

**Autodesk®**  
**Smoke® 2009**

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# New Features Guide



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Title: Autodesk Smoke 2009 New Features Guide

Document Version: 1

Date: April 09, 2008

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# Introduction



## Topics in this chapter:

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- [Contacting Customer Support](#) on page 5

## Welcome to Smoke

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# Using the New Features Guide

This New Features Guide describes the new and updated features for this release of Smoke. 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.	<b>install rpm -qa</b>
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.	<i>/usr/discreet</i>

## 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/smoke-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 Smoke is an HTML Help system that is displayed in a Web browser. The Help automatically installs on the Smoke system and is accessible anywhere within Smoke.

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

## To start the Help from Smoke:

- 1 Start Smoke.
- 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 **Left Ctrl+=** to open the Help from anywhere in Smoke.

---

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

---

**NOTE** On Linux workstations, the Help may flicker. To avoid flickering, choose Preferences / Look & Feel in the Start menu. Select Window Behavior. In the Focus Tab, set the Focus Policy to Click to Focus.

---

## 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/smoke-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 Smoke 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 Smoke

PDF files are installed in the Smoke *documentation* directory when you install Smoke. 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 Smoke.

**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.

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## 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](#) on page 7
- [What's New in General](#) on page 9
- [What's New in Importing and Exporting Media](#) on page 11
- [What's New in Batch](#) on page 15
- [What's New in Batch FX](#) on page 16
- [What's New in Editing](#) on page 16
- [What's New in Effects](#) on page 17
- [What's New in Action](#) on page 17
- [What's New in Batch Paint](#) on page 20
- [What's New in Infrastructure](#) on page 20

## 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.

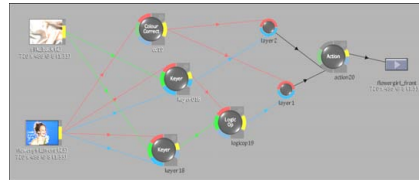
**General** Work more efficiently with updates to the Player, LUTs, Resize, Colour Source, and Autosave. See [What's New in General](#) on page 9.



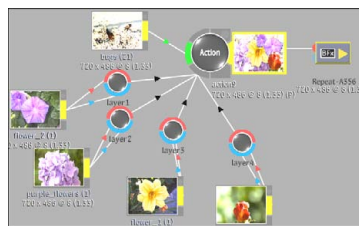
**Importing and Exporting Media** New features and enhancements for media import and export provide better support for MXF (including P2), QuickTime® (soft-import and codec profiles), Broadcast Wave, MP3, and OMF®. See [What's New in Importing and Exporting Media](#) on page 11.



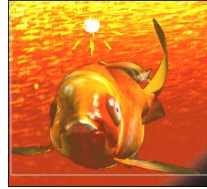
**Batch** Use the Batch module to build a processing tree by connecting clips and effects nodes. See [What's New in Batch](#) on page 15.



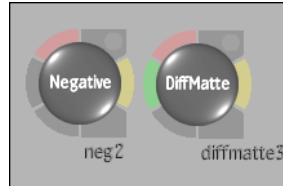
**Batch FX** Use this new type of effect to apply Batch setups to multiple timeline segments at one time. See [What's New in Batch FX](#) on page 16.



**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 16.



**Effects** New features include floating point (OpenEXR) support for the Difference and Negative tools. See [What's New in Effects](#) on page 17.



**Action** Enhancements and new features include floating point support, camera menu availability, and new entering options. See [What's New in Action](#) on page 17. Note that the DVE module is now called Action.



**Batch Paint** Introduces Batch Paint, allowing you to connect multiple sources and use them to paint the contents of source images onto the result. See [What's New in Batch Paint](#) on page 20.



**Infrastructure** Important changes have been made to Wiretap™, Stone® and Wire®, and the vic utility. See [What's New in Infrastructure](#) on page 20.

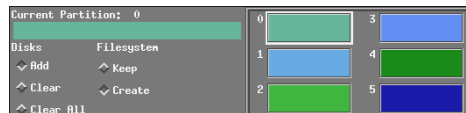


Image courtesy of Quietman

## What's New in General

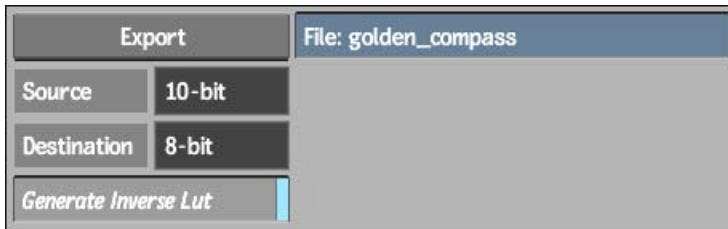
The following features have been added or updated in this release.

## 3D LUT List

You can initialise 3D LUTs for use in Smoke 2K by importing them into the LUT Preferences menu. See [LUT Preferences](#) on page 23.

## 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 24.

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 to the left of the clip replace the Player Options box. The Player Options tabs to its right replace the AudioDesk Display option 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 EditDesk are saved. You have options for setting a soft autosave, which you can cancel, and a hard autosave. See [Autosave](#) on page 25.

## 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 27.

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

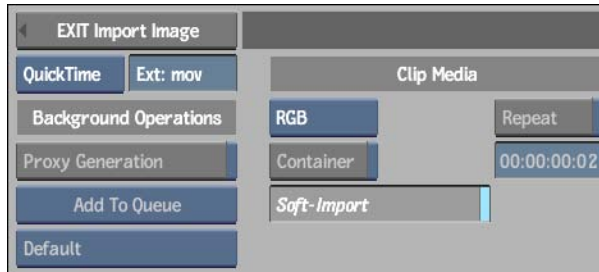


# Importing and Exporting QuickTime Media Files

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

## QuickTime Soft-Import

QuickTime files can now be soft-imported into Smoke as individual files. See [Importing and Soft-Importing Video Files](#) on page 27.



QuickTime files can also be soft-imported into a Smoke timeline when working with Final Cut Pro® XML files. See [Relinking to File-based Media](#) on page 30.

## 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 30.

Smoke reads XML files exported from FCP and assembles a timeline accordingly. In this case, you are only transferring the metadata between FCP and Smoke, 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.

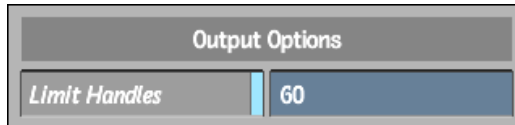
Codec Parameters			
Description: FFmpeg MJPEG			
Parameter	Value	Description	
QuickTime	▼ Rate control		
Video	Initial RC complexity	0.0	
MJPEG	▼ Quantizer		
Default	Minimum quantizer scale	2	
	Maximum quantizer scale	31	
	Maximum quantizer difference	3	Maximum quantizer difference between frames
	Use fixed quantizer	FALSE	Use fixed quality encoding
	Fixed quantizer	10	Quantizer for fixed quality encoding. Lower means better
	Quantizer compression	0.50	Amount of qscale change between easy / hard scenes

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 and Finishing application.

See [Working with Codec Profiles](#) on page 32.

## 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.

Compression Options	
Average Bitrate	128 kbps
High Quality (slow)	Min 64 kbps
High VBR Quality	Max 320 kbps

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.

Tape From File Header	Clip Metadata	File Header Keycode
Tape From Directory	File Header Timecode	Enter Keycode
Enter Tape	File Name Timecode	No Keycode
IMPORT	Enter Timecode	No KC
Up 1 level		1G/S16 mm / 1perf

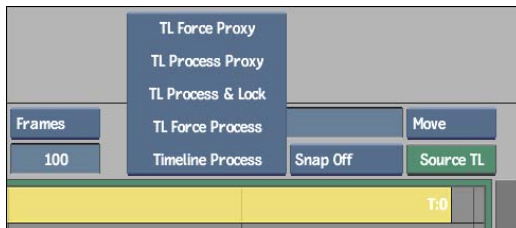
## JPEG Performance Improvement

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 Proxy, TL Process & Lock, TL Force Process, Timeline Process, and Timeline Burn™. See [Processing Soft Effects and Batch FX](#) on page 34.



## What's New in Batch

Batch is a new environment accessible from the EditDesk record timeline. The Batch module allows you to procedurally combine images and effects to build a process tree. The clips and nodes you connect in the tree provide a representation of your workflow. Use Batch to assemble a series of effects operations, where the result of each task serves as the source for the next one.

Each task—colour correction, keying, compositing—is represented as a node in Batch, which you arrange in the process tree. By building a process tree of nodes and clips, you eliminate the waiting time required for desktop renders and you save disk space because these intermediate results are not stored. See [Batch: Node Reference](#) on page 97.

Any clip in Batch can be selected for editing in the Batch schematic. You can make additional changes to the individual timeline of a clip, as well as create and update Batch FX on the Batch timeline.

See [Batch Overview](#) on page 37 and [Batch Processing](#) on page 59.

See [Offsetting Clips with the Timing View](#) on page 51.

# What's New in Batch FX

The addition of Batch to Smoke allows you to perform procedural compositing while continuing to work in a timeline-based environment. With the support of Batch effects (FX), there is a more consistent workflow between Autodesk Visual Effects and Finishing products.

See [Batch FX](#) on page 127.

# What's New in Editing

The following changes apply to editing.

## Soft Effects

Create the same soft effects from the Batch timeline as from the EditDesk record timeline.



## 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

Create wipes and axis transitions from the Batch timeline in the same way as from the EditDesk record timeline.



## Generating Clip Proxies

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.

## What's New in Effects

The following changes apply to effects.

### Difference Module and Node

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

### Negative Module and Node

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

## What's New in Action

To help with the transition to the updated DVE module, the module is now called Action. This change is designed to help your workflow and improve the interoperability between Visual Effects and Finishing products.

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 175.

## New Surface Blending Mode

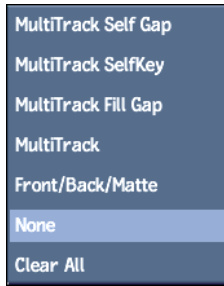
You can use a new mode from the Blend Mode box in the Surface menu. The Add Trans mode is similar to the Add mode, but also uses the transparency of the media being blended.



## 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 173.



## 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 176.

## 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 177.



## What's New in Batch Paint

The addition of Batch to Smoke also introduces Batch Paint as a system that provides a scalable matte painting, retouching, or restoration workflow in Batch. See [Batch Paint](#) on page 183.

## What's New in Infrastructure

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

### 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 stonify 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 Smoke.

## **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.

## Topics in this chapter:

- [LUT Preferences](#) on page 23
- [Exporting LUTs](#) on page 24
- [Autosave](#) on page 25

## LUT Preferences

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

3D LUTs are available only in Smoke 2K.



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

---

**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 second LUT, 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:

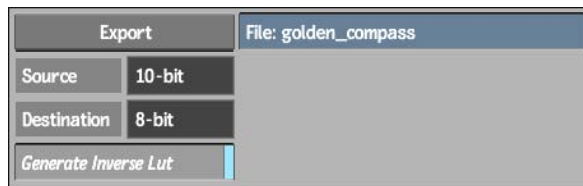
- 1 Access the LUT Editor.

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.



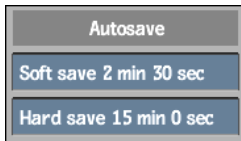
- 3 Set a location for the LUT.
- 4 Select the source and destination bit depths for the exported LUT.
- 5 Enable Generate Inverse LUT to create an inverse LUT along with the normal lut. You can apply an Inverse LUT to restore original LUT settings.
- 6 Click Export.

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 EditDesk 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.

---

**NOTE** You can do a forced autosave by pressing **Ctrl+Shift+Alt+Enter** from the EditDesk.

---

# Importing and Exporting Media

# 4

## Topics in this chapter:

- [Importing and Soft-Importing Video Files](#) on page 27
- [Relinking to File-based Media](#) on page 30
- [Working with Codec Profiles](#) on page 32
- [Processing Soft Effects and Batch FX](#) on page 34

## 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.

Movie Attributes		Video	Audio
Type: QuickTime		YUV	1 Channels
W 720	H 480	1.500000	22050
TC: 00:00:00:00		8-bit	16
Duration: 276		yuv2	twos

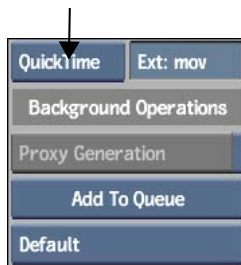
---

**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 clip library, click Import Image.
- 2 From the File Format box, select the format of the clip that you want to import.



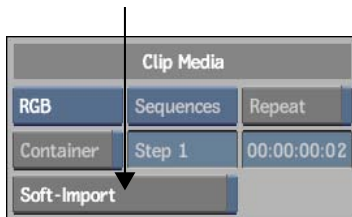
- 3 Browse to the directory containing the video files that you want to import, and then select the files.

---

**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.

---

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

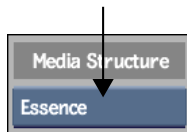


---

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

---

- 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.



- 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.

---

- 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.

Movie Attributes		Video	Audio
Type: QuickTime		YUV	1 Channels
W 720	H 480	1.500000	22050
TC: 00:00:00:00		8-bit	16
Duration: 276		yuv2	twos

- 9 Click Load.

The video files are imported to the clip library.

## 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 Smoke.

Verify that the files you are relinking to are supported in Smoke. 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.

Path	File Name	Found	Soft-Import	Relinkable
/Volumes/cuba	WHITE.jpg	NO	NO	NO
/Volumes/cuba	TVB theMatchbc	NO	NO	NO

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.

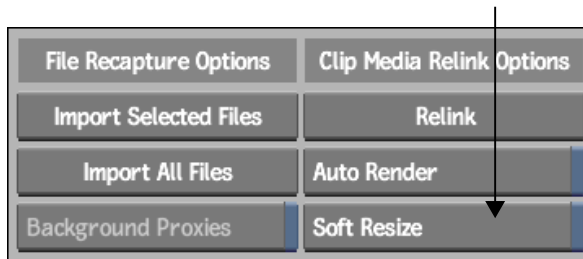
All the files are now imported or soft-imported but not yet relinked. The Relinkable column displays whether the file is relinkable.

Path	File Name	Found	Soft-Import	Relinkable
/Volumes/cuba	WHITE.jpg	YES	YES	YES
/Volumes/cuba	TVB theMatchbc	YES	YES	YES

- 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.

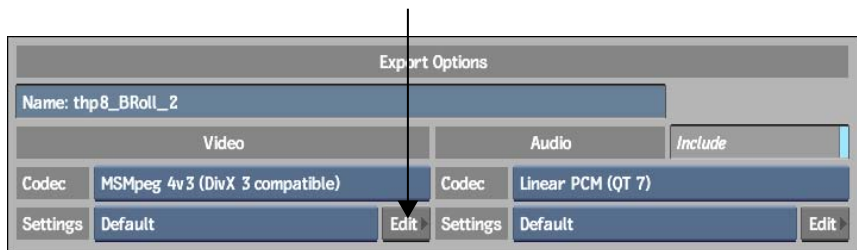
A new reel with the XML filename is created in the clip library for each imported XML file. The assembled clip in the new reel has the same name as the original FCP sequence.

# 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:

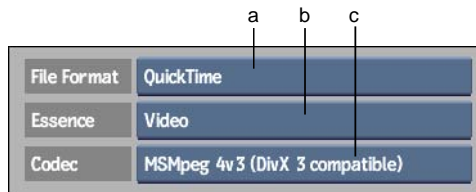
- 1 Open the Export Image menu and, from the File Format box, select QuickTime.
- 2 Click the Edit button for the video codec or audio codec that you want to modify.



The Codec Profile Editor appears.

Codec Parameters		
Description: FFmpeg MSMpeg 4v3 (DivX 3 compatible)		
Parameter	Value	Description
▼ Frame types		
GOP size (0 = intra only)	250	
Scenechange threshold	0	Threshold for scene change detection. Negative values mean more sensitivity (more keyframes)
Close all GOPs	FALSE	
Strictly enforce GOP size	FALSE	
▼ Rate control		
Initial RC complexity	0.0	
▼ Quantizer		
Minimum quantizer scale	2	
Maximum quantizer scale	31	
Maximum quantizer difference	3	Maximum quantizer difference between frames
Use fixed quantizer	FALSE	Use fixed quality encoding
Fixed quantizer	10	Quantizer for fixed quality encoding. Lower means better, 1 is not recommended
Quantizer compression	0.50	Amount of qscale change between easy / hard scenes
Quantizer blur	0.00	Amount of qscale smoothing over time
Quantizer noise shaping	0	Choose quantization such that noise will be masked by similar -frequency content in the image
Use trellis quantization	FALSE	Use trellis quantization (improves quality)
I quantizer factor	-0.8	Quantizer factor between P-frames and I-frames. If 0 then the last P frame quantizer will be used
I quantizer offset	0.0	Quantizer offset between P-frames and I-frames
▼ Motion estimation		
Motion estimation method	Zero	
ME compare function	SAD	Motion estimation compare function. SAD: Sum of absolute differences SSE: Sum of squared errors
Enable chroma ME compare	FALSE	
Motion estimation range	0	Motion estimation search range (0 means unlimited)
ME Threshold	0	Motion estimation threshold, under which no motion estimation is performed, but instead the use
MB decision mode	Use compare function	

- 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

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

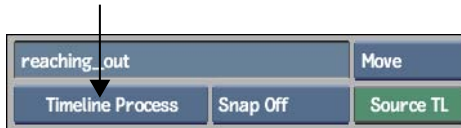
## Processing Soft Effects and Batch FX

There are new process functions available when processing Batch FX in the timeline. These include: Timeline Force Proxy, Timeline Process Proxy, 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 Smoke fails to recognize that a processed clip is no longer valid. For example,

---

<b>Select:</b>	<b>To:</b>
	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 Overview

# 5

## Topics in this chapter:

- [About Batch](#) on page 37
- [Batch Workflow](#) on page 40
- [Accessing the Batch Menu](#) on page 40
- [Viewing the Batch Schematic](#) on page 44
- [Accessing Modules from Batch](#) on page 49
- [Creating Animations with the Batch Universal Editor](#) on page 50
- [Offsetting Clips with the Timing View](#) on page 51
- [Using the BFX View](#) on page 55
- [Setting Batch Preferences](#) on page 55

## About Batch

Use Batch to assemble a series of tasks, such as colour correction, keying, and multilayer composites with animation, where the result of each task serves as the source for the next one.

Working in Batch requires the building of a process tree. Clips and nodes form the fundamental structure of a Batch process tree. The Batch module is designed to facilitate inter-module workflow and quicken interactivity as you create effects.

Each task—colour correction, keying, compositing—is represented as a node in Batch, which you arrange in the process tree. By building a process tree of nodes and clips, you eliminate the waiting time required for desktop renders and you save disk space since these intermediate results are not stored.

A Universal Channel Editor allows you to change parameters for any module at any time. A timeline makes editing functions, transitions, and timewarps available directly in Batch. Multiple view functions allow you to see changes in-context, making experimentation easier. Also, proxy processing increases performance when working with high-resolution footage by replacing it with a low-resolution version.

Any clip in Batch can be selected for editing in the Batch schematic. You can make additional changes to the individual timeline of a clip, and create and update Batch FX on the Batch timeline.

The Batch Module is available only in Smoke 2K.

## Batch Concepts

The following terms and concepts are used throughout the Batch chapters to describe workflow and the user interface.

### Clips

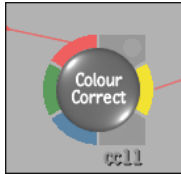
Clips are a sequence of images or frames loaded from an external device such as a VTR, stored in digital format, and displayed in the clip library and on the EditDesk. Clips form the root element of a process tree.



Image courtesy of The Post Group

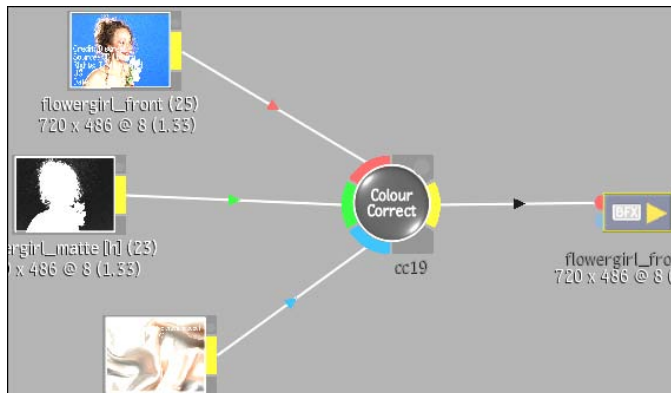
## Nodes

A node is a graphical representation of a function or module that affects a clip or another node in the process tree. Nodes have one or more input points (also called tabs) in order to connect clips to them. For example, a Colour Correct node can accept a Front, Matte and Back connection, whereas an Auto Matte node accepts a Front input.



## Process Tree

A process tree is the structure of clips and nodes that ultimately creates an effect. Clips are connected to nodes, and in turn, nodes can be connected to more clips or other nodes. A process tree ends with a BFX Output node.



## Rendering

Rendering is the process of generating the final clip or an intermediate result. When rendering in Batch, the process tree connected to the BFX Output node is processed, and effects are applied to the segment. A new clip is generated and the Record timeline is updated.

# Batch Workflow

The following table outlines the typical Batch workflow from selecting clips to rendering.

Step:	Refer to:
1. Bring clips into Batch.	<a href="#">Accessing the Batch Menu</a> on page 40.
2. Edit clips directly or from their history.	<a href="#">Modifying Clips in Batch</a> on page 64.
3. Resize a clip.	Resize Settings in the Resize chapter.
4. Assemble a process tree.	<a href="#">Assembling a Process Tree</a> on page 59 and <a href="#">Batch: Node Reference</a> on page 97.
5. Work across modules.	<a href="#">Accessing Modules from Batch</a> on page 49.
6. Edit Batch FX.	<a href="#">Editing Batch FX</a> on page 160.
7. Output a result.	<a href="#">Outputting Batch Results</a> on page 95.

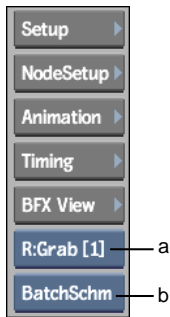
## Accessing the Batch Menu

Use the Batch menu to set up a process tree, load clips, and set rendering options. The Batch menu is available when you enter Batch and at every Batch FX level.

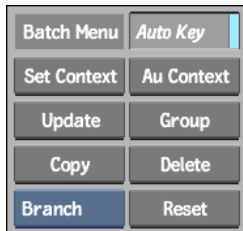
There are multiple options for bringing one or more segments into Batch or a Batch FX level. See [Creating Batch FX](#) on page 128.



Node bins and custom node panels



(a) View box (b) Reference box



Process Tree controls

The Batch controls are described as follows.

**Setup button** Displays Batch setup options.

**Node Setup** Displays the selected node's Setup menu.

**Animation button** Displays the Universal Channel Editor. You can also access the large view of the Channel Editor by tapping the right swipe bar.

**Timing** Displays the relative position in time of all Batch clips. See [Offsetting Clips with the Timing View](#) on page 51.

**BFX View** Displays a schematic view of all Batch FX applied to a BFX segment.

**Reference box** For the currently selected node, displays one of the following in the reference portion, “R” side, of the split bar.

Select:	To display:
Front	The front of the currently selected node.
Back	The back of the currently selected node.

<b>Select:</b>	<b>To display:</b>
Matte	The matte of the currently selected node.
Result	The result of the currently selected node.
Context1	The result your changes to a node have on a node set as context1 further along in the process tree. See <a href="#">Viewing Nodes in Context</a> on page 90.
Context2	The result your changes to a node have on a node set as context 2 further along in the process tree.
Out Matte	The matte that will be output.
Reference	The reference frame when the split bar is enabled.
Grab	The reference frame(s) stored in the reference buffer when the split bar is enabled.
Source Clip	The source focus clip.
Record Clip	The record focus clip.

