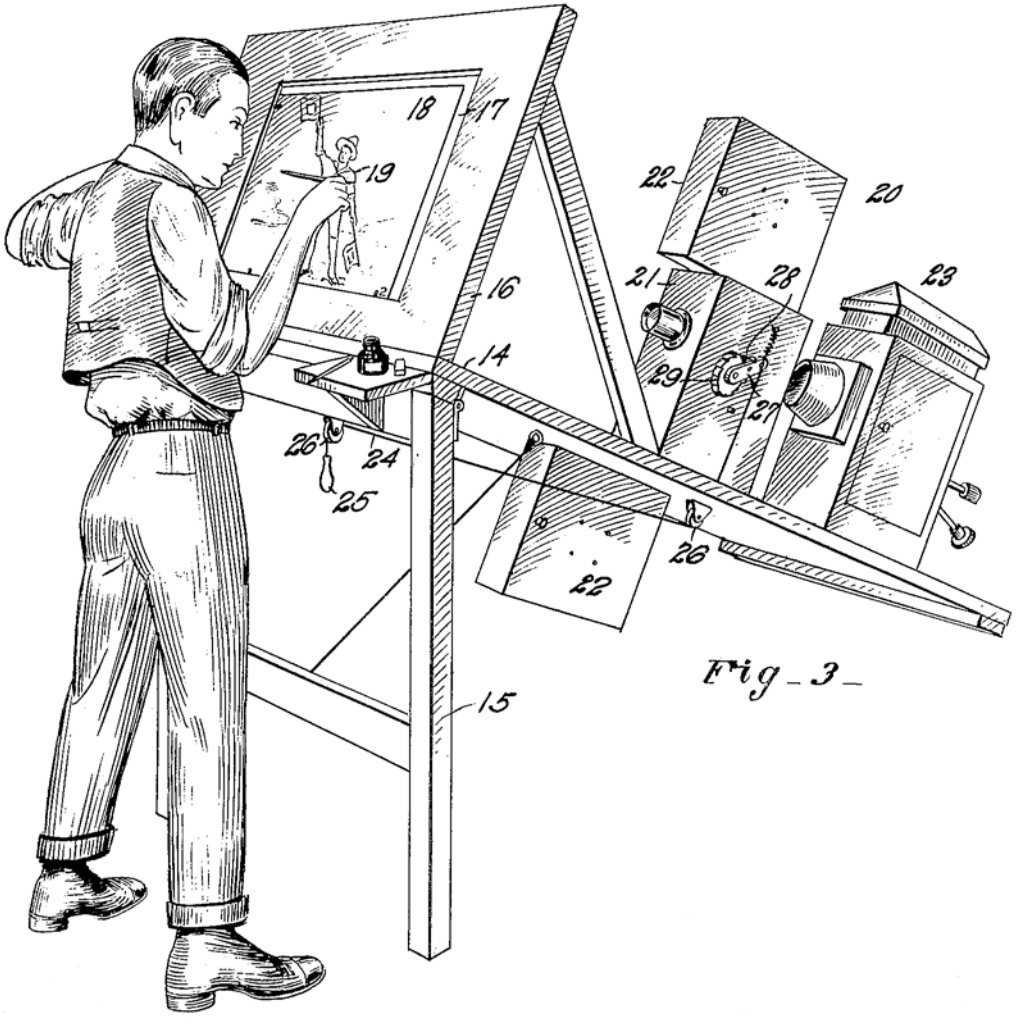

Fig_3_

Silhouette 7.5 User Guide

About this Guide

This User Guide is a reference for Silhouette and is available as an Acrobat PDF file. You can read from start to finish or jump around as you please.

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July 12, 2019

About Us

SilhouetteFX brings together the unbeatable combination of superior software designers and visual effects veterans. Add 3 Academy Awards for Scientific and Technical Achievement, 3 Emmy Awards and experience in creating visual effects for hundreds of feature films, commercials and television shows and you have a recipe for success.

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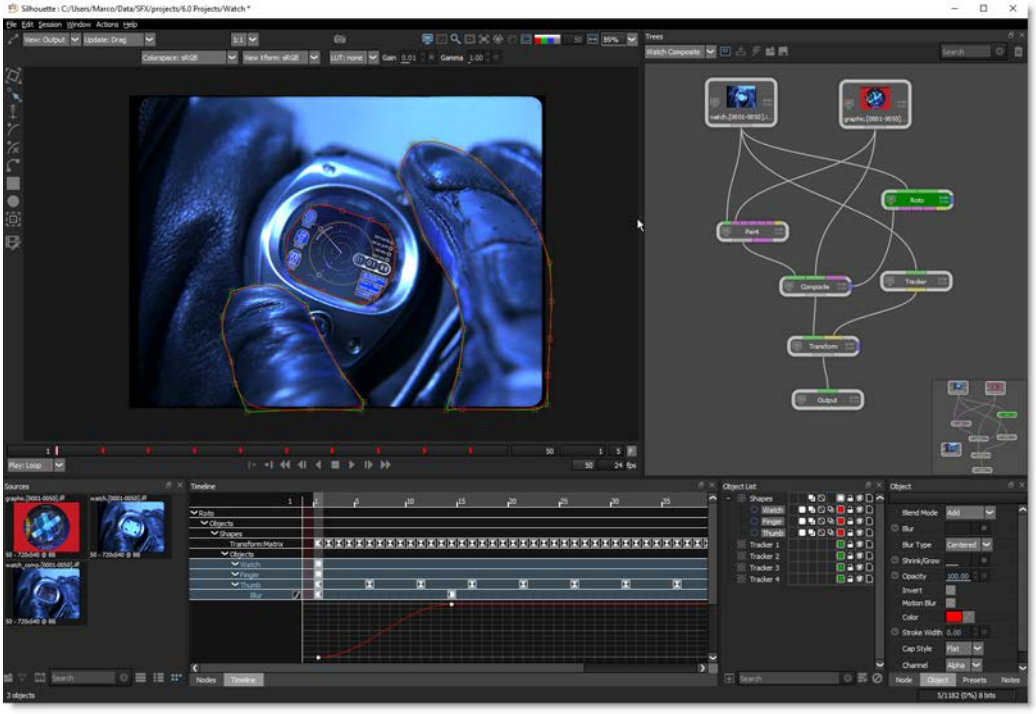
SILHOUETTE FEATURES

Invaluable in post-production, Silhouette continues to bring best of class tools to the visual effects industry. As a fully featured GPU accelerated compositing system, its standout features are award winning rotoscoping and non-destructive paint as well as keying, matting, warping, morphing, and a total of 143 different nodes--all stereo enabled.

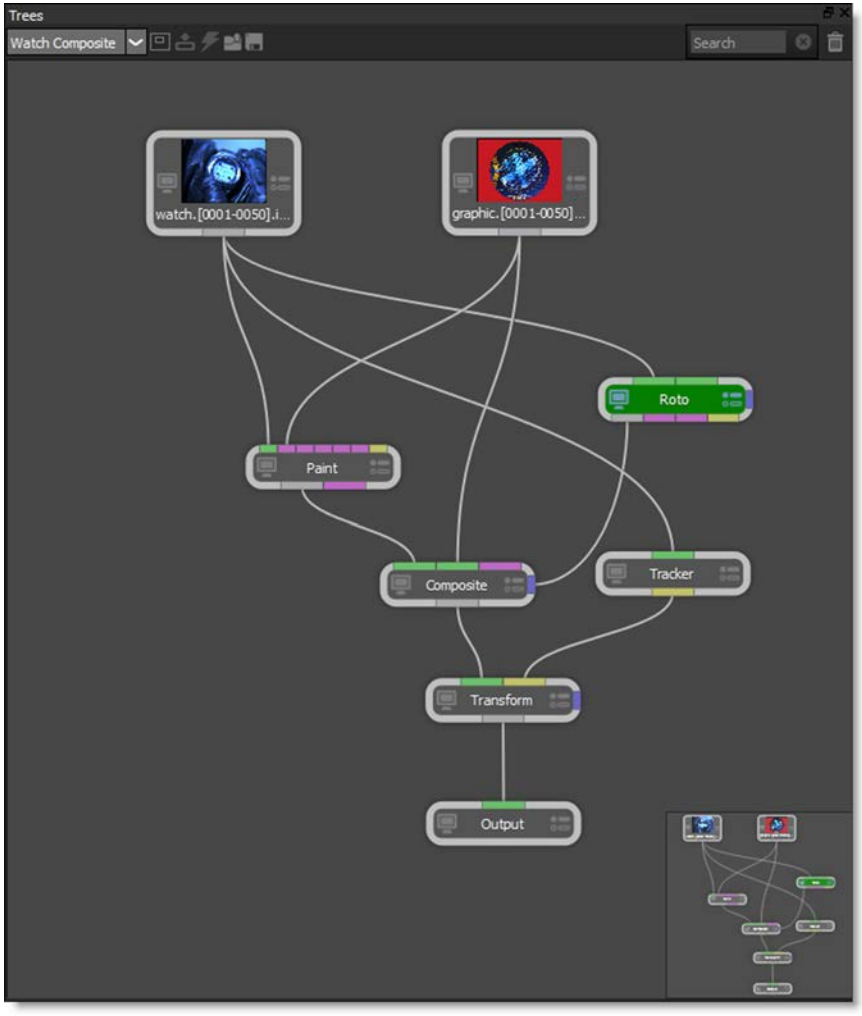
Developed over the years with input by those working in the trenches, Silhouette runs like a well oiled machine and is easy to use. You will be up to speed with minimal effort and have the tools you need to handle the most challenging of shots. As visual effects artists in previous lives, we understand your challenges and timelines. Our goal is to help you get the job done right, on time and on budget.



Trees and Nodes

Trees

The power of Silhouette lies in the Trees window where your effects are built. A tree is a series of clips and nodes, such as color correction, image processing and composite nodes, plugged together to create the desired effect. The tree is grown by adding clips and nodes in any order. The ability to view any node while editing another allows for very complex composites that can be set up and rendered in one pass.



Nodes

Silhouette is a node based system and different nodes are used for various functions. Located in the Nodes tab at the bottom of the screen, nodes are grouped into various categories.

Trees and Nodes Features

- **143 different nodes organized into Color, Composite, Diffusion, Filter, Film Lab, Image, Key, Light, Silhouette, Special Effects, Time, Tints, Transform, Warp and OFX groups**
- **Horizontal and vertical node layouts**
- **Gestural node workflow**
- **Visual presets for most nodes**
- **OFX third party plug-in compatible**

Composite

A well rounded collection of compositing nodes that provide all that is needed to combine multiple images. Utilize compositing tricks and techniques, color correction, blur, grain, matte manipulation, lens distortion, lighting effects and edge blending. Eradicate the most common effects problems or employ specialized tools for combining imagery such as fire, smoke and explosions.

Composite Features

- **Compositing tricks and techniques**
- **Effectively composite fire, explosions and smoke**
- **Edge tools to color correct or blur the composite's edge**
- **Proprietary matte generation**
- **Matte manipulation using shrink, grow, blur and wrap functions**

Roto

Silhouette allows you to quickly create sophisticated animated mattes using B-Spline, Bézier or X-Spline shapes. Intelligent design and easy-to-use tools, such as variable edge softness on a point by point basis and realistic motion blur, assist you in creating complicated shape animations. Integrated motion tracking makes the normally tedious task of rotoscoping a breeze.

Where did the term Rotoscope come from? A rotoscope was a mechanical device patented by Max Fleischer in 1917. It projected single frames of live action footage onto the animators drawing board. By simply tracing the projected shape, the animator could quickly produce incredibly lifelike drawings. With the passage of time, Rotoscoping or “Roto” for short has become a generic term for drawing shapes to extract, isolate or affect a portion of an image. It is tedious work, but it’s one of the most important parts of the visual effects process.

Roto Features

- Unlimited number of animated B-spline, X-Spline or Bézier shapes
- Stereo rotoscoping workflow and tools
- Integrated Motion Tracker that can apply motion data to points or shapes
- Planar tracker provides automatic, markerless motion analysis and tracking
- IK (Inverse Kinematics) for animating humans, animals and all manner of jointed creatures
- Support for open or closed shapes
- Move, scale, rotate, shear, and corner-pin shapes and groups of shapes
- Point-by-Point variable edge softness
- Realistic motion blur
- Animation changes for one point or selected points across all keyframes
- Independent shape viewing and hiding
- User-definable names, colors, blurs and blend modes for each shape
- Render shape animation over image as an outline or filled color
- Shape import and export
- Support for video fields and 3:2 Pulldown

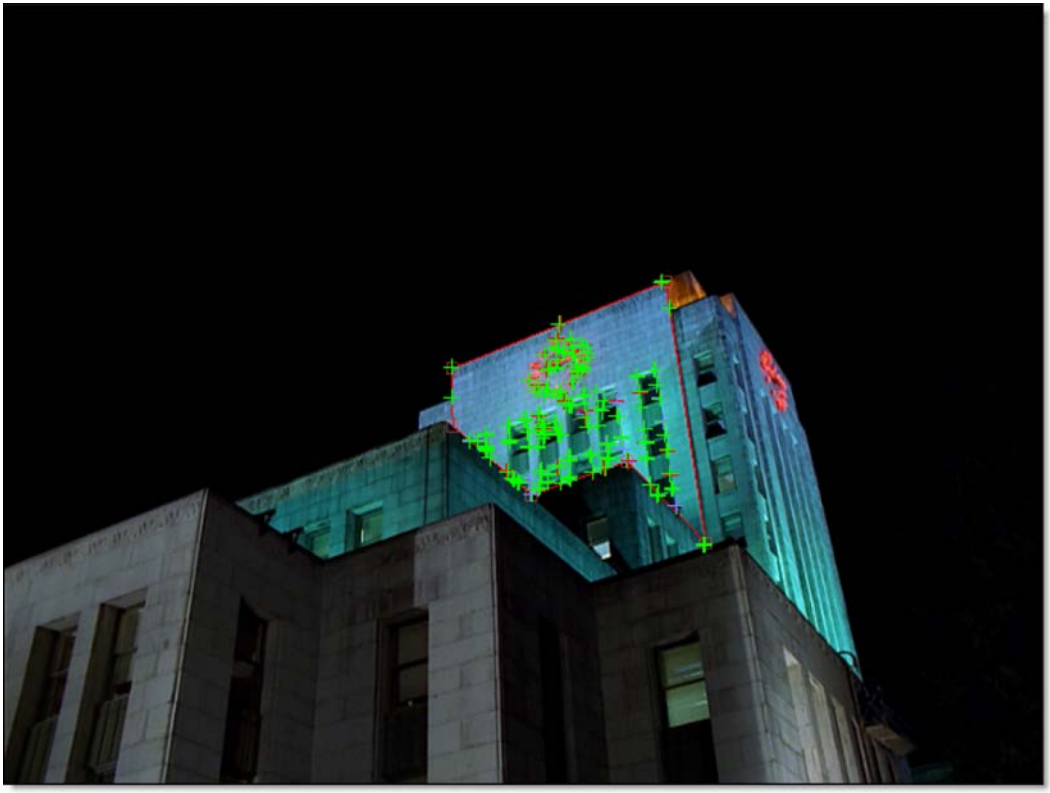
Tracker

Tracking is a technique that involves analyzing the motion of an image over time. In Silhouette, images can be tracked using an automatic image tracking system called Planar Tracking or Point Tracking which utilizes either one, two or four track points. Silhouette includes two Planar Trackers: Silhouette's Planar Tracker and Imagineer's mocha Planar Tracker.

Planar Tracking

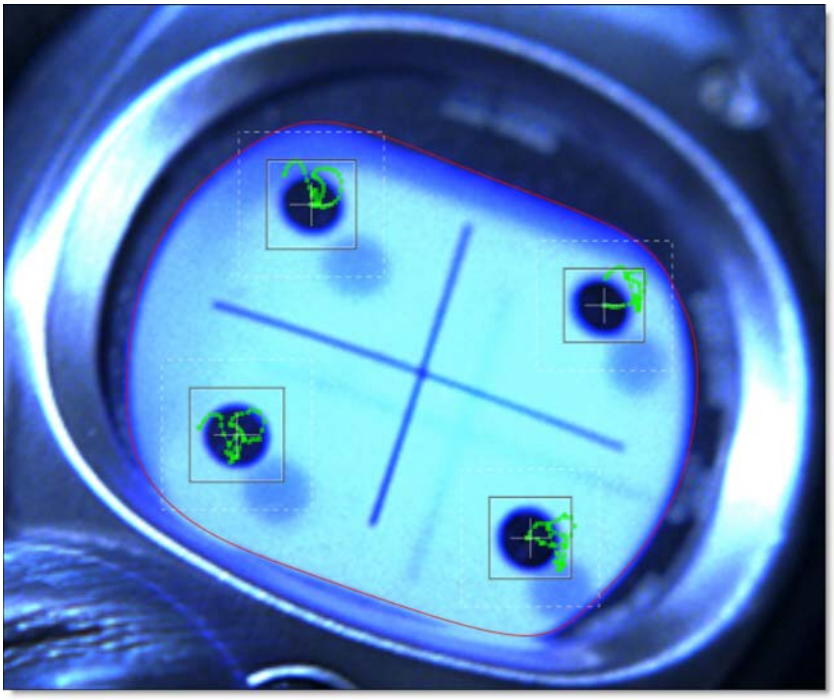
Silhouette's Planar Tracker tracks several points (corners, edges and ridges) on the image while automatically handling partial occlusions of the tracked object, producing excellent results even with textureless objects.

Imagineer's Planar Tracker technology provides 2D transformation data by tracking planes rather than points.



Point Tracker

The Point Tracker uses individual trackers which are placed on distinguishable image features.



Tracker Features

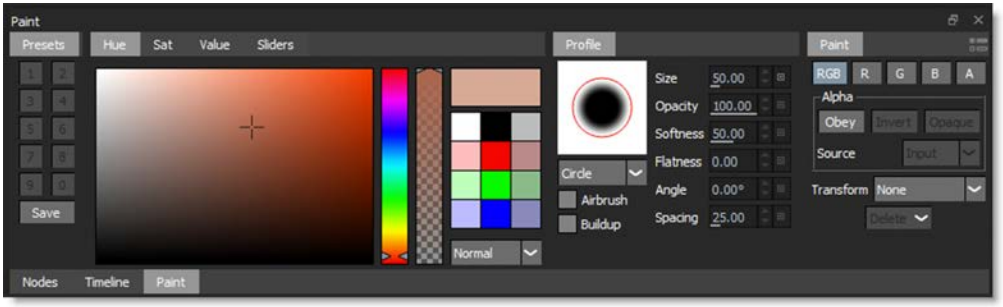
- **Planar Tracking using either Silhouette's Planar Tracker or Imagineer's mocha Planar Tracker**
- **Planar Trackers provide automatic, markerless motion analysis and tracking**
- **Planar Tracker tracks corners, edges or ridges**
- **Unlimited Point Trackers for manual precision**
- **Match Moving or stabilization of shapes or paint strokes**
- **Pre-processing filters for problematic shots include: Blur, Sharpen, Contrast, Gamma, De-Noise and Remove Flicker will increase tracker accuracy for problematic images**
- **Post-processing of point tracking data to include: Average, Smooth and Merge**
- **Tracker export to popular formats***

* mocha Planar tracking data can not be exported as external trackers.

Paint

Paint is a high dynamic range, non-destructive, 2D paint system designed from the ground up to handle the demands of feature film and television production. Whether it's image restoration, dustbusting, wire and rig removal or just plain paint, Silhouette provides simple and sensible tools to get the job done.

As you paint, every action you make is recorded as events. These events can be selectively played back on the same frame, different frames, multiple frames and with or without tracking data applied. This makes for a very powerful and versatile Auto Paint feature that provides the flexibility of a vector paint system with the speed of a raster paint system.



Paint Features

- **Black & White, Blemish, Blur, Clone, Color, Color Correct, Cutout, Drag, Eraser, Grain, Mosaic, Repair and Scatter brushes**
- **Non-destructive raster paint system allows playback of paint strokes on a range of frames or the entire clip**
- **Automatic recording of paint events with selective stroke playback**
- **Track paint strokes and Clone sources**
- **Sophisticated cloning interface**
- **Motion track, position, scale, rotate, skew and corner pin clone sources**
- **Color Correct, Blur, Sharpen or Warp the Clone source**
- **Paint on left and right stereo images simultaneously using an adjustable, keyframeable interocular offset**
- **Onion-Skin and Align tools to match up elements**
- **Presets to store brushes and their settings**
- **High dynamic range painting in 32 bit float**

Warps and Morphs

Silhouette includes a fully-featured shape based image warping and morphing system as well as a pin warper which provide the highest level of control and quality available. Image warping and morphing can take place on stills as well as moving images. Warping can be used to enhance or exaggerate facial features, adjust sizing of image elements, create talking animals or any other type of image deformation. Morphing has been traditionally used to transform one object or person into another and more recently to seamlessly transform a live action element into a CG (computer generated) object and vice versa.

Pin Warp

Before

After

Photo by Tim Easley on Unsplash

Pin Warp Features

- **Distort specific image areas using pins**
- **Protect image areas using tacks**
- **Track pins and tacks**

Morph

Before Middle After

Copyright © 2008--www.iofoto.com

Morph Features

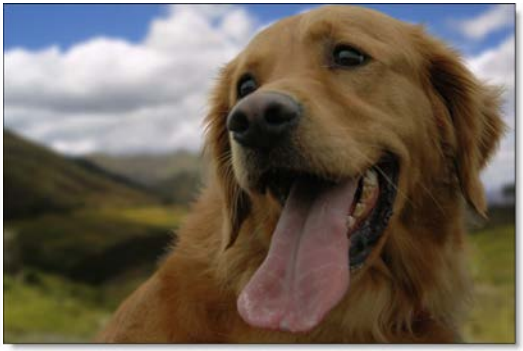
- **Distort and morph**
- **Shape based morphing**
- **Transformations on a layer by layer basis**
- **Depth and folding control**
- **Integrated motion tracking**
- **Interactive preview**

Keying and Matting

Using proprietary matte extraction techniques, the zMatte and Power Matte nodes are capable of extracting almost any object in an image quickly and simply even if you are dealing with fine hair detail, smoke, or reflections. They are easy to use, yet provide the needed tools when faced with good, bad, or ugly shots.

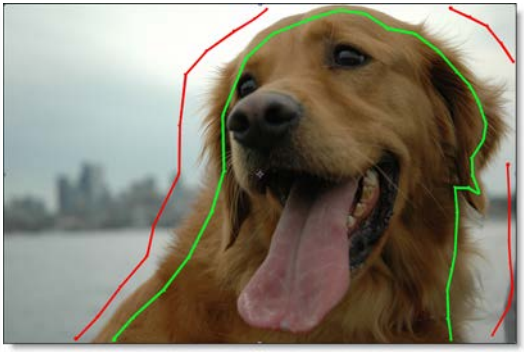
Before

After



Matte

Shapes



Keying Features

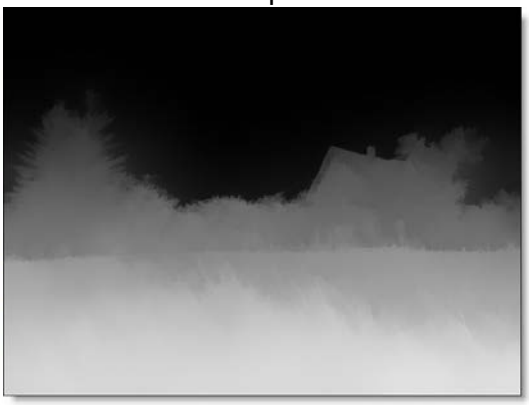
- **Interactive image matting tool capable of extracting almost any object in an image**
- **DV/HD deartifacting**
- **Multiple matte creation**
- **Color suppression**
- **Sophisticated matte manipulation**
- **Generate mattes without blue or green screens**

Depth

The Depth node contains a dedicated tool set for creating depth channels.

Original

Depth



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Depth Features

- **Shapes can be assigned individual depth values**
- **Horizon, Ramp, Hall and Tunnel gradient depth tools**
- **Alpha tool that converts the alpha channel generated by other Silhouette nodes (zMatte, Power Matte, Roto, Paint, etc) into a depth map**
- **Output to stereo displays**

Sequence Editor

Silhouette can perform editing tasks such as cutting, joining, moving, copying, replacing, trimming, retiming and repeating clips in the Sequence Editor.

Sequence Editor Features

- **Set clip in and out points**
- **Automatically assemble selected clips**
- **Copy, move, insert or replace clips**
- **Trim in, trim out or trim both sides of an edit**
- **Clip retiming**

Architecture

- Node based workflow
- Resolution Independent
- OFX third party plug-in compatible including Boris FX Sapphire, Boris FX Mocha, RE:Vision FX Twixtor and ReelSmart Motion Blur.
- Stereo viewing and editing
- Region of Interest for enhanced performance
- Command-Line Rendering
- Scripting and Actions
- OpenColorIO Color Management
- GPU and OpenGL® accelerated
- Multi-processor support
- Proxy management for large image sizes

Compatibility

- File Formats: Cineon, DPX, IFF, JPEG, OpenEXR, PNG, SGI/RGB, TIFF and TARGA
- Export Autodesk® gMask, Elastic Reality®, Fusion®, Nuke® and Shake® 4.x SSF shapes
- Import Commotion, Elastic Reality and Shake 4.x SSF shapes
- Mask interchange with After Effects® using the Silhouette Shape Import/Export Plug-in
- Export After Effects, Autodesk, Nuke and Shake 4.x trackers
- Import After Effects Corner-Pin, Nuke 8+ and Shake 4.x trackers
- Macintosh®, Windows®, Linux®

INSTALLATION AND LICENSING

Windows / Macintosh

1. **Download the Silhouette software at www.silhouettefx.com**
2. **Double-click on the installer file that you downloaded to install Silhouette.**
   The default installation folder on Windows systems is C:\Program Files\SilhouetteFX\Silhouette v7.5. On Macintosh systems, the default installation folder is /Applications/SilhouetteFX/Silhouette v7.5.
3. **When you get to the Select Components screen, select Silhouette.**
4. **If you have After Effects installed, you can also select the Silhouette Shape I/O Plug-in.**
5. **Complete the installation.**
6. **Start Silhouette on Windows systems by selecting Programs > SilhouetteFX > Silhouette v7.5 > Silhouette v7.5 in the Windows Start menu.**

   or

7. **Start Silhouette on Macintosh systems by going to the /Applications/SilhouetteFX/Silhouette v7.5 folder and double-clicking on Silhouette.**
8. **An activation window pops up when you run Silhouette.**
9. **If you purchased the software, select Activate Silhouette and follow the instructions.**
10. **If you are evaluating the software, select Request Trial Activation (Internet Required) and click Next to receive a fully functioning version of Silhouette for the specified trial period. At the end of the trial period, Silhouette reverts to a limited demo mode.**

    or

11. **Select Run in Demo Mode and click Finish.**

    Note: In Demo Mode, a watermark is superimposed over the image and you will not be able to save projects or export shapes.

Linux

1. **Download the Silhouette software at www.silhouettefx.com**
2. **Open a Terminal window and change to the directory where you downloaded the file.**
3. **Type: *tar xvzf <name of file>***
4. **Change to the new directory that is created.**
5. **To install the Silhouette software, become root and run the "install.py" script by typing: *python install.py***

   Note: A Python installation is required to run the script.