To see the reference image, select Split in the View menu. The other side of the split bar is determined by the view you select from the View box.

**View box** Sets the view in the image window. Available views are determined by the active node. You can also use the following hot keys to display commonly used views.

<b>Select:</b>	<b>To display:</b>
Front (F1)	The front of the currently selected node.
Back (F2)	The back of the currently selected node.
Matte (F3)	The matte of the currently selected node.
Result (F4)	The result of the currently selected node.
Channels (F5)	The Universal Channel Editor.
BatchSchm (Esc)	The Batch schematic. The hot key acts as a toggle between the Batch schematic and the current view.
Node Schematic (~)	The schematic for the selected node. (Only visible when an Action, Gmask or Distort node is selected.)

Select:	To display:
Out Matte	The matte that will be output.
Reference	The clip stored in the reference buffer.
Context1 (1)	The node for which context 1 is set.
Context2 (2)	The node for which context 2 is set.
C: Main Level	The clip results at the Record timeline level. This option appears when you enter Batch FX.
C: Level-up	The clip results one level higher than the current Batch FX level. This option appears when you enter a second level Batch FX.
Tracks	The in and out times, duration, and keyframe information of animation channel parameters.
Info	Animation channel parameter information in tabular format.
Source Clip (F7)	The source focus clip.
Record Clip (F8)	The record focus clip.

**Save button and box** Save a Batch setup by selecting one of the following.

Select:	To save:
All	All nodes in the schematic.
Selected	Selected nodes.

By default, Batch setups have the file extension *.batch*.

**Load button and box** Load a Batch setup by selecting one of the following.

Select:	To:
Replace	Replace the current Batch setup in the schematic.
Append	Append the selected setup to the current Batch setup in the schematic. If the setup contains nodes that have the same name as the current Batch setup, the conflicting nodes in the current schematic are renamed.

Loading a Batch setup also loads the clips used in the process trees. If Batch cannot find a clip, it displays the name of the clip in red.

You can load Batch setups that contain Flame, Flint or Inferno specific nodes. These nodes—called render-only nodes or non-editable nodes—cannot be modified in Smoke; however, Batch processes the node operation in the final clip result.

**Node bins** Contain all the nodes you require to build a process tree. The bars are divided into four categories: input nodes, formatting nodes, effects nodes, and processing nodes. See [Batch: Node Reference](#) on page 97.

**Custom node panels** Contain custom nodes that you have created. The left panel contains custom nodes available to the user, and the right panel contains custom nodes available to the project. See [Creating Custom Nodes](#) on page 85.

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**TIP** Press **Ctrl+Tab** to return to the node bins from any module's menu.

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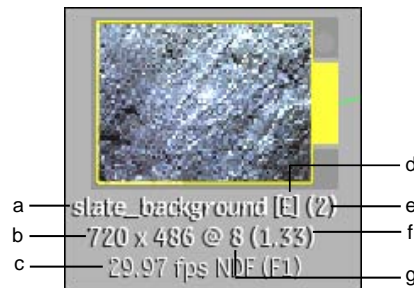
**Process Tree controls** Use these controls to position and adjust Batch nodes to keep track of processing directions. See [Manipulating Nodes](#) on page 73.

## Viewing the Batch Schematic

Visual cues in the Batch schematic are designed to help differentiate clips from one another. In addition, detailed information is available for each clip.

### Clip Information

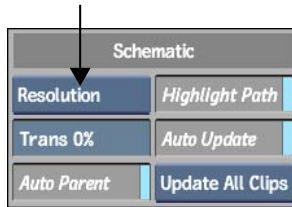
In order to distinguish similar clips from each other, you can display clip information such as resolution, frame rate, and size.



(a) Clip name (b) Size (c) Frames per second (d) Indicates edited clip (e) Number of frames (f) Aspect ratio (g) Frame bit depth

### To display clip information:

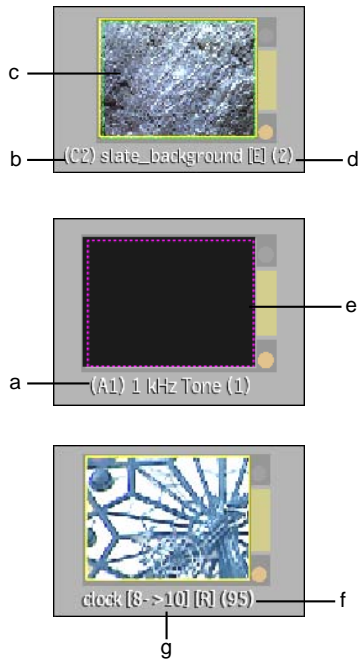
- 1 In Batch, click Setup.
- 2 Select one of the following from the Clip Info box.



Select:	To display:
Resolution	The clip's name, number of frames, dimension, frame depth, and aspect ratio.
Size	The clip's name, number of frames, and dimension (in pixels).
Framerate	The clip's name, number of frames, and number of frames per second (fps).
Size+Rate	The clip's name, number of frames, dimension (in pixels), and number of frames per second (fps).
Resolution+Rate	The clip's name, number of frames, dimension, frame depth, aspect ratio, and number of frames per second (fps). This is the most detailed level of clip information.
No Info	No information except the clip name and number of frames.

## Visual Cues

When working in the Batch schematic or in the timeline, clips can adopt symbols or letters that identify them as having been edited. Also, if the clip has a history list, this is identified by the letter H appearing next to the clip name.



(a) (A) symbol (b) (C) symbol (c) Context outline (d) [E] symbol (e) Audio Context outline (f) [R] symbol (g) LUT symbol

**[E] symbol** Signifies that the clip has been edited in the Batch timeline. In addition, the clip name is coloured blue denoting that the clip can be found in the clip library.

**(A) symbol and Audio Context outline** Signifies that an audio context has been set for this clip or node. In addition to the A, the clip had a dotted purple outline. The letter A is followed by the number of the context, for example, A2 is the second Audio context. See [Working with Audio Contexts](#) on page 93.

**(bfx) symbol** Signifies that the segments that comprise the clip have different sets of Batch FX operations applied to it. The clip cannot be expanded in the schematic. See [Batch FX](#) on page 127.

**(BFX) symbol** Signifies that a Batch FX operation was applied to the segments. The clip can be expanded in the schematic.

**(C) symbol and Context outline** Signifies that a context has been set for this clip or node. In addition to the C, the clip had a dotted green outline. The

letter C is followed by the number of the context, for example, C1 is the first video context. See [Viewing Nodes in Context](#) on page 90.

**(H) symbol** Signifies that the clip has had an effect or process applied to it. The clip's history can be expanded into a process tree and edited.

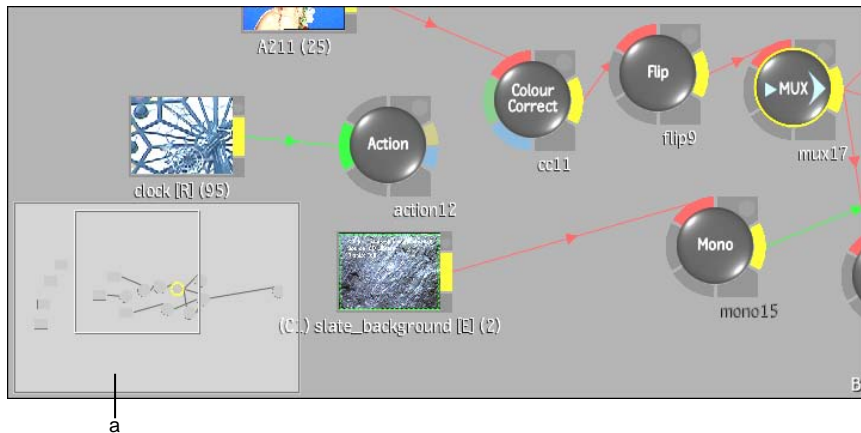
**(h) symbol** Signifies that the clip — or soft clip — has been edited and contains at least one viewable and editable history segment.

**[R] symbol** Signifies that a Resize has been applied to the clip.

**LUT symbol** Signifies that a LUT is being applied to the clip. The first and second number represent the source and destination bit depths, respectively.

## Viewing the Batch Schematic Work Area

You can enable a schematic navigator that provides a big picture of all the nodes in the work area. The navigator appears as a mini-map of all nodes, and contains a thin, grey rectangle showing the current view area.



(a) Schematic navigator

To move in the Batch schematic view using the navigator:

- 1 Press **Ctrl+Alt+N**.  
The navigator appears.
- 2 From the Batch Setup menu, click an area in the navigator to move the current view to that area of the schematic work area.
- 3 **Alt**+click to move the navigator window within the schematic work area.

# Batch Schematic Notes

You can add notes to a node or group in the Batch schematic. Notes are useful when collaborating on an effect or project with other users. Notes are saved with the setup so they are visible to all. You can copy and paste content between notes.

## To add a note to the Batch schematic or a node:

- 1 In Batch, display the node bin.
- 2 Drag and drop the note icon anywhere in the Batch work area.
- 3 Double-click the note icon.  
The Note text editor appears.
- 4 Type text into the Note field.  
Entered text will identify the user and date of entry.
- 5 Click Exit Note or press **Ctrl+Enter** to exit the Note text editor.

## Copying and Pasting Content

You can use the standard hotkeys to cut, copy, and paste the content of notes. Use the following controls.

Use:	To:
Ctrl+A	Select all of the content in a note.
Ctrl+C	Copy the selected content.
Ctrl+V	Paste the copied content.
Ctrl+X	Delete selected content.

## Viewing Schematic Notes

You can view notes or modify how they are displayed in the schematic work area.

### To adjust a note's display settings:

- 1 In the schematic work area, use one of the following commands.

Use:	To:
V+roll over note	Temporarily display a clip or node's note beneath the cursor.
Shift+V	Expand a clip or node's note beneath the cursor.
Click X (upper-left corner of note)	Close the note in the schematic.

## Multiple Viewports

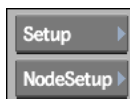
You can display up to four viewports at a time in the image window, including a view of the Universal Channel Editor and the Batch schematic. Multiple viewports are convenient for setting channel values, working in Schematic view, and previewing your results all at the same time without having to switch views.

## Accessing Modules from Batch

Many modules are fully integrated into Batch to improve workflow. User interface controls are quickly accessible for all modules. In addition, you can access a specific module's Setup menu for the following nodes:

- Action
- Colour Correct
- Colour Warper
- Gmask

You can access these Setup menus by selecting the Node Setup menu button. Clicking another node while the Node Setup is active will display its Setup menu.



**To access the module menu in Batch:**

- 1 Disable the Setup menu button.
- 2 Select the module node from the Batch schematic.  
The module's respective menu appears.
- 3 Tap the left swipe bar to return to the Batch schematic.

## Working in Action

You can access all of Action's functionality from Batch. Import clips, create media, and add effects using the Action node in the Batch process tree. You need not leave the Batch environment to accomplish any Action-related task.

Note the following when working in Action from Batch:

- To show the selected node's schematic, press the ~ key. Press ~ again to switch between the schematic and the reference area.
- To return to the Batch schematic, press the **Esc** key.
- To add Media nodes to an Action node, **Ctrl**-click the Add button in the Action Media list. If empty media or <new media> is selected, an empty Media node is created. If media already has clips from the desktop, the Media node and the Batch clip(s) are created and linked together. If the selected media is already a Media node, nothing happens.
- You can load a Batch setup with an Action node that was saved in Inferno, Flint, or Flame. Functionality that is exclusive to Inferno, Flint and Flame is render-only and not editable.

For more information, see [Action Node](#) on page 100.

## Creating Animations with the Batch Universal Editor

Use the Batch Universal Channel Editor to create animations for each node and then synchronize the timing of animations across colour correction, keying, compositing, and other nodes in Batch. Channels in the Universal Channel Editor include most nodes present in the Batch schematic.

Furthermore, use expressions to create complex animation effects where, for example, the position of the media's axis in the Action node is affected by the position of a vertex for a garbage mask.

**To access the Universal Channel Editor:**

- 1 Do one of the following:
  - Tap the right swipe bar.
  - Select Channels from the View box.
- 2 Click Animation to access the Animation controls.

## 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. Similar to the record timeline on the EditDesk, Timing View can be accessed from any Batch FX level, allowing you to view timing information of all clips in the current level at once, and adjust the timing of clips.

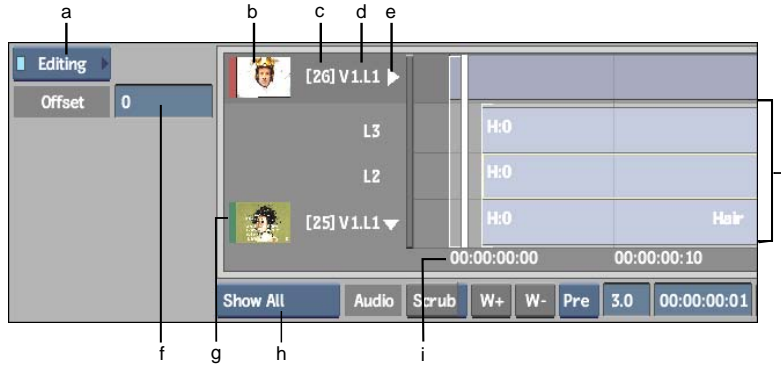
Use the Timing View to select a Batch clip to slip, slide, or trim. You can also move a segment within a clip (but not between clips).

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.
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.

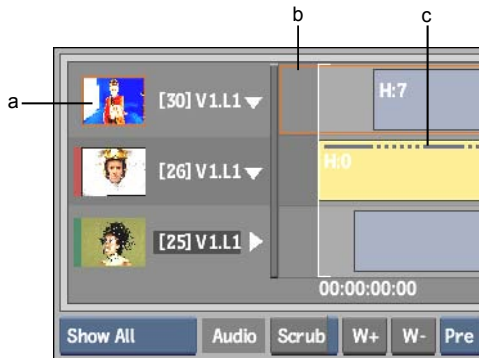
**To select a clip in the Timing View:**

- 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.

Timing View allows you to keep working in Batch when you want to view and adjust the timing of clips, rather than exiting to adjust timing on the record timeline. You can view the timing of all clips in the current Batch schematic, even if they are not on the current record timeline.

## To offset a Batch clip:

- 1 Click the clip proxy.

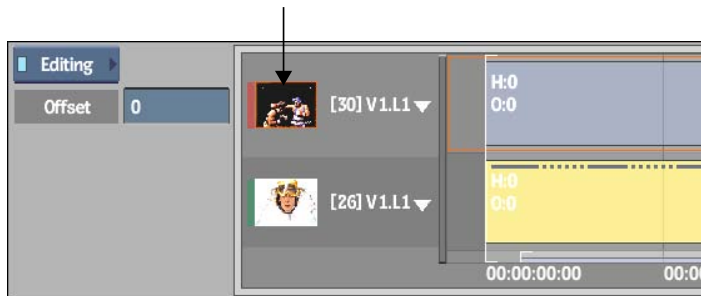


Image courtesy of Das Werk and The Post Group

---

**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.

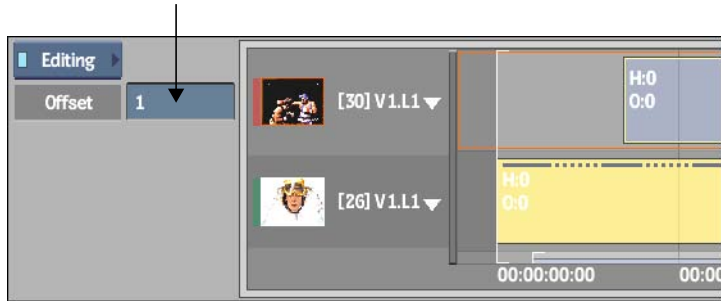


Image courtesy of Das Werk and The Post Group

## Using the BFX View

The BFX View displays a schematic of all Batch FX applied to a BFX segment. You view a single representation of Batch FX on different levels, allowing you to navigate the BFX View to access a complete Batch setup relative to the EditDesk timeline.

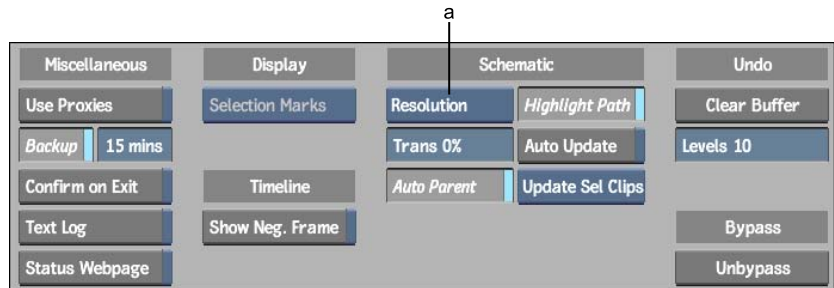
See [Navigating Batch Setups](#) on page 161.

## Setting Batch Preferences

Use the Batch Setup menu to enable Batch log files, set timeline, schematic, and undo properties, and manage caching of rendered frames.

To access the Setup menu:

- 1 In the Batch menu, click Setup.



(a) Clip Info box

The Batch Setup controls are described as follows.

**Use Proxies** Replaces clips with proxies when working in Batch and all associated modules. When enabled, the image window is outlined in amber. See [Using Proxies in Batch](#) on page 62.

---

**NOTE** It is possible that you lose precision when replacing your clips with proxies. Because they are converted to 8 bits, images may degrade.

---

**Backup button and field** Create a backup copy of your current Batch setup automatically. When enabled, a backup copy of the current setup is saved in the *\_session.batch* file in the *batch* directory.

In the Backup Frequency field, set the number of minutes between backups.

**Confirm on Exit button** Prompts for a confirmation before exiting Batch.

**Text Log button** Saves Batch processing status information in a text file called *batch\_log*. These files are located in */usr/discreet/project/<project home>/batch/log*.

Information is appended on a continuous basis to this file and serves as a permanent log file as long as Text Log is enabled.

**Status Webpage button** Creates three HTML files called *batch\_log.html*, *batch\_log\_status.html*, and *index.html*, when enabled. These files are located in */usr/discreet/html*.

The *batch\_log.html* file describes the user, project, and date of the current job.

The *batch\_log\_status.html* file is the actual status of the Output or Export node being processed and includes information such as remaining processing time, the frame currently being processed, and the number of frames to process.

The *index.html* file combines the contents of both the *batch\_log* and the *batch\_log\_status* files into a single file.

A message is displayed if an Output node is skipped at process time. This node will be skipped if the host where the output is wired is unreachable or if the library is read-only.

The contents of the HTML file are cleared after each Batch process.

**Selection Marks box** Displays the cue marks and in and out points of either the selected clip, source clip only, or record clip only.

**Show Negative Frame button** Displays negative frame numbers in the Current Frame field and the Batch timeline when a segment is offset before Frame 1. Disable to display only frames from Frame 1 onward.

**Clip Info button** Lets you select whether to display resolution, frame rate, size, or any combination of information in the schematic.

**Transparency field** Sets the transparency of currently unselected nodes in the schematic.

**Auto Parent** Enables the Parent and Cut options in the schematic while using the Move edit mode.

**Highlight Path button** Highlights the path of the currently selected node in the schematic.

**Auto Update button** Updates a node's result proxy automatically. When you change the current frame, the result proxies are updated for all clips or selected clips depending on what is defined in the Update Clip box.

**Update Clip box** Defines whether you interactively update all clips or only selected clips in Batch. Choosing Update Sel Clips increases performance.

---

**TIP** It is recommended you update selected clips when editing with the timeline.

---

**Clear Buffer button** Clears the Undo buffer of all previous undo operations.

**Undo Levels field** Sets an upper limit for the number of undo or redo operations, which applies throughout the Batch module, including tasks performed in the schematic. Tasks completed with the various nodes in Batch also support multiple undo and redo operations.

**Unbypass button** Disables node bypassing for selected nodes in the current Batch setup.



# Batch Processing

# 6

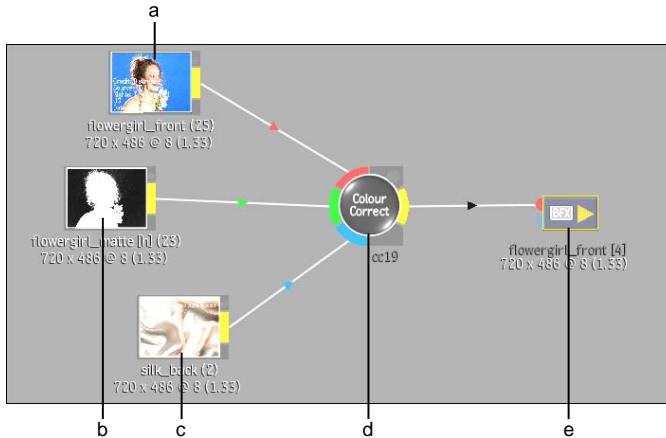
## Topics in this chapter:

- [Assembling a Process Tree](#) on page 59
- [Manipulating Nodes](#) on page 73
- [Previewing Results](#) on page 88
- [Outputting Batch Results](#) on page 95

## Assembling a Process Tree

Use Batch to assemble a series of tasks using nodes. Each node represents a specific Smoke function. You connect clips with nodes and use the result of one node as the source for the next node. As you assemble this arrangement in the Batch schematic, you are building a process tree that processes as many output clips as you want. Intermediate clips can be processed as well.

A process tree begins with a clip, contains at least one node, and ends with a BFX Output node. The following example shows a simple process tree that performs a colour correction using a front, back, and matte clip.

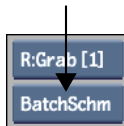


(a) Front clip (b) Back clip (c) Matte clip (d) Colour Correct node (e) BFX Output node

The Batch Module is available only in Smoke 2K.

#### To build a process tree:

- 1 In the Batch menu, select BatchSchm from the View box.



- 2 Add the clips and nodes to the schematic. See [Adding Clips to the Schematic](#) on page 61, and [Adding Nodes to the Schematic](#) on page 67.
- 3 Connect the clips and nodes in the required sequence for your effect. See [Connecting Clips and Nodes](#) on page 68, and [Working with Multiple Connections](#) on page 72.
- 4 Modify the clips and nodes, as needed, to adjust effect parameters, trim segments, apply LUTs, and adjust audio, for example. See [Modifying Clips in Batch](#) on page 64.
- 5 Connect a node to a BFX Output node.

Before you can process, a process tree must end with a BFX Output node. Batch uses these nodes to process the result of the process tree to the corresponding timeline segment. See [BFX Output Node](#) on page 104, and [Outputting Batch Results](#) on page 95.

- 6 Preview your process tree, then click Process.

The final clip is stored on the EditDesk. See [Previewing Results](#) on page 88 and [Outputting Batch Results](#) on page 95.

## Adding Clips to the Schematic

You can add clips to the Batch schematic in the following ways:

- Use the input nodes to load clips from the EditDesk or a clip library, or import a clip from a different format.
- Double-click a node's input tab to load clips from the EditDesk.

When you load or import clips from remote clip libraries, Batch does not duplicate storage on the local framestore. The import process occurs one frame at a time as you jog the timebar. In this way, the framestore is not cluttered with duplicate information.

### To add clips to the schematic:

- 1 In the Batch menu, select BatchSchm from the View box.
- 2 Drag one of the following nodes to the schematic.

Select:	To:
Desk node	Add clips from the EditDesk. You can select up to six clips. Click Exit Clip Select to return to Batch. See <a href="#">Desk Node</a> on page 110.
Library node	Load clips from a local or remote clip library. Select the clips and click Load to return to Batch. See <a href="#">Library Node</a> on page 115.
<b>NOTE</b> When creating a Library node for a clip originating from an imported library, the proxy resolution of the remote clip may not match the proxy resolution of the current project. If this occurs, load the remote clip on the Smoke first, and then use it in Batch.	
Import node	Import images and clips using the Import Image module. See <a href="#">Import Node</a> on page 113.

- 3 Select the clips you want to add to the Batch schematic.

#### 4 Click Exit.

You return to Batch and your selected clips are displayed as proxies in the schematic.

---

**NOTE** When adding a Cineon® clip to the Batch schematic, an automatic linear gamma conversion to an 8- or a 12-bit image occurs. An OpenEXR clip is stored automatically as a 12-bit image. When adding clips with these file formats, the LUT Editor option is automatically enabled.

---

#### To replace a clip in the schematic:

- 1 In the Batch schematic, double-click a clip.  
The EditDesk appears.
- 2 Select the replacement clip.
- 3 Click Exit Clip Select to return to Batch.  
In the Batch schematic, the original clip is substituted for the new selection.

### Importing Multiple Resolutions

You can import clips of resolutions other than the default resolution defined for the project. The resolution and aspect ratio display directly on the clip in the schematic. Proxies are also displayed in their correct aspect ratio.

Nodes with multiple inputs, such as the Keyer and Colour Warper, must use clips of the same resolution. For example, the Front and Back inputs must be of identical resolution. If you want to add a clip with a different resolution as an input, you must either parent a Resize node between the clip and the input of the node, or resize the clip itself. For Action nodes, each Action layer must also use a front and matte of the same resolution. However, separate layers can have different resolutions.

### Using Proxies in Batch

Use proxies to work with low-resolution versions of your high-resolution material. Using an image's proxy to perform colour corrections, blurs, or other edits significantly increases the interaction speed. Proxies of your clips are generated according to your project settings and conditions.

#### To use proxies in Batch:

- 1 In Batch, click Setup to display the Batch Setup menu.

## 2 Enable Use Proxies.



All clips replace their respective proxies as defined at project creation. The image window is outlined in amber.

---

**TIP** Press **Ctrl+P** to toggle the Use Proxies button at any time, from any location in Batch.

---

- 3 If you click Process while in Proxy mode, you are asked to confirm whether you wish to render the proxies rather than the original clips.

## Using OpenEXR Images in Batch

OpenEXR-formatted clips loaded from the Smoke or imported from the library into Batch.

A selection of Batch nodes supports direct OpenEXR input. See [Batch: Node Reference](#) on page 97. If a clip is stored at 16 bits and connected to a node that does not support floating point data, its red warning tab is activated. To connect an OpenEXR-formatted clip to a node that does not support OpenEXR input, apply a conversion and export it to a linear format.

In Batch, you can apply a conversion in EXR Display by:

- Connecting the clip to a LUT Editor node
- Accessing the LUT Editor of a clip

You can use a LUT Editor node to apply a conversion to an OpenEXR-formatted clip. If a clip is stored at 16 bits, and you want to connect it to a node that does not support floating point data, you must first attach it to a LUT Editor node to apply a linear conversion to the clip.

You can apply a conversion directly to a clip. When stored as linear data, you can connect the clip to any node in the schematic. You have the option of

changing the clip's bit depth, including returning the clip to a bit depth of 16 bits, allowing you to work with the clip's high-dynamic range properties. See [LUT Editor Node](#) on page 116.

**To apply a conversion directly to a clip:**

- 1 Select an OpenEXR-formatted clip.
- 2 Do one of the following:
  - Click Basic and enable the RGB LUT button to use current EXR Display settings.
  - Click RGB LUT to access the clip's LUT Editor, and enable the Active button to use current EXR Display settings.
  - Disable either of these buttons to work with the full range of data in the clip.
- 3 To convert the output, select the bit depth in the Destination menu.

**To apply a conversion to a clip using the LUT Editor node:**

- 1 Import or load an OpenEXR-formatted clip stored at 16 bits.
- 2 Drag a LUT Editor node to the Batch schematic and connect it to a clip.
- 3 Select the node.  
The LUT Editor appears.
- 4 From the Conversion LUT Type box, select EXR Display.
- 5 To convert the output, select the bit depth in the Destination menu.

## Modifying Clips in Batch

You can modify a clip at any stage while building your effect without having to exit Batch. Changes made to the clip are updated and reflected automatically throughout the process tree. Once modified, the clip is ready to be used in the Batch pipeline. To modify clips, you have access to the Basic, LUT Editor, Timeline, Audio, and Resize controls from Batch, as well as access to a clip's history.

### To modify a clip:

- 1 In the Batch schematic, select the clip you want to change.
- 2 Click one of the Clip Edit buttons.



---

Click:	To:
--------	-----

---

Basic	Modify timeline and timewarp options, control clip locking and slipping, and define how missing media is displayed and processed. See <a href="#">Defining Missing Media Output</a> on page 66.
-------	---

---

Resize	Change the size of a clip, as well as its aspect ratio.
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RGB LUT	Open the LUT Editor for the selected clip. From this editor, you can also change a clip to output as 8 or 12 bits.
---------	--

---

Timeline	
----------	--

---

Audio	Edit the audio individually from its assigned video..
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---

- 3 Change your clips, as required.  
Modified clips are updated in Batch immediately.
- 4 Activate or disable LUTs and resize functions for a clip using the RGB LUT and Resize buttons.  
This allows you to enable or disable a clip change quickly without reentering the Resize or RGB LUT menu.

### Modifying Clips with Clip History

Certain clips that you previously modified have clip history, which is a system for keeping track of changes made to clips. You can load these clips into Batch, which shows you, using a process tree, how the clip was modified. When you expand a clip with clip history into a Batch process tree, you can modify the

clips and nodes as you would for any Batch schematic, and then process a new clip.

## Defining Missing Media Output

You can define how missing media in a clip is processed by a node. You may want to apply effects to a clip that includes one or more gaps, or you may want to manipulate a node with multiple inputs that is not yet connected to a required input. You can view the results of the selected options in the image window.

### To define how a clip's missing media is interpreted:

- 1 In the Batch schematic, select a clip.
- 2 Select Basic.  
The Basic menu appears.
- 3 Select from the following No Media options to determine how to interpret missing information before, during and after a clip.

Head Media	Repeat First
Gap Media	Use Black
Tail Media	Repeat Last

Select:	To:
Repeat First	Substitute each frame of missing media at the beginning of the clip with the first frame of media. Applies to the Head Media menu only.
No Media	Not substitute missing media. Display an error message that there is no media to be processed by the node.
Use Black	Substitute each frame of missing media with a black frame.
Repeat Last	Substitute each frame of missing media at the end of the clip with the last frame of media. Applies to the Tail Media menu only.

If an input tab cannot process missing media, most nodes that process clips set to No Media will display a warning. The BFX Output node automatically processes gaps in clips set to No Media as black frames. See [Managing Missing Media Output](#) on page 100.

# Adding Nodes to the Schematic

You can add as many nodes as you need to create complex effects. Since Batch is designed to match your workflow, you add nodes in a similar order as you would by going from module to module.

To add a node to the schematic:

- 1 From the View box, select BatchSchm or swipe the bar at the left to display the node bins.

---

**TIP** Press **Ctrl+Tab** to display the node bins quickly.

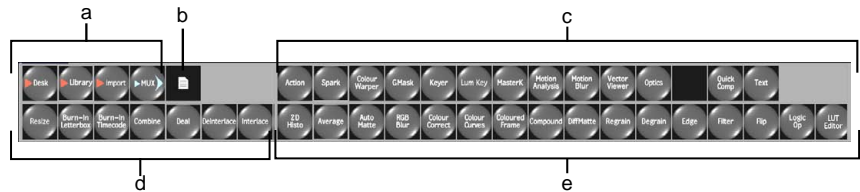
---

- 2 From one of the four node bins, select a node.

---

**TIP** Drag in each node bin to scroll the nodes.

---



(a) Input nodes (b) Note icon (c) Formatting nodes (d) Effects nodes (e) Processing nodes

- 3 Do one of the following:
  - Drag the node from the node bin and place it anywhere in the schematic.
  - Double-click the node in the bin to display a node to the right of the last selected node in the schematic.

To use the node in the process tree, you must connect it to other nodes or clips. See [Connecting Clips and Nodes](#) on page 68.

- 4 In the schematic, click the node to access the module for the selected node. For example, when you select an Action node in the schematic and you want to create a composite, click the Action node to access the full Action module.

---

**NOTE** Some nodes require you to enter their module by clicking the Edit button. Once you have performed your edits, click Return to return to Batch with the latest unprocessed setup for the selected node.

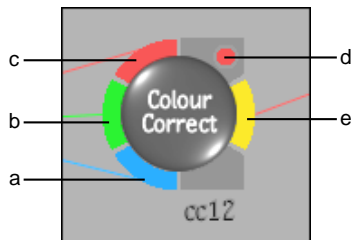
---

Repeat this procedure for all the nodes you set up in your process tree. For a description of each Batch node, see [Batch: Node Reference](#) on page 97.

## Connecting Clips and Nodes

As you add nodes, you connect them to the process tree by linking the result from one node and using it as a source (front, matte, or back) for the next node in the process tree or by linking backward from the source of a node to the output of another (to reuse a node's output). The only exception is the BFX Output node: you cannot link from its result.

To connect nodes, you use the coloured tabs on the node's left side; these tabs are called *source tabs*. The colours of the source tabs correspond with the cursor colours when selecting clips from the Smoke . The yellow tab on the node's right side is called the *Result tab*. You use the Result tab of a node to connect its result to the front, back, or matte tab of another node.



(a) Matte tab (b) Back tab (c) Front tab (d) Warning tab (e) Result tab

Node source tabs are described in the following table.

Tab	Colour	Description
Front	Red	Connects a front clip to a node.
Back	Green	Connects a back clip to a node.
Matte	Blue	Connects a matte clip to a node.
Result	Yellow	Connects the result of a node to other nodes.

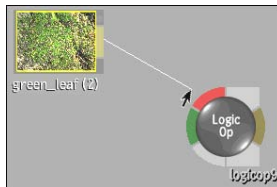
Tab	Colour	Description
Output Matte	Blue	Connects the output matte of a node to other nodes.
Warning	Red circle	Warns you that clip input to this node is unconnected or missing media, or clips parented to this node do not share the same resolution or a compatible bit-depth. A message also appears in the message bar (press <b>Alt+E</b> and mouse over the node to redisplay the message.)

The available source tabs depend on the node. If the node accepts a front, back, and matte clip, all coloured source tabs are available. If the node only accepts a front clip, the red source tab is available and the other source tabs are grey. The Result tab is always available, except on the BFX Output node. When a source tab or Result tab is not connected to a clip or to another node, the coloured tabs are dimmed.

There are several different ways of connecting clips or nodes together. You can connect them manually or automatically. You can also quickly connect several nodes and clips together using the tap-tap feature.

#### To connect a clip to a node:

- 1 Click the clip and drag the cursor to a source tab on a node. Alternatively, select Parent from the Edit Mode box and drag the cursor to a source tab.



**Dragging from a clip to the front tab of a Logic Op**



(a) Edit Mode box

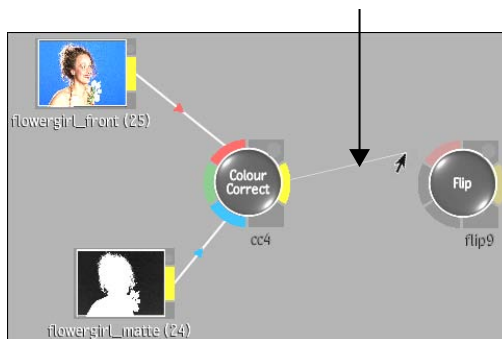
An arrowed line is drawn from the clip to the source tab. The colour of the line corresponds to the colour of the source tab to which the clip is connected.

For example, if you want a clip to be used as the front clip for the Colour Correct node, a red arrowed line is drawn in the schematic connecting the clip and the node.

**To connect nodes manually:**

- 1 Click the Result tab of a node whose result you want to use and drag the cursor to one of the source tabs of the next node in the process tree.

An arrowed line is drawn from the node to the source tab. For example, click the Result tab of the Colour Correct node and drag the cursor to the front tab of the Flip node to flip the result of the colour-corrected clip.

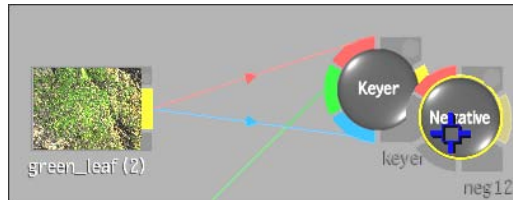


### To connect nodes automatically:

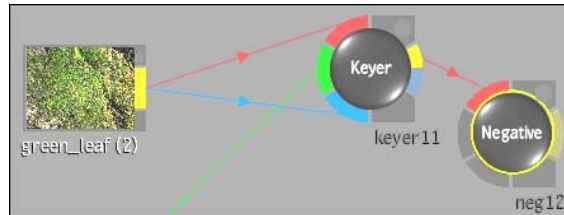
- 1 Use the Autolink feature by pressing **Shift** and dragging a node to another node so their tabs touch.

The nodes are connected.

**Action:** Press and hold Shift while dragging the Negative node to the Keyer node



**Result:** The Keyer output is the front for the Negative node



### To create a node connection using tap-tap linking:

- 1 Click the socket of the first node or clip you want to connect.
- 2 Click the socket of the node you want to connect the first node to.

The nodes are connected.

---

**NOTE** If the first node you click is an Output node, you can add as many subsequent input socket connections as you like. To finish selecting, click anywhere in the schematic work area.

---

### To simultaneously break a connection and add a new input:

- 1 Connect the new clip or node's Result tab to the source tab of a node that is already connected to a different source.

The source tab's original link is disconnected and replaced with a connection to the new Result tab.

### To disconnect nodes or clips:

- 1 Drag the cursor across the connecting line between a clip and a node or between two nodes.  
The arrowed line is cut and the source tab is dimmed.
- 2 You can cut multiple connections in a single stroke by clicking and dragging over several connecting lines in the schematic.

---

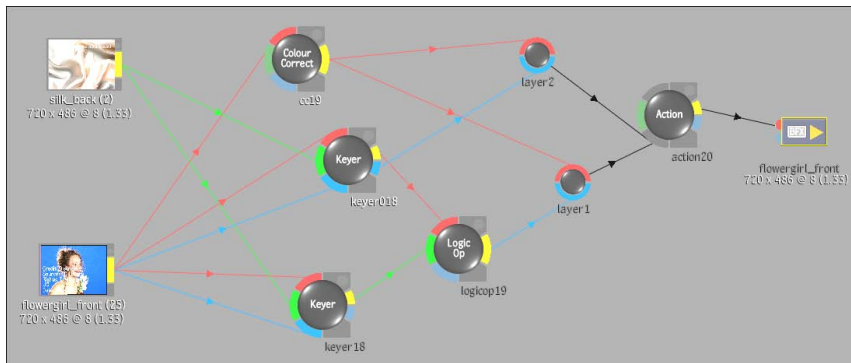
**TIP** To quickly disconnect a node, press **Ctrl+Alt** and click the node to disconnect.

---

## Working with Multiple Connections

When connecting clips and results, you can have single or multiple connections. This means that you can connect a clip to many different nodes. You can also connect a node's Result tab to more than one node if you want to reuse a node's output elsewhere.

In the following example, the `flowergirl_front` clip is connected to the Front tab of a Colour Correct node and two Keyer nodes. The `silk_back` clip serves as the back for both Keyer nodes and the Action node. The result of the Colour Correct node is connected to two Action media nodes, one of which has a Logic Op node feeding into it. Finally, the entire process tree feeds into one final output.



### To add a connected clip:

- 1 Double-click a coloured source tab.

The Smoke appears. The cursor is the same colour as the first unassigned tab.

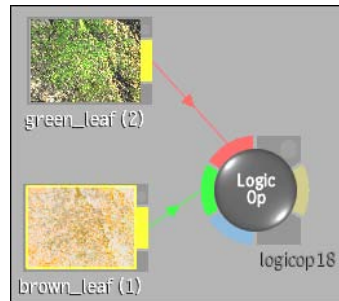
**2** Select a clip.

The arrow changes colour if the node has other unlinked source tabs.

**3** Continue to select clips for unlinked tabs or click Exit Clip Select.

You are returned to Batch, where the selected clips are added to the process tree and connected to the node.

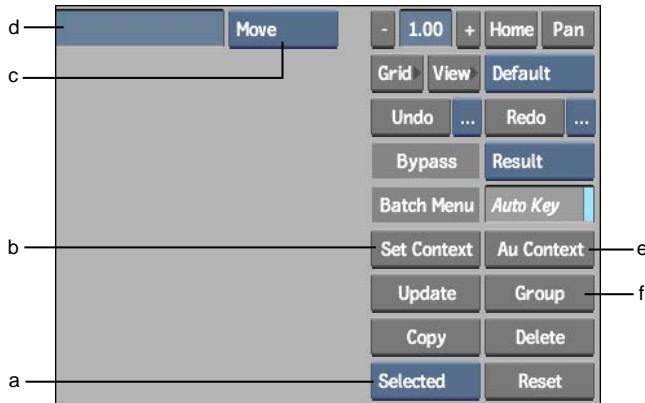
For example, the node on the left shows a Logic Op node before double-clicking a source tab. The process tree on the right shows the same Logic Op node after double-clicking the red source tab and selecting a front clip and a back clip from the Smoke.



## Manipulating Nodes

As you build your process tree, you can reposition the nodes to keep track of the processing direction.

Once you position the nodes, you may want to give them more descriptive names, copy process trees, create groups, and delete unnecessary nodes. You must select a node, multiple nodes, a branch, or the entire process tree before moving, copying, grouping or deleting them. To carry out these tasks, you use the Process Tree controls.



(a) Selection Mode box (b) Set Context button (c) Edit Mode box (d) Name field (e) Au (Audio Context) button (f) Group button

The Process Tree controls are described as follows.

**Name field** Assigns a unique and descriptive name to nodes and clips.

**Edit Mode box** Sets the manipulation mode in the schematic.

Select:	To:
Move	Move nodes, branches, and process trees in the schematic. In this mode, you can also parent and cut connections gesturally in the schematic.
Parent	Connect and disconnect clips and nodes.
Delete	Delete clips and nodes in the schematic, one at a time.

**Undo and Redo buttons** Undoes or repeats the last action performed whether in the schematic or in a module. You set the number of undo levels in the Setup menu.

**Bypass box** Bypasses the node, instead passing the selected clip downstream. See [Bypassing Nodes](#) on page 78.

**Set Context button** Uses the currently selected node as a context for viewing in a viewport. See [Viewing Nodes in Context](#) on page 90.

**Audio Context button** Uses the currently selected audio clip as a context for another clip. See [Working with Audio Contexts](#) on page 93.

**Update button** Forces an update of nodes that might not have processed the current frame.

**Group button** Creates a group with sets of nodes, branches, or process trees. See [Grouping Nodes](#) on page 81.

**Copy button** Copies selected items in the schematic.

**Delete button** Deletes selected items in the schematic.

**Selection Mode box** Displays the node or set of nodes that you can select.

**Reset button** Resets a node, a branch of nodes, or an entire process tree according to what is selected in the Selection Mode box.

When you reset an Action or a Keyer node, the undo list is cleared. When an Action or a Keyer node is part of a branch in a process tree, you may accidentally clear the undo list when you reset these or other nodes. To prevent the accidental clearing of the undo list when you reset any of these nodes, the following warning appears and you are prompted to confirm:

**Confirm reset? WARNING: This will clear the undo stack.**

For example, when you click Reset to reset a Colour Warper node that is parenting a Keyer node, you must confirm.

## Selecting Nodes

Fundamental to constructing a process tree is the ability to move, reorganize, and connect nodes in a logical manner. Before you can do any of this, however, you have to select a node.

**To select nodes:**

- 1 From the Edit Mode box, select Move.
- 2 From the Selection Mode box, select a mode.

Use:	To select:
Selected	One item in the schematic such as a clip or a node.
Branch	The nodes and clips contained in a branch. A branch is defined by a node and all the clips and nodes before it in the process tree.
Tree	An entire process tree.
All	The entire schematic, including all process trees.

3 In the schematic, make a selection.

To select:	Click:
An item	The node or image.
A branch	The first node in the branch you want to select. All nodes before it (upstream) in the tree are selected.
A process tree	Any node in the process tree with Tree selected.
All process trees	Any node in any process tree with All selected.

The selected nodes are highlighted. The clicked node is outlined in yellow and the other selected nodes are outlined in white.

## Moving Nodes

You can move a node, a branch, a group, or an entire process tree. Typically, you move a node by dragging it in the schematic. You can move several nodes at a time.

To move nodes:

1 In the Edit Mode box, select Move.



In the schematic, the cursor changes to a blue crosshair.

2 In the Selection Mode box, select the nodes and clips you want to move.

- 3 Press **Alt** and click a node to move all selected nodes.

## Copying Nodes

You can copy a node, a branch, or an entire process tree. You can also copy clips.

### To copy a selection:

- 1 In the Edit Mode box, select Move.
- 2 In the Selection Mode box, select the nodes and clips you want to copy.
- 3 In the schematic, make your selection.
- 4 Click Copy to copy the selection.  
A copy of the selection appears in the schematic.

## Deleting Nodes

You can delete nodes or clips individually. You can also delete branches, process trees, as well as the entire schematic.

### To delete a single node or clip:

- 1 In the Edit Mode box, select Delete.  
In the schematic, the cursor changes to a red crosshair.

---

**NOTE** In Delete mode, you can only delete one item at a time.

---

- 2 Click the node or clip you want to delete.  
The selected item is deleted.

### To delete a branch:

- 1 In the Edit Mode box, select Move.
- 2 In the Selection Mode box, select Branch.
- 3 In the schematic, click the first node for the branch you want to delete.  
All nodes and clips feeding into the clicked node are outlined in white and the leading node in the branch is outlined in yellow.

- 4 Click Delete.

The selected branch is removed from the schematic.

#### To delete a process tree or an entire schematic:

- 1 In the Edit Mode box, select Move.
- 2 In the Selection Mode box, select Tree or All depending on what you want to delete.
- 3 In the schematic, click a node in the process tree you want to delete or if you want to delete the entire schematic, click any node.
- 4 Click Delete.

The selected process tree or schematic is deleted.

#### To delete by dragging items out of the schematic:

- 1 In the Edit Mode box, select Move.
- 2 In the schematic, do one of the following:
  - Drag a node to the bottom of the screen. The cursor changes to a green recycling icon. The node is deleted.
  - Drag a node to the bottom of the screen while pressing **Alt**. The cursor changes to a green recycling icon. If Branch is selected from the Selection Mode box, the branch (the selected node and all incoming nodes) is deleted.
  - Drag a node to the bottom of the screen while pressing **Alt**. The cursor changes to a green recycling icon. If Tree is selected from the Selection Mode box, the entire process tree is deleted.
  - Drag a node to the bottom of the screen while pressing **Ctrl + Alt**. The cursor changes to a green recycling icon and the node is deleted. A link between the node before and after the deleted node is automatically created.

## Bypassing Nodes

You can improve your workflow in Batch by deactivating certain nodes and rendering only the nodes that you want to process right away.

For any node, you can pass the Front, Back, Matte, or Key-in clip—depending on the type of node you select and its source tab inputs—as the input to the next node in a branch.