   Silhouette is unpacked into the current directory.
6. **To run Silhouette from the directory where it is unpacked, type: ./run.sh**
7. **An activation window pops up when you run Silhouette.**
8. **If you purchased the software, select Activate Silhouette and follow the instructions.**
9. **If you are evaluating the software, select Request Trial Activation (Internet Required) and click Next to receive a fully functioning version of Silhouette for the specified trial period. At the end of the trial period, Silhouette reverts to a limited demo mode.**

   or
10. **Select Run in Demo Mode and click Finish.**

    Note: In Demo Mode, a watermark is superimposed over the image and you will not be able to save projects or export shapes.

Library Dependencies

Silhouette v7.5 no longer uses -rpath to hard-code the location of its dependent libraries which are included in the "lib" folder. Instead, LD_LIBRARY_PATH should be set to point to the Silhouette "lib" folder. The included run.sh script shows how to do this. The LD_LIBRARY_PATH can be used to have Silhouette use a different Qt or python package as well.

Linux Modifier Key Configuration

When using the KDE or GNOME desktops, by default there is a Move Window modifier key combination set up, so that if you **Alt**-drag a window, it will move. This interferes with our **Alt**-drag capability in some tools, so you will want to disable this desktop feature.

KDE Desktop

1. **Run the KDE Control Center.**
2. **Go to the Desktop/Window Behavior panel and select the “Actions” tab.**
3. **Down in the Inner Window, Titlebar & Frame area, change the “Modifier Key” option from Alt to Meta.**

GNOME Desktop

1. **Run the Control Center in Preferences.**
2. **Select Windows.**
3. **Select Super (or “windows logo”).**

Linux Tablet Configuration

We require that proper tablet support is enabled in the X server. This part is left up to the user, as it is very distribution and version specific. This site can be used for more information: **http://linuxwacom.sourceforge.net/index.php/all**

Activation

Internet Activate

Activates Silhouette over the Internet.

Note: If you experience an error when using Internet Activate, it may be because of anti-virus software, firewall software or you may be using a proxy server to access the Internet.

- **Anti-Virus Users: Disable the anti-virus software while activating.**
- **Firewall Users: Open your firewall software and allow our software to access the Internet.**
- **Proxy Server Users: Select Advanced Options in the activation window and enter the appropriate proxy server settings.**

Install a License File

Loads a license file.

Deactivation

Once Silhouette has been activated, you can access the deactivate option by selecting the Help > License menu.

Internet Deactivate

Deactivates Silhouette over the Internet. Use this method to return your Product Code back to the activation server. You will then be able to use your Product Code to activate Silhouette on another computer.

Note: Internet Deactivate is only available if your computer was activated using Internet Activate. If the deactivate option is grayed out, please contact customer support.

License Transfer

Your Product Code allows you to run Silhouette on one computer at a time. However, you may transfer the license by deactivating on one computer and activating on another.

Internet Deactivate / Internet Activate is the preferred method of license transfer between computers, but is only available if you initially activated over the Internet and currently have Internet access. If you do not have Internet access, you will need to contact customer support to assist you in transferring the license.

To transfer a license:

1. **Select License from the Help menu.**
2. **Choose Internet Deactivate and click Next.**

   Silhouette is now deactivated.
3. **On the target computer, select Activate Silhouette and follow the instructions.**

   Silhouette will then activate on the new computer.

Floating License Installation

Silhouette can utilize either nodelocked or floating licenses. Nodelocked licenses are locked to a particular machine in contrast to floating licenses which can be used on different machines. A floating license is checked out of a dedicated license server when Silhouette is started and checked back in to the server when Silhouette is closed.

In order to connect to your license server, you will need to know the port number and hostname or IP address. This information is entered into the Silhouette Activation window > Advanced Options > License Server field.

Note: Please contact your system administrator if you do not know the port number and hostname or IP address. Silhouette ships with a default port of 4313, but you would use a different port number if you have defined a custom port.

Floating License Installation

1 **Start Silhouette.**

An activation window pops up.

2 **Select Advanced Options and click Next.**

3 **In the License Server field, type your port@host information and press Finish. Examples of how to enter the port@host would be 4313@big-server or 4313@192.168.1.50.**

Note: Silhouette now checks the SFX_LICENSE_SERVER environment variable before checking the state of the Advanced Options > License Server entry. If you have a large number of client machines that connect to a floating license server, you can set the SFX_LICENSE_SERVER environment variable with port@host as the value. Doing this will eliminate the need to enter the port@host in the Advanced Options window for each client machine.

TUTORIALS

Starting Silhouette

1 **Start Silhouette on Windows systems by selecting Programs > SilhouetteFX > Silhouette v7.5 > Silhouette v7.5 in the Windows Start menu.**

or

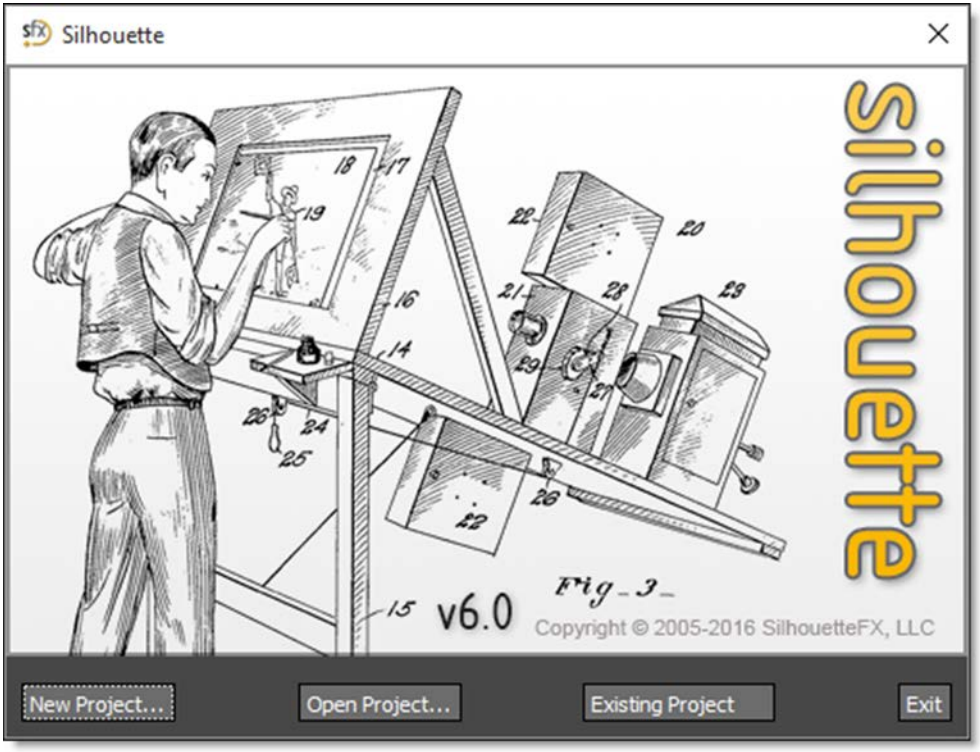
2 **Start Silhouette on Macintosh systems by going to the /Applications/SilhouetteFX/Silhouette v7.5 folder and double-clicking on Silhouette.**

or

3 **Start Silhouette on Linux systems by opening a Terminal window and typing: *silhouette***

Creating a Project

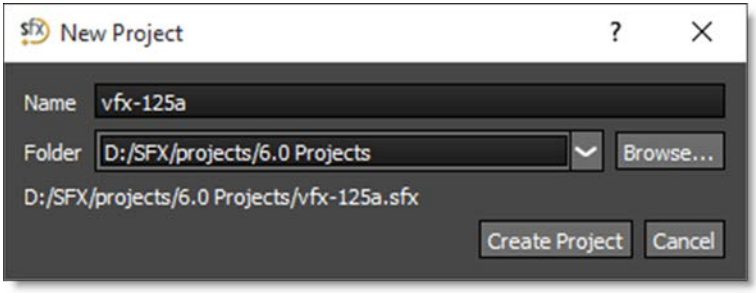
When you start Silhouette, you are required to create or open a project. A project contains footage and sessions. A session in Silhouette is where you composite, rotoscope and paint.



1 **Select New Project.**

The New Project dialog box opens.

2 **Enter a name for the project, choose a folder to store the project and then click Create Project.**



The Silhouette user interface opens once the project is created. When the new project is created, a folder is generated using the name of the project and contains the project file as well as paint data, autosave, and backups.

Importing and Replacing Media

Before you can start using Silhouette, media or footage has to be imported.

Importing Media

1 **Select File > Import > Media.**

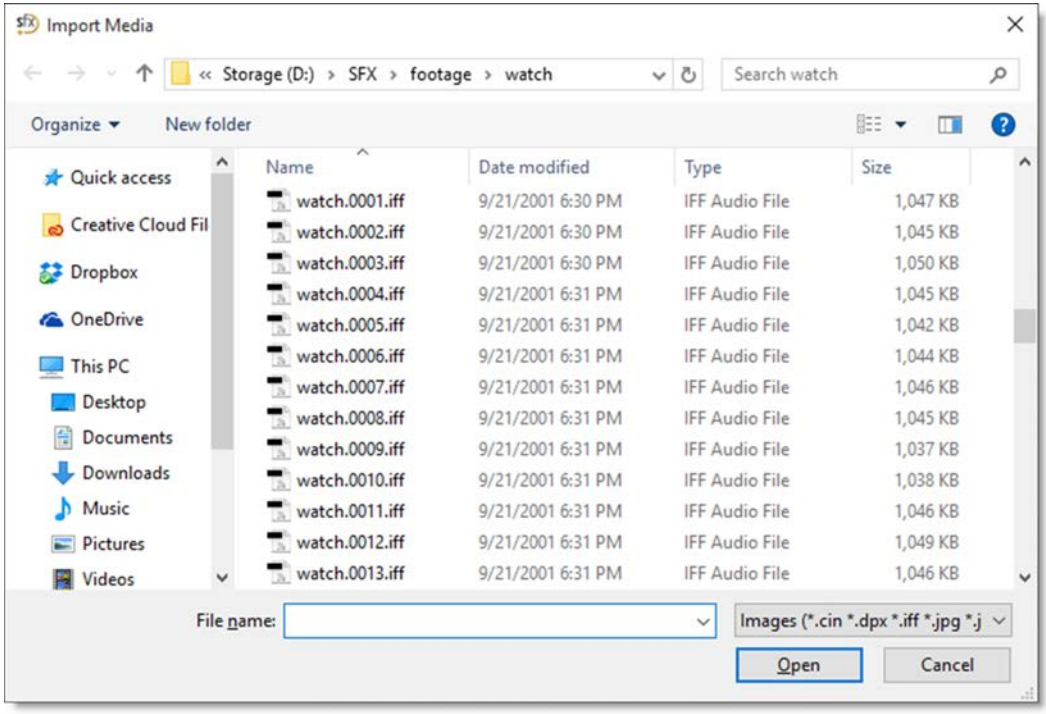
or

2 **Click the Import icon at the bottom left of the Sources window.**

or

3 **Double-click on an open space in the Sources window.**

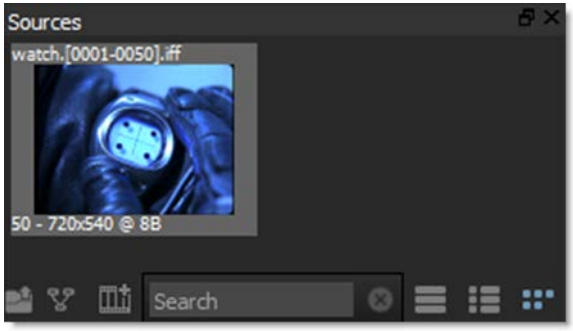
4 **When the File Browser opens, navigate to the location of your clip.**



We currently support the following file formats: Cineon, DPX, IFF, JPEG, OpenEXR, PNG, SGI/RGB, TIFF and TARGA.

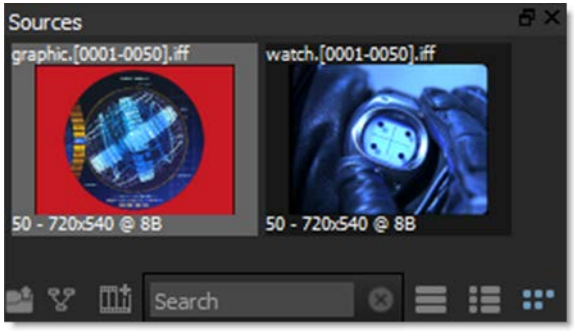
5 **Select the first frame in the clip and click on Open.**

The entire clip is imported into Silhouette.

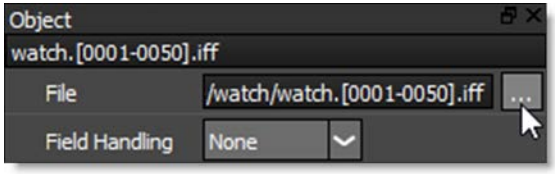


Replacing Media

1 **In the Sources window, click on a clip to select it.**



2 **In the Object window, click the Browse icon at the far right of the File field.**



The File Browser opens.

3 **Navigate to your clip, select it and hit the Open button.**

The old clip is replaced with the new clip.

Managing Media Paths

You can virtualize media paths in order to improve asset sharing between users, asset management and render servers by specifying the file path with a SFX_MEDIA environment variable.

Note: This is accomplished through a default SfxContentResolver that maps a “sfx” scheme to the SFX_MEDIA environment variable, and vice versa.

1. **Using the standard method for setting an environment variable on your OS, create an environment variable named SFX_MEDIA with a value being the path where you media is stored, for instance, C:\Media\footage\.**
2. **Import a clip that is nested under the path you set for the environment variable.**
3. **Select the imported clip in the Sources window.**

   Please note that in the Object window > File field, the beginning of the source’s path is now sfx://.

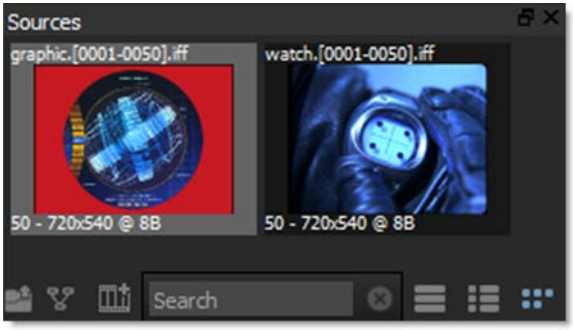
4. **Go to another computer with the same media, but a different folder structure, and set the SFX_Media to the new path.**
5. **Open the project created by the first machine and all of the source footage will be linked properly on your second machine.**

Creating Sessions, Compositing and Multiple Nodes

Once media is imported into Silhouette, a session has to be created. A session in Silhouette is where you compose, rotoscope and paint.

1 **Import some footage conducive to compositing, for instance, a foreground RGBA and a background clip.**

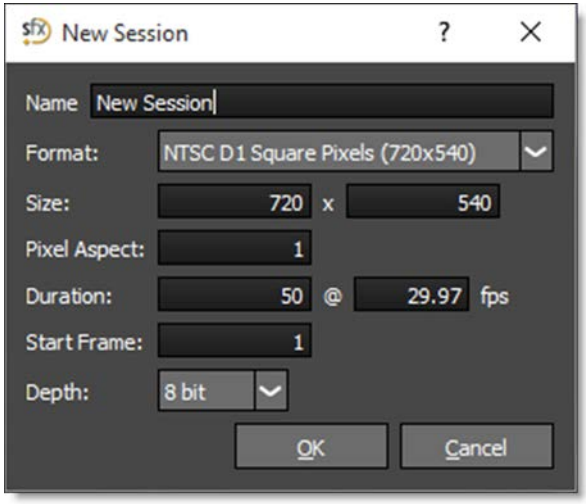
2 **Highlight the foreground RGBA clip in the Sources window.**



3 **Choose Session > New Session, press Ctrl(Win)/Cmd(Mac)-N or click the New Session icon at the bottom of the Sources window.**

or

4 **Drag the clip thumbnail from the Sources window to the Trees window.**

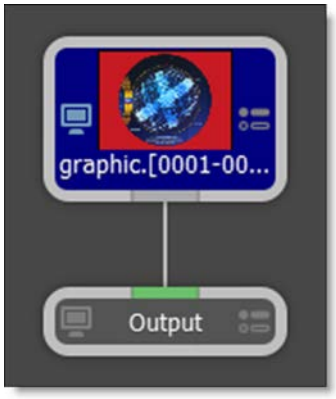


The clip settings are automatically imported into the session settings.

Note: If an in and out point has been marked for a source clip, the marked duration will be used for the session duration. For more information on source clip in and out points, see **Source In and Out Points**.

5 **If you'd like, rename the session in the Name field and click OK.**

The source node is automatically connected to an Output node which determines the file format, file name, disk storage location, and channels to be rendered.



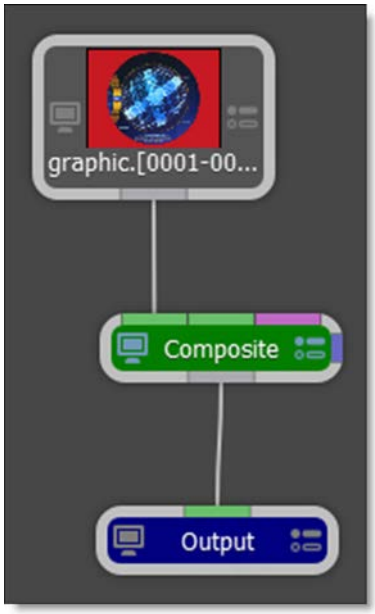
6 **Select the Nodes tab at the bottom of the screen.**

Silhouette is a node based system and different nodes are used for various functions.The node groups are displayed and are organized into Color, Composite, Diffusion, Filter, Film Lab, Image, Key, Light, Silhouette, Special Effects, Time, Tints, Transform and Warp groups.

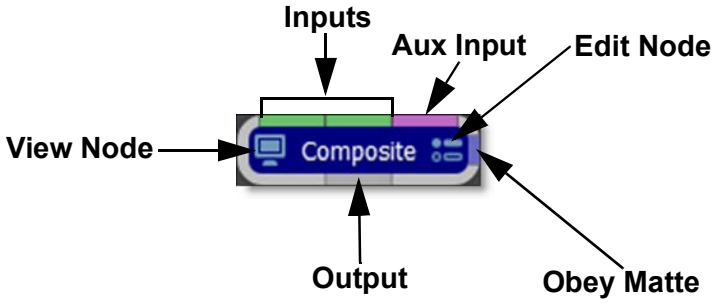
You can search for nodes by clicking the Search icon at the top left of the Nodes window. Type in the node that you want to search for and it will appear. Click the Search icon when done to return to the normal Nodes window view.

7 **Select the Composite category and the nodes for that group are displayed.**

8 **Click and drag a Composite node to the Trees window and drop it onto the existing node wire between the source and output nodes.**



The node wire will automatically grab on to the Composite node. In case you were wondering, the different colored bars on the border of the node allow you to connect into and out of it.



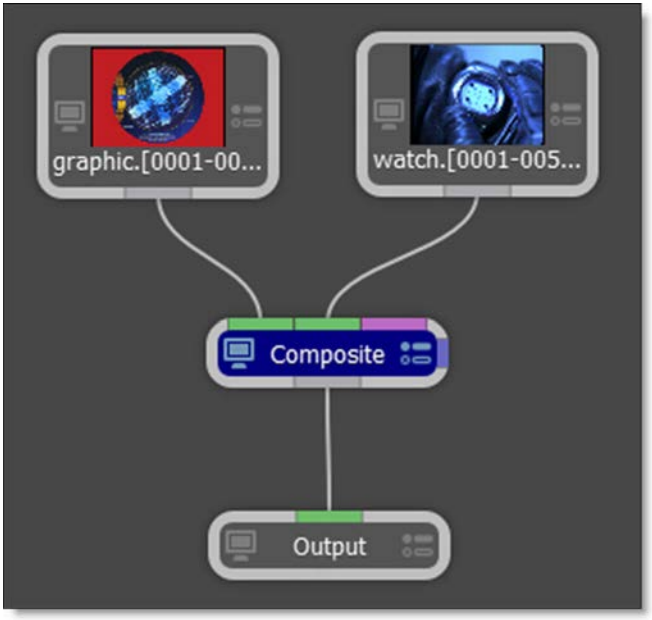
The Composite node can use either two or three inputs.

- **Two inputs: Foreground RGBA and Background**
- **Three inputs: Foreground, Background, Matte**

Note: You can change Composite's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

9 **Drag your background clip from the Source window to the Trees window.**

10 **Click on the background clip's output port and drag to the Composite node's background input (middle input).**



Silhouette is a straight, unmatted compositor and its composite nodes expect unpremultiplied images. In addition, it is best practice to unpremultiply before color correcting premultiplied images so as to avoid unexpected results. If you are working with premultiplied images, you have the following options:

- **In the Source parameters, identify the alpha as Premultiplied. This will unpremultiply it.**
- **Unpremultiply the image within the Composite node.**
- **Use a Composite > Unpremultiply node before the premultiplied image hits the Composite node.**

11 **Single-click in the center of the Composite node to view and edit it.**

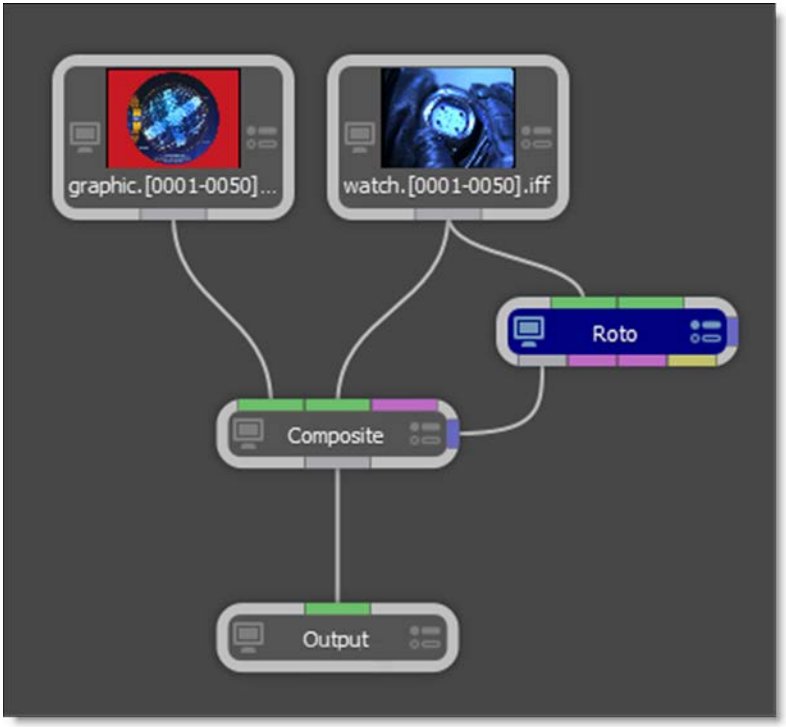
When a node is single-clicked, a couple of things happen. First, it is loaded into the Viewer so you can see its affect on the image. Second, its parameters are loaded into the Node parameters window so its controls can be edited. You can tell which node is being viewed and edited by the state of the View and Edit Node icons on the node. They are colored blue when enabled.

When you have multiple nodes, you can view one node while editing another. Just click on either the View Node or Edit Node icons. Let's connect another node.

12 **From the Image tab, click and drag a Roto node to the Trees window. Press the Ctrl(Win)/Cmd(Mac) key before dropping it onto the background source clip.**

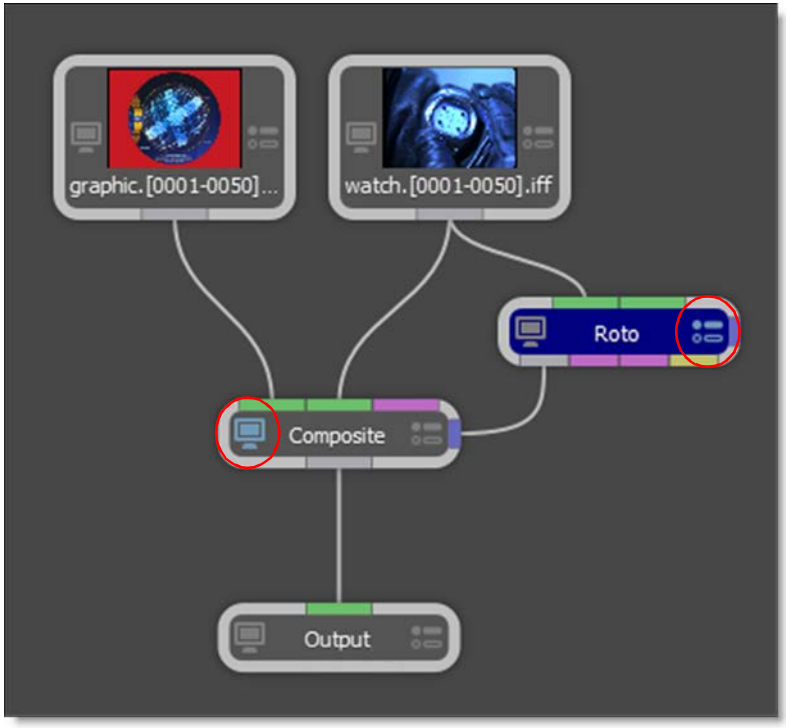
This creates a new branch.

13 **Hook the Roto node's output (far left output port) to the Obey Matte input (right edge of node) of the Composite node.**



Whatever is plugged in to the Obey Matte input will constrain or limit the effect of the node.

14 Click the View Node icon on the Composite node and the Edit Node icon on the Roto node.



This configuration will allow you to view the Composite node while editing the Roto node.

15 Click the Circle icon located on the left side of the Viewer and drag out a circle over a portion of the foreground that is being composited.

16 Click the Edit icon on the Composite node, switch to the Obey Matte tab in the Node window and enable Obey.

Now, the composite only occurs in the area defined by the Obey Matte input.

Obey Matte Disabled **Obey Matte Enabled**

For all the ways you can add and connect nodes, see the **Adding and Connecting Nodes** sections for more information.

Editing Sessions

Once you have created a session, you can change its settings at any time by using one of the two methods listed below.

1 **From the pull-down menu at the top of the screen, select Session > Session Settings.**

or

2 **Press Ctrl(Win)/Cmd(Mac)-Shift-S.**

In either case, the session window opens and you can change the settings. When the Edit Session window opens, make the desired changes.

Cineon/DPX Log Session Workflow

To ensure that Cineon/DPX images display correctly, use the workflow outlined below.

Note: Silhouette tries to figure out whether a DPX file is logarithmic or linear based on the file's header information. Sometimes the program used to create the DPX file writes the wrong information into the header causing Silhouette to think it is Logarithmic when it is Linear and vice versa. To explicitly set whether or not the file is Logarithmic or Linear, see the **Edit Source > Interpretation** section for more information.

Working in Linear Space

Our preferred Cineon/DPX Log workflow is to use linearized Cineon/DPX Log images in a Float session.

1 **Load a Cineon or DPX clip and create a Float session.**

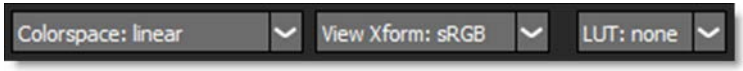
2 **Use the default Color Management > Cineon/DPX Working Space preference setting of Linear.**

This converts log Cineon/DPX files to scene linear.