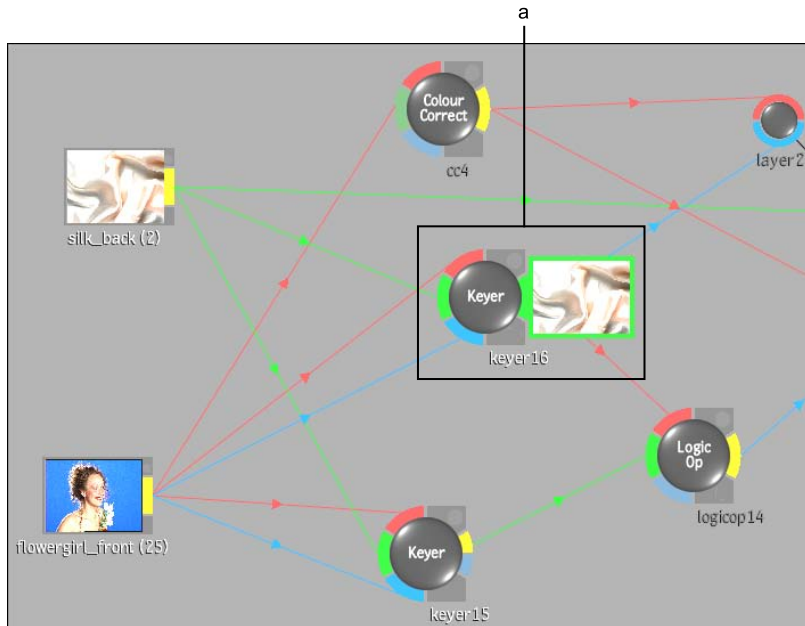
**To bypass a node:**

- 1 In the schematic, select the node that you want to bypass.  
Typically, the bypass node will feed its result into a node that you want to render or work with more intensively, such as an Action node. For example, click a Keyer node that has Front, Back, and Key-in clips feeding into it.
- 2 In the Bypass box, select the clip you want to pass as the input to the next node.



The options that appear in the Bypass box depend on the inputs of the node you select in step 1. For example, the Keyer node has Front, Back, and Key-in clips as inputs to its source tabs, therefore they appear in the Bypass box.

The Keyer node operations are bypassed. In this case, only the back clip is passed.



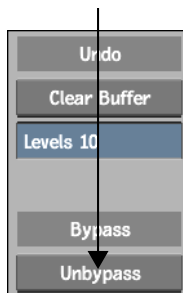
(a) Bypassed Keyer node

- 3 If you want to undo the bypass of a single node, select the bypassed node and in the Bypass box, select Result.
- 4 When you are ready to render the entire process tree, go to the Setup menu and click Unbypass to unbypass selected nodes.

---

**NOTE** Clicking Unbypass/Re-bypass affects whatever is selected in the selection box (All, Tree, Branch, or Selected).

---



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**TIP** You can use the - + **Click** key combination to bypass/unbypass a node.

---

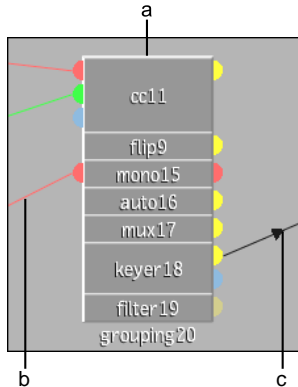
### **Bypassing Action or Keyer Nodes**

The Action and Keyer nodes each have two outputs: a result and a matte. If you bypass one of these nodes, the matte output will be the same as the result output (depending on the current selection in the Bypass box).

## **Grouping Nodes**

You can group nodes to simplify cluttered schematics. When you group nodes, they collapse into one group node that you can use as a parent to, or child of, other clips and nodes. A group is represented by a single node that displays the group contents, inputs, and outputs.

You can create several groups and organize them in your schematic. You can then work on individual groups. For example, group a Keying and Colour Correction branch separately from an Action and filtering branch, and then work on each branch independently of the other. If you need to edit the nodes in a group, you can expand the group and make the necessary modifications.



**(a) Group node (b) Input connection (c) Output connection**

A group is a dynamic node that you can customize using the Group List menu. The Group List menu lists all the nodes and connections contained in a group and lets you rename or hide them. In addition, you can define which input and output connection sockets are visible and available for connection in the schematic.

---

**NOTE** When you are working inside a group in Batch, the Burn button disappears.

---

To group nodes:

- 1 **Ctrl**-drag to select the nodes you want to group.  
Selected nodes are outlined in white.
- 2 In the Process Tree controls, click Group.

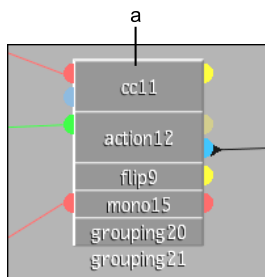


The selected nodes collapse into a group node.

---

**NOTE** You can create a group inside a group.

---



(a) The Group node lists the nodes contained in the group, as well as the non-hidden input tabs and output tabs

- 3 In the Name field, type a name for the group and press **Enter**.  
The new group name is shown in the schematic.

You can select a node in the Group List menu to display the group at the selected node's stage. The View box must be set to Result, Front, or Back to use this display option.

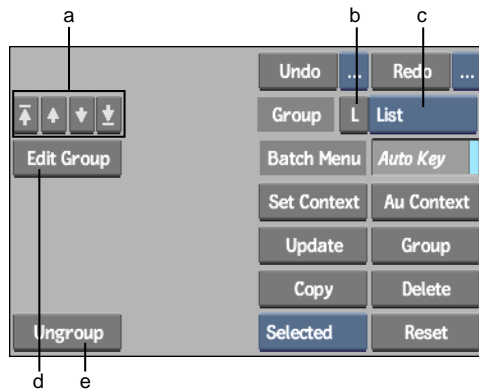
## Editing a Group

Use the grouping controls to adjust the contents of a group.

### To edit a group:

- 1 Select the group you want to edit.

When you select a group node, the Process Tree controls change to show the List button, and the Group List menu displays the Ungroup, Edit buttons, and the Sort Order buttons.



(a) Sort Order buttons (b) List button (c) Node List box (d) Edit Group button (e) Ungroup button

- 2 Click Edit Group.

The nodes in the group appear in an isolated schematic.

---

**TIP** Instead of editing the group, you can access a single node's menu by selecting the node's name from the Node List box. Click the L (List) button to return to the Group List menu.

---

- 3 Modify the nodes as required.

---

**NOTE** Selecting All from the Selection Mode box while editing a group selects all nodes within the current group; any nodes outside the group in the current Batch pipeline remain unselected.

---

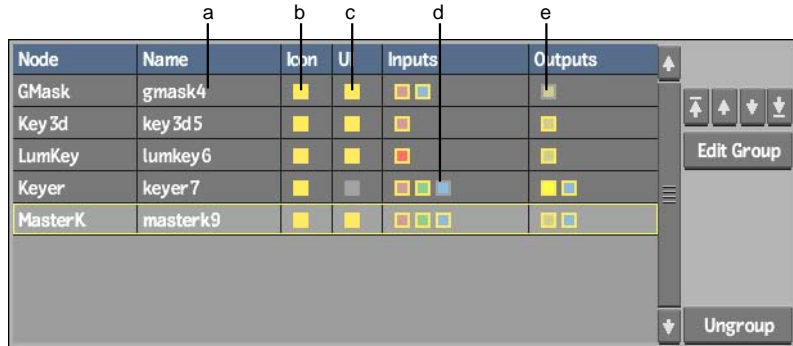
- 4 Click Exit Group to return to the main schematic.
- 5 Change the order of nodes in the group using the Sort Order buttons. The single arrow buttons move the selected node one position up or down, and the double-arrows move the selected node to the first or last position within a group.
- 6 Click Ungroup to expand the group of nodes to their pre-grouped positions in the schematic.

### Defining Group Display Settings

You can customize the group node using the Group List menu.

To define a group's display settings:

- 1 Select a group to display the Group List menu.



(a) Node name (b) Enabled icon visibility (c) Enabled UI visibility (d) Disabled input visibility (e) Disabled Output visibility

- 2 Change the group's interface by editing or toggling on any of the following node properties.

Click:	To:
Name	Change the node's name.
Icon	Toggle the node's visibility within the group.
UI	Toggle the node's availability in the Node List box.
Input	Hide or unhide the selected node's input sockets. Sockets are colour-coded with the same scheme as Batch nodes.

---

Click:	To:
Output	Hide or unhide the selected node's output sockets. Sockets are colour-coded with the same scheme as Batch nodes.

---

## Creating Custom Nodes

In addition to the standard node bins are two bins that can contain custom nodes. You can drag nodes, groups, branches, and whole Batch trees into a custom node bin to create a custom node. A custom node can consist of a single node, like a specific Colour Correct you need to use frequently, or a multitude of nodes that create an effect, such as a Keyer node parented to an Action node with layers connected to a GMask node. The newly created custom node can then be pulled out of the node bin and into a schematic work area to be used anywhere in Batch as often as you like.

### To create a custom node:

- 1 From the Batch schematic, select a clip, node, branch, tree, or group.
- 2 Drag and drop the selection to the appropriate custom node bin. The left custom node bin contains nodes for the current user. The right bin contains project nodes that are available to all users.

The selection is copied to the bin. The original selection remains in the schematic. If the selection is dropped outside of the bins, the selection is deleted.



User custom node bin

---

**NOTE** No two custom nodes can share the same name. Attempting to drop a node into a custom bin with a similarly named node is not possible.

---

### To use a custom node:

- 1 Select a node from one of the bins. If necessary, scroll through the custom node bins.
- 2 Drag and drop the node into the schematic work area.

A node appears with the same configuration that was used to create the custom node.

You can use custom nodes as often as you like. Each time a custom node is dropped into the schematic work area, it is given a new name and/or number.

#### To manage the custom node bins:

- 1 Click one of the following to manage the nodes in the custom node bins. Both the user and project custom node bins have their own set of commands.

Click:	To:
Load	Load custom nodes from another project or user.
Save	Save the current custom nodes so they can be loaded by another project or user.
Delete	Delete the selected custom node.
Clear Bin	Delete all custom nodes in the node bin. You must confirm the multiple deletion.
Arrow Buttons	Reposition custom nodes in the bin. The single arrow button advances one node at a time, and the double arrow button brings you to the first or last custom node.

#### Resolution Issues

A node's bit depth and resolution are not always compatible. It is not always possible to use clips of different resolution or bit depth. For example, it is not possible to have one custom Colour Corrector node with an 8-bit clip and another with a 12-bit clip. Garbage masks, on the other hand, work correctly with clips of different bit depth, but not of different resolutions.

## Loading a Node's Setup

You can load the following nodes' setups from Batch:

- Action
- Colour Correct

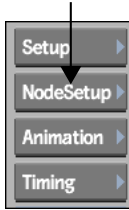
- Colour Curves
- Colour Warper
- Degrain
- Difference Matte
- Filter
- Gmask
- LUT Editor
- Optics
- Paint
- Regrain
- Resize
- Text

When you load a Batch setup, clips are searched for on the Smoke and in the clip libraries. On the Smoke, clips are searched for first by name, and then by clip ID. In clip libraries, clips are searched for by clip ID only—they are not searched for by name. If you delete a clip from the clip libraries that is used in a Batch setup file, you cannot replace it by giving another clip the same name. However, if you delete a clip on the Smoke, you can replace it with another clip on the Smoke that has the same resolution and name.

When you load a Batch setup using Append, a node with the same name as the one in the current Batch setup is renamed by adding zeroes to the name until a unique name is found. For example, if node1 and node 01 exist in the current Batch setup, the appended node1 is renamed node001.

**To load a node setup in Batch:**

- 1 Select a node in the Batch schematic.
- 2 Click Node Setup to display the selected node's Setup menu.



- 3 Click Load Node.

The file browser appears.

- 4 Navigate to and select a setup file. Once selected, the setup is loaded and you are returned to the Batch schematic.

## Undoing and Redoing Operations

Use the Undo and Redo buttons to undo or redo operations performed in both the Batch schematic and individual modules.

You can only undo operations that affect the final result. For example, a slider edit, or node parenting can be undone, but not a view change or schematic pan.

## Previewing Results

While creating your process tree, you can preview results at any time. If you do not like the result of one operation, you can modify or delete it without affecting the other operations in the sequence. You can preview your results in Batch by:

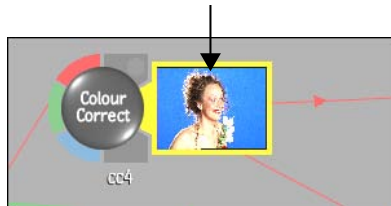
- Using proxies in the schematic
- Clicking one of the viewing buttons to view results at the current level in the image window
- Clicking the Level-up context button to view results one level higher than the current Batch FX level.
- Clicking the Main Level context button to view results as they will appear at the top Batch level.

- Setting up to two context nodes in Schematic view and viewing the results in context in the image window. See [Viewing Nodes in Context](#) on page 90.

**To preview results using proxies:**

- 1 Click Setup.
- 2 In the Setup menu, enable Auto Update.
- 3 In the schematic, select the node whose result you want to preview.
- 4 Double-click the Result tab. Alternatively, press **T** as you click the Result tab.

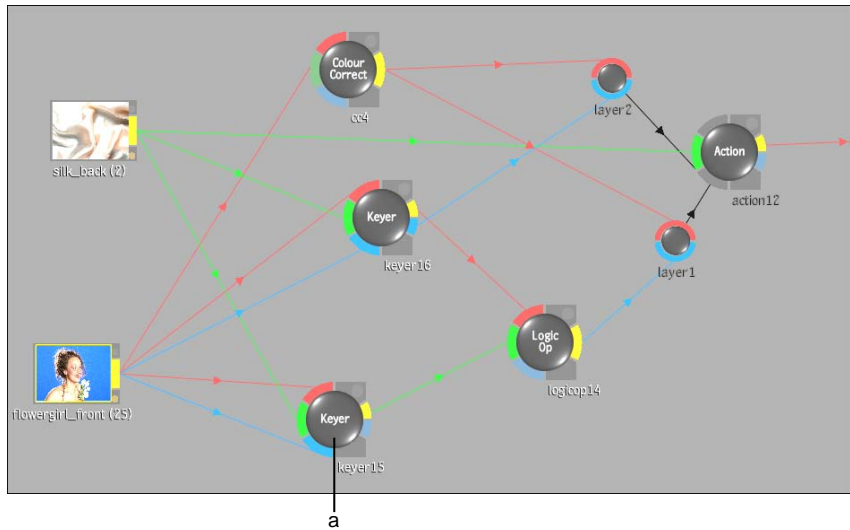
The result proxy appears and shows the result up to and including the selected node.



- 5 To close the proxy, double-click the Result tab again, or press **T** as you click the Result tab.

**To preview results in the image window:**

- 1 Select the node whose results you want to preview.



(a) For example, click the Keyer node

2 In the Batch menu, select Result from the View box.

The intermediate nodes are processed up to and including the selected node, and the result of the selected node is displayed in the image window.



## Viewing Nodes in Context

You can view a node in context with another node to compare intermediate results throughout the process tree. By working with context points, you can

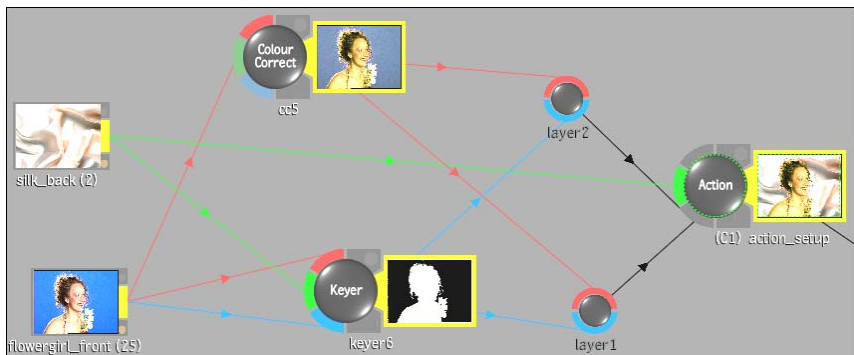
modify nodes in the process tree and immediately view the impact those changes have on the nodes further along in the process tree.

You can set two context points in a process tree. The Process Tree menu includes the Set Context button for setting the context of a node operation.



(a) Set Context button

The following example has a process tree that includes a Colour Correct node that feeds into an Action node. Two Keyer nodes also feed into the same Action node. You can set the context on the Action node and continue modifying the Colour Correct node, while viewing the result of the Colour Correct node, the Keyer node, or the Action node.



**To view nodes in context:**

- 1 In the schematic, select the node you want as the context. Using the preceding example, select the Action node.
- 2 In the Process Tree menu, click Set Context.

---

**NOTE** You can also set the context node by holding the = key and clicking the node you want to use. This method retains the current node selection.

---

(C1) appears next to the Action node name in the schematic.



- 3 In the schematic, select the node you want to edit. Using the preceding example, select the Colour Correct node and modify the setup.
- 4 View your colour correction changes in the context of Action by using preview proxies.
  - Selecting Context 1 from the Reference box
  - Clicking Result and selecting Context 1 or pressing **F4**



In this way, you are colour correcting “in context” of the intermediate result. Furthermore, as you move to different frames in the module, Context 1 also displays the result at the same frame. For instance, if you are at frame 15 in the Colour Corrector, Context 1 (Action) is also at frame 15. (Exceptions to this occur when using time-based nodes such as Remove Pulldown, Add Pulldown, Interlace, and Deinterlace.)

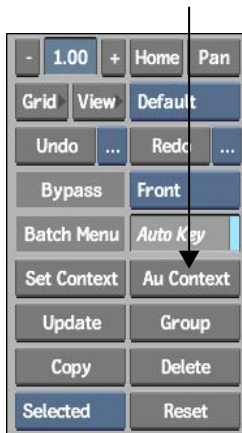
- 5 If you want to set a second context, select another node in the schematic—such as the Keyer node—and click Set Context. (C2) appears next to the Keyer node name.
- 6 Repeat steps 3 and 4.

## Working with Audio Contexts

While working on one clip or branch of the process tree, you can listen to the audio of another clip. Audio contexts work in much the same way as video contexts. You can set up to two audio contexts in Batch.

### To set an audio context:

- 1 In the Batch schematic, select a clip that contains audio.
- 2 Click Au Context to set the clip's audio as Audio Context #1 (or press **F10**).



Clips with an audio context are labelled A1 or A2 and are outlined by pink dots.

---

**NOTE** Selecting another clip and clicking Au Context again will set the second audio context. Repeating this with another clip will remove the context from the first audio clip and make the new selection Audio Context #2, since only two audio contexts can be set at a time.

---

### To hear an audio context:

- 1 Click Setup.
- 2 In the Audio Monitoring box, select an audio context to listen to.

Select:	To play:
Current	The audio of the currently selected clip.
Context 1	The audio of the clip set to Audio Context 1.
Context 2	The audio of the clip set to Audio Context 2.
Source	The audio of the Source clip.
Record	The audio of the Record clip.
Main Level	The audio of the segment selected in the main timeline.
No Audio	No audio.

**TIP** Cycle through the Context options using **F12**.

**NOTE** Playback of audio is only available when playing a clip. However, you can scrub audio anytime in Batch.

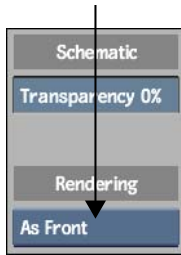
## Sampling LUTs

When you use the colour patches in the LUT Editor menu in Batch to sample image channel values, sample the image before you resize it. When you try to sample resized images, you sample the original front image, not the resized image.

## Using the Scan Format as a Rendering Parameter

When using the Burn-in Timecode, GMask, and Text nodes, you can use the import scan format of a clip as the rendering format. To do this, choose As Front from the Scan Format box.

For GMask:



For Burn-in Timecode:

Text Colour		As Front	Safe Title	Comments		
Shadow		Horizontal Centre	X 0	Date/Time		
Background		Bottom	Y 0	Record TC	00:00:00:00	29.97 fps NDF
Font	Discreet		Size 50	Source TC	00:00:00:00	29.97 fps NDF
<name>				Frame No	Total	100
				Keycode	No KC	

## Outputting Batch Results

When you are ready to generate the final clip or an intermediate result, click the Process button. All process trees in the schematic are processed, and one clip is written to the destination specified by each BFX Output node.

## Importing LUTs

When you save the Import node in Batch, two LUT files are saved—one for the RGB channels and one for the matte. The files are named as follows:

- <node>.lut\_node
- <node>\_alpha.lut\_node



# Batch: Node Reference

# 7

## Topics in this chapter:

- [About Batch Nodes](#) on page 98
- [2D Histogram Node](#) on page 100
- [Action Node](#) on page 100
- [Add Pulldown and Remove Pulldown Nodes](#) on page 103
- [Auto Matte Node](#) on page 103
- [Average Node](#) on page 104
- [BFX Output Node](#) on page 104
- [Burn-In Letterbox Node](#) on page 106
- [Burn-in Timecode Node](#) on page 106
- [Colour Correct Node](#) on page 107
- [Colour Curves Node](#) on page 107
- [Coloured Frame Node](#) on page 107
- [Colour Warper Node](#) on page 108
- [Combine Node](#) on page 109
- [Compound Node](#) on page 109
- [Deal Node](#) on page 109
- [Degrain and Regrain Nodes](#) on page 110
- [DeInterlace and Interlace Nodes](#) on page 110
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- [Flip Node](#) on page 112
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- [Keyer Node](#) on page 114
- [Library Node](#) on page 115
- [Logic Op Node](#) on page 115
- [Luminance Key Node](#) on page 115
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- [Posterise Node](#) on page 120
- [Quick Composite Node](#) on page 120
- [Resize Node](#) on page 120
- [Render-only Nodes](#) on page 121
- [RGB Blur Node](#) on page 121
- [Spark Node](#) on page 124
- [Text Node](#) on page 124

## About Batch Nodes

Each node in Batch corresponds with one of the Smoke commonly used modules or a command. The Smoke functions that you use in Batch are contained in four sets of node bins.

To display node bins, click the left swipe bar.



(a) Input nodes (b) Notes node (c) Effects nodes (d) Format nodes (e) Processing nodes

- Input nodes—for loading and importing source clips, as well as processing rendered clips.
- Processing nodes—for processing clips using nodes, including nodes whose functions are found in the Video, Film, and FX menus.
- Format nodes—for formatting frames in a clip using nodes, including nodes whose functions are found in the Film and Timecode menus.
- Effects nodes—for creating special effects, including nodes whose functions are found in the Effects menu.

---

**TIP** If you do not see the node you are looking for, scroll the nodes in the bar with a click and drag.

---

The Batch module is only available in Smoke 2K.

## Accessing a Node's Menu

Each node's menu can be displayed in Batch, allowing you to easily access its controls.

**To access a node's menu:**

- 1 Disable the Setup menu button.
- 2 Select the module node from the Batch schematic.  
The module's respective menu appears.
- 3 Tap the left swipe bar to return to the Batch schematic.

## Managing Missing Media Output

A node processes missing media in a clip based on the clip's settings (see [Defining Missing Media Output](#) on page 66). Most nodes that receive missing input from clips set to No Media will not process affected frames and display a warning. However, the BFX Output node automatically processes gaps in No Media clips as black frames.

There are nodes that process a No Media clip based on the type of input tab that is receiving the information. The Action, Paint, and Text nodes receive No Media clip information based on its source, and the current input and clip settings of the node's other inputs.

## Supporting Floating-point Images

Floating-point images in the OpenEXR file format can be added to a Batch processing tree. Some nodes can be connected immediately downstream of a clip, while others must first be attached to a LUT Editor node to convert it to a linear image. See [LUT Editor Node](#) on page 116.

## 2D Histogram Node

Use the 2D Histogram node to display the luminance distribution of the matte. This node can be placed anywhere in the Batch process tree.

## Action Node

Action nodes provide in-context access to a fully functional Action module. Click the Action node in the schematic to access it.

This node supports floating-point (OpenEXR) input.

You can parent a back clip to the Action node in Batch. Although doing so is not necessary, a parented back clip node provides a good visual reference for identifying the Action composite in the process tree.

**To parent a back clip to an Action node in Batch:**

- 1 Swipe the left side of the screen to show the node bins.
- 2 From the Effects node bin, drag an Action node to the schematic.

- 3 Add the clip that you want to use as the back clip for the Action composite to the schematic. See [Adding Clips to the Schematic](#) on page 61.
- 4 With Parent mode selected from the Edit Mode box, drag from the clip node to the Action node's green input tab.



When you add an Action node to a process tree, you can either add indirect media, which appear in the Batch schematic, or add direct media from the Action module. Direct media does not appear in the Batch schematic.

## Indirect Action Media

You can add Media nodes to an Action node in Batch. Attached to the Action node, a Media node has the following properties:

- A Media node is permanently parented to the Action node (you cannot sever these process lines).
- Media nodes have red and blue input tabs for the front and matte clips, respectively.
- Media nodes support floating-point (OpenEXR) input.

---

**NOTE** If a Media node contains media that is missing a Smoke clip, the Action node's name is highlighted in red.

---

### To add media to an Action node in Batch:

- 1 Click the Action node.  
The Action menu appears.
- 2 Click Media.  
The Media menu appears.
- 3 Do one of the following:
  - Hold **Ctrl** and click Add to add media.

- Select media that has a front and/or matte, and press **Ctrl+Add**.

The Media node and its clips (if any) are added to the Batch schematic.

---

**NOTE** Deleting a Media node's clips that have been added to the Batch schematic will make the clips unavailable in the Action module.

---

4 Parent the appropriate front and matte clips to the Media node:

- Parent the front clip to the red input tab.
- Parent the matte clip to the blue input tab.

Media nodes that you set up in Batch are represented in the Media List with brackets (“[ ]”) around the input clip names.

### Advantages and Limitations

If you create indirect Action media in the Batch schematic, note the following advantage. You can create complex effects processes (for example, a glow or a spark) that you can pipe into a Media node. Setting up indirect media is a good way to work on pre-processes for clips that you want to input into media.

If you create indirect Action media, note the following disadvantage. You cannot change the input clips for media set up in Batch from the Media menu of Action. If you attempt to do so, a message appears indicating that the selected media is indirect media. To change the input clips of indirect media, either return to the Batch schematic and then parent new front and matte clips to the Media node, or delete the Media node.

## Direct Action Media

Instead of adding Media nodes in the schematic, you may prefer to set up the media for your Action composite directly inside the Action node.

Although direct media is not represented in the Batch schematic, media and all settings pertaining to it are saved with the Batch setup.

---

**NOTE** You can create direct media in the Action module (from the Batch Action node) and then add them to the Batch schematic by selecting media and pressing **Ctrl +Add**.

---

## Missing Media

If a clip set to No Media is attached to an Action node and is missing media, the node's output is based on the tab to which the clip is connected, and the status of the node's other inputs.

The following conditions will output transparent Action media if the clip is missing media:

- A front clip set to No media
- A back clip set to No Media
- A matte set to No Media, with a front clip that is also connected to the Action node

If all media in the scene are transparent and no other information is input into the Action node, the node output is set to No Media.

## Add Pulldown and Remove Pulldown Nodes

The Add Pulldown and Remove Pulldown nodes each accept a front clip as input:

- The Remove Pulldown node removes field artifacts introduced in a 24-to-30 fps conversion process.
- The Add Pulldown node produces the appropriate field sequence for converting a clip from 24 to 30 fps.

When either the Add Pulldown or Remove Pulldown nodes render a transition, preceding and subsequent frames with no media are replaced by black frames, regardless of Media settings for the missing media.

The First Processed Frame field sets the value at which output is processed from the node. Unprocessed output does not display any media.

These nodes also support floating-point clip input.

## Auto Matte Node

The Auto Matte node accepts a front clip as input, which it uses to generate a high-contrast matte. The Auto Matte node menu is similar to the Auto Matte command in the Fx menu.

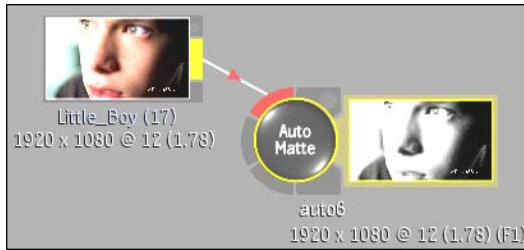


Image courtesy of Optimus

## Average Node

The Average node makes it possible to simulate motion blur in Batch. An image averaging function is applied to the frames to create the motion blur. Attach a front clip to the Average node.

The Average node processes frames based on data from preceding and subsequent sample frames. A frame set to No Media with missing media may be included in a sample.

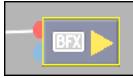
Input	Result
Current frame set to No Media	Frame set to No Media
Frame with media after gaps set to No Media	Frame using current and next frames
Frame with media before gaps set to No Media	Frame using current and previous frames

## BFX Output Node

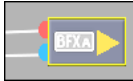
Use the BFX Output node to output Batch FX you have applied to a segment or a contiguous selection of segments.

The BFX Output node accepts a front and a matte input. The node outputs the front as the RGB result. The matte is output as the alpha result.

The icon displayed on the node is dependent on its context. If the BFX level was entered with the Pre option, the icon background is grey. If it was entered with the Post option, the background is black. If matte input is attached to the node, the icon displays an A next to the original BFX symbol.



**BFX Output node with front input**



**BFX Output node with front and matte input**

From this node, you can edit LUT and resize settings for Batch FX. A segment with Batch FX displays the BFX icon, indicating it has been processed with a BFX Output node.

**To access BFX Output settings:**

- 1 In the schematic, select the BFX Output node.
- 2 Click one of the Batch FX Edit buttons.



<b>Click:</b>	<b>To:</b>
Basic	Display resolution and timecode settings.
Resize	Change the output crop settings when the input has a different resolution or bit depth than the Batch FX output (the menu's Active button must be enabled). The destination resolution cannot be edited with this node.
RGB LUT	Change LUT Editor settings for the Batch FX output (the menu's Active button must be enabled). The destination bit depth cannot be edited with this node.

# Burn-In Letterbox Node

Use the Burn-In Letterbox node to burn a letterbox into a clip.

**To burn in letterbox:**

- 1 Drag a Burn-In Letterbox node to the Batch schematic.
- 2 Attach the clip to the Burn-In Letterbox node.
- 3 Select an aspect ratio:
  - 1.33:1 (NTSC/PAL)
  - 1.37:1 (Academy)
  - 1.66:1 (European 35 mm)
  - 1.77:1 (HDTV)
  - 1.85:1 (American)
  - 2.35:1 (Cinemascope)
  - Custom (With Custom selected, enter a value for the aspect ratio in the Ratio field.)
- 4 If you want to offset the letterbox border, enter a value in the Offset field.
- 5 Click the Border Colour box to change the colour of the letterbox border.
- 6 Attach a BFX Output node to your clip and then process the result.  
The burn-in letterbox formatting is applied to the clip.

# Burn-in Timecode Node

The Burn-in Timecode node has a Front input tab. If you are mixing clips that originate from formats that use different timecode, you may want to burn in information on a clip to keep a timecode reference clip.

You can also use this node to burn in keycode.

# Colour Correct Node

The Colour Correct node accepts a front, back, or matte clip as input. The results of a colour correction operation depend on which clip or combination of clips are linked to the Colour Correct source tabs.

For example, if you connect only a front clip, the colour correction is applied to the entire frame. If, however, you connect both a front and matte clip, the colour correction is only applied to the area defined by the matte.

You can load Colour Correct setups directly in Batch.

The Colour Correct node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	Black frames
Matte	White frames

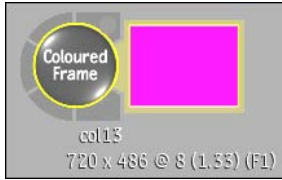
# Colour Curves Node

Use the Colour Curves node to access a clip's Colour menu, where you can remove colour spill from the front clip and perform a hue shift. You can save and load Colour Curves setups directly in Batch.



# Coloured Frame Node

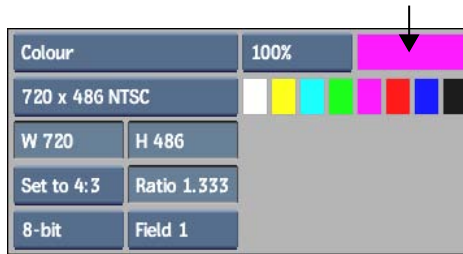
The Coloured Frame node generates a colour bar, noise, or colour clip that can be used as the clip for other nodes. You can specify the frame's resolution and bit depth. The Coloured Frames node menu is similar to the Colour Source command in the Video menu .



The Coloured Frame node includes eight colour pots for storing and selecting customized colours for creating frames.

**To change the current colour of the Coloured Frame node:**

- 1 Click the Current Colour pot.



- 2 Select a new colour using the colour picker.
- 3 Click the Current Colour pot again.

**To customize a colour pot:**

- 1 Click the Current Colour pot.
- 2 Select the colour you want using the colour picker.
- 3 Click a colour pot, holding the mouse button down until the colour changes.

All customized colour pots are saved with each Coloured Frame node. The information is also saved in the Batch setup file.

## Colour Warper Node

The Colour Warper node accepts a front, back and matte clip as input. Use the Colour Warper node to access the Colour Warper module. In Batch, enable Result to display the image and the vectorscope in the image window.

The Colour Warper node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	White frames
Matte	Black frames

## Combine Node

The Combine node combines individual channels of three different source clips. To generate a new clip, the Combine node merges the red, green, and blue channels from three clips into one.

## Compound Node

The Compound node makes it possible to combine the contents of several frames into a single frame. The value you enter in the Compound Over field determines exactly how the frames are combined. This is similar to Average, but the resulting clip is shorter, according to the original length/value in the Compound Over field.

The First Processed Frame field sets the value at which output is processed from the node. Frames earlier than the entered value are included in the output but display the first processed frame.

## Deal Node

The Deal node deals out the frames of a single clip evenly to any number of destination clips. The Clip field defines the number of times the clip is split; the Frame determines which of the dealt clips is output.

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

The First Processed Frame field sets the value at which output is processed from the node. Unprocessed output does not display any media.

# Degrain and Regrain Nodes

Use the Degrain and Regrain nodes to add and remove grain from the RGB channels of a selected colour in an image. The Degrain and Regrain nodes are the same as the Degrain and Regrain commands in the Film menu.

The Degrain node accepts only a front clip as input. The Regrain node accepts front, back, and matte clips as input.

The Regrain node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	Black frames
Matte	White frames

# DeInterlace and Interlace Nodes

The DeInterlace node separates the odd and even scanlines of a clip. For each frame of the clip, the result clip contains one frame with odd scanlines (Field 1) and one frame with even scanlines (Field 2). The DeInterlace node accepts a front clip as input.

The Interlace node interlaces the odd and even scanlines of a clip. For each pair of frames in the input clip, the Field 1 scanlines of one frame are interlaced with the even scanlines of the second frame to produce a single frame in the generated clip. The node accepts a front clip as input.

The First Processed Frame field sets the value at which output is processed from the node. Unprocessed output does not display any media.

These nodes support floating-point (OpenEXR) clip input.

# Desk Node

Use the Desk node to access the EditDesk, where you can load clips from the Source Area into Batch.

### To load images from the EditDesk:

- 1 In the Batch menu, swipe the bar at the left of the menu to display the node bins.
- 2 In the node bin, select the Desk node and drag it to the schematic. The Source Area of the EditDesk appears.
- 3 Select up to six clips.
- 4 If you select less than six clips, click Exit Clip Select to return to Batch. You return to Batch and the selected clips appear in the schematic.

## Difference Matte Node

The Difference Matte node generates a matte clip from a source clip and a background. This allows you to remove an image from one context and add it to another. The matte is created using the Tolerance and Softness values that you specify.

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

## Edge Node

Use the Edge node to do one of the following:

- Create a greyscale image composed of the edges in an image. You can apply edge-detection to both colour and monochrome clips.
- Modify the edges of the key. You can apply the Erode, Shrink, and Blur filters to the edges of the matte.

---

**NOTE** When using the Edge node, values for blur width and height, and shrink and erode width will be scaled following the current resolution of the node. Switching an Edge node input from a PAL clip to an HD clip will update the width and height values automatically.

---

## Field Merge Node

The Field Merge node accepts a front clip. Use the Field Merge node to remove field jitter by merging the fields of a clip. Enter the percentage of blending

between fields in the Level field. A value of 100% replicates the average pixel on both the even and odd lines.

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

## Filter Node

The Filter node applies different effects to a clip, including textures, blurring, edge detection, embossing, sharpening, as well as a combination of effects.

### To load a filter:

- 1 Add a Filter node and attach a front clip.
- 2 Select the Filter node in the schematic.  
The menu for the Filter node appears.
- 3 Click Load.  
The file browser appears showing a list of filters. These filters are the same filters available in the Filter module and Paint.
- 4 Select a filter.  
You return to Batch and the name of the selected filter appears in the Filter box.

---

**NOTE** You cannot create or modify filter setups through Batch.

---

## Flip Node

The Flip node accepts a front clip as input. Use the Flip node to generate a mirror image of a clip. Select how you want to flip the clip from the Flip Type box. You can flip the frames in a clip horizontally, vertically, or both.

## GMask Node

The GMask node accepts a front and a matte clip as input. The GMask node accesses the Garbage Mask menu and includes the Tracer and Region of Interest (ROI) functions.

You can save and load GMask setups directly in Batch.

GMask node tabs process gaps in clips set to No Media as black frames. An unconnected front clip will return an error, while an unconnected back clip will process black frames.

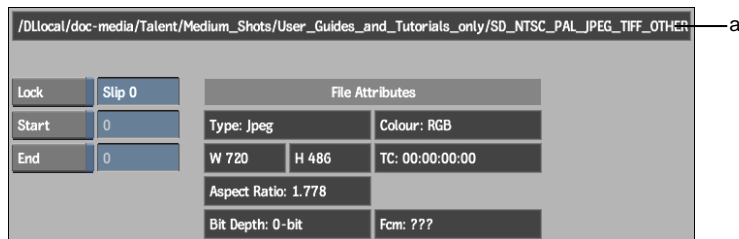
## Import Node

Use the Import node to access the Import Image module, where you can import images and clips directly into Batch. Once imported, the item's start and end frames can be set.

### To import images into Batch:

- 1 In the node bin, select the Import node and drag it to the schematic.  
The Import Image menu and file browser appear.
- 2 In the Import Image menu, select the file type you want to import from the File Type box.
- 3 In the file browser, select the file(s) you want to import.
- 4 Click Load.

You return to Batch and the filename and file type of the image you import appear in the schematic. The filename and path appear in the message bar when you click the image. Detailed information about the image is displayed below the message bar.



(a) Message bar

---

**NOTE** An imported image can be resized or brought into the LUT Editor, which can be accessed from the clip's RGB LUT menu.

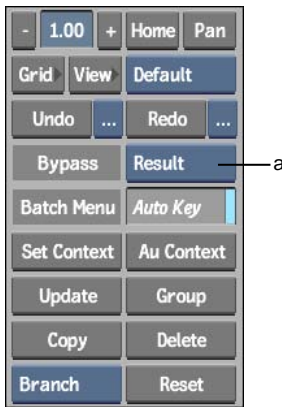
---

If an imported clip or image cannot be found, the missing file is displayed as a checkerboard in the image window.



## Keyer Node

The Keyer node accepts front, back, and matte clips as input. Before you enter the Keyer module, you can choose to generate a result, matte, or composite clip by selecting the Result, Matte, or Comp view option, respectively, from the Choose Type box before processing.



(a) Choose Type box

The Keyer node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	Black frames
Matte	Black frames

When working in the Keyer module, missing media in front clips set to No Media are converted into black frames while they are in the editor. When missing media is output from the Keyer node, it returns to a No Media state.

# Library Node

The Library node accesses the clip library, letting you load clips directly into Batch.

## To load clips from the clip library into Batch:

- 1 In the node bin, select Library and drag it to the schematic.  
The clip library appears.
- 2 Select the library you want to browse. You can browse both local and remote libraries.
- 3 Select the clips you want to load and click Load.  
You return to Batch and the selected clips appear in the schematic.

# Logic Op Node

The Logic Op node accepts a front, back, and matte clip. The Logic Op box lists the logical operations that you can perform on the front clip.

Operation	Transparency
Add	0.0%

The Logic Op node processes missing media in clips set to No Media based on the input tab it is connected to.

Input	Result
Front	No media
Back	Black frames
Matte	White frames

# Luminance Key Node

The Luminance Key node creates a matte based on the luminance of an image. A front clip can be connected to the Luminance Key node and will process a result clip that can be used as a matte.

There are two parameters available:

- Tolerance removes greys outside the key shape. A value of 100% generates a completely opaque matte.
- Softness adjusts the softness of the edges of the matte.

These settings can be animated and are available as channels.

## LUT Editor Node

A LUT converts logarithmic images to linear images or linear images to logarithmic images, while maintaining colour accuracy. The LUT Editor node can also be used to apply a conversion to 16-bit floating-point image in the OpenEXR file format.

When you import or export clips in Batch, default LUT parameters are used and the direction of the conversion is detected automatically. Use the LUT Editor to modify these default settings interactively or to import an existing LUT. You can also export a LUT from the LUT Editor.

When you load an OpenEXR-formatted clip into Batch, you can connect it to nodes that support 16-bit floating-point images. To work with additional nodes, first connect the clip to a LUT Editor node to convert the clip into an 8- or 12-bit linear image. Whether or not you change the clip's bit depth, use the LUT Editor's EXR Display option to control the image's luminance and black point properties.

The LUT Editor node can be set to output a bit depth of 8, 10, 12, or 16 bits. You can also manually set the variables for output.

## Applying a Conversion to an OpenEXR Image

You can use a LUT Editor node to apply a conversion to an OpenEXR-formatted clip. If a clip is stored at 16 bits, and you want to connect it to a node that does not support floating-point data, attach it to a LUT Editor node to apply a linear conversion to the clip.

**To apply a conversion using the LUT Editor node:**

- 1 Import or load an OpenEXR-formatted clip stored at 16 bits.
- 2 Drag a LUT Editor node to the Batch schematic and connect it to a clip.

- 3 Select the node.  
The LUT Editor appears.
- 4 From the Conversion LUT Type box, select EXR Display.
- 5 To convert the output, select the output bit-depth in the Destination menu.

## Master Keyer Node

Use the Master Keyer node to gesturally pull a key. Add a Master Keyer node to the Batch pipeline when you need to create an accurate key of a clip. Use the Master Keyer node to automatically suppress colour spill, to colour correct, and to remove noise or grain.

The Master Keyer node accepts front, back, and matte clips as input. While there is no setup menu for the Master Keyer node, it can be saved as part of the Batch setup, or alternatively, as a Custom node. The Master Keyer is also available from the Keyer node.

---

**TIP** In order for the hot keys **M** and **D** to correspond to Matte and Degrain, the Master Keyer in Batch must have focus and the viewport cannot be set to a schematic view. If the schematic has focus, then **M** corresponds to Move and **D** corresponds to Delete.

---

The Master Keyer node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	Black frames
Matte	White frames

## Matte Curves Node

Use the Matte Curves node to access the Matte Curves menu, where you can adjust the luminance of input mattes.

The Matte Curves node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	Black frames
Back	Black frames
Matte	No media

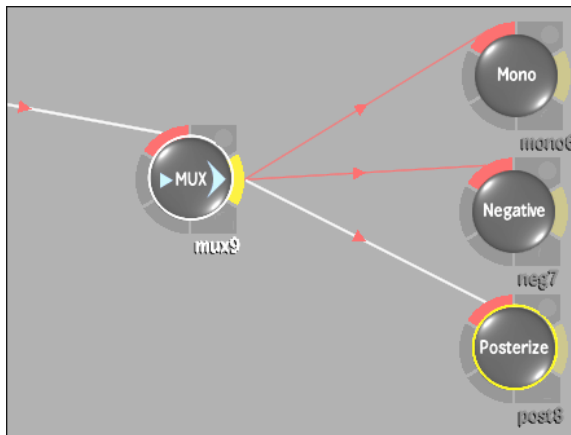
## Monochrome Node

The Monochrome node generates a monochrome copy of the front clip. Use the Channel box to select the monochrome channel for the clip.

## MUX Node

The MUX (multiplexer) node allows you to make multiple output sockets. Use this node as the input to a group to simplify the representation of a complex effect.

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



# Negative Node

The Negative node generates a negative copy of the front clip. The Negative node does not have a node menu.

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



# Notes Node

A Notes node creates notes or annotations in the Batch schematic. Notes can be collapsed, moved, resized, or expanded. See [Batch Schematic Notes](#) on page 48.

# Optics Node

The Optics node accepts front, back, and matte clips as input. Use the Optics node to add a glow effect to the clip in the process tree.

The Optics node processes gaps in clips set to No Media based on the input tab receiving the information.

Input	Result
Front	No media
Back	Black frames
Matte	No media

# Paint Node

Batch Paint is a system that provides a scalable matte painting, retouching, or restoration workflow in Batch. Due to its underlying technology, Batch Paint automatically scales strokes when changing the resolution, ratio, or bit

depth of input clips, or when switching from Full Resolution to Proxy mode. Batch Paint supports "clipless" setups, which can be applied to any image input while accurately reproducing the sequence of painted strokes.

The Paint node accepts a front and matte clip as input, and creates a result and output matte clip, respectively. You can paint on the result and output matte, with a selection of brushes in different paint modes.

The Paint node also allows you to connect multiple sources and use them to paint the contents of source images onto the result. This paint operation, applied with the Reveal paint tool, can be used with in-context overlay over the result image. A front and matte clip can be connected as a source by connecting the clips to a source node. The content of source front and source matte input can be used to create brush strokes on the result and output matte.

The Paint node processes missing media in clips set to No Media based on the type of input tab to which it is connected. The node output (including missing media frames) has the same resolution as the Paint setup.

Input	Result
Front	No media
Matte	No media
Source	Transparent strokes

See [Batch Paint](#) on page 183.

## Posterise Node

The Posterise node accepts a front clip and produces a posterised result by reducing the number of luminance or chrominance levels in the clip.

## Quick Composite Node

The Quick Composite node accepts front, back, and matte clips. Use the Quick Composite node to composite a front clip and a back clip using a matte clip.

## Resize Node

Use the Resize node to change a clip's resolution, frame depth, and aspect ratio. You can also pan and scan the destination image relative to the source.

You can then select and animate the portion of the source clip that appears as the destination clip, and process to create the result image.

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

---

**TIP** You can use Resize to output, for example, an HD project to a lower resolution for quick viewing.

---

## Render-only Nodes

When a Batch setup contains a node for a feature that is not supported, a render-only node is created. Although you cannot edit these nodes, you can change their input clips and output connections. Render-only nodes are processed in the final clip result.

The following nodes are render-only in Smoke:

- 3D Keyer
- Auto Stabilize
- Distort
- Glow
- Lens Distort
- Modular Keyer
- Motion Analysis
- Motion Blur
- Vector Viewer

## 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:

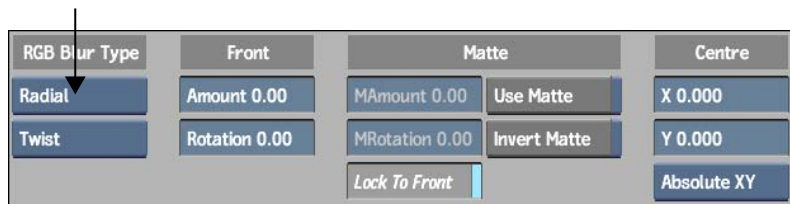
- 1 In the RGB Blur Type box, select Gaussian or Box.



- 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.

## Spark Node

Use the Spark node to access the file browser, where you can add Sparks plug-ins to the process tree. The number of inputs and bit depth that a Spark node accepts depends on the Sparks plug-in. A Spark node has light grey source tabs, since each Sparks plug-in varies in the type of clips it uses. When editing a Spark, you can display information on its type by toggling the **F1** and **F4** function keys.

When working in a Sparks plug-in in Batch, missing media in front clips set to No Media can be converted into black frames while they are in use. When missing media is output from this node, it returns to a No Media state, regardless of whether it was set to display differently in the node.



---

Select:	To:
Pass Through	Keep frames as No Media for the Spark.
Convert to Black	Use black frames when working with nodes that process past and future frames.

---

**NOTE** When you attempt to use a Sparks plug-in, the error message “SPARK IS NOT SUPPORTED” may appear. This means the selected Sparks plug-in cannot be used with Batch. Contact the company that developed the Sparks plug-in for information on obtaining a compatible version.