3 **Make sure that the Display Options icon is enabled in the Viewer.**

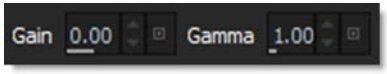
Silhouette automatically tries to determine the colorspace based on the data in the file and other information from the header. If a colorspace can't be detected, Linear will be selected.

4 **In the Color Management toolbar located below the Display Options icon, make sure that the Colorspace is Linear and the View Xform is sRGB.**



These settings will ensure that the linearized Cineon/DPX images will look correct in the Viewer. If you'd like, you can also adjust the Gain (exposure) and Gamma of the image.

5 **To adjust the brightness of the image in the Viewer, use the Viewer > Display > Gain and Gamma settings.**



Working in Log Space

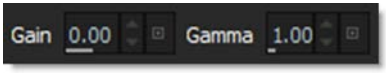
If you would like to work with Cineon/DPX images in log space, you can bypass Silhouette's Cineon conversion. This allows you to work with the raw Cineon/DPX files without a conversion.

1. **Load a Cineon or DPX clip and create a Float session.**
2. **Set the Color Management > Cineon/DPX Working Space preference setting to Log.**

   This keeps the Cineon/DPX files in log space.
3. **Make sure that the Display Options icon is enabled in the Viewer.**

4. **In the Color Management toolbar located below the Display Options icon, make sure that the Colorspace is Cineon and the View Xform is sRGB.**

   These settings will ensure that the log Cineon/DPX images will look correct in the Viewer. If you'd like, you can also adjust the Gain (exposure) and Gamma of the image.
5. **To adjust the brightness of the image in the Viewer, use the Viewer > Display > Gain and Gamma settings.**



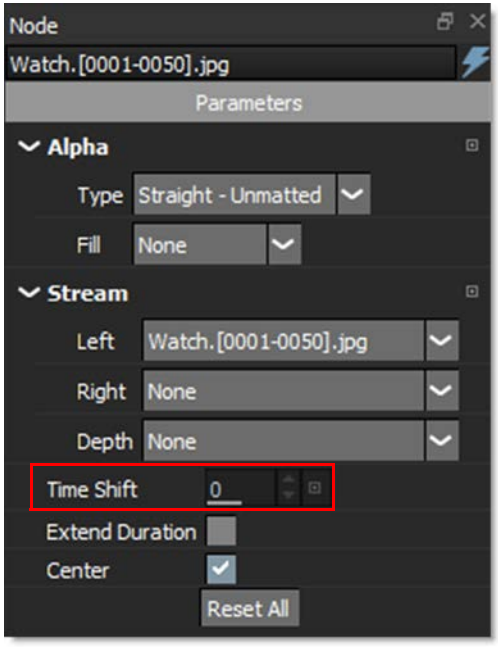
Shifting a Source Node in Time

You can shift a Source node in time. This is useful for lining up frames that are numbered differently.

1 **Single-click on the Source node in the Trees window to view and edit it.**

Once active, the Source node's parameters appear in the Node parameters.

2 **Drag the Time Shift numeric field to the desired frame or enter a value by clicking on the number.**



The start frame for the node is adjusted by the Time Shift value.

Viewer

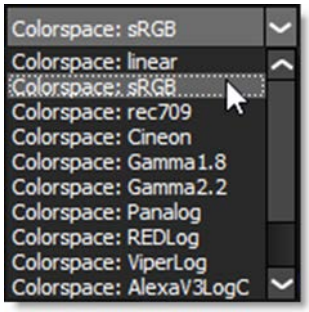
Color Management

Silhouette uses the OpenColorIO standard originally developed by Sony Pictures Imageworks for its color management. You can load custom color configuration files and custom LUTs, apply colorspace conversions, as well as use other controls for fine tuning.

1 **Make sure that the Display Options icon is enabled in the Viewer.**

Silhouette automatically tries to determine the colorspace based on the data in the file and other information from the header.

2 **If not set correctly, change the input colorspace of the current scene using the Colorspace pop-up menu.**

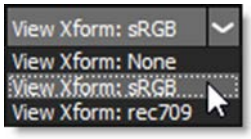


When using Cineon/DPX images with the Color Management > Cineon/DPX Working Space preference set to Linear, the input colorspace should be set to Linear. When the preference is set to Log, the Cineon colorspace should be used.

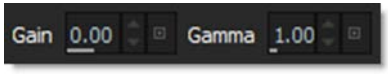
3 **If you are using a custom OCIO configuration with multiple Display options, choose the colorspace of the display using the Display pop-up menu.**

Note: If there is only one Display option, the Display pop-up menu is hidden.

4 **Select the colorspace transform to apply to the scene from the View Xform pop-up menu.**



5 **To adjust the brightness of the image in the Viewer, use the Viewer > Display > Gain and Gamma settings.**



You can select a custom OpenColorIO (.ocio) configuration file by choosing it in the Color Management > OCIO Configuration preference.

For more information on OpenColorIO, including the OCIO file format, please visit **http://opencolorio.org/**.

Using the RGBA buttons in the Viewer

1 **Click on the Red, Green, Blue or Alpha buttons to solo that channel as a gray scale image.**

If only one component is selected, it is displayed in gray scale. The horizontal white bar above the RGBA buttons quickly toggles the display of the image back to full color mode.

2 **Select the horizontal white bar above the RGBA buttons to quickly toggle the display of the image back to full color mode.**

3 **Either press the Alpha button (to the right of the blue button) or the A key to cycle the state of the alpha display.**

Note: To view a shape's alpha channel, you must first set the View to Output before pressing the Alpha button or **A** key.

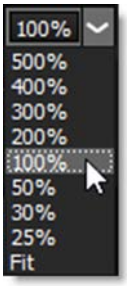
Hitting the Alpha button or **A** key once superimposes the alpha channel over the image. Pressing a second time displays the alpha channel over black. Hitting again shows only the color image.

Shift-A activates RGBA mode which does the following: Toggles the View to Output, superimposes the alpha channel over the image and deactivates the Overlay. Pressing **Shift-A** again returns the Viewer to its previous state.

Viewer Navigation

Zooming

1 **Select a value between 25% and 500% in the Zoom pop-up menu.**



or

2 **Use the scroll wheel on your mouse to zoom in and out of the image.**

or

3 **Press Space Bar-Shift and drag left or right.**

or

4 **Use the + or = keys to zoom in and the - key to zoom out.**

Zoom and Centering Presets

1 **Press the F keyboard shortcut or select Fit from the zoom pop-up window to display the image as large as possible within the Viewer window.**

2 **Press the H keyboard shortcut or double-click the middle mouse button to set the image to a 100% zoom level and center it in the Viewer.**

3 **Press Ctrl(Win)/Cmd(Mac)-F to center the selected object in the Viewer.**

Viewer Rotation

Rotating the Viewer can facilitate rotoscoping and painting.

1 **Select the Rotate icon to enable Viewer rotation mode.**

Once Rotate is enabled, the Adjust Rotation editing control (hand icon) becomes available.

2 **Press the Adjust Rotation icon to enable it.**

3 **Click and drag in the Viewer to set the angle.**

Once the angle has been set, you will need to disable Adjust Rotation to use the node's tools.

4 **Select the Adjust Rotation icon again to disable it.**

Optimizing Playback

Silhouette can cache frames into RAM to guarantee real-time playback. When you hit the play button, each frame is cached into RAM. Once the clip is played through once, it will then play in real-time if enough RAM is available. At the bottom right corner of the interface, there is a numeric readout (Cache Display). It displays the length of your clip, the maximum frames that can be cached into RAM, the percentage of RAM currently being used as well as the session's bit depth.

If your clip is longer than the maximum frames that can be cached into RAM, the clip will not play in real-time.

Preload Frames

1 **Play your source clip to cache it into memory.**

Once cached, playback is instantaneous since the frames are already loaded. In addition, source frames are also automatically cached in a background thread. The amount of preloaded frames is controlled by a Cache > Preload Frames preference with the default value being 10 frames.

2 **Select File > Preferences on Windows and Linux or Silhouette > Preferences on Macintosh.**

3 **Go to the Cache group.**

4 **If you'd like, you can change Preload Frames to a higher value.**

5 **Click Apply.**

Increase Amount of Frames During Playback

There are number of ways to increase the amount of frames that can be played back in real time.

1 **Enable the Viewer > ROI (Region of Interest) to work on a sub-region of the image.**

2 **Select File > Preferences on Windows and Linux or Silhouette > Preferences on Mac and increase the %Total Physical RAM parameter in the Cache preferences (requires a restart of Silhouette to take effect). Please note that setting the % Total Physical RAM too high could cause instability if running other memory intensive programs.**

3 **In the Roto node, change the View from Output to Foreground.**

4 **Shorten the length of the clip by adjusting the First and Last Frame in the Timebar.**

5 **Change the proxy setting to 2:1, 3:1 or 4:1.**

6 **If you are working with film resolution files in a Float session, change the session depth to 8 bits while you work, then switch back to Float for rendering.**

Note: When painting, do not use a proxy setting other than 1:1 and make sure that you remain at the sessions original bit depth. Do not use steps 5 and 6 when painting.

Sequence Editor

Silhouette can perform editing tasks such as cutting, joining, moving, copying, replacing, trimming, retiming and repeating clips in the Sequence Editor. The sequence can then be used as an element in the Trees window.

Creating a Sequence

A sequence is comprised of multiple clips edited together.

1 **Select the New Sequence icon in the Sources window.**

A sequence object is created in the Sources window and the Sequence Editor appears.

2 **Drag and drop clips from the Sources window into the Sequence Editor.**

3 **Drag and drop to insert clips or Alt-drag and drop to replace clips.**

If you select one or more clips in the Sources window before pressing the New Sequence icon, the clips are assembled in selection order using in and out points, if they are set, into a new sequence.

4 **Drag and drop the sequence from the Sources window into the Trees window.**

The sequence can now be used as an element in the Trees window just like any other source.

Marking In and Out Points

Clips in the Sources window can have in and out points which are used when creating a sequence. In and out points are also useful within the sequence to define a region to be moved, copied, replaced or deleted.

1 **Double-click on a clip in the Sources window.**

The clip is loaded into the Viewer and Mark IN and Mark OUT icons appear.

2 **Set the Timebar to the in point.**

3 **Click the Mark IN icon or press the I key.**

4 **Set the Timebar to the out point.**

5 **Click the Mark OUT icon or press the O key.**

When setting in and out points for a clip, the clip takes over the Viewer. To return the Viewer to a sequence or a node, double-click the sequence in the Sources window or a node in the Trees window.

Moving, Copying, Replacing and Deleting

The highlighted selection can be moved, copied, replaced or deleted.

Moving

1 **Click on a clip or drag select multiple clips to select them.**

2 **Click somewhere in the highlighted region and drag and drop to a new location.**

The selection is moved.

Copying

1 **Click on a clip or drag select multiple clips to select them.**

2 **Click somewhere in the highlighted region and Shift-drag and drop to a new location.**

The selection is copied.

Replacing

1 **Click on a clip or drag select multiple clips to select them.**

2 **Click somewhere in the highlighted region and Alt-drag and drop on either a destination clip or a marked region.**

The destination clip or marked region is replaced.

Deleting

1 **Click on a clip or drag select multiple clips to select them.**

or

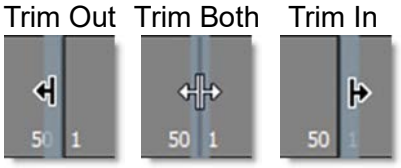
2 **Mark IN and Mark OUT points in the Sequence Editor.**

3 **Press the Delete key.**

The selection is deleted.

Trimming

The head and tail of a clip can be lengthened or shortened using the Trim controls.



Clicking on a cut enables trimming and displays both sides of the cut in the Viewer.

1 **Click and drag in the center of a cut between two clips (double-arrow cursor appears) and both sides of the cut are trimmed.**

2 **Click and drag to the left of the cut (left arrow cursor appears) and the outgoing clip is trimmed.**

3 **Click and drag to the right of the cut (right arrow cursor appears) and the incoming clip is trimmed.**

Note: After selecting the left, right or center of a cut, the left and right arrow keys can be used to trim frames one at a time.

Change Speed and Direction

Modification of the speed and direction of selected clips is possible in the Sequence Editor.

Changing Speed

1 **Click on a clip or drag select multiple clips to select them.**

The Segment Speed field controls the speed of selected clips and displays as a percentage. A value of 50 slows down by 50%, a value of 100 does nothing, and a value of 200 is twice as fast.

2 **Using the Segment Speed field, enter a value of 200 to double the speed.**

3 **Enter a value of 50 to slow the clip down by half.**

Note how the duration field has doubled in duration.

Reversing Direction

1 **Click on a clip or drag select multiple clips to select them.**

2 **Change the playback mode to Reverse in the Segment Direction field.**

The order of the frames is reversed.

Looping A Clip

1 **Click on a clip or drag select multiple clips to select them.**

2 **At the bottom left of the Sequence Editor, increase the Loop Count value from 1 to 3.**

The clip is repeated three times.

3 **Select the Segment Direction: Forward, Reverse or Bounce.**

The clip is repeated three times using the selected direction.

Freeze Frame

1 **Drag the Timebar to the frame you would like to freeze.**

2 **Use Add Edit before and after the frame so a single frame clip is created within the Sequence.**

Note: The Add Edit icon is located at the bottom left of the Sequence Editor.

3 **Zoom the Sequence Editor in using either Middle mouse scroll or Shift-Middle mouse scroll (10x faster) while hovering the cursor over the single frame clip.**

Note: Selecting a single frame clip is difficult unless you zoom in because the trim handles will most likely be selected instead.

4 **Click on the single frame clip to select it.**

5 **Enter the freeze frame duration in the Loop Count field, for instance, 10 for 10 frames.**

6 **Click OK.**

The frame is frozen for the specified period.

Roto

Rotoscoping or “Roto” for short has become a generic term for drawing shapes to extract, isolate or affect a portion of an image. It is tedious work, but it’s one of the most important parts of the visual effects process. Within the Roto node, there are all the tools needed to make quick work of any Roto job.

Creating usable shape animations can be a bit tricky with the most common problem being edge chatter. Here’s a few tips to help you on your way.

Analyze the Clip

View your clip to determine the frame that requires the greatest number of points to create the shape. It is easier to draw your shape on the most complex frame as opposed to starting on a simpler frame and adding points later.

Select a Spline Type

In Silhouette, you can create B-Splines (also known as natural splines), X-Splines, Bézier splines, Circles and Squares.

Create Shapes with Less Points

Use as many points as needed to create the shape, but avoid using more than is necessary. The fewer the points, the easier it is to successfully animate the shape. Unnecessary shape complexity inevitably leads to inconsistency when editing points.

Create Multiple Shapes

Create multiple shapes to Roto complex objects. Drawing separate shapes for the major parts of an object give you finer control over motion especially when separate objects intersect with each other.

Edit the Shape in Groups

Try not to individually move points in a shape unless absolutely necessary. Moving points in groups will maintain consistency and eliminate edge chatter.

Use the Tracker

Use the tracker to analyze the motion of your clip and then apply that motion to your shapes. This will cut down on the number of keyframes needed.

Keyframe, Keyframe, Keyframe

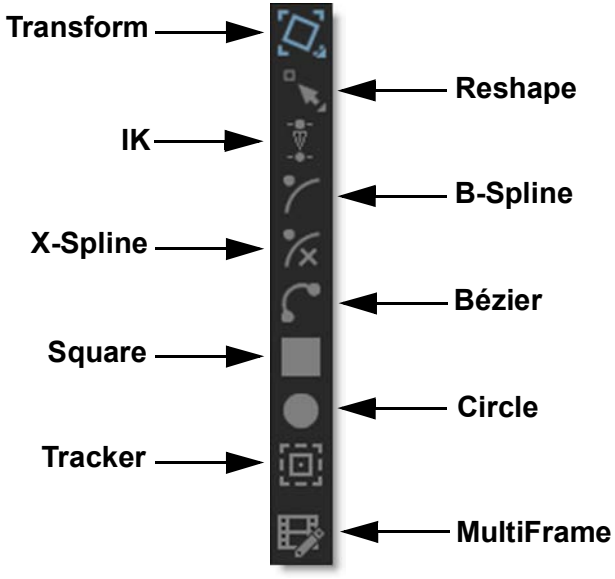
By editing your shape at various frames in the clip, Silhouette animates the shape in between those keyframes. This saves you work. Make as few keyframes as possible, but as many as needed so the shape properly follows the object that you are rotoing. For instance, on a 80 frame clip, start by adding keyframes at 1, 20 and 40. If more animation is needed, add keyframes at 10 and 30. Get the idea? Creating too many keyframes will cause the shape to jitter or chatter.

Quick Start

For the inpatient among you, here's a Roto quick start. For all others, Roto features are covered in more detail after this exercise.

1. **Load some source footage and create a session.**
2. **In the Trees window, add a Roto node from the Nodes > Image group and connect it to the source node.**
3. **Single-click in the center of the Roto node to view and edit it.**

When the Roto node is edited, a number of different tools are selectable from the Toolbar to the left of the Viewer.



4 **View your clip to determine the frame that requires the greatest number of points to create the shape. It is easier to draw your shape on the most complex frame as opposed to starting on a simpler frame and adding points later.**

5 **Select B-Spline (B) from the Toolbar.**

6 **Click on the screen to create a control point.**

A control point is created.

7 **Add as many points as you like.**

8 **When finished adding points, click the first control point that you added to close the shape.**

Use as many points as needed to create the shape, but avoid using more than is necessary. The fewer the points, the easier it is to successfully animate the shape.

Now that you have a shape, you can use either Reshape or Transform to perform editing functions.

9 **Select Reshape (R).**

Reshape modifies shapes by adjusting their control points and tangents.

10 **To move points, select one or more control points and drag the point or points to a new location.**

11 **To add a new control point, Alt-click on a selected shape.**

12 **To delete control points, select them and press the Delete key.**

13 **Go to various frames in your clip and edit the shape using the Reshape tool.**

As the shape is edited on different frames, a keyframe marker is shown in the Timebar to provide a visual display of where there are shape keyframes. The color of the markers is determined by the shape color. If multiple selected shapes have a keyframe on the same frame, the most recently selected object's color has precedence.

Next, instead of modifying the shape's control points, try modifying the entire shape.

14 Click on Transform (T) in the Toolbar.

Transform affects an entire shape or a group of shapes

15 Select a shape and use one of the on-screen controls to modify it.

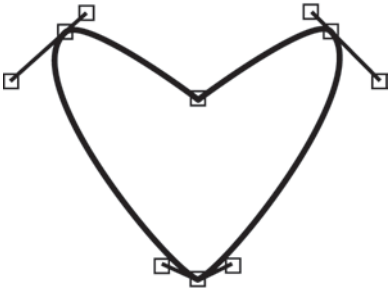
Shortcut	Action
Drag within large center circle	Moves the layer
Shift-drag within large center circle	Constrain layer movement horizontally or vertically
Drag the center square horizontal and vertical halfway points	Scales the layer horizontally or vertically
Drag a center square corner	Proportionally scale the layer
Drag large center circle	Rotate the layer
Ctrl(Win)/Cmd(Mac)-drag large center circle	Rotates the layer with finer control
Drag small center circle	Moves the Anchor point
Q	Activates / Deactivates translation of selected layers
W	Activates / Deactivates rotation of selected layers
E	Activates / Deactivates scaling of selected layers
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments

The **Q**, **W** and **E** keys allow you to quickly translate, rotate or scale selected shapes while using the Transform tool.

16 **Press the Q key to activate translation mode, the W key for rotation mode or the E Key for Scale mode and click and drag to transform the selected shape. You must press the Q, W or E key, whichever one was selected, a second time to deactivate the mode.**

Bézier

Bézier splines are defined by control points and tangents. The position of the two tangent handles control the amount of a point's curvature.



1 **Select Bézier (Shift-B) from the Toolbar.**

2 **Click on the image to place the first control point.**

The starting control point is created and sets the direction of the shape's path.

3 **To extend the control point's tangents, drag the cursor while keeping the mouse pressed.**

Although you can use the Reshape tool to later change a shape's look after drawing it, you can also use the same Reshape keyboard shortcuts to modify a shape while drawing it. See **Adjusting Bézier Curves** for more information on the various ways to change a control point's tangents.

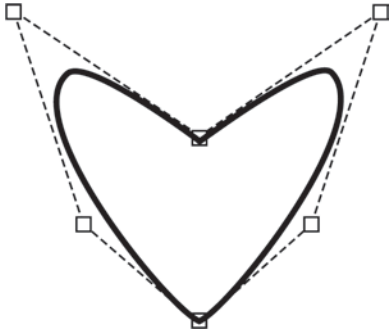
4 **Click on the screen to add more control points.**

5 **When finished adding points, click the first control point that you added to close the shape.**

Use as many points as needed to create the shape, but avoid using more than is necessary. The fewer the points, the easier it is to successfully animate the shape.

B-Spline

In contrast to Béziers, B-Splines don't use tangents and are created by only using control points. The position of the points, their intensity settings as well as their proximity to each other determine the curvature of the shape.



1 **Select B-Spline (B) from the Toolbar.**

2 **Click on the screen to create a control point.**

A control point is created.

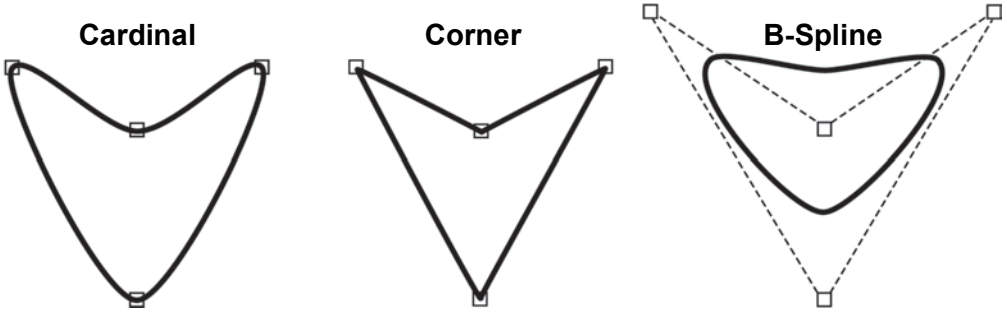
3 **Add as many points as you like.**

4 **When finished adding points, click the first control point that you added to close the shape.**

Use as many points as needed to create the shape, but avoid using more than is necessary. The fewer the points, the easier it is to successfully animate the shape.

X-Spline

A X-Spline is an intuitive and easily editable spline format whereby its points can be of three different types: Cardinal, Corner or B-Spline.



1 **Select X-Spline (S) from the Toolbar.**

2 **Click on the screen to create a control point.**

A control point is created.

3 **Add as many points as you like.**

4 **When finished adding points, click the first control point that you added to close the shape.**

Use as many points as needed to create the shape, but avoid using more than is necessary. The fewer the points, the easier it is to successfully animate the shape.

Square

1 **Select Square (Shift-S) from the Toolbar.**

2 **Do one of the following:**

- **Click and drag in the shape of a square.**
- **To create a perfect square, hold down the Shift key while clicking and dragging in the shape of a square.**

3 **When you release the mouse button, a square shape appears.**

Circle

1 **Select Circle (Shift-C) from the Toolbar.**

2 **Do one of the following:**

- **Click and drag in the shape of a circle.**
- **To create a perfect circle, hold down the Shift key while clicking and dragging in the shape of a circle.**

3 **When you release the mouse button, a circular shape appears.**

Open Shapes

Open shapes are good for rotoscoping strands of hair or thin objects.

1 **Select either Bézier, B-Spline or X-Spline from the Toolbar.**

2 **Click on the screen to create a control point.**

A control point is created.

3 **Add as many points as you like.**

4 **When finished adding points, select the Reshape tool.**

You can also press the **Esc** key to finish the shape.

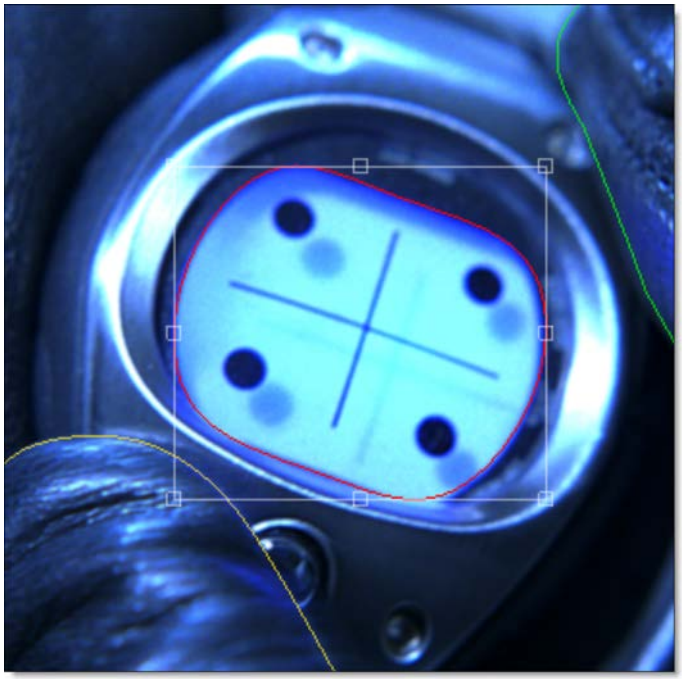
5 **Select the open shape and in the Object window, adjust the Stroke Width to set its thickness and choose a Flat or Round Cap Style.**

Transform

Once you draw a shape, there are various ways to modify it. As the object that you are attempting to Roto changes over time, you will need to adjust the shape so that it exactly matches the object. The Transform tool affects an entire shape or a group of shapes.

Shape Mode

Transform Shape Mode allows you to position, move, scale, rotate, shear or corner-pin a shape or selection of shapes using the on-screen controls.



1 **Click on Transform (T) in the Toolbar.**

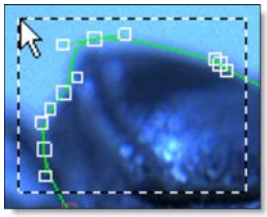
2 **Select a shape.**

3 **Use one of the on-screen controls to modify the shape. See the tutorials to follow for more detail on using the On-screen controls.**

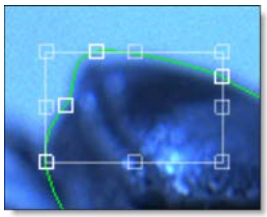
Points Mode

Transform Points Mode allows you to position, move, scale, rotate, shear or corner-pin a selection of points using the on-screen controls.

1 **Using Reshape (R), select multiple points on the shape.**



2 **In the Toolbar, click on Transform twice (TT).**



A bounding box with on-screen controls appears around the selected points instead of around the entire shape.

3 **Use one of the on-screen controls to modify the shape. See the tutorials to follow for more detail on using the On-screen controls.**

Moving Shapes

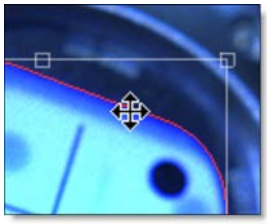
Shapes can be moved horizontally or vertically.

Note: The remainder of the Transform tutorials assume that Transform Shape Mode is enabled in the Toolbar.