---

## Text Node

Text is comprised of layers, paragraphs, and characters. You can use the Text node in the same way as you use the Text module to make text spin, dance, and change colour over time.

You can enter the Text module with or without a background clip. To enter the Text module with a background clip, you must attach the clip before clicking the Text node.

---

**NOTE** The PreRender Text preference does not apply when you access Text from Batch.

---

**To enter the Text module from Batch:**

- 1 Click the Text node.

---

**NOTE** If a background clip is not connected to the Text node, you select a resolution for the output of the Text node.

---

- 2 Click Edit.  
The Text module controls appear.



# Batch FX

# 8

## Topics in this chapter:

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- [Creating Batch FX](#) on page 128
- [Creating One Clip Per Timeline Layer](#) on page 138
- [Converting Soft Effects to Batch Nodes](#) on page 140
- [Viewing Batch FX in Context](#) on page 149
- [Offsetting the Starting Frame of a BFX Clip](#) on page 152
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## 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 EditDesk record 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.

With the support of Batch FX in Smoke, there is a consistent workflow between Autodesk Visual Effects and Finishing products.

Batch FX is available only in Smoke 2K.

## 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 EditDesk record 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 the record 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 record 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 record 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.

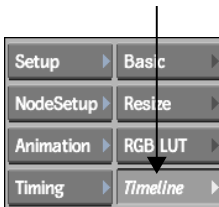


The segment's source is loaded as a clip in a new Batch setup. In this example, the source segment is brought into a Batch setup without its Axis Key and Text soft effects.

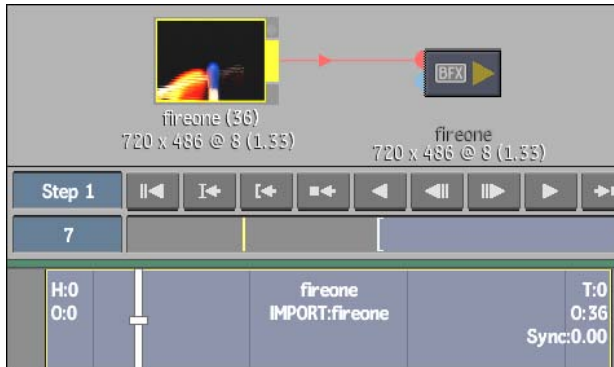


(a) Source segment brought into a Batch setup with the Pre option.

- 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.

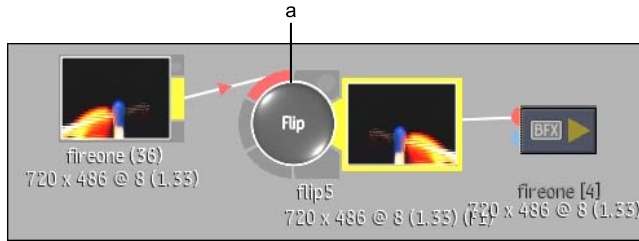


The Axis Key and Text soft effects are not brought into the Batch setup.



- 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**

---

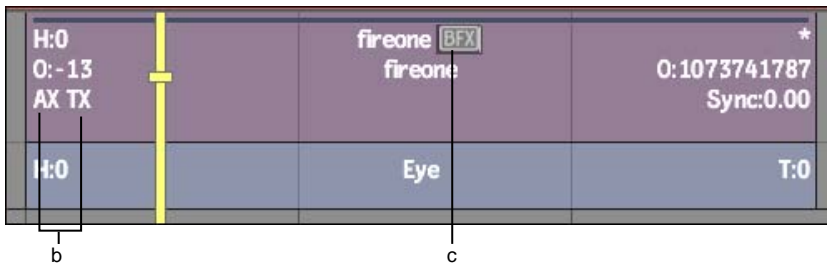
**TIP** To see an updated proxy of the result for a node, enable Auto Update in the Batch Setup menu.

---

- 5 When you are finished working with the setup, exit to the EditDesk record 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 160.

**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.

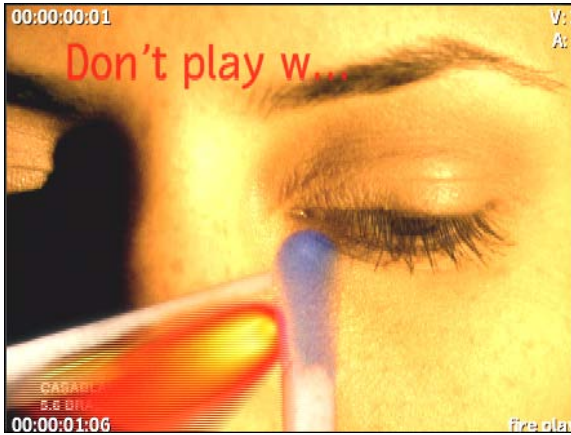
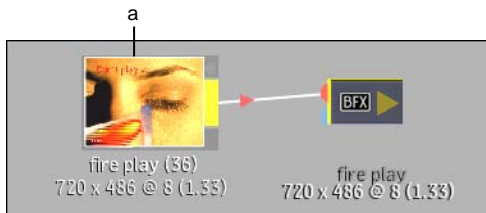


Image courtesy of Casablanca

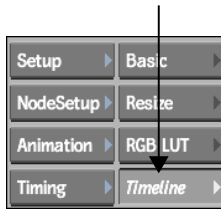
**NOTE** If you did not select all the layers of a vertical edit, a message appears stating that vertical compositing may be lost.

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 record timeline.



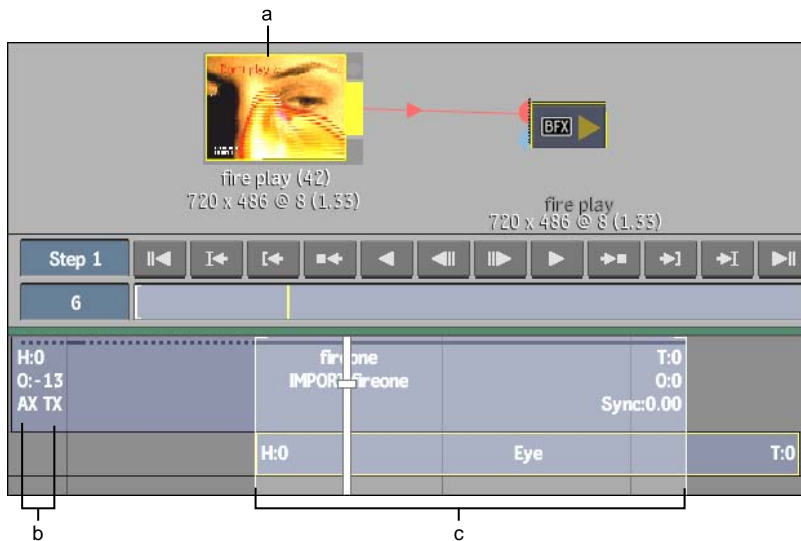
(a) Source segment and applied soft effects brought into a BFX level with Post option

- 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 record 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.

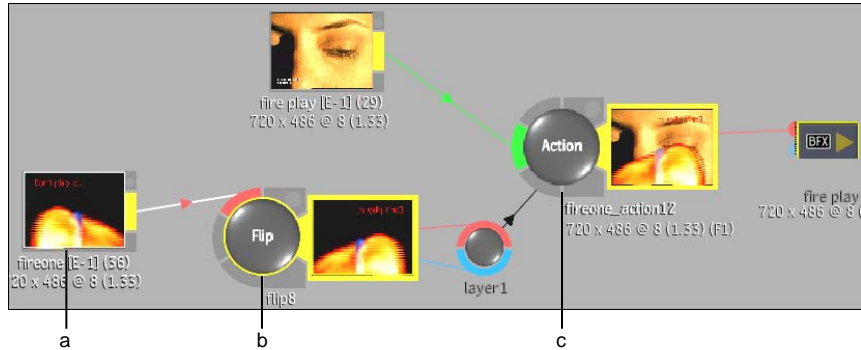


(a) Selected clip (b) Axis Key and Text soft effect indicators (c) In and out points on clip layers

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 record 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 140.



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

#### 4 When you are finished, exit to the EditDesk record 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

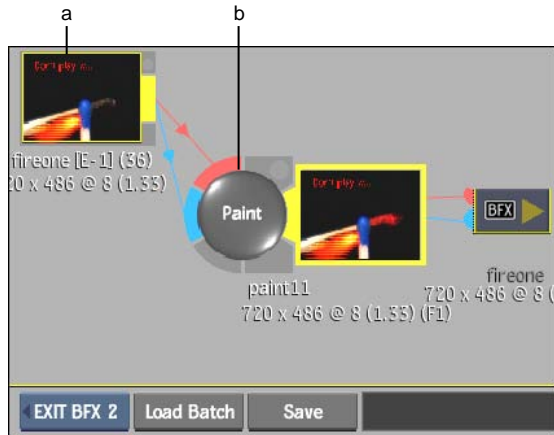
Image courtesy of Casablanca

---

**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 BFX setup. See [Editing Batch FX](#) on page 160.

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**NOTE** For a visual representation of all nested levels of Batch FX, use the BFX View. See [Navigating Batch Setups](#) on page 161.

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## Creating One Clip Per Timeline Layer

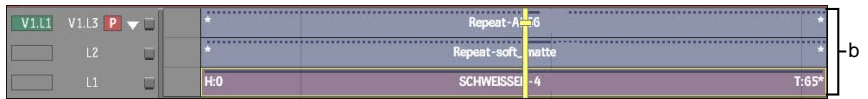
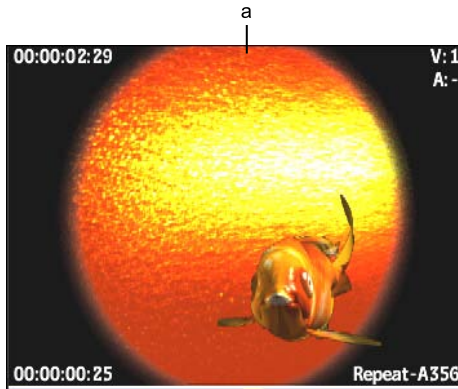
If you bring multiple layers into a BFX setup and want to apply a separate flow graph to each layer, you can split the layers and create one clip per layer. If you want to work with the clips in an Action setup, and they are not affected by vertical compositing from the original timeline layer, you can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

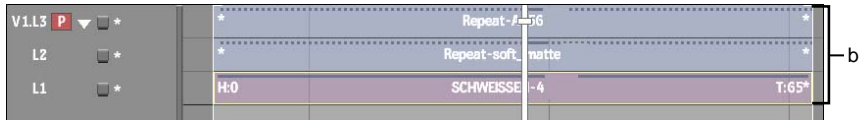
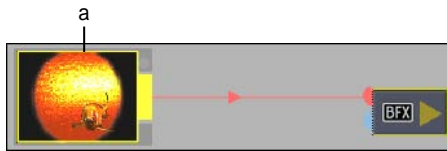
- 1 Load a multi-layer clip into a BFX level.



(a) Clip (b) Clip layers

Image courtesy of Quietman

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



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

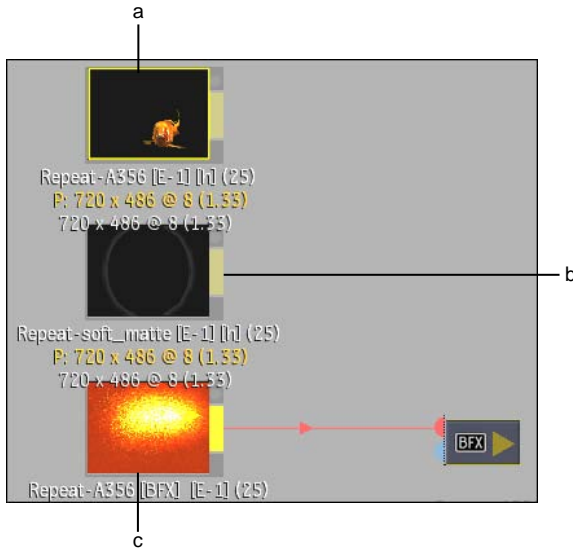
2 Select an option from the Split Layer option box.

**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 BFX 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.

<b>Soft Effect</b>	<b>Corresponding Batch Node</b>
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

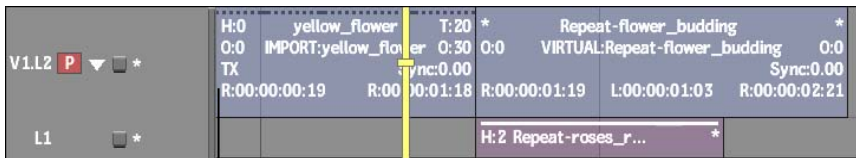
When you extract a soft effect, segments or other soft effects may also get extracted so that vertical editing from the timeline is maintained. Some of these scenarios are illustrated in the following examples.

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.



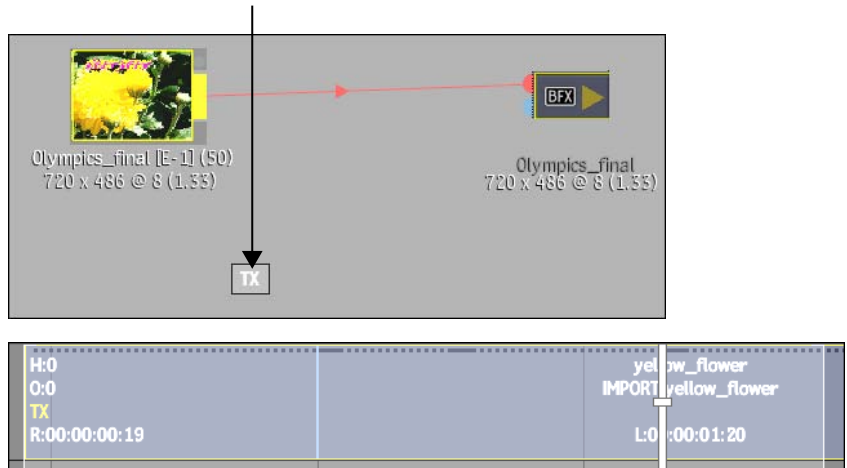
a

(a) Selected segment with Text soft effect

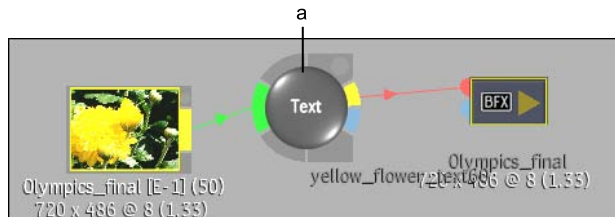
- 2 Bring the segment into a BFX level with the Post option. The segment you selected is loaded as a clip in a Batch setup. All applied soft effects are brought in with the clip.

- 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

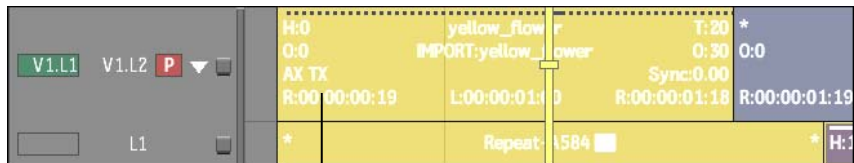
- 4 Use the Text node to modify the Text setup or to connect to other clips.

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

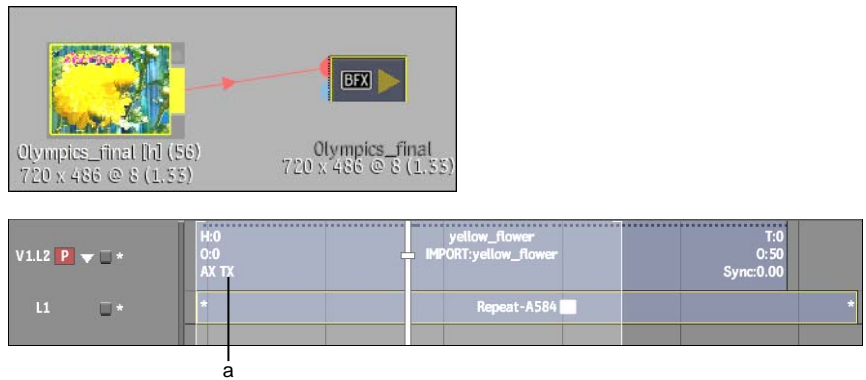
- 2 Bring both segments into a BFX level using the Post option.  
Both segments are loaded in a Batch setup as a single clip with their soft effects.
- 3 To display the clip's timeline, select the clip in the schematic and click Timeline.

---

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

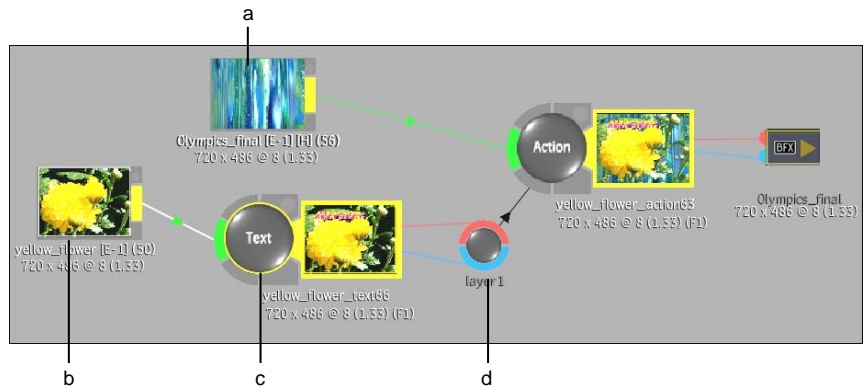
---

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. (The processing order is from bottom to top of the soft effect buttons on the EditDesk record timeline.)



(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.

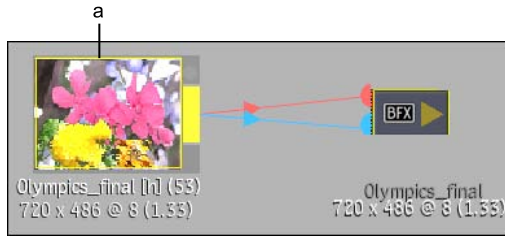


Layer	Segment Name	Start Time	End Time	Effects
L4	at-butterfly	0:0	0:35	AX, CC
	VIRTUAL:Repeat-butterfly	0:0	0:35	Sync:0.00
L3	yellow_flower	0:0	0:50	AX
	IMPORT:yellow_flower	0:0	0:50	Sync:0.00
L2	Repeat-red_flowers	0:0	0:53	AX, CC
	VIRTUAL:Repeat-red_flowers	0:0	0:53	Sync:0.00
L1	Repeat-flowers_blue	*	*	

(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.

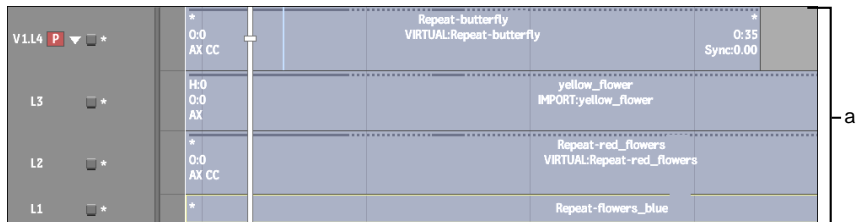


(a) Clip with soft effects

- 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.

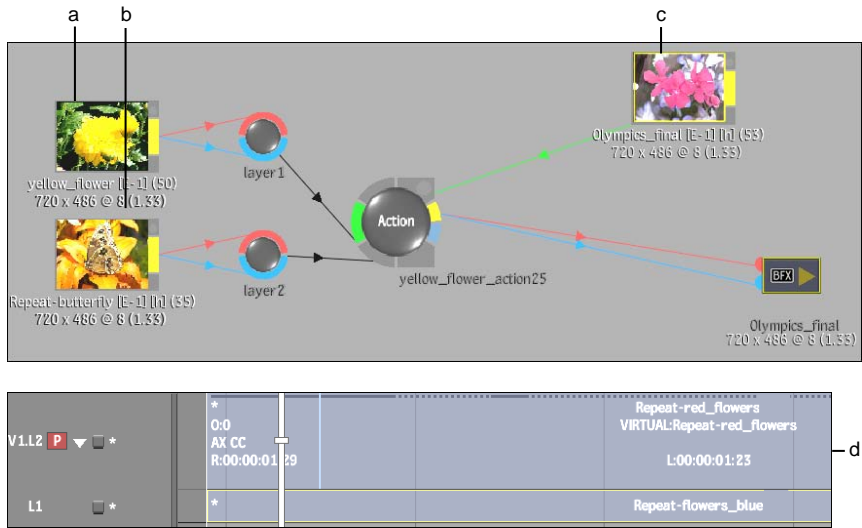
All applied soft effects are preserved on the imported segments.



(a) Clip layers and soft effects

- 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.

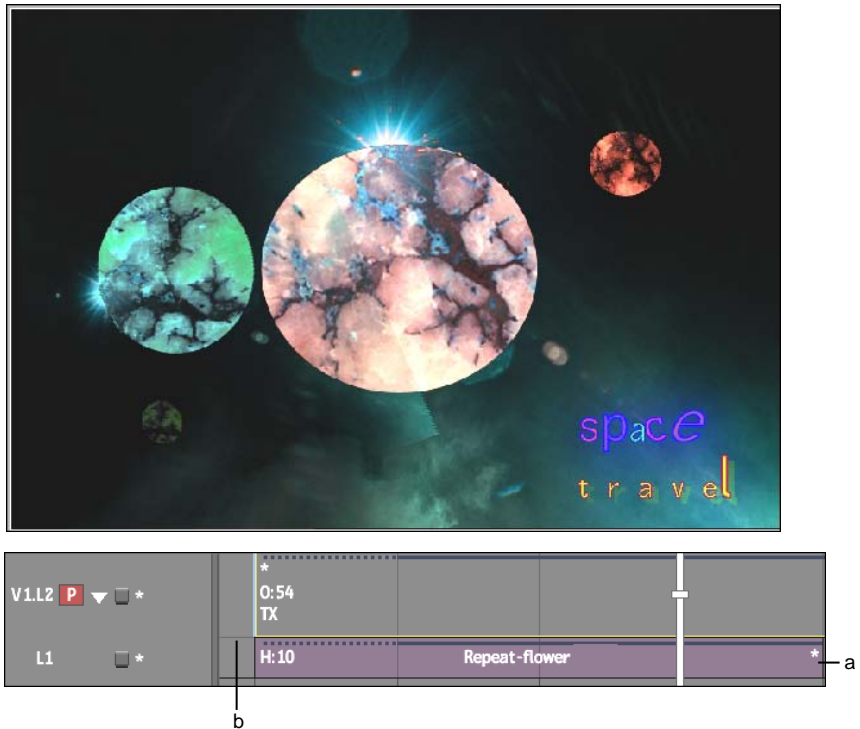
- 2 Link the corresponding node to a clip in the process tree.

# 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.

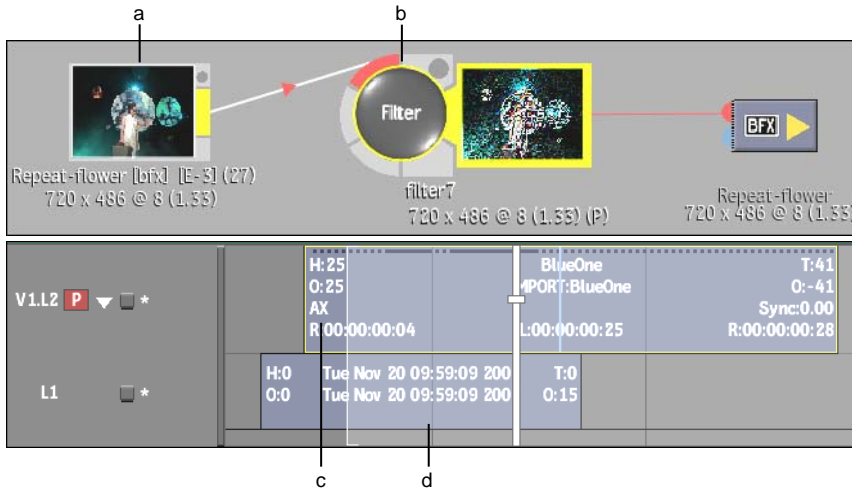
In the following illustration, the EditDesk timeline has two layers. The top layer contains a gap with a Text soft effect.