1 **Make sure that Transform (T) Shape Mode is enabled.**

2 **Select a shape or series of shapes.**

3 **Drag on the outline of one of the shapes.**



or

4 **Press the Q key to activate translation mode and click and drag to move the shapes.**

5 **You must press the Q key a second time to deactivate translation mode.**

To constrain movement along an axis:

1 **Select a shape or series of shapes.**

2 **Press the Shift key while dragging the outline of a shape. The movement is constrained by the first direction (horizontal or vertical) that you drag in.**

Nudging Shapes

Shapes can be nudged horizontally or vertically using the **Arrow** keys. One press of the **Arrow** key moves the shapes 1 pixel. Using the **Shift** key in conjunction with the **Arrow** keys moves the shapes 10 pixels.

1 **Select a shape or series of shapes.**

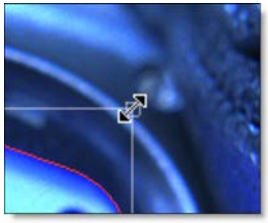
2 **Use the Arrow keys to nudge the shapes.**

Scaling Shapes

Scaling changes the size of the shapes.

1 **Select a shape or series of shapes.**

2 **Drag any of the points on the shape bounding box.**



or

3 **Press the E key to activate scaling mode and click and drag to scale.**

Note: The position of the cursor when **E** is pressed sets the anchor point for the scaling.

To proportionately scale, hold down the **Shift** key when scaling.

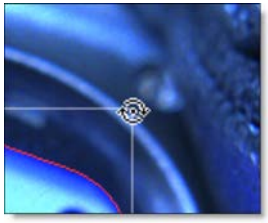
4 **You must press the E key a second time to deactivate scaling mode.**

Rotating Shapes

Rotating changes the angle of the shapes.

1 **Select a shape or series of shapes.**

2 **Ctrl(Win)/Cmd(Mac)-drag on a shape bounding box corner handle.**



or

3 **Press the W key to activate rotation mode and click and drag to rotate.**

Note: The position of the cursor when **W** is pressed sets the anchor point for the rotation.

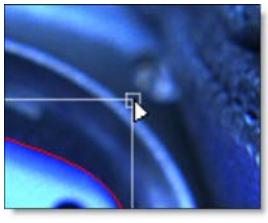
4 **You must press the W key a second time to deactivate rotation mode.**

Corner-Pinning Shapes

The corner points of a shape's bounding box can be corner-pinned. For instance, you could fit the corners of a shape into the corners of a billboard.

1 **Select a shape.**

2 **Alt-drag the corners of the shape's bounding box.**

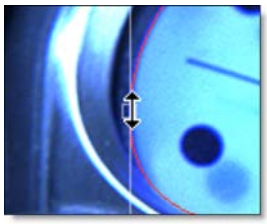


Shearing Shapes

Shapes can be sheared resulting in the shape being skewed horizontally or vertically.

1 **Select a shape.**

2 **Ctrl(Win)/Cmd(Mac)-drag on the midpoints of a shape bounding box on either the horizontal or vertical axis.**

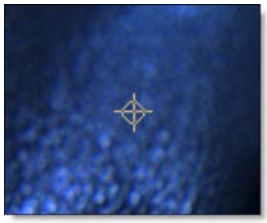


Anchor Point

A shape rotates around its center point, but scales from the opposite handle. Moving the anchor point changes the center of rotation and scaling when using the on-screen controls.

1 **Press the . (period key).**

The Anchor Point is displayed on the screen.



2 **Click and drag the Anchor Point to the desired location.**

3 **Select your shape and then rotate or scale it.**

Notice how the shape rotates and scales around the Anchor Point.

Note: If more than one shape is selected, they will both rotate and scale around the Anchor Point.

Copying and Pasting Shapes

Shapes can be cut(**Ctrl(Win)/Cmd(Mac)-X**), copied(**Ctrl(Win)/Cmd(Mac)-C**) and pasted(**Ctrl(Win)/Cmd(Mac)-V**).

Deleting Shapes

A shape or selection of shapes can be easily deleted using none other than the **Delete** key.

1. **Select a shape or set of shapes.**
2. **Hit the Delete key.**

Reshape

The Reshape (R) tool modifies shapes by adjusting their control points and tangents.

Adding Control Points

Adding control points assists in tracing more detailed objects.

1 **Select Reshape (R) from the Toolbar.**

2 **Alt-click on a selected shape to add a new control point.**

Don't click on an existing control point because it will move it instead.

Deleting Control Points

1 **Select the control points and press the Delete key.**

or

2 **Right-click on a control point and select Delete from the Reshape pop-up menu.**

Moving Control Points

1 **Select one or more control points.**

2 **Drag the point or points to a new location.**

Nudging Points

Points can be nudged using the **Arrow** keys. One press of the **Arrow** key moves the points 1 pixel. Using the **Shift** key in conjunction with the **Arrow** keys moves the points 10 pixels.

1 **Select a point or series of points.**

2 **Use the Arrow keys to nudge the points.**

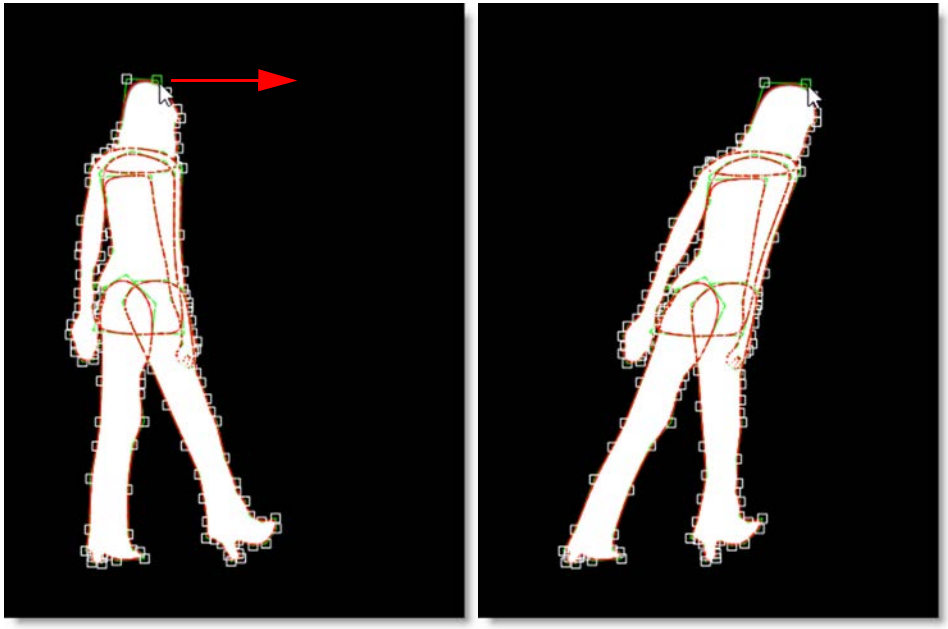
Magnetic Mode

1 **In the Toolbar, click on Reshape to cycle between Normal and Magnetic mode.**

2 **Select a series of points.**

3 **Drag one of the selected points.**

Points near the cursor move more than points farther away.



Numbering Points

All points or a selection of points can be numbered.

Numbering All Points

1. **Go to File > Preferences > Shape on Windows and Linux or Silhouette > Preferences > Shape on Mac.**
2. **Set the Number Points preference to All.**
3. **Click OK.**

Numbers are now displayed next to all points.

Number One Point or a Selection of Points

1. **Using the Reshape (R) tool, select one or more points.**
2. **Right-click on one of the selected control points and select Tag.**

The points are now tagged for numbering.

3. **Go to File > Preferences > Shape on Windows and Linux or Silhouette > Preferences > Shape on Mac.**
4. **Set the Number Points preference to Tagged.**
5. **Click OK.**

Numbers are now only displayed next to tagged points.

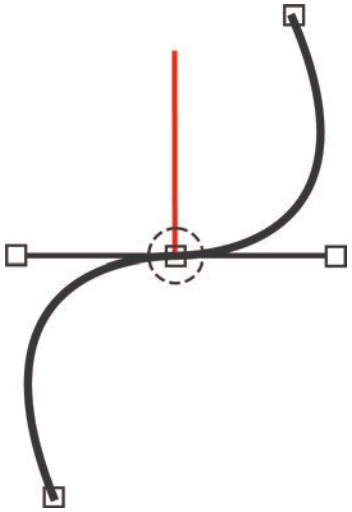
Feather

Shape points can be feathered to create variable edged blurs on a point by point basis.

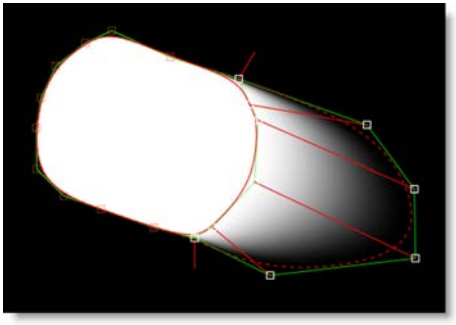
Closed Shapes

1 **Select Reshape (R) from the Toolbar.**

2 **Select a shape point and a red, outward feather handle appears. Dragging this handle outward will pull the feather out.**



After the initial drag, the outer feather point can be dragged around independently.



Multiple selected points can be dragged simultaneously and by a proportionate amount. To move the shape and feather points simultaneously, press **Shift** while moving the shape point.

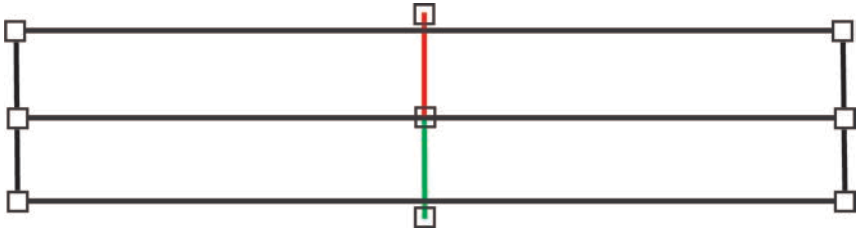
Note: The display of the feather handles can be hidden using **Shift-F**.

Open Shapes

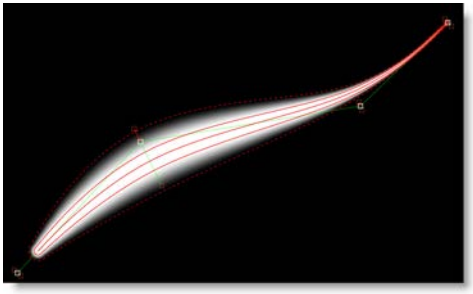
1 **Select Reshape (R) from the Toolbar.**

2 **Select an open shape, adjust the Stroke Width to set its thickness and choose either a flat or round Cap Style in the Object window.**

Once you've done this, additional per-point feather handles appear--a red one for the Stroke Width and a green one for the Feather.



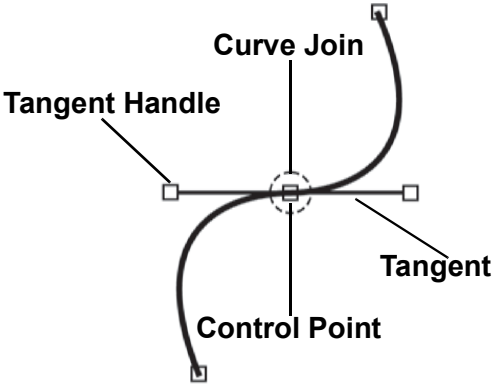
Just drag on the handles to make adjustments.



3 Multiple selected points can be dragged simultaneously and by a proportionate amount.

Adjusting Bézier Curves

The length and direction of a control point's tangents direct the curve through that control point.

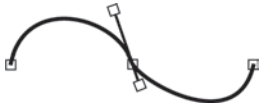


Control points have two tangents that can extend from it. The path of the curve through the control point is determined by the length and orientation of the tangents. When you drag one tangent's handle, the adjacent tangent moves as well.

1 **Select a control point on a Bézier shape.**

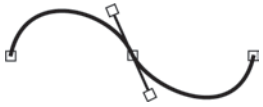
2 **Click and drag a tangent handle.**

This adjusts the length of one tangent while retaining a fixed angle between the two tangents.



3 **Ctrl(Win)/Cmd(Mac)-drag a tangent.**

This adjusts both tangents simultaneously while retaining a fixed angle between the two tangents.



4 **Alt-drag a tangent.**

Only one tangent is moved which is useful for creating corners.

5 **Right-click over a control point and select Linear, Corner or Cardinal.**

Linear adjusts both tangents one quarter the distance and in the direction of their adjoining control points. Corner collapses both tangents to create a corner point. Cardinal creates a smooth point where the curve passes smoothly through it.

Extending Short Tangents

Sometimes a control point's tangents are so close together that trying to modify the tangent results in movement of the control point. If this is the case, you can force the tangents to move without affecting the control point.

1 **Press the Alt key while dragging the tangent.**

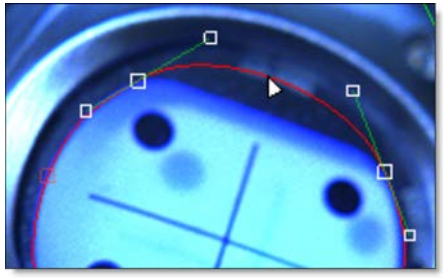
Only the tangent will move, leaving the control point unaffected.

Moving Curve Segments

Normally, you move control points to adjust the form of a shape, but you can also move the portion of the curve between control points.

1 **Deselect all control points by clicking somewhere off the shape.**

2 **Ctrl(Win)/Cmd(Mac)-drag a Bézier curve segment between control points.**



Once you start dragging, the **Ctrl(Win)/Cmd(Mac)** key can be released.

Note: The surrounding tangents remain smooth, but if you want to keep adjacent tangents from moving, hold down the **Alt** key while dragging.

Adjusting B-Splines

B-Splines are created by only using control points and are simple to adjust. The position of the points, their weight settings as well as their proximity to each other determine the curvature of the shape. The weight (amount of pull on a point) decides how sharp or smooth it is. Silhouette employs variable weight intensities on a point by point basis.

1. **Select a control point on a B-Spline shape.**
2. **Alt-drag the point to the right to create a corner point or Alt-drag to the left to create a smooth point.**

   or

3. **Alt-click to cycle through the preset weight settings of the point.**

   or

4. **Right-click over a control point and select Corner or B-Spline.**

Note: The **Alt**-click and pop-up menu preset weight settings for Corner and B-Spline can't be animated.

Adjusting X-Splines

X-Splines are created by using control points and then adjusting their weight to coincide with one of the point types: Cardinal, Polygon or B-Spline. The point type can even be somewhere in between one point type and another.

1. **Select a control point on a X-Spline shape.**
2. **Alt-drag the point to the right. The tension of the point goes from Cardinal to Corner to B-Spline.**

   or

3. **Alt-click to cycle through the different point types.**

   or

4. **Right-click over a control point and select Corner, Cardinal or B-Spline.**

Converting B-Splines or X-Splines to Bézier Splines

You may convert your B-Splines or X-Splines to Bézier Splines at any time.

1. **Select a B-Spline or X-Spline shape.**
2. **Select Actions > Edit > Convert to Bézier.**

Once you select Convert to Bézier, a couple of things happen. The visibility of the B-Spline or X-Spline is toggled to off. A new Bézier Spline is created and is named the same as the B-Spline or X-Spline but has an * at the end of the name.

Note: The Bézier conversion of B-Splines that use extreme, variable weight adjustments will not exactly match the original B-Spline. Do not use extreme, variable weight adjustments if you are planning on converting the B-Spline to a Bézier.

Copying and Pasting Shapes

Selected shapes can be cut(**Ctrl(Win)/Cmd(Mac)-X**), copied(**Ctrl(Win)/Cmd(Mac)-C**) and pasted(**Ctrl(Win)/Cmd(Mac)-V**).

Breaking Shapes

In the Reshape tool, closed shapes can be opened using the Break option from the control point pop-up menu.

1. **Select and right-click on a control point.**
2. **Choose Break from the pop-up menu.**

The shape opens at the selected control point.

Closing and Extending Shapes

Shapes can be closed or extended with just a few mouse clicks. It is necessary to use the Reshape tool to perform the following actions.

Closing Shapes

1. **Select one of the control points at the end of the shape.**
2. **Alt-click on the other end point to close the shape.**

Extending Shapes

1. **Select a control point at either end of an open shape.**
2. **Alt-click somewhere off the shape.**

Joining Open Shapes

In the Reshape tool, open shapes can be joined together.

1. **Select one of the end points of the source shape by clicking on it.**
2. **Make sure both shapes are selected in the Object window.**
3. **Alt-click on one of the end points of the target shape.**

The two shapes are now joined together as one.

4 **Repeat steps 1 and 3 for the two remaining end points to close the shape.**

Note: The target shape inherits the attributes of the source shape.

Combine Shapes

Copies the selected control points from a source shape into a target shape, placing them between two adjacent selected points in the target shape.

1 **Select one or more points on a source shape.**

2 **Ctrl(Win)-Cmd(Mac)-click the target shape in the Object List.**

3 **Select two adjacent points on a target shape.**

4 **Choose Combine Shapes from the pop-up menu.**

The selected points from the source shape are copied between the two selected points in the target shape.

Extract Shape

Extracts the selected points of a shape into a new closed shape.

1 **Select three or more shape control points.**

2 **Choose Extract Shape from the pop-up menu.**

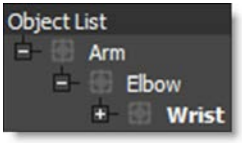
The selected controls points are used to create a new closed shape while removing the points from the original shape.

IK (Inverse Kinematics)

In computer graphics, inverse kinematics (IK) is a technique that provides automatic movement of objects. It allows elements of an object to be linked, such as the parts of an arm or leg, and causes them to move in a prescribed, realistic manner. IK simplifies the process of rotoscoping jointed, segmented figures by making the motion of each part related to the motion of the linked parts. That way, you simply have to animate the starting and ending joints, and the ones in between will adjust themselves and create more natural looking movement.

1. **To create an IK chain for an arm, create three layers.**
2. **Name the layers as follows: Arm, Elbow, Wrist.**
3. **Move the Elbow layer into the Arm layer.**
4. **Move the Wrist layer into the Elbow layer.**

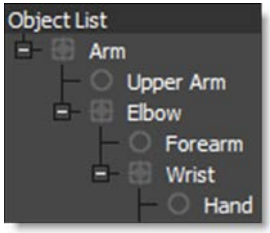
Your layers should look like this:



Create shapes for each layer.

5. **Select the Arm layer and create a shape for the upper arm.**
6. **Select the Elbow layer and create a shape for the forearm.**
7. **Select the Wrist layer and create a shape for the hand.**

The layers and shapes should look like this:



Now that the layers and shape have been setup, the joints need to be placed by positioning the Anchor Point of each layer using the Transform tool.

8. **Select the Arm layer in the Object List and activate the Transform (T) tool.**

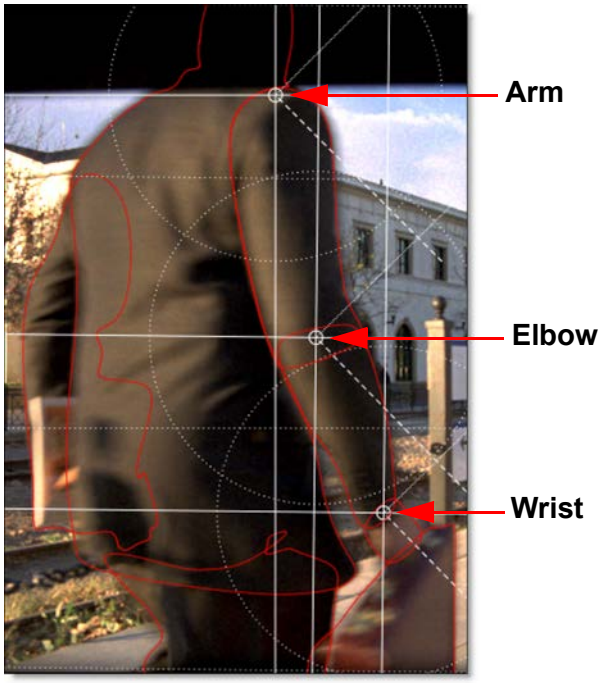
9 **Move the center Anchor Point on-screen control so that it is positioned at the top of the shoulder.**

10 **Select the Elbow layer and position the Anchor point at the elbow.**

11 **Select the Wrist layer and position the Anchor point at the wrist.**

Your image will be different, but the joints should look something like this:

Joints



12 **Select IK (Y) in the Toolbar.**

13 Select the Upper Arm, Forearm and Wrist shapes and an IK chain is built on the fly that flows up the shape's layer tree to the top-most layer.

Each layer's Anchor Point becomes a joint in the IK chain. The "bones" are just the connections between the layer anchors.

14 Click-drag a bone or shape to rotate the shape around the parent's anchor point.

When animated, keyframes are automatically set for each layer's rotation parameter. However, you can explicitly set the layer rotation keyframes by right-clicking on a selected bone and a choosing Add Key.

15 Click-drag a joint to use IK to rotate all joints up the chain.

16 Alt-click-drag a joint to move the joint while attempting to keep other joints in place.

IK greatly simplifies the rotoscoping of humans, animals and all manner of jointed creatures.

Note: To quickly jump between the Reshape, Transform, and IK tools while editing a shape, use the shortcut keys: **R** for Reshape, **T** for Transform and **Y** for IK. **R**, **T** and **Y** are very convenient since they are right next to each other.

MultiFrame

MultiFrame modifies the Transform and Reshape tools to allow you to make adjustments across all previously set keyframes or a selection of keyframes.

1 **Select MultiFrame (M) in the Toolbar.**

A red outline is drawn around the Viewer to let you know that MultiFrame is active.

2 **Drag the red ends of the MultiFrame range bar at the top of the Timeline to limit the keyframes affected by MultiFrame.**

The MultiFrame range is displayed in the status bar while it is being edited.

3 **Select either the Transform or Reshape tools, make a selection and modify the shape.**

Only keyframes defined in the MultiFrame range are adjusted.

Rendering Shapes to Channels

Shapes can be assigned to different channels of an image when rendering.

1. **Create four shapes.**
2. **Select a shape and in the Object window, set the Channel parameter to Red.**
3. **Assign the other three shapes as Green, Blue and Alpha.**

   Now that you have assigned the shapes to different channels, you can visualize the results prior to rendering using View > Channels in conjunction with the **Alt-R**, **G**, **B** and **A** shortcut keys.

4. **Choose View > Channels.**
5. **Use the Alt-R, G, B and A shortcut keys to see which shapes are assigned to the various channels.**
6. **When ready, render shapes into the assigned channels by connecting the Roto node's Channels output to an Output node.**
7. **In the Output node, choose a file format that supports RGBA and make sure that RGB and Alpha are enabled in the Channels field.**

Rendering Shape Outlines or Color Filled Shapes

Shapes can be outlined or filled with a color and rendered in the RGB output.

1. **Create some shapes.**
2. **In the Node parameters, activate Color > Enable.**
3. **Turn up the Outline Size parameter.**

   The shape outlines will now render in the RGB output. To change the shape's outline color, use the Shape > Color parameter.

4. **Set the Outline Size parameter to 0 and turn up the Fill Opacity.**

   The shapes are now filled with a color in the RGB output.

5. **Select an individual shape and change the color in the Object window.**

   Each shape can have its own color.

6. **If you'd like, you can globally change the opacity using the Color > Fill Opacity node parameter. You can also change the opacity of each shape separately using the Shape > Opacity control in the Object window.**

Importing and Exporting Shapes

Export

Silhouette, After Effects, Elastic Reality, Fusion, gMask (Combustion, Flint, Flame, Inferno), Nuke and Shake 4.x SSF shapes can all be exported.

Silhouette

1 **Select the shapes that you want to export.**

If you are exporting using the Silhouette Shapes format, you can also export layers.

Note: Open shapes can only be exported using the Silhouette and Nuke 9+ Shapes formats.

2 **Choose File > Export and select the shape format that you would like to export to.**

To export to After Effects masks, use the Silhouette Shapes option. The Silhouette Shape Import/Export Plug-in is then required to import Silhouette Shapes into After Effects.

3 **When the file browser opens, type a name and click OK to save the file.**

A file is saved with the appropriate file extension.

Note: When exporting to Nuke, you can optionally fully bake shape and transform data, convert opacity to Nuke Lifetime, and export the Silhouette project name as determined by the **Nuke 9+ Shapes preferences**.

After Effects

The Silhouette Shape Import/Export Plug-in for After Effects is required to export After Effects masks to Silhouette Shapes. When exporting After Effects masks, the following shape parameters transfer into Silhouette: opacity, blur, shape color, shape name, invert and locked states, transfer mode and per-shape motion blur state.

1 **Start Adobe After Effects, open a project and select a layer in the Timeline that contains After Effects masks.**

2 **From the After Effects File menu, choose Export > Silhouette Shapes.**

A file browser opens.

3 **Type a name and press OK to save the file.**

All After Effects masks from the selected layer are exported and a file is saved with a .fxs file extension.

Import

Silhouette

Silhouette, After Effects, Commotion, Elastic Reality and Shake 4.x SSF shapes can all be imported into Silhouette.

1 **Choose File > Import and select the shape format that you would like to import.**

A file browser opens.

2 **Select the shape file to import and click OK.**

The shapes are added to the current session.

Commotion Import Notes

When importing Commotion shapes into Silhouette, the following shape parameters transfer into Silhouette: shape visibility, shape locked state, shape motion blur on/off state. If the shape is invisible in Commotion, it will start out invisible in Silhouette, so it might not look like it was imported unless you have the Object List open.

Shake Import Notes

Shake 4.x shapes are imported into Silhouette, but attributes such as feathering, color and opacity are ignored.

After Effects

The Silhouette Shape Import/Export Plug-in for After Effects is required to import Silhouette Shapes and convert them to After Effects masks. When importing Silhouette Shapes, the following shape parameters transfer into After Effects: opacity, blur, shape color, shape name, invert and locked states, transfer mode and per-shape motion blur state.

1 **Start Adobe After Effects, open a project and select a layer in the Timeline.**

2 **From the After Effects File menu, select Import > Silhouette Shapes.**

A file browser opens.

3 **Select the shape file to import and click OK.**

Combustion

Import Shapes into Combustion

1 **In a Mask operator, click on the Settings tab.**

2 **Under Mask Setups, click on Import and select the gMask file that you saved from Silhouette.**

Elastic Reality

Import Shapes into Elastic Reality

1 **With an Elastic Reality project open, select Shape >Import.**

2 **When the File Browser opens, choose the .ers file that you saved from Silhouette.**

Flint / Flame / Inferno

Importing Shapes into Flint / Flame / Inferno

1 **Open the Garbage Mask Setup menu.**

2 **Click Load Setup.**

3 **When the File Browser opens, select the gMask file that you saved from Silhouette.**

Fusion

Importing Shapes into Fusion

1 **From a file browser window, drag the .setting file that you saved from Silhouette and drop it into a Fusion flow.**

Nuke

Importing Shapes into Nuke

When using the Nuke 9+ Shapes export option, Nuke will import open/closed shapes, the shape feather, opacity, blend mode, invert, motion blur, outline color, fill color, shape blur (inner and outer blur only), and visibility. The layer's blur, visibility and motion blur are also imported in addition to the node blur. You can optionally fully bake shape and transform data, convert opacity to Nuke Lifetime, and export the Silhouette project name as determined by the **Nuke 9+ Shapes preferences**.

1 **Select File > Open and choose the .nk file that you saved from Silhouette.**

Note: The imported shapes are set to render into the alpha channel only.

Importing Shapes into Shake 4.x

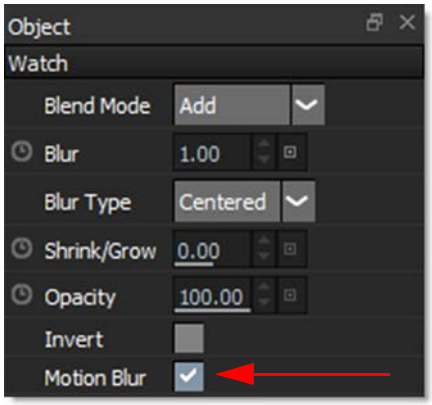
Shake will import the shape name, locked/unlocked state, opacity, visibility, motion blur on/off, shutter angle, and shutter phase. In addition, subtractive shapes import into Shake as black in the RGB channels with a white alpha channel.

1. **Create a RotoShape node.**
2. **Click on the Import Shape Data from File icon.**
3. **When the File Browser opens, select the .ssf file that you saved from Silhouette.**
4. **Drag the slider in the Timebar to see your shape.**

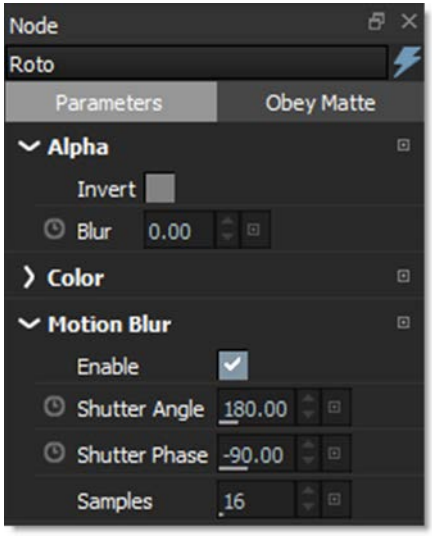
Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. To use Motion Blur, it must be activated for each individual shape as well as in the Roto node.

1 **Select one or more shapes and enable Motion Blur in the Object window.**



2 **In the Node parameters, enable Motion Blur and adjust the Shutter Angle, Shutter Phase and Samples as desired.**



When working with motion blur, it is best to keep your View set to Foreground. This way editing your shape will be quick and interactive.

3 **Set your View to Foreground.**

When you need to view the motion blurred alpha channel, use **Shift-A**. **Shift-A** toggles the View to Output, superimposes the alpha channel over the image and deactivates the Overlay. Pressing **Shift-A** again returns the Viewer to its previous state.

4 **To view the motion blurred alpha channel, press Shift-A.**

Note: Normally, motion blur is calculated going forward, so if there is no shape motion beyond the end of a clip, there won't be motion blur on the last frame. To work around this, add an extra frame or two to the end of the work range in the Timebar, enable Show Work Range in the Timeline context menu, and then move the shape's last keyframe to be outside of the session range.

Renaming Objects

You can rename a shape, layer or tracker by:

1 **Click on the object once to select it, hit the Enter key, type in the new name and press Enter again.**

or

2 **Double-click the object, type in a new name and hit the Enter key.**

or

3 **Right-click on the object, select Rename and type in a new name.**

Adding Notes

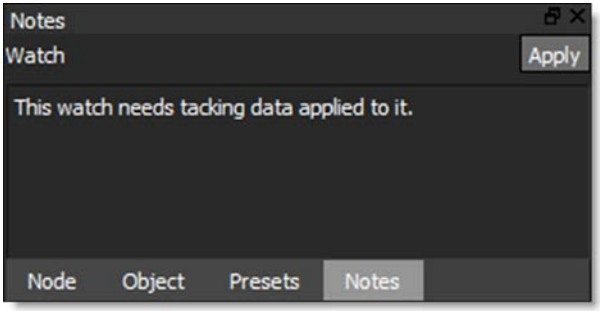
You can type an arbitrary length note for selected objects. Currently, only shapes, trackers and layers are supported.

1 **Select a shape, tracker or layer.**

2 **In the Object List, click the Notes icon to the right of the selected object.**

The Notes window comes forward.

3 **Click in the Notes tab and type your note.**

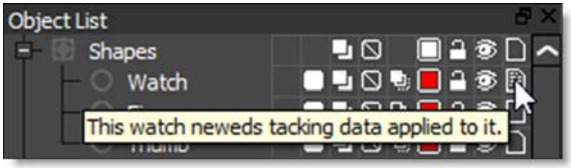


Because you can type multiple paragraphs into the Notes window, you must press Apply to assign the note.

4 **Click Apply in the notes window.**

The center of the Notes icon fills in once a note is applied to the object.

5 **Hover over the Note icon in the Object List and the note is displayed as a tool tip.**



Timebar Keyframes

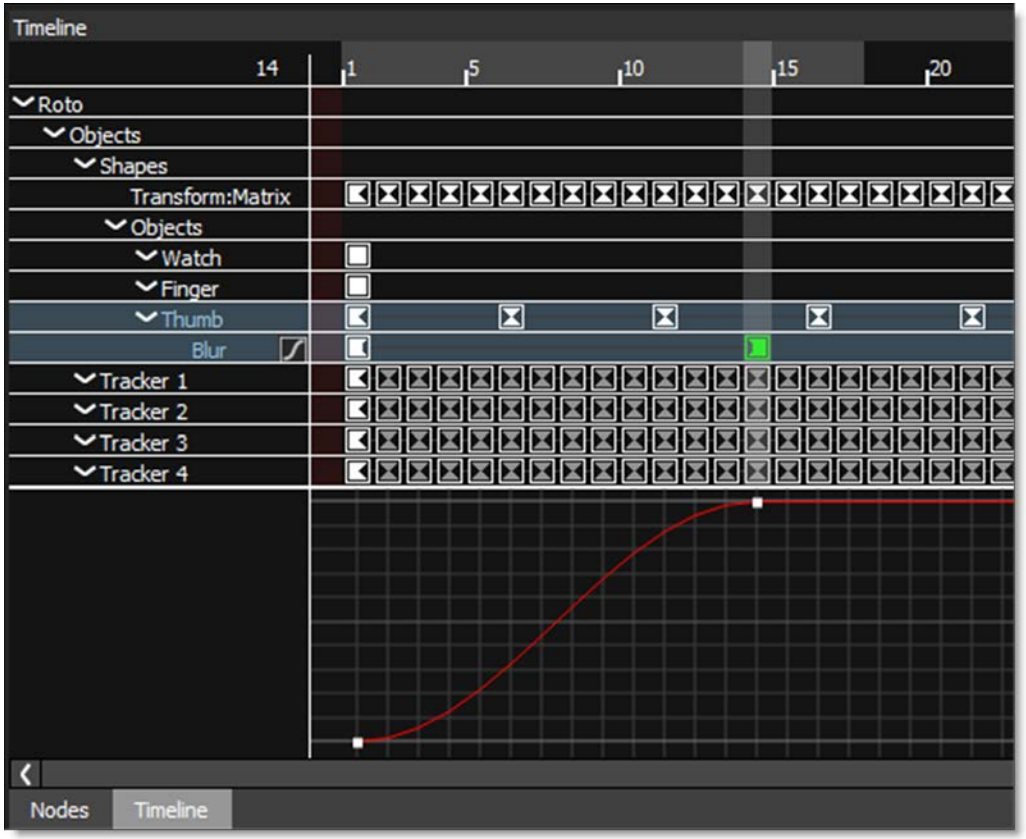
Colored markers in the shuttle area signify where selected objects have keyframes. These keyframes can be moved to a new position. Objects that display keyframes in the Timebar are shapes, trackers and painted frames. Path keyframes are shown for shapes, position keyframes for trackers and painted frames when in the Paint node.

The color of the markers is determined by the object color. If multiple selected objects have a keyframe on the same frame, the most recently selected object's color has precedence.

1. **Press Shift-Alt and hover over one of the colored markers.**
2. **When the cursor changes to a double arrow, click and drag the marker to a new location.**

Using the Timeline

The Timeline is an overall view of all animated parameters. It provides you with the tools necessary to view, edit, move or delete keyframes as well as change their interpolation type using a Curve Editor.



Zooming the Timeline In or Out

1 **Use the scroll wheel to zoom the Timeline in and out.**

or

2 **Shift-Middle-mouse drag in the Timeline.**

Panning the Timeline

1 **Use the Spacebar and click and drag to pan horizontally or vertically in the Timeline.**

Changing the Work Range

The Timeline displays the full session range with the work range displayed using a gray bar at the top of the Timeline.

The work range can quickly be adjusted by:

1. **Ctrl-drag the ends of the work range bar to change the start and end.**
2. **Ctrl-drag the work range bar to slide it forward and back while maintaining the duration.**

Moving One Keyframe

1. **Click on a keyframe to select it.**
2. **Drag the selected keyframe to its new time.**

Moving a Selection of Keyframes

1. **Click on the starting keyframe to select it.**
2. **Shift-click on the ending keyframe.**

   A range of keyframes is selected.
3. **Click and drag one of the selected keyframes to the new location.**

   All selected keyframes move to the new location.

Adding a Marker

1. **Move the Timebar to the desired frame.**
2. **Right-click in the Timeline and select Marker > Create/Edit.**
3. **Enter the marker text and click OK.**

   A light blue marker is displayed at the top of the Timeline.

Curve Editor

The Curve Editor is a view mode in the Timeline that allows you to work with keyframe animations expressed as curves on a graph. It allows you to visualize the interpolation of the animation.

1 **Animate a parameter by setting a couple of keyframes.**

Once a parameter is animated, the Curve Editor icon appears to the right of the parameter in the Timeline.

2 **Enable the Curve Editor icon.**

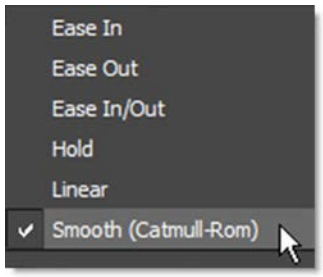
The Curve Editor appears at the bottom of the Timeline.

3 **Use the + or = keys to zoom in, the - key to zoom out or Space Bar-drag to pan the Curve Editor.**

4 **Click and drag a point to move it and Alt-click on the curve to add a new point.**

5 **Right-click on a keyframe in the Timeline or a point in the Curve Editor to bring up the pop-up menu.**

The pop-up menu allows you to change the keyframe interpolation.



Roto Blend

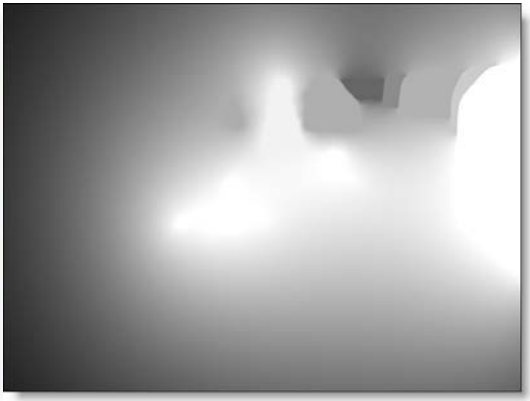
The Roto Blend node smoothly blends the opacity of shapes together.

1. **Load some source footage and create a session.**
2. **In the Trees window, add a Roto Blend node from the Nodes > Image group and connect it to the source node.**
3. **Single-click in the center of the Roto Blend node to view and edit it.**
4. **Create multiple shapes.**
5. **Set each shape's opacity to a different level.**

   The shape's different opacities automatically blend from one to another.

Before

After



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6. **In the Roto Blend node parameters, you can change the Precision from Normal to Better for higher quality shape blending.**

Tracker

Planar Trackers

Silhouette includes two Planar Trackers: Silhouette's Planar Tracker and Imagineer's mocha Planar Tracker. Regardless of which one you use, the workflow is the same.

The key to getting the most out of the Planar Trackers is to learn to find planes of movement in your shot which coincide with the object that you want to track. Sometimes it will be obvious--other times you may have to break your object into different planes of movement. For instance, if you were tracking a tabletop, you would want to draw a spline to avoid a flower arrangement in the center of the table, since it is not on the same plane and will make your track less accurate.

Both Planar Trackers require that you create a layer in the Object List and have at least one shape within it to drive the tracker.

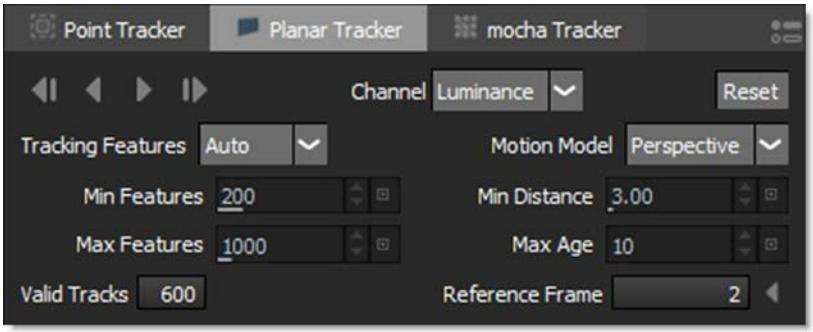
Note: The Tracker is available as a separate node, but is also built into the Depth, Morph and Roto nodes. This tutorial demonstrates the use of the Tracker from within the Roto node.

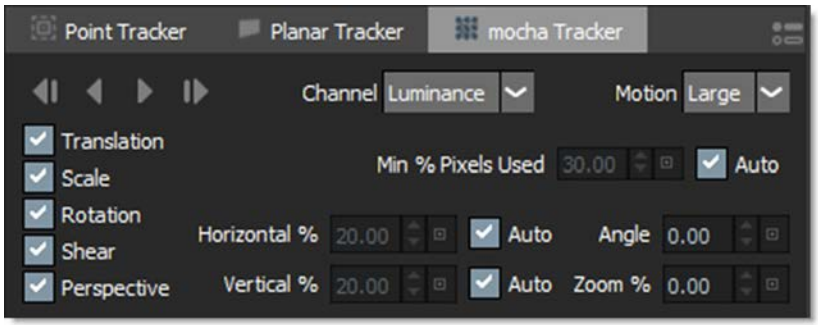
1. **Load some source footage and create a session.**
2. **In the Trees window, add a Roto node from the Nodes > Image group and connect it to the source node.**
3. **Single-click in the center of the Roto node to view and edit it.**
4. **Go to the frame where you want to start tracking.**
5. **Set the View to Foreground for the fastest speed when tracking. In the Foreground view, no processing occurs and therefore it is faster than View > Output.**
6. **Create a layer in the Object List using the Add Layer icon.**

7. **Inside of the new layer, create a shape around the object that you would like to track and make sure that there is some detail inside of the shape. It does not have to be exact and it is best to leave a little extra room around the object. In addition, you can use more than one shape as long as they are on the same geometric plane.**

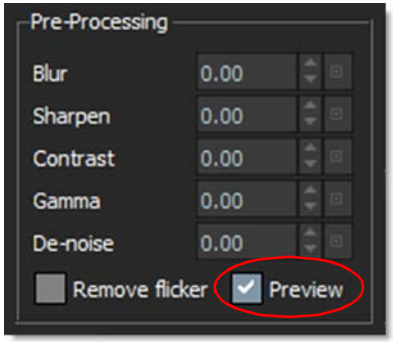
8 **Choose the Tracker (Shift-T) in the Toolbar.**

9 **In the Tracker tab located at the bottom of the screen, select either the Planar Tracker or mocha Tracker tab.**



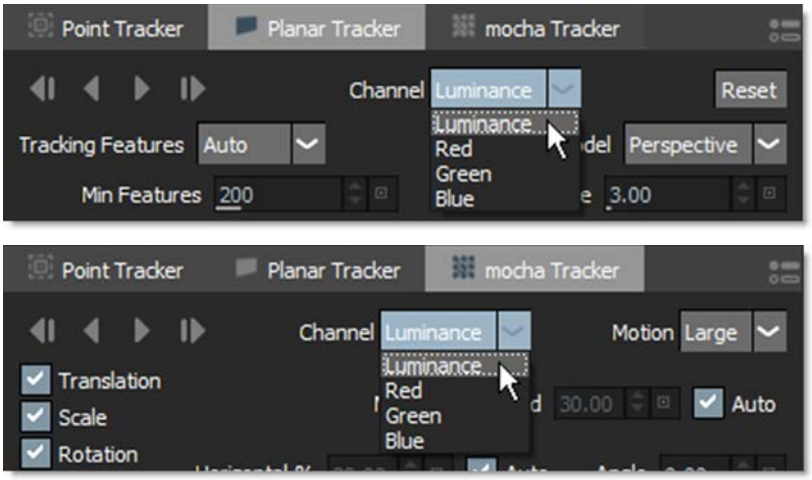


10 **Enable Preview in Pre-Processing.**



The image in the Viewer becomes black and white and displays the color space that you will track in.

11 Select the color space to track with in the Channel pop-up menu.



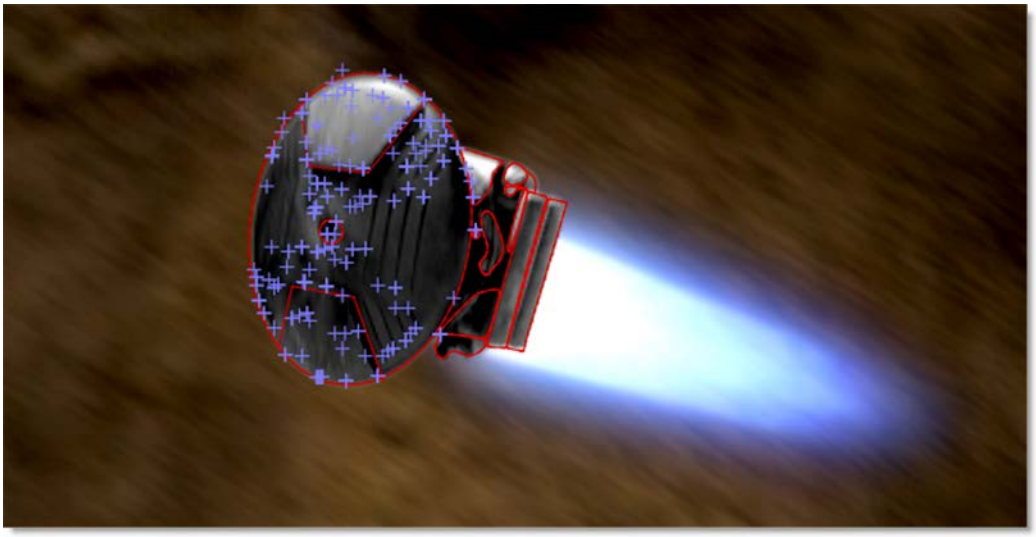
Pick the color space that displays the best contrast in the object you are tracking.

12 Disable Preview in Pre-Processing.

13 Make sure that the layer containing your shape is active, otherwise the Tracker Direction controls will be grayed out. You can tell that the layer is active by the check mark to the right of the layer name. The layer is made active by selecting it or enabling the Active Layer check mark.

When a layer is selected, the per-shape blend mode, invert state, on/off state and opacity are all obeyed. This allows you to use multiple shapes to track with. If a single shape is selected within the active layer, only that shape will be used for the tracker.

14 **Hit either the forward or backward track button depending on which direction you are tracking.**

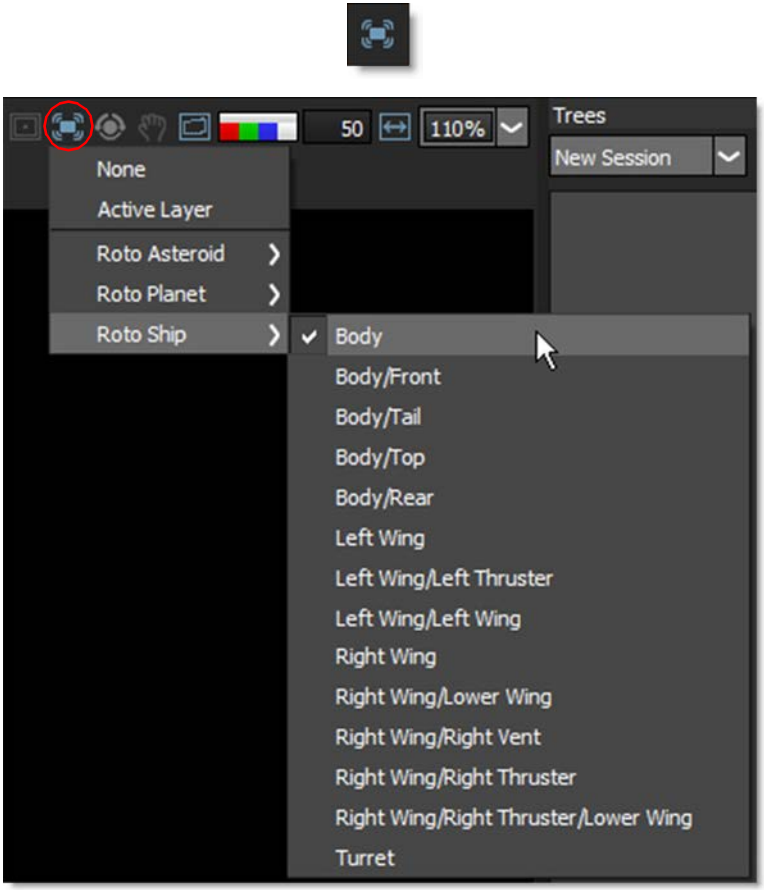


15 **When the tracking is done, that's it, you're done.**

The tracking data is automatically applied to the selected layer.

16 **After tracking, if you are not happy with the results, try the different techniques listed in Planar Tracking Tips and Tricks and mocha Tracker Tips and Tricks.**

17 If you want to use Stabilization, click the Stabilize icon above the Viewer and choose either the Active Layer or a layer from the list. Available layers are organized by node.



The Viewer is now stabilized based on the selected layer's tracking data.

18 Make shape adjustments and keyframe it as necessary using the Reshape and Transform tools.

19 When shape editing is complete, click on the Stabilize icon (if it was activated) and select None to turn it off.

The Viewer is returned to its normal state.

Exclude Areas While Planar Tracking

In some cases, there are parts of an image that can interfere with the effectiveness of the Planar or mocha Trackers. To handle this, you can create subtractive shapes in the area you are tracking.

1. **Create a shape around the area that you would like to exclude from the tracking process.**
2. **Place this shape above the layer that you are tracking. Set the shape's Blend mode to Subtract.**
3. **Select the layer you are tracking and then add the subtract shape to the selection by using Ctrl(Win)/Cmd(Mac)-click.**

   Note: The same method used for shapes to exclude areas while tracking can be used for layers.

4. **Hit either the forward or backward track button depending on which direction you are tracking.**

Now, the area within the subtract shape is not analyzed by the Planar Tracker or mocha Tracker.

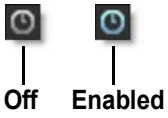
Offset Planar Tracking Using Layers

There are times when the object you are planar tracking becomes obscured, and in these instances, you can use a layer to compensate for the obscured object.

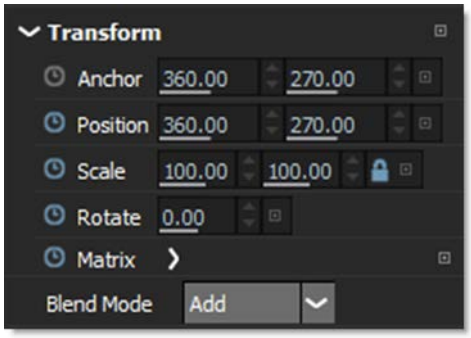
1. **Track an object using either the Planer Tracker or mocha Tracker.**
2. **When the object you are tracking becomes obscured or the track fails, hit the Cancel button in the Tracker Progress window.**
3. **Back up to the last properly tracked frame.**
4. **Select the Timeline tab at the bottom left of the screen.**
5. **After this point in the Timeline, delete any Transform:Matrix keyframes for the tracked layer.**

6. **Click on Transform (T) in the Toolbar.**

7 **Set Transform keyframes for the selected layer at the last properly tracked frame by enabling the Animate icon for the layer parameters that you will be adjusting.**



8 **Move the Timebar forward to where the object you are tracking is no longer obscured and animate the layer parameters so that your shape matches the object you are tracking.**



The manual keyframes you set take care of the animation of the object while the object was obscured.

9 **Choose the Tracker (Shift-T) in the Toolbar.**

10 **If you are using the Planar Tracker, press the Reset button to reset the track points to account for the new location. This sets a new Reference point.**

11 **Hit either the forward or backward track button depending on which direction you are tracking.**

Smoothing Planar Tracked Layers

Smoothing planar tracked layers removes inaccuracies in the tracking data.

1 **Select a layer which has been planar tracked.**

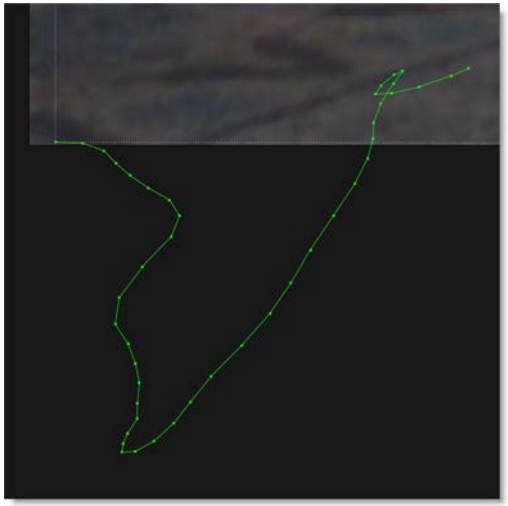
Once selected, the layer displays tracking paths on the four corners and in the center of the frame.

2 Zoom into one of tracking paths on a corner of the image.

Viewing the path while adjusting the Smooth slider will provide visual feedback.

3 In the Tracker tab, choose Smooth and adjust the slider when it pops-up.

The planar tracked layer is smoothed.



Converting Planar Tracker Track Points to Point Trackers

Planar Tracker track points can be converted to point trackers which can then be treated like any other point tracker; they can be merged, smoothed, averaged, and applied to layers.

Note: Since the mocha Planar Tracker tracks planes rather than points, only Silhouette's Planar Tracker track points can be converted to point trackers.

1 **Create a shape around an object that you want to track and place it in a layer.**

2 **Select the Tracker and choose the Planar Tracker tab.**

The Planar Tracker continuously kills off trackers and spawns new ones, stitching them together to create a solution. This is done so we can account for partial occlusions automatically. The downside is that individual Planar Tracker points only last a portion of the frame range. When creating Point Trackers from Planar Tracker points, you can make tracks live longer by increasing the Max Age parameter.

3 **Change the Max Age value to be the duration of the clip.**

This will force track points to last longer.

4 **Hover over a track point.**

In the Status Bar at the bottom left of the user interface, information regarding the track point is displayed such as the X/Y position and frame range. Don't worry if you can't find a track point that lasts the entire clip. You can create multiple point trackers that cover different frame ranges and then later merge them together in the Point Tracker.

5 **Right-click on a track point and choose Create Point Tracker.**

A new point tracker is created which is then visible in the Point Tracker tab.

6 **Select the Point Tracker tab to see the newly created point tracker.**

This newly created point tracker can be treated like any other point tracker. You can merge, smooth, average and apply it to layers.

Note: If you created multiple Point Trackers that cover different frame ranges, you can select them and use the Point Tracker > Merge feature to create one tracker.

Planar Tracking Tips and Tricks

If you have trouble tracking a shot using the Planar Trackers, here are some tips and tricks.