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

Image courtesy of Das Werk

In the following illustration, the bottom layer from the EditDesk 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 EditDesk 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 EditDesk record timeline.

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

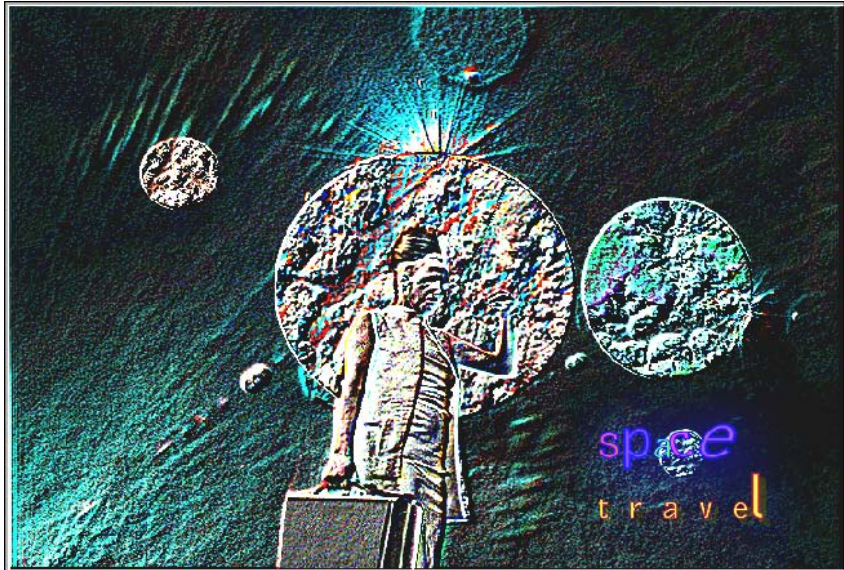


Image courtesy of Behavior Communications Inc., Das Werk

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

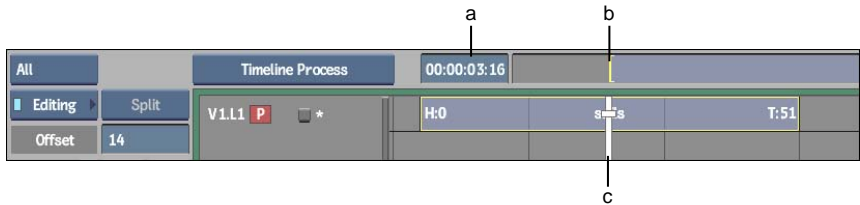
When you load a clip in a BFX level, its timecode automatically keeps the timecode of the EditDesk record timeline. Both the clip timeline positioner and the Batch timeline positioner represent the EditDesk record timecode for the current frame. If the clip brought into a BFX level has head frames, they 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 EditDesk record timeline(c) Batch timeline positioner at frame 1 (d) Clip timeline positioner at frame 1

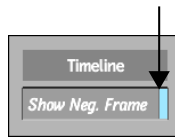
In the next example, the Batch timeline is set to display negative frames. The Batch timeline positioner changes location to take into account the negative frames. Display negative frames if you need the extra frames for editing.



(a) Timecode of clip from EditDesk record 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.

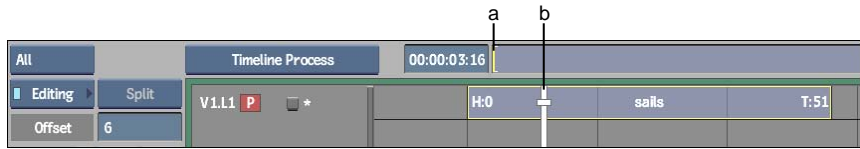


**To offset the starting frame of a clip:**

- 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.



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

## 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 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.

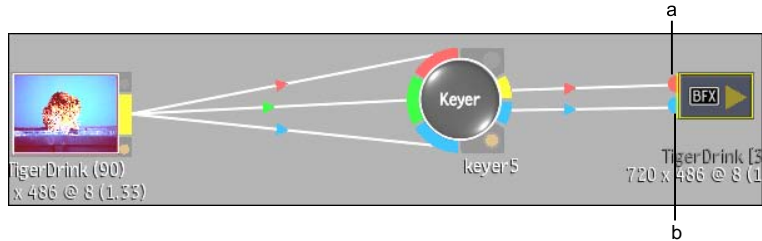
Alternatively, you can have an Axis soft effect automatically added on output. Enable the Add Axis On Matte Output button in the Modules/Soft FX section of the Preferences menu.

### 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.



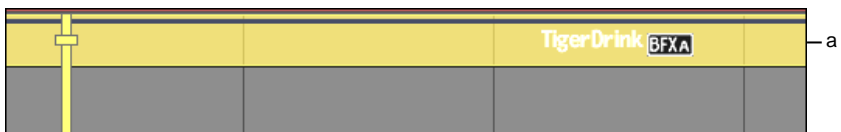
(a) RGB result goes to front input tab (b) Alpha result goes to matte input tab

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



Image courtesy of The House

- 3 Exit back to the timeline and process.  
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

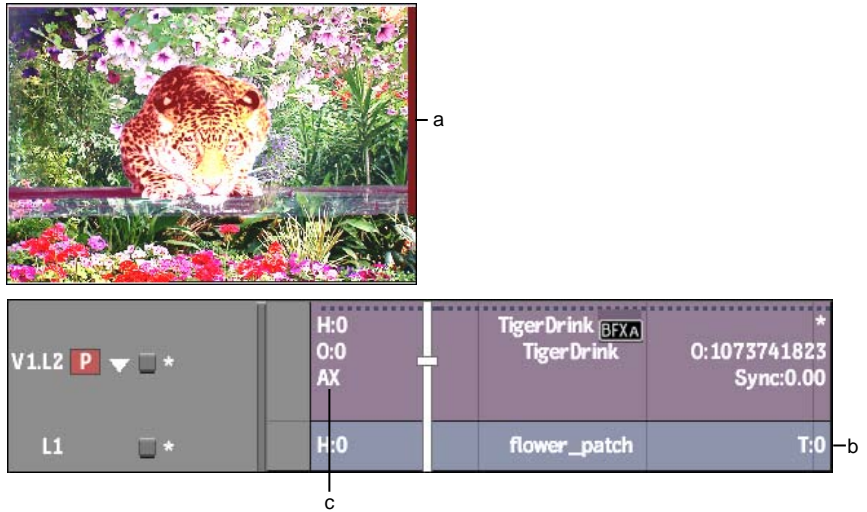
- 4 Add a soft Axis to the matte segment and a background layer to the timeline.

---

**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

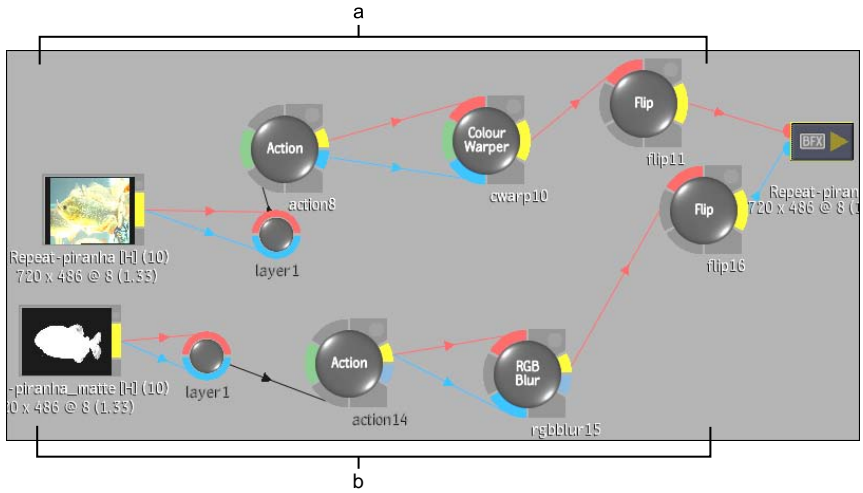
Image courtesy of The House

## 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.

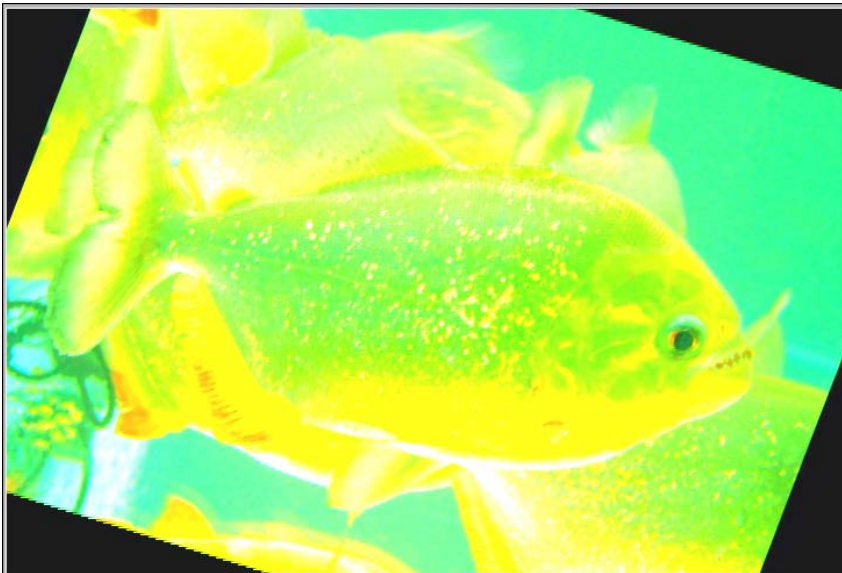
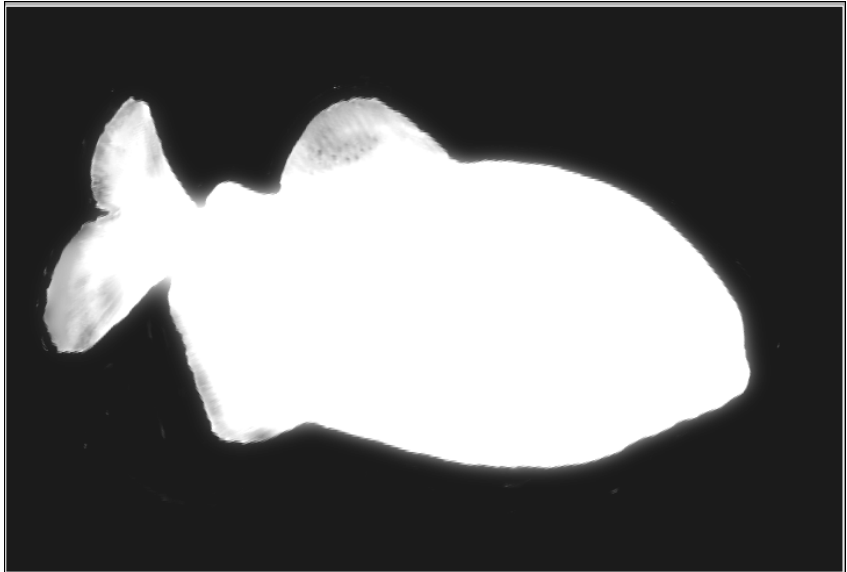


Image courtesy of Technicolor (formerly Toybox)

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 161.

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.

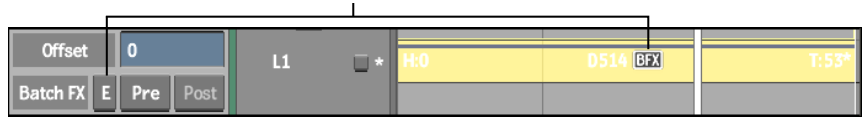
### To edit the Batch setup applied to the current clip:

- 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 EditDesk record 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 extract a BFX segment from a timeline and process it 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.

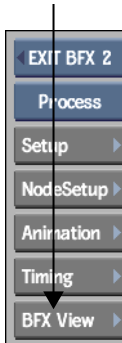
### To navigate Batch setups:

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

---

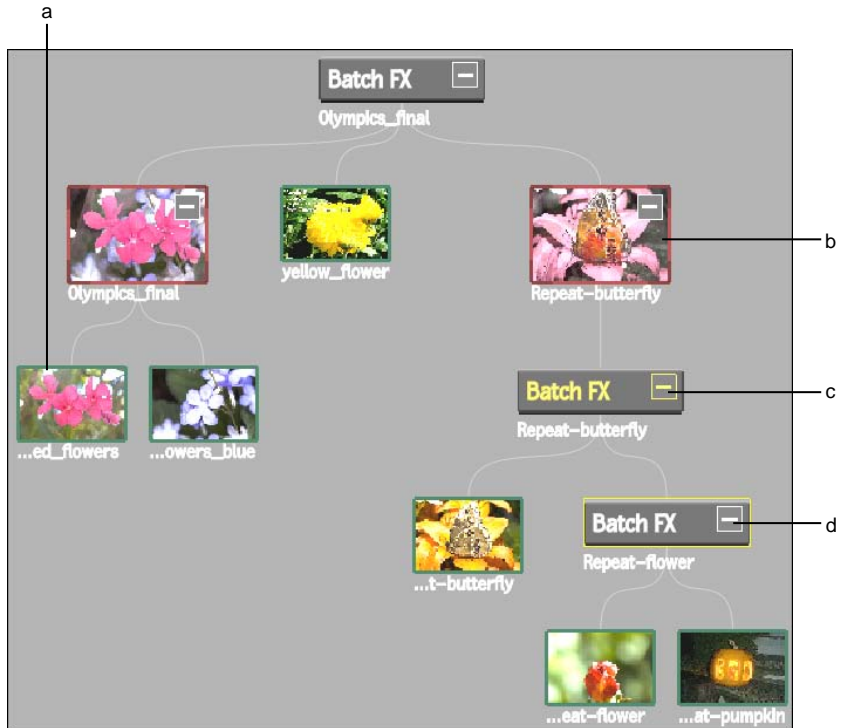
**NOTE** If you are on the EditDesk record timeline, select BFX View from the View Modes box.

---



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.

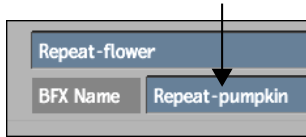
The Batch setup appears.

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

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 EditDesk record 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.

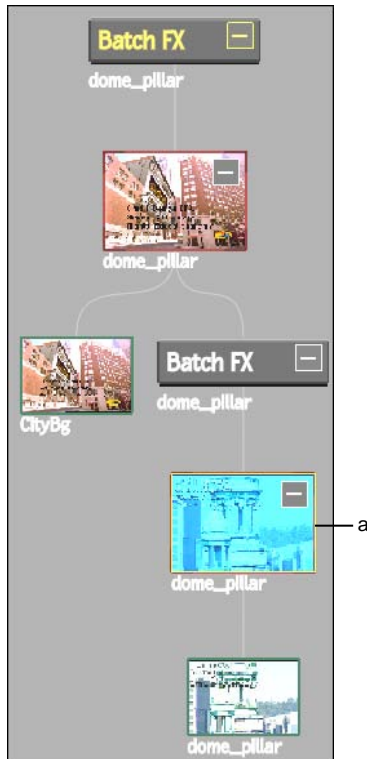
**To copy a source:**

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

---

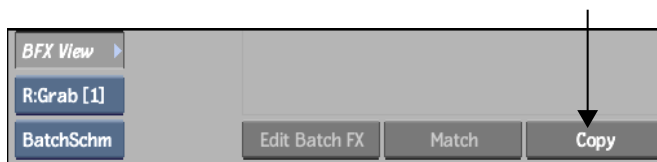
**NOTE** You cannot select clips within containers.

---



(a) Selected record clip with soft effects

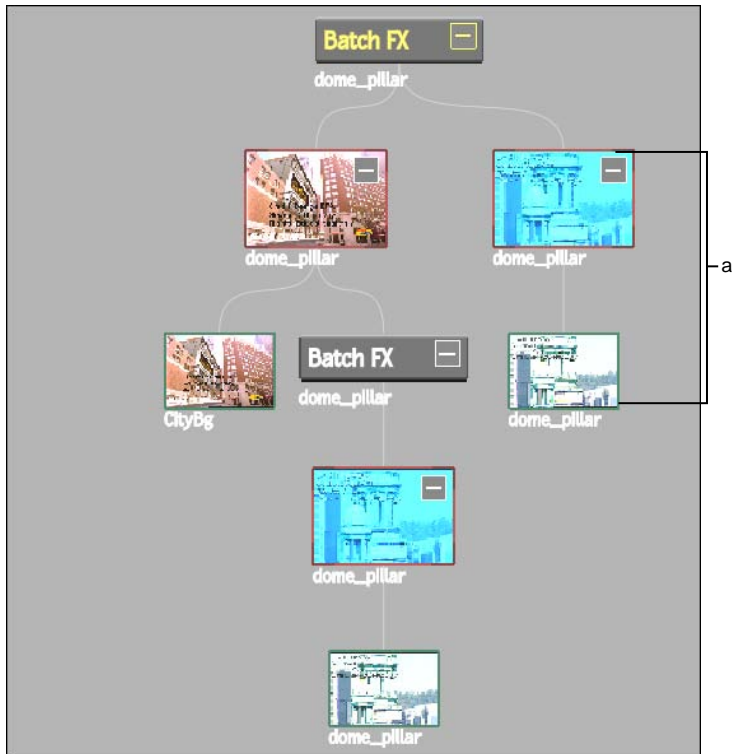
2 Click Copy.



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 EditDesk record timeline, a copy appears only in the Source Area.

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.

---

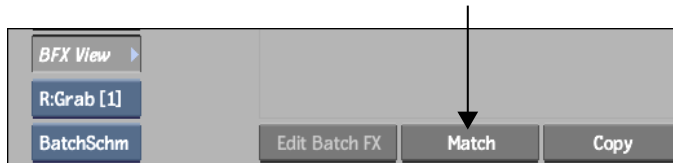
**NOTE** You cannot select clips within containers.

---



(a) Source clip to match

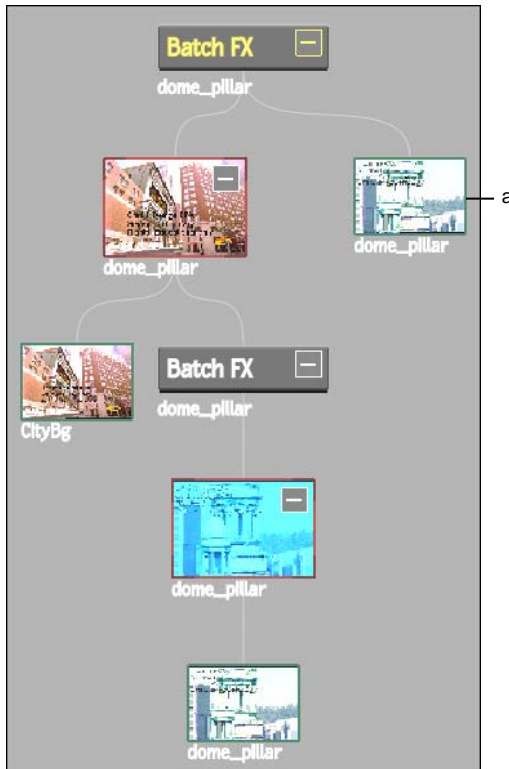
3 Click Match.



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 EditDesk record timeline, a copy appears only in the Source Area.

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.

---

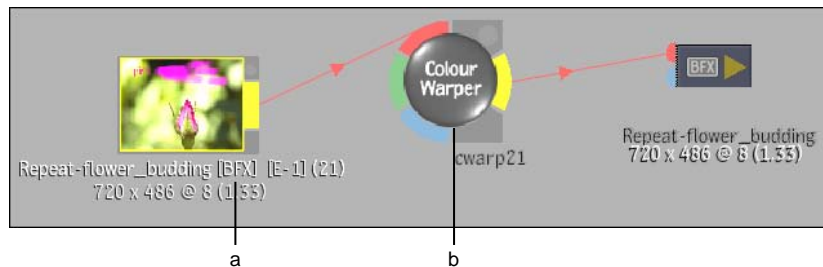
If you expand a Batch setup containing nodes that change the duration of a clip, for example, Interlace, Deal, and Pulldown, the visual result may not be the same as before the expansion.

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.

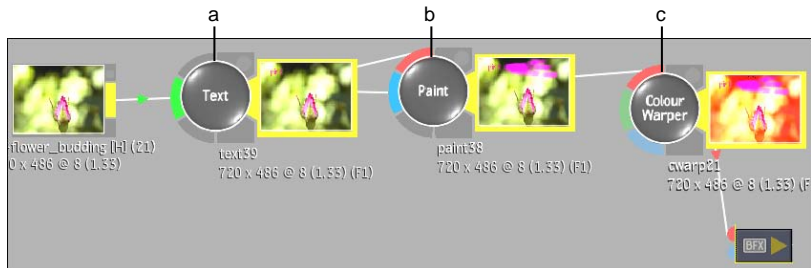
---

- 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 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 Modules/Soft FX. 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 Display the Player and select Preview FX from the Preview option box.



- 3 Scrub the timeline positioner.

# Action

# 9

## Topics in this chapter:

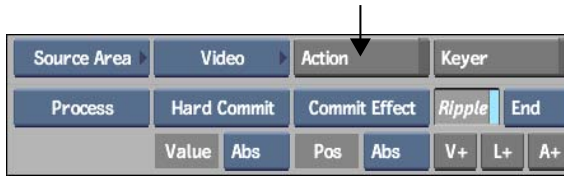
- [Accessing the Action Module](#) on page 173
- [Using Floating Point Images](#) on page 175
- [Reordering Surfaces with Re-entry](#) on page 176
- [Selecting Objects and Populating Menu Tabs](#) on page 177

## 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 Click Action in the EditDesk menu.



2 Select an option from the Input Mode box.

Select:	To:
Front Back Matte	Select source clips from the EditDesk. 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 <b>Alt</b> key when you click the Action button to automatically select the None option. Press <b>Alt</b> when you select your destination to open Action with all media and nodes deleted and all parameters (except for resolution) set to default.
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 <b>Ctrl+Alt</b> 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.

---

- 3 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).

---

- 4 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:

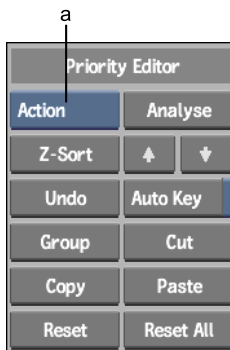
- You are not able to enter the Colour Corrector, Keyer, or Stabilizer from Action with a 16-bit floating point clip. An error appears in the Action message bar, and the module does not open.

- 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 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.

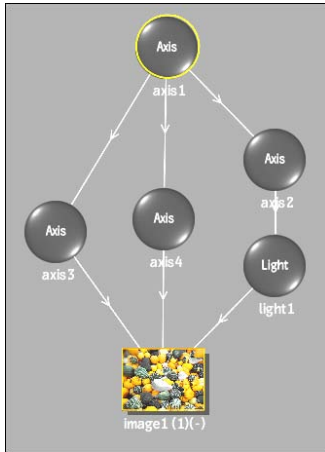
Depending on what type of object is selected, the tabs in the Object menu are populated based on different rules, as illustrated in the following examples.

### **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.



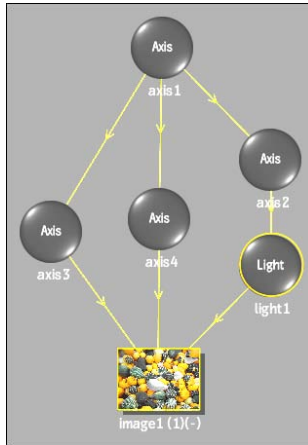
**NOTE** If there are more than five tabs on either side of the Object menu, use the arrows beside the tab names to navigate to the desired tab.