General Tips and Tricks

Scrub Your Timeline

When starting a track, go through your footage a few times to see what your best options are for tracking. You will save yourself a lot of time by making note of obstructions and possible problem areas in advance.

Change The Tracking Features

By default, Tracking Features is set to Auto which tracks corners, edges and ridges simultaneously and then automatically selects the best result. Changing from Auto to Corners, Edges or Ridges may yield a better result.

Switch The Motion Model

Perspective is the default motion model, but Affine (tracks translation, rotation, scale, and skew) or Translation (tracks the XY offset) may better choices for your clip. In general, use Perspective for tracking larger shapes, Affine for medium shapes and Translation for small shapes.

Use Edges

When tracking surfaces, you will usually get a much better track if you include the edges and not just the interior of an object. This is because the Planar Trackers can define the difference between the background and the foreground and lock on better.

Track From The Largest, Clearest Point

In order for Planar Trackers to keep the best possible track, it is usually best to scrub through the timeline and find the largest and clearest area to begin tracking from, draw your shape there, then use backwards and forward tracking from that point.

For example, if you have a shot of a sign coming toward you down a freeway, it is usually better to start at the end of the clip where the sign is largest, draw your shape and track backwards, rather than start from the beginning of the clip.

A Planar Surface Does Not Necessarily Have To Be Flat

We have a Planar Tracker which specifically tracks planes of motion, but this is not limited to tables, walls and other flat objects. Faces can be tracked very successfully around the eyes and bridge of the nose. Rocky ground, rumpled cushions, clumps of bushes, human torsos and curved car bodies are all good candidates. The key is low parallax or no obvious moving depth. When in doubt, try quickly tracking an area to see if it will work, as you can quite often trick the Planar Trackers into thinking something is planar.

Draw More Shapes

Remember you are not limited to one shape in a layer. Use a combination of shapes to add further areas or cut holes in existing areas to maximize your search.

Use Shapes Only For Tracking

You can use shapes for tracking purposes only and once the track is completed, you can hide or delete them.

Create Subtract Shapes

In some cases, there are parts of an image that can interfere with the effectiveness of the Planar or mocha Trackers. To handle this, you can create subtractive shapes in the area you are tracking.

Create a shape to subtract out areas of unwanted motion that may interfere with tracking and keyframe the shape as necessary. Place this shape above the layer that you are tracking and set the shape's Blend mode to Subtract. Select the layer you are tracking and then add the subtract shape to the selection by using **Ctrl(Win)/Cmd(Mac)**-click. Now when you track, the area within the subtract shape will be excluded.

Track From Different Points In Time

Depending on the motion of the object to be tracked, you may get better results if you track from the end to the beginning. You may also track from the middle to the beginning and then from the middle to the end.

Use A Different Channel To Track On

Change the Channel parameter from Luminance to Red, Green or Blue. The Channel parameter determines which image value the tracking algorithm uses.

Utilize The Pre-Processing Filters

Use the Blur, Sharpen, Contrast, Gamma, De-Noise or Remove Flicker pre-processing parameters.

Track The Foreground

Set the View to Foreground for the fastest speed when tracking. In the Foreground view, no processing occurs and therefore it is faster than View > Output.

There Is No Magic Bullet

The Planar Trackers are very flexible trackers and will save a lot of time, but you will eventually run into a piece of footage that just will not track. Large or continuous obstructions, extreme blur, low contrast details and sudden flashes can all cause drift or untrackable situations.

mocha Tracker Tips and Tricks

In addition to the Planar Tracker Tips and Tricks previously mentioned, here is an important mocha Tracker tip.

When In Doubt, Ramp Up Your Pixels

You can quite often get a great result with the default settings, but if you're getting a lot of drift, try setting the Min % Pixels Used value higher. The processing can be slower, but you will usually get a much more solid track.

Point Tracker

The Point Tracker uses trackers which are placed on distinguishable image features.

Note: The Tracker is available as a separate node, but is also built into the Depth, Morph and Roto nodes. This tutorial demonstrates the use of the Tracker from within the Roto node.

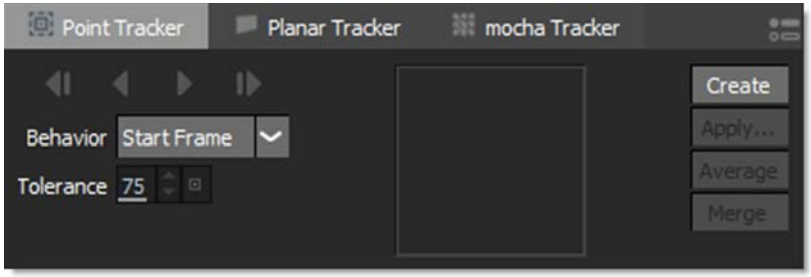
Creating a Tracker

1 **Select the Tracker (Shift-T) in the Toolbar.**

2 **Go to the frame where you want to start tracking.**

3 **Set the View to Foreground for the fastest speed when tracking. In the Foreground view, no processing occurs and therefore it is faster than View > Output.**

4 **In the Tracker window located at the bottom of the screen, select the Point Tracker tab.**

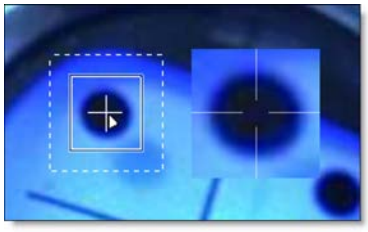


5 **Press the Create button and a tracker is placed in the center of the image.**

or

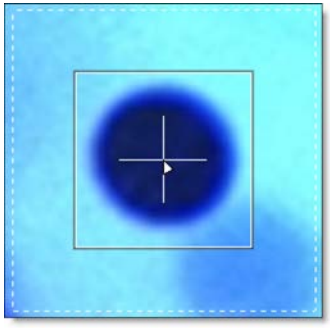
6 **Alt-click on an open space in the image.**

As you pass your cursor over the image with the **Alt** key depressed, a zoomed region to the right of the tracker aids in selecting your Match Area.

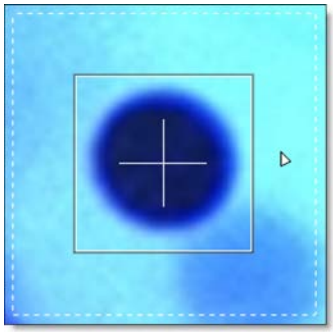


Moving Tracker Components

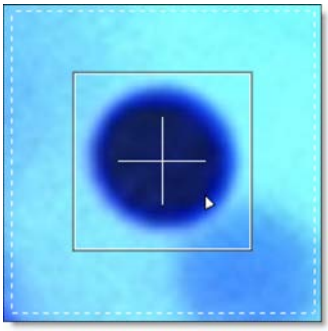
1 **Clicking and dragging directly on the Track point will move all components of the Tracker: Match Area, Search Region and Track Point simultaneously.**



2 **Clicking and dragging within the area of the Search Region will move only the Search Region.**



3 **Clicking and dragging within the area of the Match Area will move both the Search Region and Match Area simultaneously, leaving the Track Point at its current location. This would be used for Offset Tracking when the original track point becomes obscured.**



Scaling Tracker Components

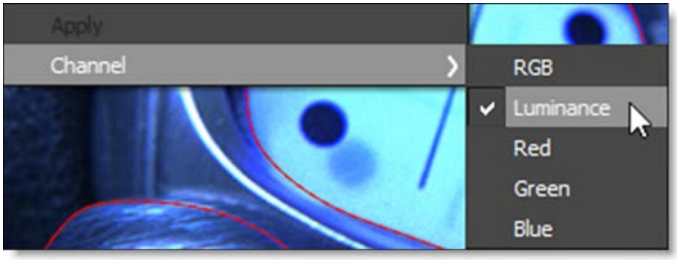
1 **Clicking and dragging on the corners of the Match Area bounding box scales both the Match Area and Search Region.**

2 **Clicking and dragging on the corners of the Search Region bounding box scales only the Search Region.**

Tracking an Image

1 **Adjust the size and position of the Match Area and Search Region.**

2 **Right-click on the tracker and select the color space to use in the Channel sub-menu.**



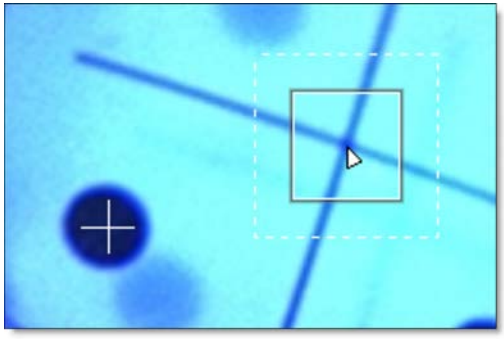
3 **Hit either the forward or backward track button.**

Silhouette will analyze the motion for each frame in the clip.

Offset Tracking

There are times when your original Match Area gets obscured, and in these instances, you can offset the Match Area and Search Region from the Track Point.

1. **Create a tracker and track a portion of the clip until the Match Area becomes obscured.**
2. **Hit the Stop button in the Tracker Progress window.**
3. **Back up to the last properly tracked frame.**
4. **Click and drag somewhere within the Match Area and both the Match Area and Search Region will move simultaneously, leaving the Track Point at its current location.**



5. **Click the forward tracking button to continue tracking.**

The Track Point follows the same path, but the new Match Area is used to acquire the tracking data.

Tracking Difficult Shots

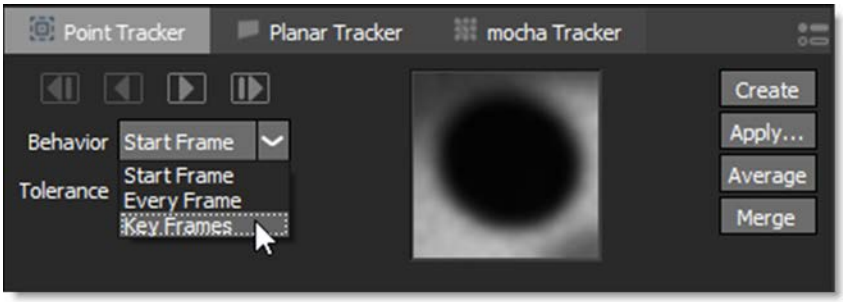
Some clips are difficult to track because of erratic motion or the occlusion of the feature that you are attempting to track. In these cases, you can do a bit of hand tracking using one of two methods:

- **By pre-keyframing the tracker at various frames throughout the clip.**
- **Keyframing a shape and then creating tracker keyframes based on the shape's motion.**

Keyframing the Tracker

1. **Create a tracker.**
2. **Adjust the tracker to match the object at various frames throughout the clip.**

3 **In the Tracker tab, change the Behavior to Key Frames.**



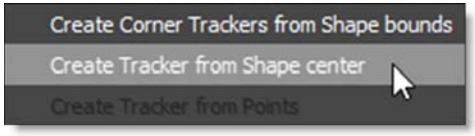
The Tracker Match Area will now use these keyframes as a reference while tracking.

Create Tracker from Shape Center

1 **Create a shape around the feature that you would like to track. Go to various frames throughout the clip and adjust the shape to match the feature.**

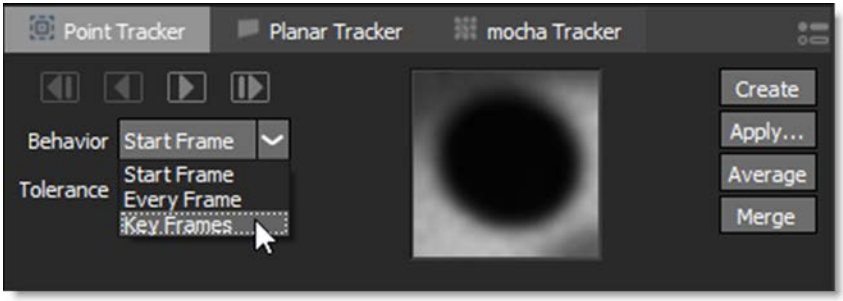
2 **Select the Tracker tool and right-click on the shape.**

3 **From the pop-up menu, select Create Tracker from Shape Center.**



A tracker is automatically created around the center point of the shape and any shape keyframes are automatically applied to the Tracker.

4 **In the Tracker tab, change the Behavior to Key Frames.**



The Tracker Match Area will now use these keyframes as a reference while tracking.

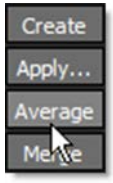
Modifying Tracking Data

Averaging Trackers

Averages multiple tracks into a new destination track. A common technique is to track forwards from the first frame to the last, and then create a second track, tracking backwards from the last frame to the first. These two trackers are then averaged together to derive a more accurate track.

1 **Select more than one tracker.**

2 **In the Tracker tab, choose Average.**



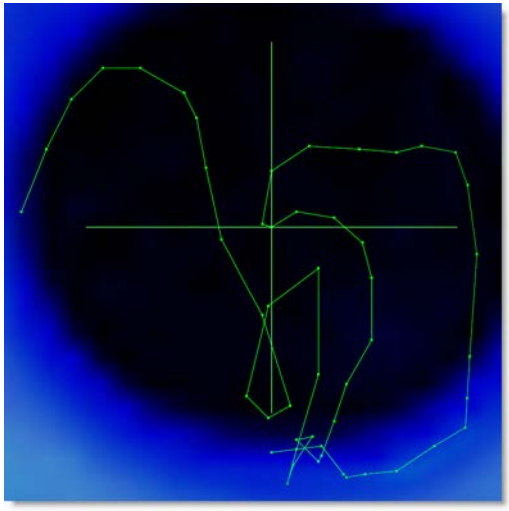
A new averaged tracker is created.

Smoothing Trackers

Smoothing trackers removes inaccuracies in the tracking data.

1 **Select a tracker to smooth.**

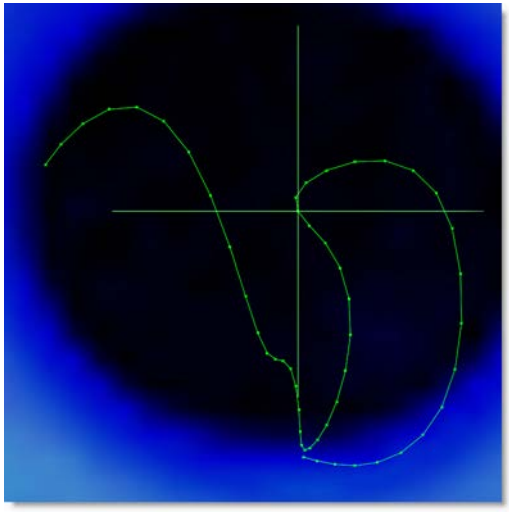
2 **Zoom into the tracker's path.**



Viewing the path while adjusting the Smooth slider will provide visual feedback.

3 **In the Tracker tab, choose Smooth and adjust the slider when it pops-up.**

The tracker is smoothed.



Merging Trackers

If you have multiple trackers that cover different frame ranges, they can be merged into one tracker, automatically compensating for the different offsets.

1 **Select multiple point trackers that cover different frame ranges.**

For instance, you may have one tracker that covers frames 1-25, another 25-75 and the last one from 75-100. Ideally, the trackers should overlap in time by at least one keyframe.

2 **Click the Merge button.**

A new tracker is created that covers the frame range encompassed by the three trackers.

Applying Trackers

Match Moving and Stabilizing Layers

In general, tracking data should be applied to layers instead of individual shapes. The tracking data is placed into the transform of a selected layer (containing shapes) allowing you to have separate keyframes for both the layer transformation and for the shapes. This results in far fewer shape keyframes than other methods and is the preferred way of working with clips in motion. The result is a very flexible method for discrete editing of layer and shape transformations.

Once applied to a layer, the tracking data can be used in Match Move or Stabilize mode. In Match Move mode, the clip moves as normal and the shape follows along according to the tracking data. In Stabilize mode, the clip is locked in place by stabilizing the Viewer. In either mode, you only need to keyframe the shape when it changes form.

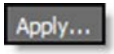
1 **Create a layer in the Object List using the Add Layer icon.**

The new layer is active and you can tell by the check mark icon in the box to the right of the layer name in the Object List.

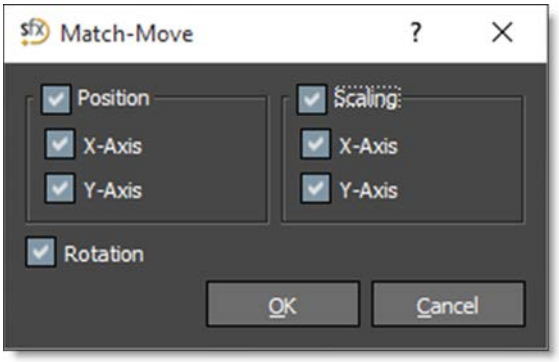
Note: Point tracking data is only applied to the active layer.

2 **Select the trackers that you would like to use.**

3 **Press the Apply button.**



You have a choice of applying position, scaling and/or rotation. However, scaling and rotation require two trackers.



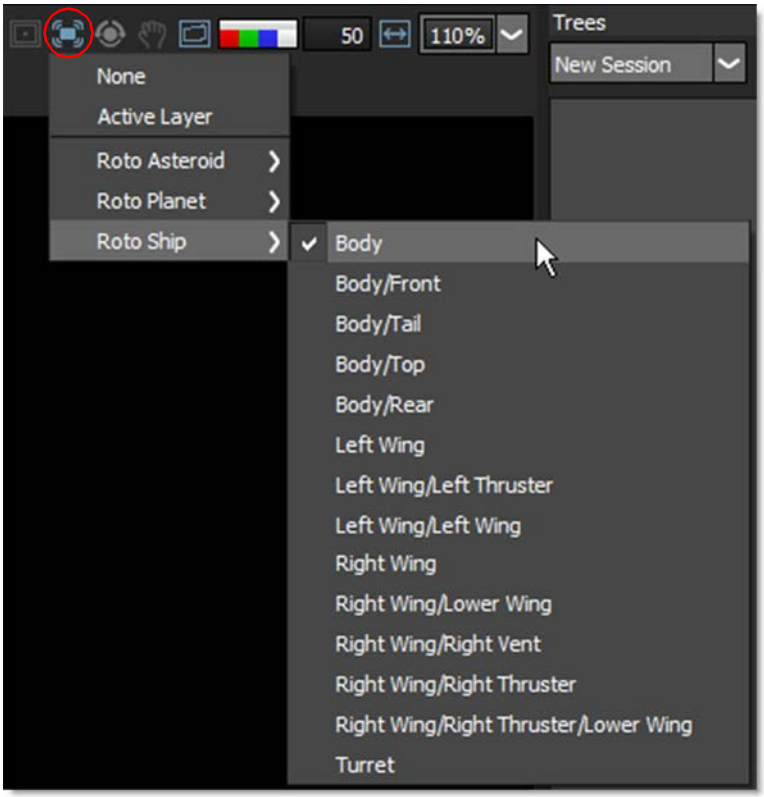
4 **Select Position, Rotation and/or Scaling and click OK.**

The tracking data is applied to the Transform > Matrix parameter of the selected layer.

5 **Create a shape inside of the selected layer.**

If you look at various frames in the clip, you'll see that the shape is match moved to the motion of the image.

6 **If you want to use Stabilization, click the Stabilize icon above the Viewer and choose either the Active Layer or a layer from the list. Available layers are organized by node.**



The Viewer is now stabilized based on the selected layer's tracking data.

7 **Make shape adjustments and keyframe it as necessary using the Reshape and Transform tools.**

8 **When shape editing is complete, click on the Stabilize icon and select None to turn it off.**

The Viewer is returned to its normal state.

Each layer can have different tracking data applied to it. Just go to the Tracker tab and apply the motion from other trackers to other layers.

Four Point Corner-Pin Tracking

Four-point tracking is traditionally used to match the perspective of a square or rectangular shape by tracking its four corners and applying a corner-pin transformation.

1 **Create four trackers on the corners of a square or rectangular object and track the motion.**

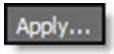
2 **Create a layer in the Object List using the Add Layer icon.**

The new layer is active and you can tell by the check mark icon in the box to the right of the layer name in the Object List.

Note: Point tracking data is only applied to the active layer.

3 **Select the four trackers.**

4 **Press the Apply button.**



The corner-pin data from the four trackers is applied to the layer.

5 **Create a square shape inside of the selected layer. When drawing the shape, it should be placed near the location of the four trackers.**

If you look at various frames in the clip, you'll see that the shape's motion is matched to the motion of the image.

Match Moving Points

Match moving applies the motion of a tracker to individual points on a shape.

Note: Match moving individual points results in keyframes being set on every frame of the shape and can make it cumbersome to later edit those points. This functionality has been added to Silhouette as some users prefer to work with this way.

1. **Select a tracker.**
2. **Click on a shape to select it and then select a point.**

   Note: To select points on a shape, you must first select the shape by clicking on the shape outline. Then, **Ctrl(Win)/Cmd(Mac)**-click each point that you would like to select. Also, when a tracker overlaps a point, it will be difficult to select the point while in the Tracker. To select a point that overlaps a tracker, switch to the Reshape tool, select the point and switch back to the Tracker.
3. **Right-click over a selected point and choose Apply from the pop-up menu.**

   The tracking data is applied to the point.

Point Tracker Tips and Tricks

If you have trouble tracking a shot using the Point Tracker, here are some tips:

- **Set the View to Foreground for the fastest speed when tracking. In the Foreground view, no processing occurs and therefore it is faster than View > Output.**
- **Stop the tracker, go to the bad frame and reposition the Track Point, and hit the tracking button again. You don't need to go back to your start frame.**
- **Lower the Tolerance value, and track again from the beginning, or the frame before the bad frames. The lower the Tolerance, the more forgiving the tracker will be--but also less accurate.**
- **Start over and switch Behavior from Start Frame to Every Frame. This means that instead of trying to compare the tracking region with the first "pure" frame, it will try to match to the previous frame. If you re-track from the middle of a clip, it will consider your new start frame as your reference frame with either setting.**
- **Use the Blur, Sharpen, Contrast, Gamma, De-Noise or Remove Flicker pre-processing parameters.**
- **At any time, you can manually adjust the Track Point by simply grabbing it and putting it where you need to.**
- **Change the Channel parameter from RGB to Luminance, Red, Green or Blue and re-track. The Channel parameter determines which image value the tracking algorithm uses.**
- **A technique you can use to assist with difficult shots is to manually insert tracking keyframes. For example, if you have 100 frames to track, you can put in a keyframe every 5 or 10 frames by repositioning the Tracker. Once your keyframes are manually entered, return to frame 1 and set the Behavior to Key Frames. The tracker searches along the tracker's pre-existing motion path to find matching patterns.**
- **You can use the same technique as in the previous tip, but with the following differences. Create a shape around the feature that you would like to track. Go to various frames throughout the clip and adjust the shape to match the feature. Select the Tracker tool and right-click on the shape. From the pop-up menu, select Create Tracker from Shape Center. A tracker is automatically created around the center point of the shape and any shape keyframes are automatically applied to the tracker. In the Tracker window, change the Behavior to Key Frames. The tracker Match Area will now use these keyframes as a reference while tracking.**

Match Move or Stabilize Images

Match moving and stabilization is achieved through the Transform node in conjunction with the Tracker. The Tracker outputs transformed layers for use in other nodes. For instance, the Transform and Paint nodes have tracker inputs as do other nodes that contain point controls. When the output of a Tracker node is plugged into a node's transform input, the Tracker's transformed layers are available to match move or stabilize.

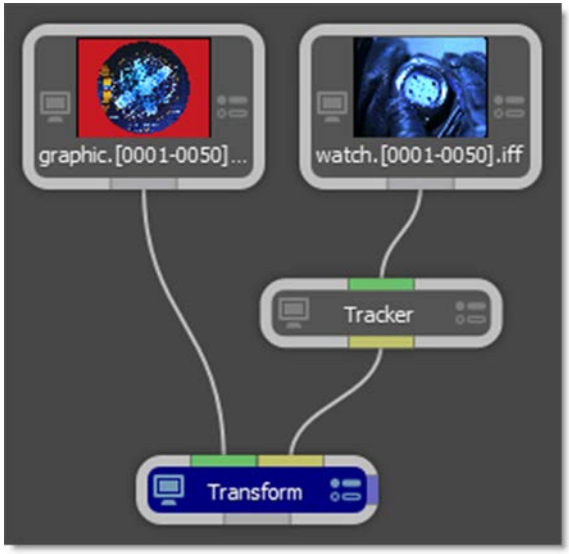
Match Move

1 **Load some source footage and create a session.**

2 **In the Trees window, drag a Tracker node from the Nodes > Transform group onto the source node you want to track.**

3 **Add a Transform node from the Nodes > Transform group and connect it to the source node you want to match move.**

4 **Connect the Tracker output into the Transform node's transform input located at the top right of the node.**



Currently, the Transform and Paint nodes have transform inputs as do other nodes that contain point controls. The transform inputs are colored yellow.

5 **Single-click in the center of the Tracker node to view and edit it.**

6 **Track an object and apply the tracker to a layer.**

7 **Single-click in the center of the Transform node to view and edit it.**

8 **Select a point tracker or tracked layer from the Transform > Transform pop-up menu.**

9 **Select Match Move in the Transform > Mode pop-up menu.**

The tracking data from the selected layer is applied to the image and it is match moved.

10 **If necessary, you can use the Transform node's parameters in conjunction with the tracking transform.**

Stabilize

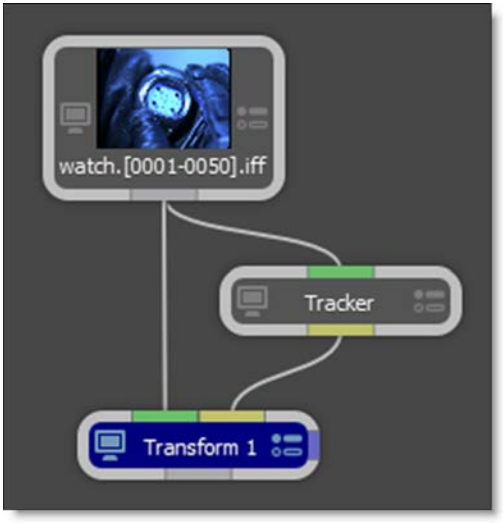
1 **Load some source footage and create a session.**

2 **In the Trees window, add a Transform node from the Nodes > Transform group and connect it to the source node.**

3 **Drag a Tracker node from the Nodes > Transform group onto the source node.**

A new branch is created.

4 **Connect the Tracker output into the Transform node's transform input located at the top right of the node.**

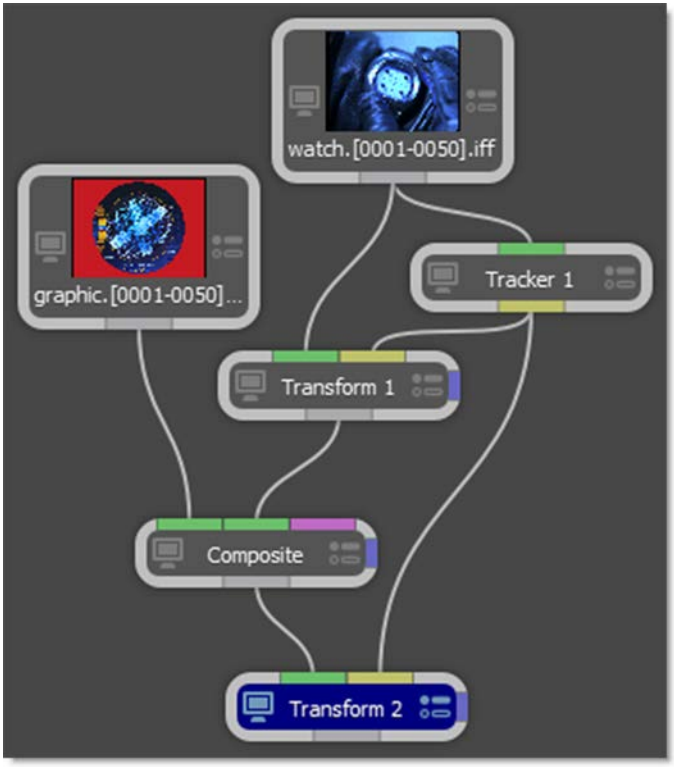


5 **Select Stabilize in the Transform > Mode pop-up menu.**

The tracking data from the selected layer is applied to the image and it is stabilized.

6 **If you'd like, you can now add various elements to the stabilized image.**

7 **To reapply the clip's original motion, copy the original Transform node used to stabilize the image, paste it after the added elements, and hook the Tracker node's output into the new Transform node's transform input.**



8 **Change the new Transform node's Transform > Mode from Stabilize to Match Move.**

The image now has the original motion applied to it.

Importing and Exporting Tracking Data

Exporting Tracking Data

Trackers can be exported to the After Effects, Autodesk, Nuke and Shake tracker formats. In addition, the tracking data applied to a layer, either by Point Trackers or Planar Trackers, can be exported as a four point corner-pin track.

Note: mocha Planar tracking data can not be exported as external trackers.

Exporting One to Two Trackers

1. **Choose the Tracker (Shift-T) in the Toolbar.**
2. **Select the trackers that you want to export.**
3. **Choose Export in the Tracker tab and select the tracker format.**
4. **When the window pops-up, type in a name and click Save.**

Currently, you can export to the After Effects, Autodesk, Nuke and Shake tracker formats.

Exporting Four Trackers for Corner-Pinning

1. **Choose the Tracker (Shift-T) in the Toolbar.**
2. **Using the Shift key, select the four trackers that you want to export in a Z pattern: Upper Left, Upper Right, Lower Left and Lower Right.**
3. **Choose Export in the Tracker tab and select the tracker format.**
4. **When the window pops-up, type in a name and click Save.**

Exporting a Layer as a Four Point Corner-Pin

1. **Select the layer that you want to export.**
2. **Press the Tracker (Shift-T) in the Toolbar, Choose Export in the Tracker tab and select the tracker format.**
3. **When the window pops-up, type in a name and click Save.**

Note: When exporting a four point corner-pin track to Autodesk products, it is better to use four trackers instead of the tracking information from a layer.

Importing Tracking Data

After Effects Corner-Pin, Nuke 8 and above, Shake or Simple Format formatted trackers can be imported into Silhouette. If you would like to import trackers from non-supported applications, simply export a Silhouette tracker in Simple Format to see how it should be formatted.

Silhouette

1. **Select the Tracker (Shift-T) in the Toolbar.**
2. **Choose Import in the Tracker tab.**
3. **Select the After Effects Corner Pin, Nuke, Shake or Simple Format tracker file that you would like to import and click Open.**

   If you select multiple trackers in the import dialog, more than one tracker can be imported at a time.

   Note: With some formats, the imported trackers may not line up with the tracked feature. If so, use MultiFrame mode to move the tracker and it's keyframes into the proper location.

After Effects

1. **Double-click on the tracker text file that you exported from Silhouette.**

   The value of the Comp Pixel Aspect Ratio line at the top of the exported tracker file must match the Pixel Aspect Ratio in the After Effects Composition settings. Edit the exported tracker file as needed.

2. **Press Ctrl(Win)/Cmd(Mac)-A to select all and Ctrl(Win)/Cmd(Mac)-C to copy.**
3. **In After Effects, select a layer in the Timeline and press Ctrl(Win)/Cmd(Mac)-V to paste the Tracker Data.**

   Note: If you exported a limited work range in Silhouette, go to the start frame of the work range in After Effects before pasting.

4. **Open the Window > Tracker controls.**
5. **In the Motion Source pop-up, select the layer where you pasted the tracking data.**
6. **From the Current Tracker pop-up, select the Tracker that you just pasted. If you only have one tracker, this would be Tracker 1.**
7. **Change the Track Type from Raw to one of the available options.**
8. **Click Edit Target and choose the layer that you would like to apply the motion to.**
9. **Hit Apply.**

Combustion

Importing One to Two Trackers into Combustion

1 **Click on the Tracker tab.**

2 **In the Source pop-up, choose your layer.**

3 **Select the Track type: Position, Scale or Rotate.**

4 **Click on the Import Data button and pick Discreet Tracker Setup.**

5 **Load the tracker file that you saved from Silhouette.**

Importing Four Trackers into Combustion

1 **Create a 3D Workspace.**

2 **Import two layers into your Composite workspace.**

3 **Click and select the layer that you want to corner-pin and make sure it is at the top of the stack.**

4 **In the Composite Controls > Layer Tab, activate Four Corner.**

In your Viewport, the layer will have a point on each corner of the image.

5 **Click and drag each corner point to the position where you want your layer placed after the trackers are imported.**

6 **Using the Shift key, select the four corner points.**

The points turn yellow when they are selected.

7 **Click on the Tracker tab.**

8 **In the Source pop-up, choose the layer the tracking data was derived from.**

9 **Select the Position Track type.**

10 **Click on the Import Data button and pick Discreet Tracker Setup.**

11 **Load the tracker file that you saved from Silhouette.**

Note: When importing a four point corner-pin track in Combustion, it is better to use four trackers instead of the tracking information from a layer.

Flint / Flame / Inferno

1 **Select the Stabilizer.**

2 **Click on the Imp button below the Track fields and select the tracker file that you saved from Silhouette.**

Note: When importing a four point corner-pin track in Flint, Flame and Inferno, it is better to use four trackers instead of the tracking information from a layer.

Nuke

1 Choose File > Import Script and select the tracker file that you saved from Silhouette.

Shake

1 Add a Tracker, Match Move or Stabilize node.

2 In the Tracker node, click the Load button in the Parameter tab and select the tracker file that you saved from Silhouette.

3 For the Match Move and Stabilize nodes, right-click on one of the trackName's in the Parameter tab and choose Load Track File.

4 Select the tracker file that you saved from Silhouette.

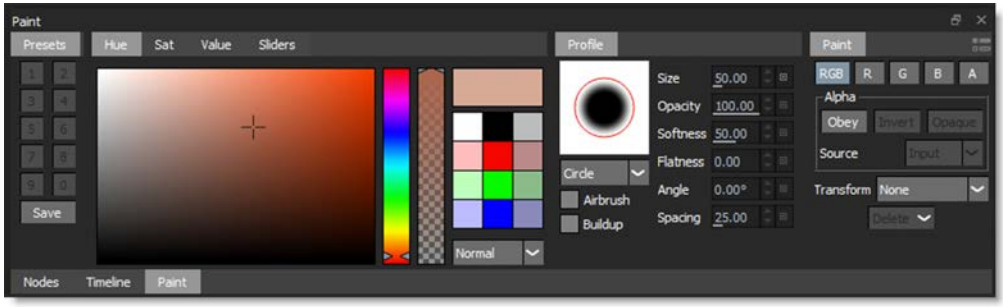
Paint

Paint is a high dynamic range, non-destructive, 2D raster based paint system designed from the ground up to handle the demands of feature film and television production. Whether it's image restoration, dustbusting, wire and rig removal or just plain paint, Silhouette provides simple and sensible tools to get the job done.

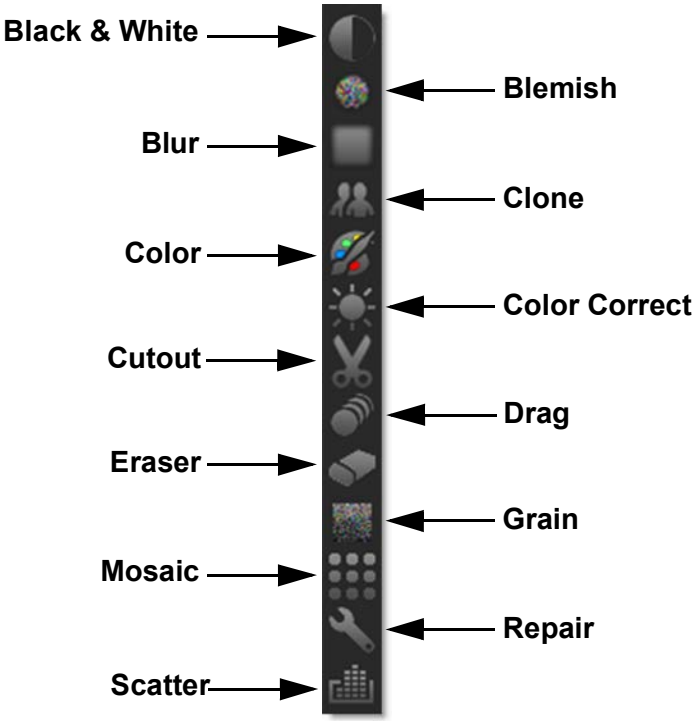
Using Paint

1. **Load some source footage and create a session**
2. **In the Trees window, add a Paint node from the Nodes > Image group and connect it to the source node.**
3. **Single-click in the center of the Paint node to view and edit it.**

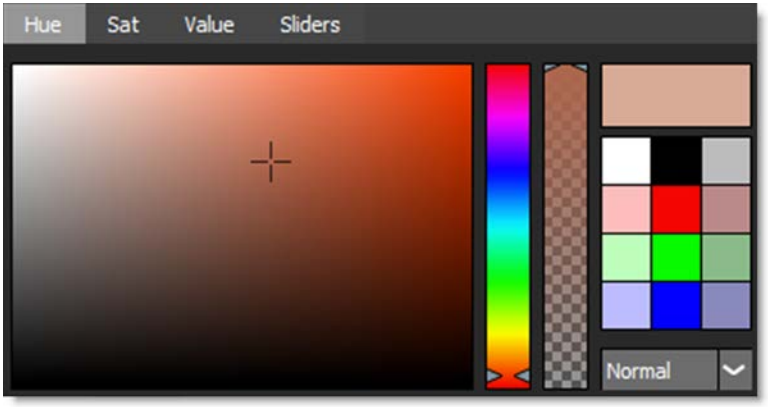
In the Paint node, various non-animateable controls appear in a Paint window located at the bottom portion of the screen. Silhouette provides a wide variety of paint tools that are organized into Presets, Brush, Profile and Paint tabs.



In addition, a number of different brushes are selectable from the Paint Toolbar to the left of the Viewer.



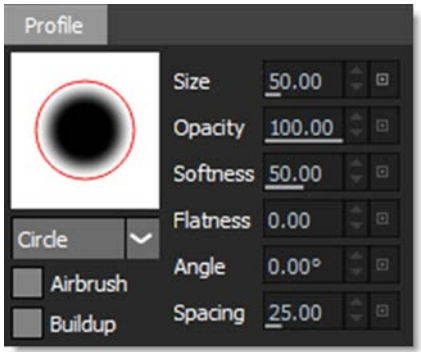
Once a brush is selected, its controls appear on the left side of the Paint window.



4 **Select the Color brush (Shift-C). By default, it is preset to white.**

5 **Paint on the image in the Viewer by pressing and dragging with your pen or clicking and dragging with your mouse. You can quickly draw straight lines if you press Alt, click and then click in a different location. If you keep Alt depressed while clicking, you will create interconnected straight lines.**

6 **In the Paint window's Profile tab, adjust some of the settings to see how it changes your brush.**



In addition to the Profile > Size control, the brush can also be resized by using the **[** and **]** bracket keys in the Viewer or by holding **Ctrl(Win)/Cmd(Mac)** and dragging the brush outline.

7 **Experiment with some of the other brushes in the Brush Toolbar.**

8 **Adjusting the brush parameters located on the left side of Paint window will change the effect of the brush when you paint.**

By default, you are painting on the RGB channels of the image. However, you can paint individually on the red, green, blue or alpha channels as well as simultaneously paint on the RGB and alpha channels using the Paint tab.

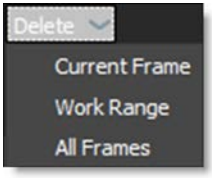
9 **In the Paint window's Paint tab, click on R to paint only the Red channel.**

10 **Paint on the image.**

11 **If you view the individual Red, Green and Blue channels using the RGBA buttons in the Viewer, you will see that only the Red channel is affected.**

12 **Select the horizontal white bar above the RGBA buttons to quickly toggle the display of the image back to full color mode.**

At any time, you can clear all paint strokes and restore the original unpainted frames by using Delete in the Paint tab. You can restore the Current Frame, the Work Range, or All Frames.



13 **In the Paint tab, select Delete > All Frames to clear all paint strokes on all frames.**

14 **Go to frame 1 of the clip and paint on the image.**

15 **Advance to frame 2.**

As you change frames in the clip, the painted frames are stored to disk. Paint on the current frame is also saved with File > Save.

16 **Go back to frame 1 and you will see that your paint stroke has been recorded.**

17 **Paint some more frames in the clip.**

As frames are painted, a marker is shown in the Timebar to provide a visual display of which frames are painted.

Paint Presets

Brush presets can be saved using the Presets tab on the left side of the Paint window. It allows you to save all of the brush parameters as a preset.

1 **To save a preset, select a brush and adjust its controls.**

2 **Click Save and then choose one of the numbered presets.**

Note: Saved presets are highlighted blue. Clicking a blue preset after selecting Save will overwrite it.

Once saved, you can use the **Alt-0** through **Alt-09** keyboard shortcuts to quickly select one of the presets.

3 **Clear a paint preset by pressing Save, then Alt-clicking on the preset.**

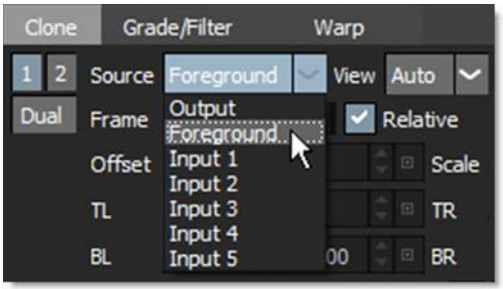
Clone Brush

The Clone brush paints the image using another part of the image or other image as defined by the settings in the Clone controls.

Selecting the Clone Source

1 **Choose the Clone brush (C) from the Toolbar.**

2 **In the Clone controls, select Output, Foreground or Input 1-5 in the Source pop-up menu.**

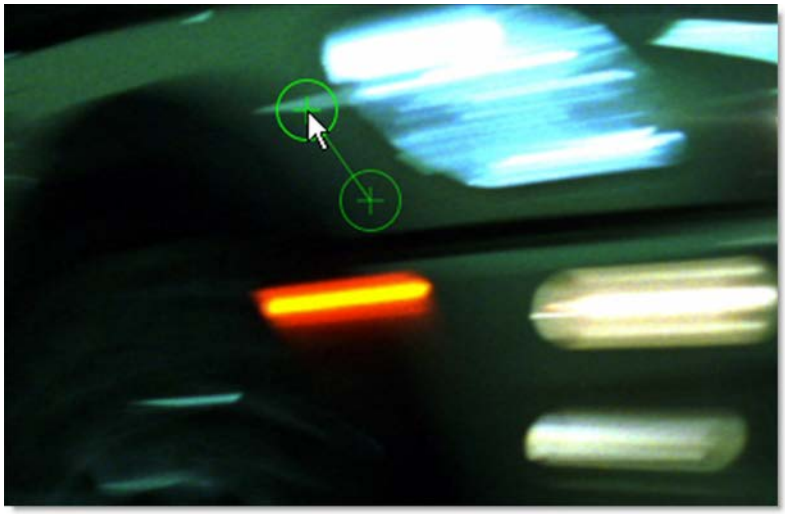


Output is the painted output of the Paint node and when selected, clones from previously painted areas. Foreground clones from the foreground image, while Input 1-5 are additional clone sources that clips can be connected to on the Paint node.

3 **If you'd like, set the Frame parameter to choose which source frame to paint from.**

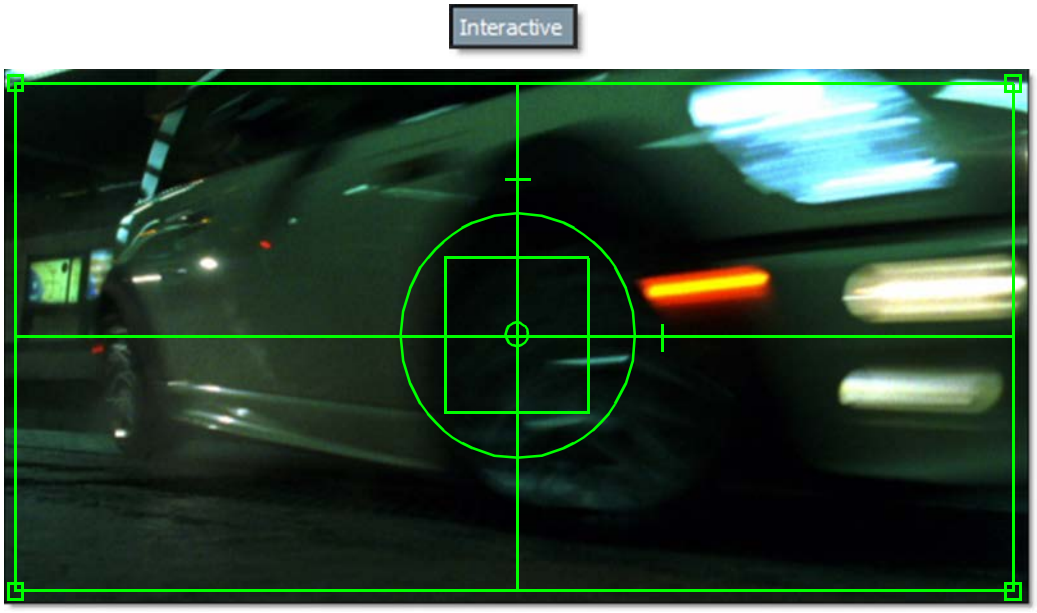
Setting the Clone Offset

Set your Clone source offset by one of the following methods:



1. **Shift-clicking, dragging and releasing in the Viewer.**
2. **Press and hold down the Shift key. Click once to set the Clone source and click once again in a different location to set the Clone target.**
3. **Press Q (Translate), W (Rotate) or E (Scale) and click and drag to translate, rotate or scale the Clone source. Onion Skin mode is automatically activated once the Q, W or E key is pressed. Press whatever key you pressed (Q, W or E) again to deactivate the mode.**

4 Turn on Interactive mode and use the on-screen controls.



- **Use the up, down, left and right arrow keys to nudge the Clone source.**
- **Adjust the Position (Offset), Scale, Rotate, and Corner-Pin > TL (Top Left), TR (Top Right), BL (Bottom Left) and BR (Bottom Right) numeric fields.**

Clone Transform On-Screen Controls

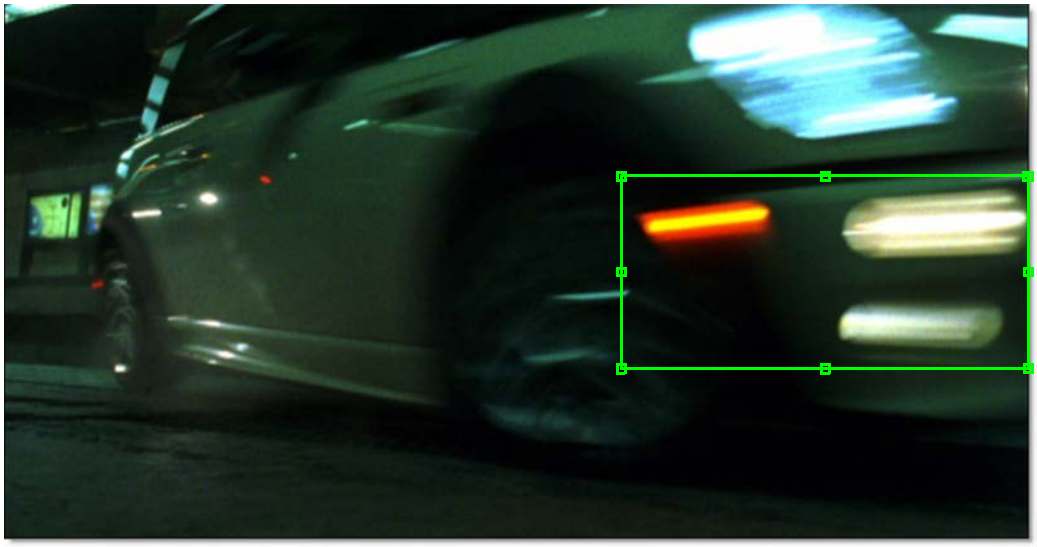
Shortcut	Action
Drag within large center circle	Moves the Clone source
Shift-drag within large center circle	Constrain Clone source movement horizontally or vertically
Drag the center square horizontal and vertical halfway points	Scales the Clone source horizontally or vertically
Drag a center square corner	Proportionally scale the Clone source
Drag large center circle	Rotate the Clone source
Ctrl-drag large center circle	Rotates the Clone source with finer control
Drag handles on corners of image	Corner-pins the Clone source
Drag dash above large circle	Skews the Clone source horizontally
Drag dash to the right of large circle	Skews the Clone source vertically

Define a Clone Transform Region

You can change the position and size of the Clone transform on-screen control rectangle which allows the effect of the corner-pin to be controlled from a specific region.

1 **Press the Region button to enable it.**

2 **Click-drag to create a region.**



3 **Alt-click and drag to create new region when one already exists.**

4 **Click and drag inside a region to move it or drag the region handles to resize.**

5 **When you are ready to adjust the Clone transform, enable Interactive mode.**

Note: When there are no on-screen controls (center square and circle) within the Clone transform bounding box, a region is active.

6 **Use the on-screen controls to adjust the Clone source.**

The effect of the corner-pin is now controlled by the region, and the scale and rotation anchor points are set to the region's center.

7 **To clear a region, enable Region and tap outside a region box without dragging.**

Using Clone Alignment Modes

Four Clone alignment options will aid you in positioning the Clone source. They are: Onion Skin, Align, Vertical Split and Horizontal Split.

1 **Activate Onion Skin or Align mode if you need to line up the Clone source and target images.**

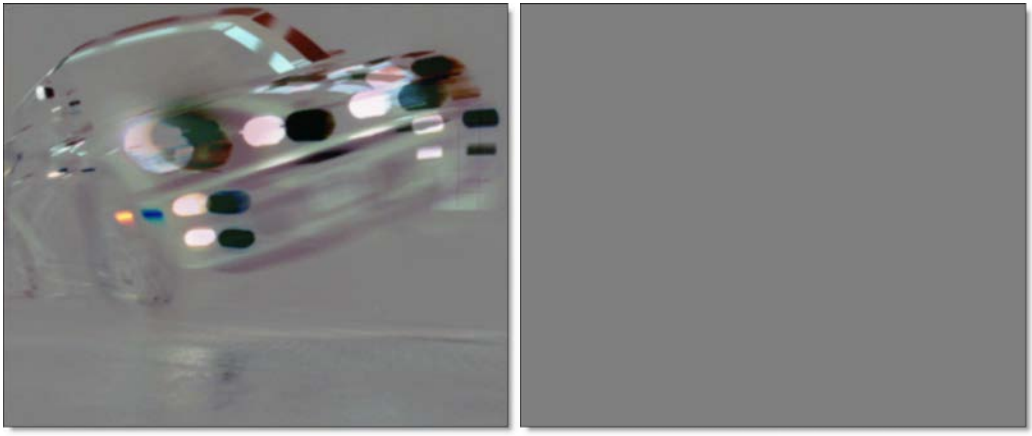
- **Select the Onion Skin icon to activate it and then align the Clone source.**

or

- **Select the Align icon to activate it and then align the Clone source.**

Align inverts the clone source and mixes it with the foreground, creating an embossed effect when similar images are not aligned. When perfectly aligned, the Viewer appears gray or black depending on the state of the Paint > Clone > Alignment Type preference.

Not Aligned **Aligned**



2 **Once the Clone source offset is set, deactivate Onion Skin or Align mode if they are activated.**

Very often, you will encounter two images from the same location that are not color matched.

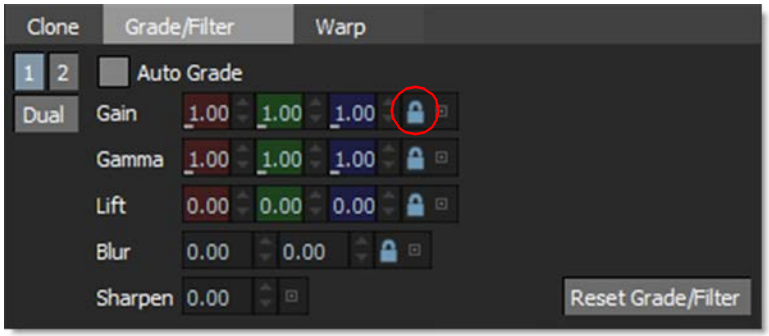
3 **If the Clone source needs to be color corrected to match the area to be painted, select the Grade/Filter tab.**

4 **Choose the Vertical Split icon to compare the Clone source and target using a split screen.**

The split is handy when using the Grade/Filter controls to color match the Clone source to the target.

5 **Adjust the Gain/Gamma/Lift numeric controls by dragging on them.**

6 **Click the Lock icon to move the numeric fields individually. This un-gangs them.**



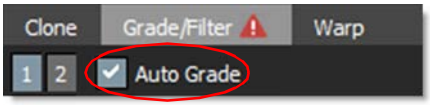
Note: Once a Grade/Filter or Warp parameter has been adjusted, an exclamation point appears to the right of the tab to indicate that a change was made.

Automatic Color Correction

The Grade/Filter > Auto Grade feature automatically color corrects the clone source to match the location you are painting.

1 **Select the Grade/Filter tab.**

2 **Enable Auto Grade.**



3 **Paint a stroke.**

Now, when you paint, Silhouette automatically color corrects the clone source to match the location you are painting.

Note: The Gain/Gamma/Lift controls are disabled when using Auto Grade.

Manual Color Correction

The steps below contain some useful tips when doing manual color correction.

1 **Select the Grade/Filter tab.**

2 **Make sure Auto Grade is not enabled.**

3 **Choose the Vertical Split icon to compare the Clone source and target using a split screen.**

The split is handy when using the Grade/Filter controls to color match the Clone source to the target.

4 **Move your cursor into the image area over the split line and when the cursor changes to a double-arrow, click and drag to move the split line to the location where you will be painting and where you want to do the color matching. The split line may not be obvious, so white triangles on the edges of the Viewer will help you find it.**

By isolating individual color channels, it is easier to match the colors.

5 **In the Viewer, look only at the Red channel (Alt-R).**

6 **Ctrl(Win)/Cmd(Mac)-drag (for finer accuracy) the Gain > Red numeric field so that the luminance values on either side of the split line match.**

Tip: Set your Update mode to Drag or Adaptive. As you drag a parameter, Silhouette is constantly rendering. This makes the color adjustments more interactive.