### Other object selected (no “axis attributes”)

These objects include 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.



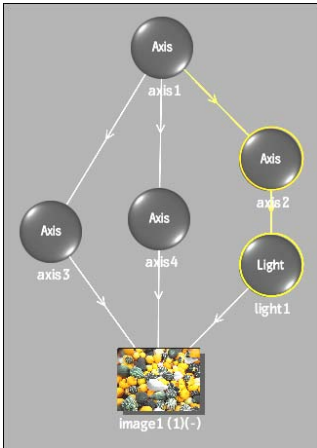
The tabs in the Object menu appear as follows. The image1 tab appears in light blue to signify that multiple objects are connected down to it. Use the tabs to switch between menus within the Object menu. The Camera tab appears in orange as the first tab on the right side of the Object menu, and is exempt from the tab population rules.



### Object with “axis attributes” selected

These types of objects include lights 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.

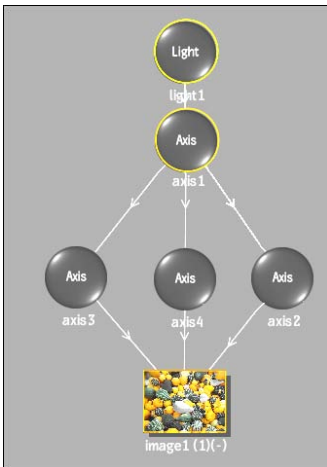
For example, in the following schematic, light 1 is selected.



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.

---



# Batch Paint

# 10

## Topics in this chapter:

- [About Batch Paint](#) on page 183
- [Accessing Batch Paint](#) on page 184
- [Using Sources](#) on page 186
- [Brush Attributes and Attribute Modes](#) on page 187
- [Painting Brush Strokes](#) on page 192
- [Revealing Sources](#) on page 195
- [Using the Canvas](#) on page 197
- [Previewing a Reveal Operation Using a Reference Image](#) on page 199

## About Batch Paint

Batch Paint is a system that provides a scalable matte painting, retouching, or restoration workflow in Batch. Due to its underlying technology, Batch Paint automatically scales strokes when changing the resolution, ratio, or bit depth of input clips, or when switching from Full Resolution to Proxy mode. Batch Paint supports “clipless” setups, which can be applied to any image input, while accurately reproducing the sequence of painted strokes.

The Paint node accepts a front and matte clip as input, and creates a result and output matte clip, respectively. You can paint on the result and output matte, with a selection of brushes in different paint modes.

Batch Paint also allows you to connect multiple sources and use them to paint the contents of source images onto the result. This paint operation, applied with the Reveal paint tool, can be used with in-context overlay over the result image. A front and matte clip can be connected as a source by connecting the clips to a source node. The content of source front and source matte input can be used to create brush strokes on the result and output matte.

Batch Paint is available only in Smoke 2K.

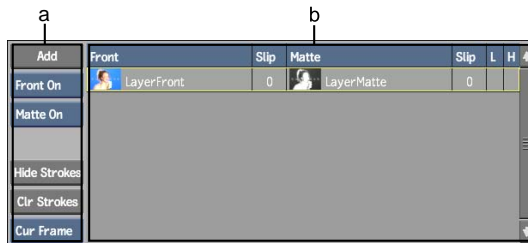
## Accessing Batch Paint

Paint is accessed from the Batch module.

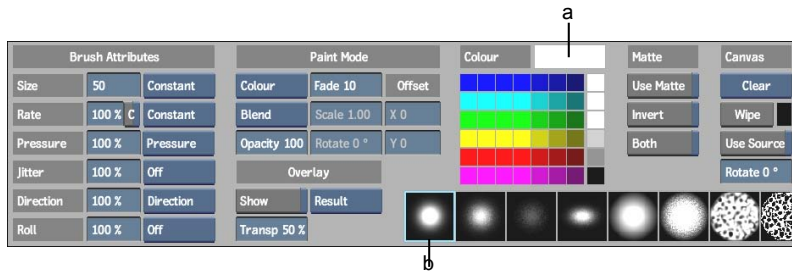
**To access Batch Paint:**

- 1 From the Processing menu, click Batch.
- 2 In the Batch module node bin, double-click the Paint node or drag the node to the Batch schematic.
- 3 Attach a clip or node output to the front tab.
- 4 Attach a clip or node output to the matte tab. If a matte clip is not attached, the node interprets the missing input as a white clip.
- 5 In the Batch schematic, double-click the Paint node.

The Batch Paint menu appears.



(a) Source controls (b) Sources List



(a) Current Colour Pot (b) Current Brush

---

**NOTE** The Parent and Delete options in the Paint Tools box are standard Batch features and are not used in Batch Paint.

---

**Source Controls and Sources List** Displays the front clip, matte clip, and sources. The Sources list manages the sources attached to the current node. A source is composed of a front source and a matte source. See [Using Sources](#) on page 186.

**Brush Attributes** Sets the size of the brush and other brush attributes affecting how paint is applied to the canvas. See [Brush Attributes and Attribute Modes](#) on page 187.

**Paint Mode** Sets the type of paint operation that is applied to the brush. Some brushes paint in a colour; others use contents of the result or a source.

**Matte controls** Defines the area that can be used to paint. You can paint on the entire canvas or areas delimited by the matte properties.

**Canvas controls** Controls clearing and wiping the canvas at the current frame. See [Using the Canvas](#) on page 197.

**Colour pots** Displays the default palette colours that can be used for brushes and wipes.

**Brushes** Displays default brush strokes.

The following views are available in Batch Paint.

Select:	To display:
Front (F1)	The front clip or Batch tree input. The modifications to the front create the result clip.

Select:	To display:
Matte (F3)	The matte clip or Batch tree input. The modifications to the matte create the output matte.
Source Front (F1 F1)	The source front that is selected in the Sources list.
Source Matte (F3 F3)	The source matte that is selected in the Sources list.
Result (F4)	The result image. Paint can be applied to the result.
Output Matte (F4 F4)	The output matte image. Paint can be applied to the output matte.

## 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 [Defining Missing Media Output](#) on page 66.

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.

Front		Slip	Matte		Slip	L	H
 LayerFront		0	 LayerMatte		0		
 silk		0	 silk		0		

a
b

c
d

(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.

## Brush Attributes and Attribute Modes

You can set various brush attributes and attribute modes to determine how paint is applied to the image.

### Setting Brush Attributes

The Brush Attribute fields set the size of the brush, the distribution of the paint, and the rate and direction of the paint application.

a

Brush Attributes		
Size	50	Constant
Rate	100 % C	Constant
Pressure	100 %	Pressure
Jitter	100 %	Off
Direction	100 %	Direction
Roll	100 %	Off

(a) Brush Attribute fields

**Opacity** Affects the transparency of the brush. A value of 100% applies a fully opaque colour. Use a lower value to apply a more transparent colour.

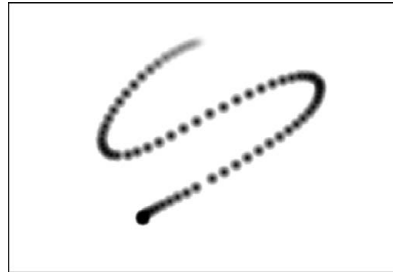
**Size** Determines the size of the brush, which is indicated by the diameter of the green dashed circle surrounding the cursor brush. To increase the brush

size, press **S** and drag the brush to the right on the canvas. To decrease it, press **S** and drag to the left.

**Rate** Determines the rate at which brush strokes are applied to the canvas. Use a high value to produce a smooth continuous stroke, or a low value to produce a less continuous stroke with larger gaps between brush images. The **C** (Constant) button in the Rate field determines whether the consistency of the stroke is dependent on the speed at which you move the pen or mouse. For example, to create a stroke of evenly spaced dots, you could set the Rate field to 20 percent and enable Constant.



Rate attribute value = 100



Rate attribute value = 25

**Pressure** Affects the transparency of the paint applied to the image. To apply opaque paint, use a high percentage value. For more transparent paint, use a low value. The Pressure attribute differs from the Opacity attribute in that you can set the Pressure attribute mode so that the paint transparency varies according to the pressure applied to the pen or the direction of the brush.

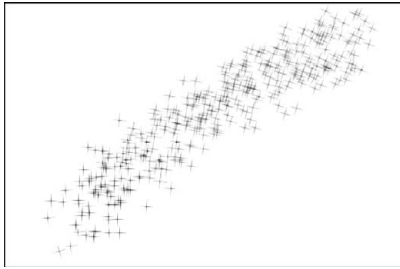


Pressure attribute value at 100%

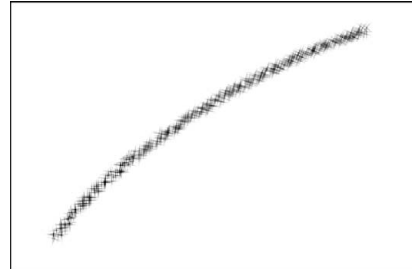


Pressure attribute value at 50%

**Jitter** Randomizes the brush strokes applied to the image. A high value produces a greater dispersion of paint, while a low value produces a greater concentration.

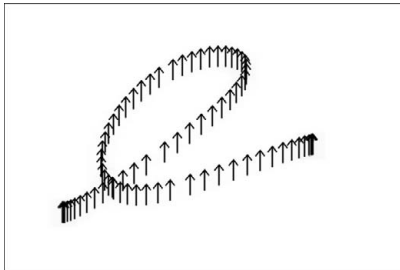


**Jitter attribute value at 100%**

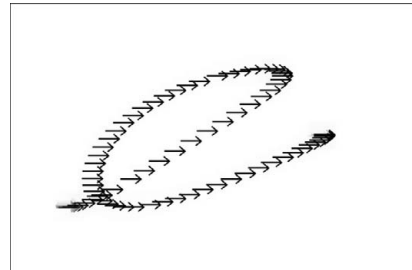


**Jitter attribute value at 10%**

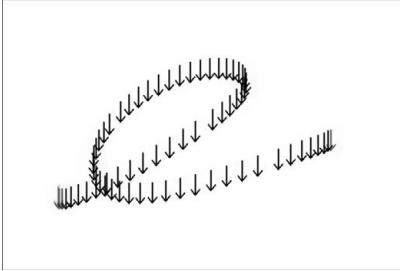
**Direction** Causes the brush to rotate around the Z-axis and can be used to produce a calligraphy effect. The effect of the Direction attribute is most noticeable when used with one of the elliptical or star brushes. The value of the Direction attribute causes the brush strokes to rotate by 90 degrees for each increment of 25 percent.



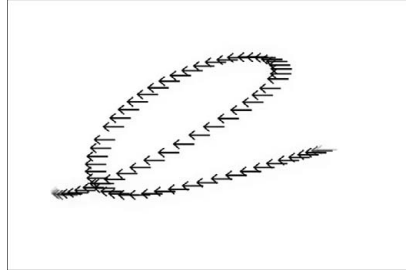
**Direction attribute value at 100%**



**Direction attribute value at 75%**



Direction attribute value at 50%



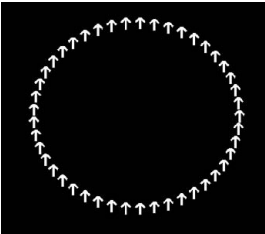
Direction attribute value at 25%

**Roll** Rolls the brush around the X-axis. The effect of the roll is most noticeable when used with one of the non-symmetrical brushes. For each increment of 25 percent, the Roll attribute value creates a rolled brush stroke of 90 degrees.

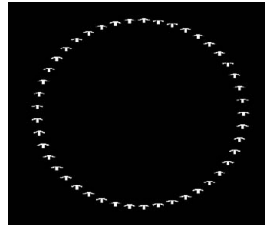
---

**NOTE** You can use any attribute mode with the Roll attribute.

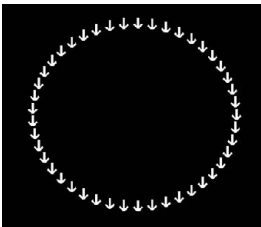
---



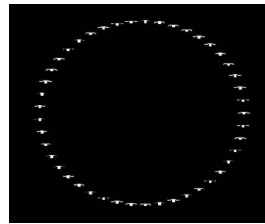
Roll attribute value at 100%



Roll attribute value at 75%



Roll attribute value at 50%



Roll attribute value at 25%

# Setting Brush Attribute Modes

The value of a brush attribute depends on the selected attribute.

Brush Attributes		
Size	50	Constant
Rate	100 % C	Constant
Pressure	100 %	Pressure
Jitter	100 %	Off
Direction	100 %	Direction
Roll	100 %	Off

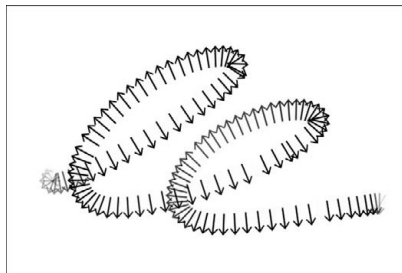
(a) Brush Attribute Mode boxes

**Off** Disables the brush attribute.

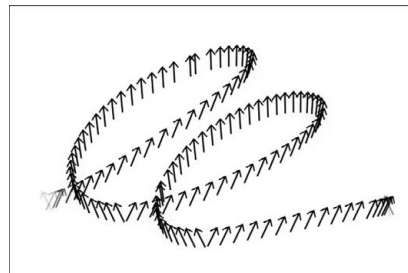
**Constant** Keeps the brush attribute values constant.

**Pressure** Uses the pressure exerted on the pen as the reference value. The harder you press on the pen, the greater the brush attribute value. The softer you press, the lower the brush attribute value.

**Direction** Uses the direction of the brush stroke as the reference. When used with the Direction mode, the Direction attribute causes the brush strokes to follow the trajectory of the brush. Increase the value to enhance the effect on brush direction. Drag right to use 100% of the brush attribute value, left to use 0%, up to use 25%, or down to use 75%.

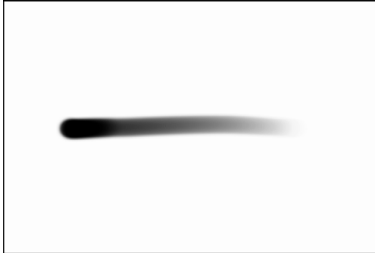


Direction attribute value at 100%, Direction attribute mode



Direction attribute value at 15%, Direction attribute mode

**Fade** Uses the percentage value entered in the Fade field to determine the length of time that elapses before the brush stroke fades. The greater the percentage, the faster the stroke fades. A value of 100 in the Fade field causes the stroke to fade quickly, whereas a value of 1 causes the stroke to last longer. Also, strokes applied quickly will be longer than those applied more slowly.



Pressure attribute value at 100%,  
Fade attribute mode at 35%



Pressure attribute value at 100%,  
Fade attribute mode at 85%

**Front, Matte, Source Front and Source Matte** Allows you to use the red channel in a reference image to set brush attributes. Source Front and Source Matte mode use the red channel of the selected source in the Sources list.

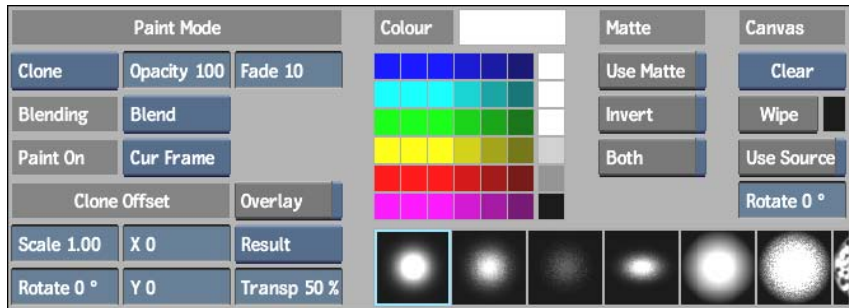
## Painting Brush Strokes

You can paint on the canvas using a variety of brush types and colours. Once you select a brush type, you can modify brush attributes to further refine your strokes. A stroke can be applied to a single frame, or simultaneously to multiple frames. You can paint on the result or output matte, or you can use matte paint mode controls to paint on the result and output matte at the same time.

You can restrict brush strokes to the area delimited by the matte. For example, assume that you have a front input that includes a person shot against a blue screen and a corresponding matte clip. If you opt to limit brush strokes to the matte, your brush strokes on the result or output matte appear only inside the matte area and, therefore, over the person. If you then limit brush strokes to the existing strokes, new paint strokes are applied only over strokes that have already been applied.

# Applying Brush Strokes

As in the Paint module on the Smoke, you can paint with either a pen or a mouse, and access various pressure settings.



## To apply a brush stroke:

- 1 Select an option from the Paint Tools box (or press **Q**).
- 2 Select an option from the Paint On box to apply the stroke to the current frame, all frames in the sequence, or the current frame and subsequent frames.
- 3 Select the Result (**F4**) or Output Matte (**F4 F4**) to set the view where you are painting.
- 4 If you want to paint on the result and output matte simultaneously, enable Both.
- 5 Click a brush to select it.

---

**TIP** Although you cannot create custom brushes in Batch Paint, you can do so in Paint module on the Smoke and then switch back to Batch Paint to use them.

---

- 6 Set brush attributes. See [Brush Attributes and Attribute Modes](#) on page 187.
- 7 If you will reveal a source on the image, select the source in the Sources list. See [Revealing Sources](#) on page 195.
- 8 To change the colour, click a colour pot. If you are painting on the output matte, the brush colour is grey with an equivalent luminance value.

---

**TIP** As an alternative to using the colour pots, you can designate the colour under the pointer as the current brush colour by pressing the left **Ctrl** key and clicking on the canvas.

---

- 9 Click and drag on the canvas to draw a stroke.

---

**NOTE** Downstream context views are not automatically updated as you add strokes, since this would cause performance degradation. To force an update, click the Update button or press **U**.

---

- 10 Use the eraser end of the pen if you are using the stylus to erase strokes that you have created.

## 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.

## Revealing Sources

The Reveal tool allows you to paint the contents of one or more source front images directly onto the result. You can also use the Reveal tool to copy source matte images onto the output matte. For example, if one source has a tree

that you would like to include on the canvas, you can select the source with the tree and then paint it onto the result.

To paint with a copy of the result or output matte image, use the Clone tool.

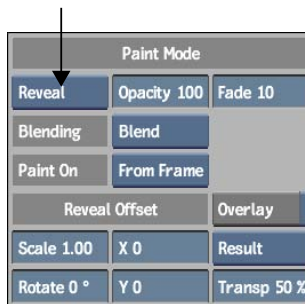
---

**NOTE** If changes are made upstream of the Paint node, revealed strokes are preserved. However, the strokes will reflect the “old” input unless you force an update by clicking the Update button or by pressing **U**. Updates are not performed automatically because they affect system performance.

---

**To reveal a front or matte input:**

- 1 Select Reveal from the Paint Modes box (or press **E**).



The Reveal Offset parameters appear.

- 2 Set the brush attributes. See [Brush Attributes and Attribute Modes](#) on page 187.
- 3 In the Sources list, select the source you want to reveal.

---

**NOTE** You can reveal sources that are marked as hidden in the Sources list. You will only be able to view the strokes created with a source when you disable Hide Strokes.

---

- 4 To limit the revealed sources to the areas delimited by their mattes, select an option in the Matte Source box.
- 5 To display the source as an overlay of the result image, enable Overlay (**Tab**). You can apply transformations to the source before you apply strokes:
  - To interactively offset a source image, press **Ctrl+Shift** and drag the source. See [Previewing a Reveal Operation Using a Reference Image](#) on page 199.

- To scale the source, enter a value in the Scale field.
  - To rotate the source, enter the angle of rotation in the Rotate field.
- 6 Click and drag on the canvas to apply strokes that reveal the transformed contents of the selected source.

## Using the Canvas

Use the canvas controls to control clearing and wiping of the image.

### Clearing the Canvas

You can clear all strokes from the result image and output matte at the current frame or all frames.

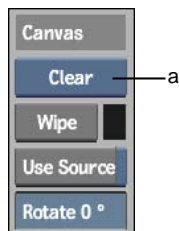
---

**WARNING** Any strokes that have been applied will not be maintained when you clear strokes.

---

**To clear strokes from the canvas:**

- 1 Select one of the following from the Clear Canvas option box:
  - Clear to remove strokes from the current frame.
  - Clear All to remove strokes from all frames.



(a) Clear Canvas option box

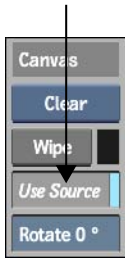
The strokes are removed from the result image.

## Wiping the Canvas

You can wipe the result image when you want to apply a uniform colour at the current frame in a single brush stroke. Alternatively, you can use a source, to wipe over an image.

**To wipe the result image with a colour or a source:**

- 1 From the View box, select Result (**F4**).
- 2 Do one of the following:
  - Pick the wipe colour by clicking the colour pot to the right of the Wipe button.
  - Select the source in the Sources list and enable Use Source.



- 3 To display the source as an overlay of the result image, enable Overlay (**Tab**). You can apply transformations to the source before you apply the wipe:
  - To interactively offset a source image, press **Ctrl+Shift** and drag the source. See [Previewing a Reveal Operation Using a Reference Image](#) on page 199.
  - To scale the source, enter a value in the Scale field.
  - To rotate the source, enter the angle of rotation in the Rotate field.
- 4 Click Wipe.

## Rotating the Canvas

During the painting process, you can rotate the canvas, making it easier to paint on any part of your image.

### To rotate the canvas:

- 1 Do one of the following:
  - Set the angle of rotation in the Rotation field.
  - Press **Alt+spacebar** and drag in your image.



(a) Rotation field

## Previewing a Reveal Operation Using a Reference Image

Overlaying a reference image on the result offers an intuitive way of previewing paint operations.

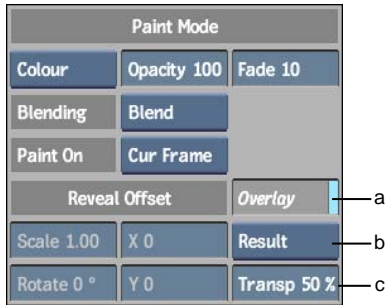
When you overlay a source onto the result, you can preview the effects of a Reveal operation. The selected image is superimposed over the result, and the transparency can be adjusted. This allows you to see exactly what your brush strokes will reveal.

When you overlay a result reference clip onto the result, you can slip the overlaid frame to display previous or next frames, creating an onion skin effect.

The overlay of the front and the matte can also be shown on the result, allowing you to rotoscope more easily, for example.

### To display the reference image:

- 1 Enable the Overlay button (**Tab**).



(a) Overlay button (b) Reference button (c) Transparency field

The reference image appears by default at 50% transparency.

- 2 Select the reference image you want to display from the Reference box.
- 3 If you selected Source Matte or Source Front, select an image from the Sources list.
- 4 With the reference image, you can:
  - Hold down **Ctrl+Shift** and drag the source front or source matte to offset it to preview a Reveal operation.
  - Scale the image, by entering a value in the Scale field.
  - Rotate the image, by entering the angle of rotation in the Rotate field.
  - Set the Slip value in the Sources list to show a reference image at a different frame relative to the actual frame position. See [Slipping a Reference Image](#) on page 200.
  - Set the transparency for the reference image in the Transparency field.

---





**NOTE** You can also drag the result image to offset it for a Clone operation by holding down **Ctrl+Shift**.

---

## Slipping a Reference Image

A reference image that is offset in time can be overlaid on the canvas. You can slip a front, matte, result, output matte, source front, and source matte clips. In the Sources list, use the Slip field to indicate the offset amount.

Each slip value can be set independently. To set the same front and matte values for a source, hold down the **Alt** key and edit either value.

Front		Slip	Matte	Slip		L	H
 LayerFront	0	 LayerMatte	0	0			
 silk	0	 silk	0	0			

(a) Front and Source Front Slip fields (b) Matte and Source Matte Slip fields