7 **In the Viewer, look only at the Green channel (Alt-G).**

8 **Ctrl(Win)/Cmd(Mac)-drag (for finer accuracy) the Gain > Green numeric field so that the luminance values on either side of the split line match.**

9 **In the Viewer, look only at the Blue channel (Alt-B).**

10 **Ctrl(Win)/Cmd(Mac)-drag (for finer accuracy) the Gain > Blue numeric field so that the luminance values on either side of the split line match.**

11 **Press Alt-B again to toggle off the Blue channel and to display the RGB channels in the Viewer at the same time.**

Your Clone source and target should now be color matched.

12 **Toggle off the Vertical Split and paint the image.**

13 **To reset the Clone offset, press Shift and without moving the cursor, click your mouse or tap your pen on the screen once.**

The Clone offset is quickly set to a 0,0 offset.

Using Clone > Warp

The Warp tab in the Clone Brush allows you to warp specific image areas using pins, while leaving other areas untouched. Adjustments can range from subtle nip and tucks to something more obvious like repositioning an arm or leg.

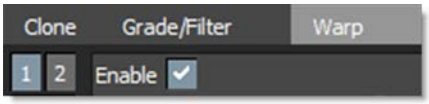
Before

After

Photo by Tim Easley on Unsplash

1 **Choose the Clone brush (C) from the Toolbar.**

2 **Select the Warp tab.**



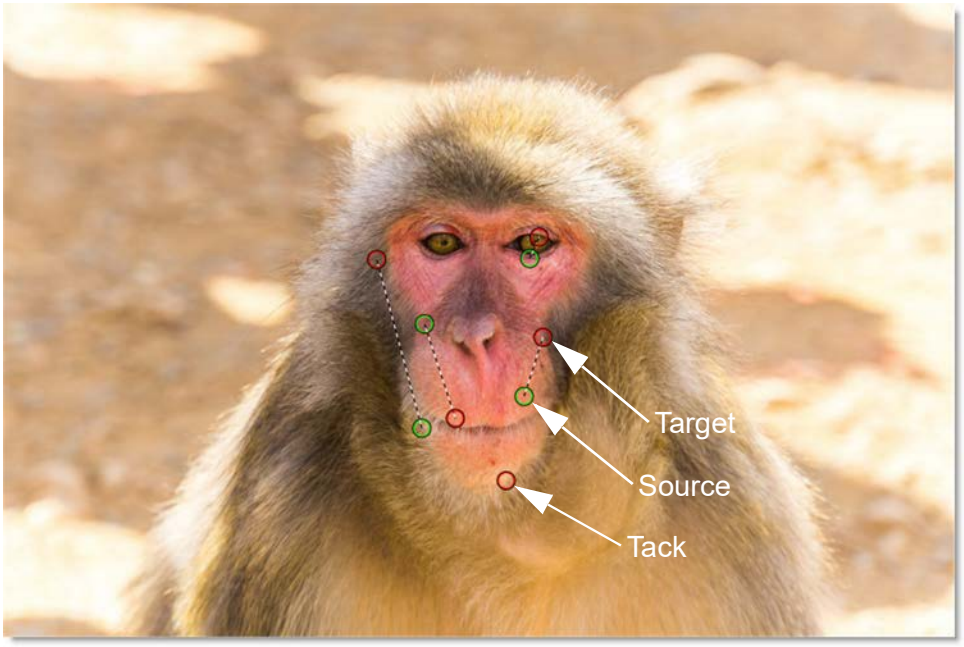
When the Warp tab is selected, Onion Skin mode is automatically activated so you can see the warp effect once a pin is added.

Tip: Change the Mix value to 100 if you want to see the warped image at 100%.

3 **Click-drag on the image to create a pin that contains a source and target.The farther the target (red circle) is dragged from the source (green circle), the more the image warps. You can add up to 20 pins.**

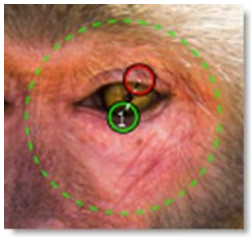
4 **To constrain the warp, click-release on the image to set a tack.**

The tack acts as a barrier and limits the effects of the warp.



In addition, each pin and tack has a radius which determines its strength.

5 **Hover over a pin to display the radius.**



6 **Shift-drag the pin radius to adjust it.**

7 **To track the pins and tacks, connect a Tracker output into the Paint node's transform input located at the top right of the node and select a point tracker or tracked layer from the Warp > Transform pop-up menu.**

The pins and tacks are now transformed by the motion of the tracked layer.

Go to the **Pin Warp** node for more information.

Aligning Features from Different Images

Oftentimes, you need to align the same feature in two different frames of a clip when painting with the Clone brush.

1 **In the Clone controls, select Output, Foreground or Input 1-5 in the Source pop-up menu and then set the Frame parameter to choose which source frame to paint from.**

2 **Press the ‘ key (located to the left of 1 key).**

The Clone source image automatically appears in the Viewer.

3 **Set the Onion-Skin mix to 100.**

4 **Click on the Clone source feature that you want to paint from.**

The Clone target image automatically appears in the Viewer.

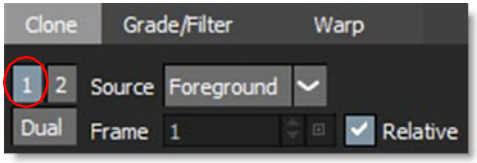
5 **Click on the Clone target feature that you want to paint on.**

The Clone offset is set.

Dual Clone Brush

Two Clone presets can be activated at once. This allows you to paint from two different images or locations, using separate Transform, Grade/Filter and Warp settings.

1 **Select the number 1 Clone preset.**

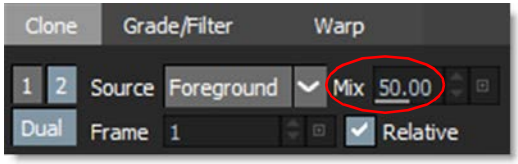


2 **Set the Clone source Transform, timing, Grade/Filter and Warp controls.**

3 **Choose the number 2 Clone preset and set its Clone source Transform, timing, Grade/Filter and Warp controls.**

4 **Press the Dual icon below the presets.**

A Mix control now appears at the top right of the Clone controls.



5 **Change the Mix parameter to set the relative opacity of the two Clone sources.**

6 **When you paint, both Clone presets will contribute to the painted result.**

Alpha Channels

Alpha channels can be used to control where you paint in the RGB channels with the source of the alpha coming from an image or by painted strokes. Alpha channels can also be painted on and modified.

Obey Alpha - Using Painted Alpha

Paint Temporary Alpha

Painting temporary alpha can limit where you paint in the RGB channels.

1 **Select the Color brush (Shift-C).**

2 **Enable only the A channel in the Paint tab.**

3 **Press the A key once to superimpose the alpha channel over the image.**

Now when you paint, you will see the alpha channel superimposed as a blue color over the RGB channels.

4 **Paint over an area of the image.**

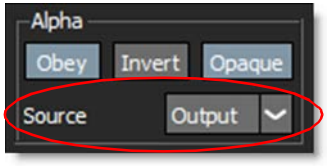
5 **Press the A key twice more to remove the alpha overlay.**

6 **Disable A and enable RGB in the Paint tab.**

Obey Alpha

1 **Enable Obey in the Alpha section of the Paint tab.**

2 **In the Paint tab, set the Alpha > Source to Output.**



Output uses the painted output alpha as the obey alpha source.

3 **Paint some strokes.**

When you paint, you can only modify the RGB channels in the area of the painted alpha.

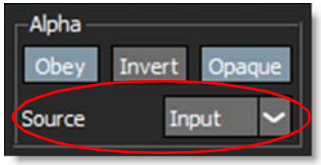
4 **If you'd like, enable Invert in the Alpha section of the Paint tab to paint the RGB channels anywhere but where the alpha exists.**

Obey Alpha - Use Input Alpha

The alpha from source layers and images can be used to control where you paint.

1 **Enable Obey in the Alpha section of the Paint tab.**

2 **In the Paint tab, set the Alpha > Source to Input or Input 1-5.**



Input uses the input alpha from source layer or image as the obey alpha source.

3 **Paint some strokes.**

When you paint, you can only modify the RGB channels in the area of the input alpha.

4 **If you'd like, enable Invert in the Alpha section of the Paint tab to paint the RGB channels anywhere but where the alpha exists.**

Note: To view the input alpha, you will need to switch the View pop-up menu to the source containing the alpha.

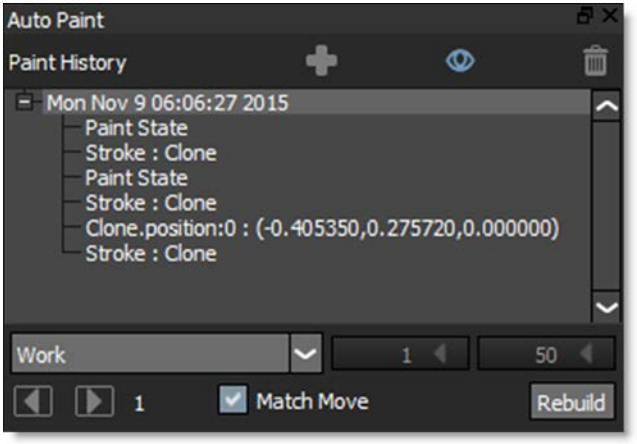
Auto Paint

Auto Paint is a highly unique automated paint feature that records all paint activity with tight integration of both point and planar trackers. Paint strokes can be match moved or stabilized giving Silhouette the speed of raster paint with the repeatability of vector paint. The beauty of the system lies in the automatic recording of the paint strokes and brush settings. Individual paint strokes can be selected and repeated over many frames, as well as deleted. If the original footage changes, the entire paint history can be used to rebuild the painted shot, automatically.

Event Playback

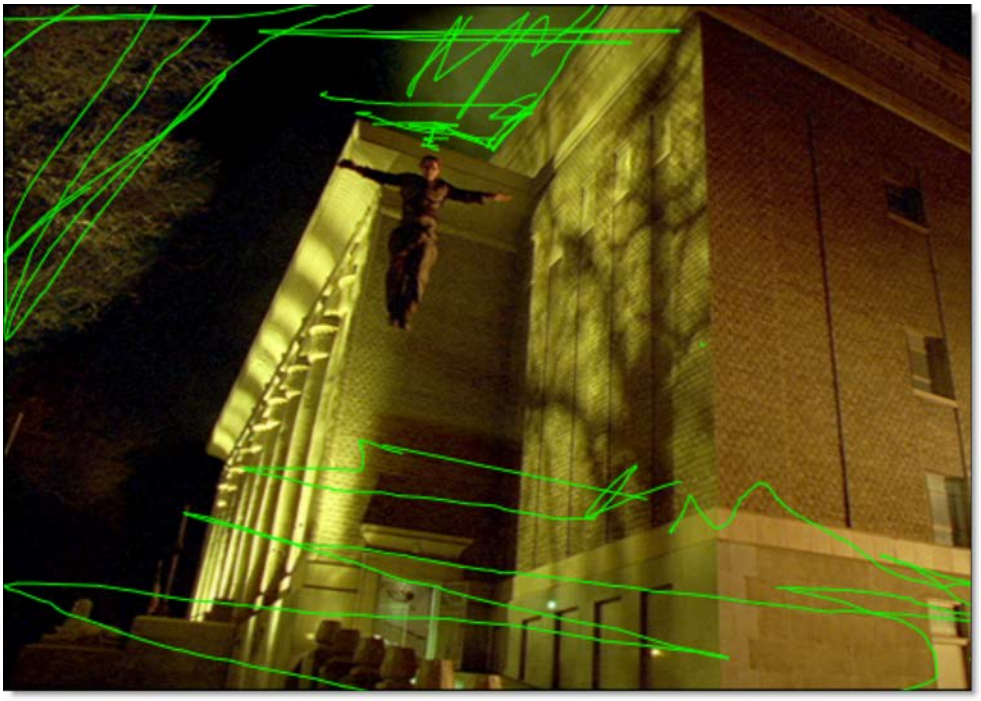
1 **Go to frame 1 and paint some strokes.**

Groups are created each time painting is started on a frame and recorded with the current time stamp. So the first time you begin painting on frame 1, for instance, a renamable “event group” containing a current time stamp is created. Then, events are created for the current paint state: channels/flags, brush profile, brush, and brush parameters. And finally, a new stroke event is created for the new stroke. After the first stroke, state changes are stored in their own events (ie. Brush Size change, Opacity, etc).

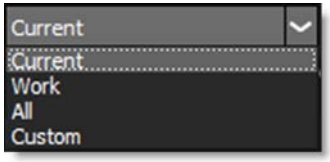


2 **In the Paint History, select the frame number group, paint event group, or a sub set of the paint events you want to play back.**

When you make a selection in the Paint History, the strokes are highlighted green in the Viewer.



3 **In the Auto Paint window, choose an option from the Frame Range pop-up menu.**



If you choose Custom, you will be able to enter values in the numeric input fields.

4 **Press either the Play Selected Events Forward or Backward icon in the Auto Paint window.**

This will play back all of the selected events for the desired frame range. The playback is smart, so if you try to play back starting on the frame from where the source events are coming from, it will skip this frame and just move on to the next.

As it plays, Silhouette copies the paint events from the start frame on to the end of the history for successive frames, as if you were manually performing those events.

Event Playback - Tracking Paint Strokes

Let's suppose you want to paint out some facial blemishes on frame 1 and apply those strokes to the rest of the clip, while taking into account the camera movement. With Silhouette's Auto Paint features, you can easily do this by playing back the paint strokes from frame 1 and using tracking data to match move the strokes on successive frames.

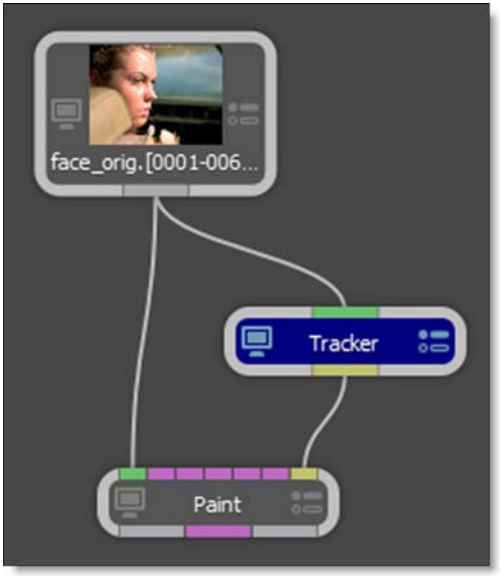
1 **Load some source footage that has some camera movement to it and create a session.**

2 **In the Trees window, click on the source to select it and then double-click on the Paint node from the Nodes > Image group to add it to the tree.**

3 **Drag a Tracker node from the Nodes > Transform group and drop it onto the source node.**

A new branch is created.

4 **Connect the Tracker output into the Paint node's transform input located at the top right of the node.**



The transform inputs are colored yellow.

5 **Single-click in the center of the Tracker node to view and edit it.**

6 In the Tracker node, add a layer in the Object List.

7 Track an object whose motion you want to apply to paint strokes.

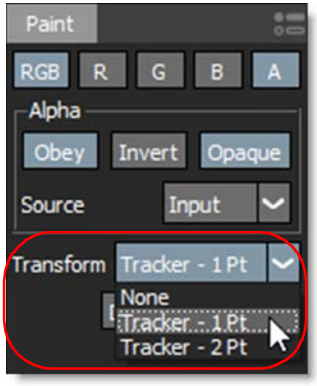
8 Go to frame 1, select the tracker, select the layer, and apply the tracking data.

9 In the Trees window, single-click in the center of the Paint node to view and edit it.

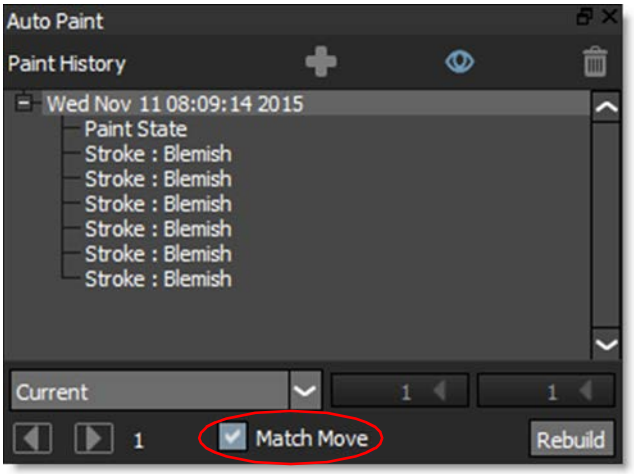
10 Paint some strokes that you would like to duplicate over the entire clip.

For this image, I used the Blemish brush to remove acne from the girl's face.

11 Select a point tracker or tracked layer in the Paint tab's Transform pop-up menu.

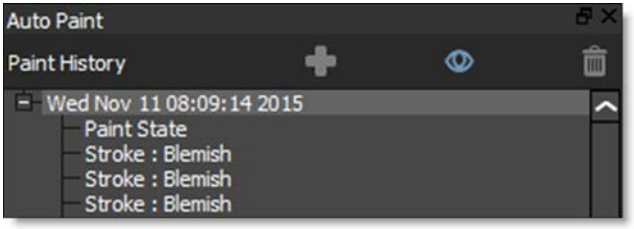


12 Enable Match Move located at the bottom of the Auto Paint window.



Activating Match Move will use the tracking data from the selected layer and apply it to the paint strokes when playing back selected events.

13 In the Paint History, select the paint event group or a sub set of the paint events you want to play back. In this example, selecting the top group is good.



14 In the Auto Paint window, select All from the Frame Range pop-up menu.

15 Press either the Play Selected Events Forward or Backward icon in the Auto Paint window.

The paint strokes from the start frame are duplicated on successive frames with tracking data applied to them so they will follow the motion of the clip.

Event Playback -Tracking the Clone Source

Tracking the Clone source is useful for when you want the Clone source to match the motion of the clip you are painting on.

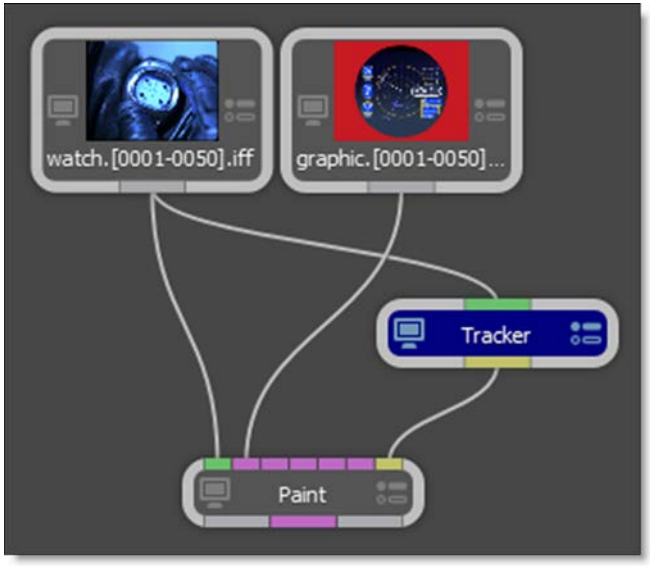
1 **Load some source footage that has some camera movement to it and create a session.**

2 **In the Trees window, click on the source to select it and then double-click on the Paint node from the Nodes > Image group to add it to the tree.**

3 **Drag a Tracker node from the Nodes > Transform group and drop it onto the source node.**

A new branch is created.

4 **Connect the Tracker output into the Paint node's transform input located at the top right of the node. The transform input is colored yellow.**



In the example above, I have also hooked up a clone source into the first clone input of the Paint node.

5 **Single-click in the center of the Tracker node to view and edit it.**

6 **In the Tracker node, add a layer in the Object List.**

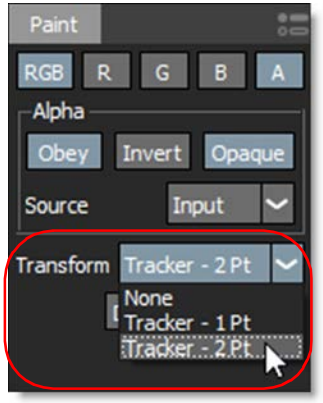
7 Track an object whose motion you want to apply to paint strokes.

8 Go to frame 1, select the tracker, select the layer, and apply the tracking data.

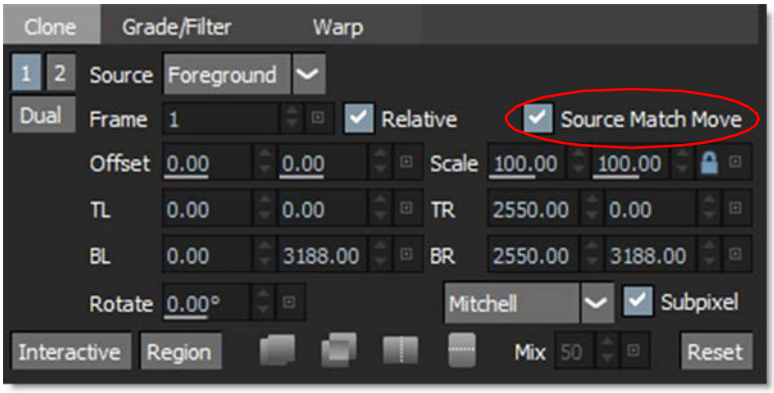
9 In the Trees window, single-click in the center of the Paint node to view and edit it.

10 Choose the Clone Brush in the Toolbar.

11 Select a point tracker or tracked layer in the Paint tab's Transform pop-up menu.



12 Enable Source Match Move in the Clone transform controls.



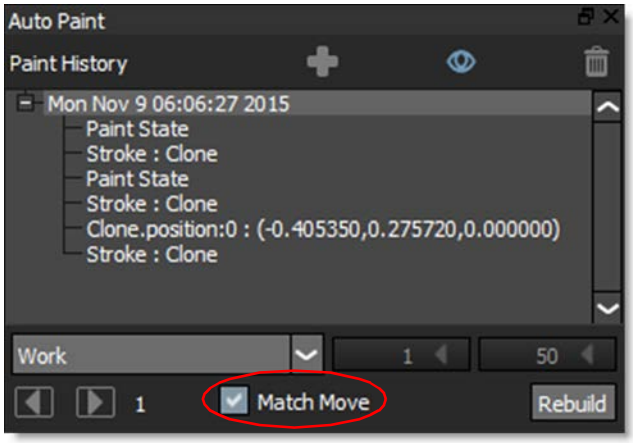
Selecting a layer and activating Source Match Move in the Clone transform controls applies the tracking data of the selected layer to the Clone source. In this configuration, the painted Clone source is match moved.

13 Paint some strokes that you would like to duplicate over the entire clip.

For this image, I am painting a graphic into the face of the watch.

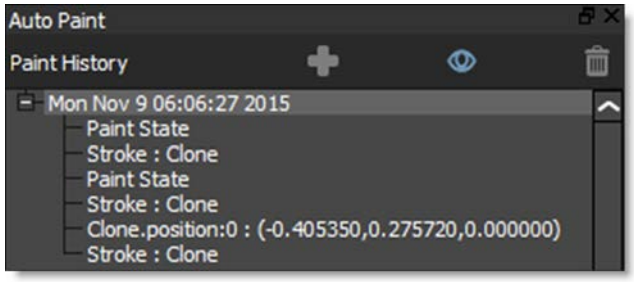
Once you are done painting the frame, you can then duplicate it over the rest of the clip.

14 Enable Match Move located at the bottom of the Auto Paint window.

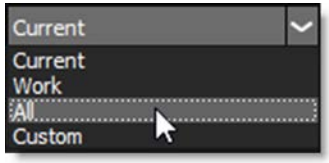


Activating Match Move will use the tracking data from the selected layer and apply it to the paint strokes when playing back the events.

15 In the Paint History, select the paint event group or a sub set of the paint events you want to play back. In this example, selecting the top group is good.



16 In the Auto Paint window, select All from the Frame Range pop-up menu.



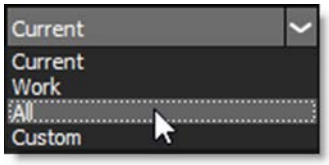
17 Press either the Play Selected Events Forward or Backward icon in the Auto Paint window.

The paint strokes from the start frame are duplicated on successive frames with tracking data applied not only to the paint strokes but to the Clone source as well.

Rebuild

The Rebuild feature in the Auto Paint window will rebuild the paint events for all frames defined in the Frame Range in the order in which they were painted. This is useful if you replace your footage with a different color correction than the original and want the result of painting with the Clone brush to match the new footage.

1 **In the Auto Paint window, select All from the Frame Range pop-up menu.**

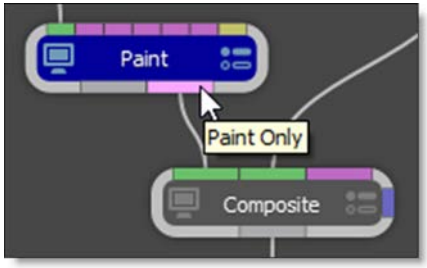


2 **Click the Rebuild button in the Auto Paint window.**

Paint Only Node Output

The Paint Only node output outputs only the painted portions of the frame along with an automatically generated alpha channel (where the brush painted). This will allow you to seamlessly composite the painted areas in a Composite node without having to do a difference matte.

1. **In the Paint node, select View > Paint to display what would be rendered when using the Paint Only output.**
2. **If you press the A key to overlay the alpha, you will see an automatically generated alpha channel where the brush painted.**
3. **Connect the Paint Only node output to a Composite node.**



The paint strokes will be seamlessly composited over whatever background image you have connected.

Power Matte

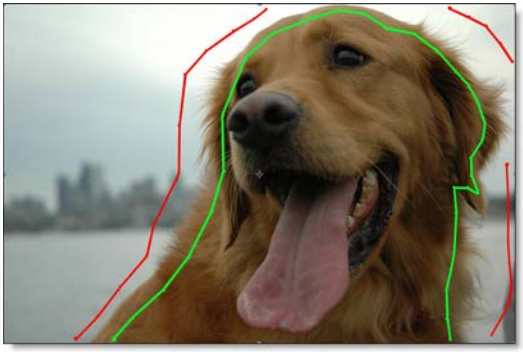
Open Shape Method

Power Matte creates mattes by using a trimap--a pre-segmented image consisting of three regions of foreground (what you want to cut out), background (what you want to get rid of) and unknown. Partial opacity values are then computed only for pixels inside the unknown region. Two trimap methods can be used: Open Shape or Closed Shape. This tutorial will use the Open Shape Method.

Unlike previous approaches, our trimaps can be relatively sparse consisting of open foreground and background shapes. All pixels left unmarked will be treated as unknown.

Original

Shapes



A good Open Shape technique is to draw an inner and outer outline around the object you are extracting using open shapes. Shapes should be near the boundary of the foreground or background, but not right up against the edge. Also, if the foreground or background has varying colors, the shapes should cross over these colors.

Note: The general rule is to not put foreground and background shapes too close together unless you need to.

1. **Load some source footage and create a session.**
2. **In the Trees window, add a Power Matte node from the Nodes > Key tab and connect it to the source node.**
3. **Single-click in the center of the Power Matte node to view and edit it.**

4 **Define foreground area (what you want to cut out) by drawing an open shape around the inner edge of the object.**

5 **Start by selecting either Bézier, B-Spline or X-Spline from the Toolbar.**

6 **Click on the screen to create a control point.**

A control point is created.

7 **Add as many points as you like.**

8 **When finished adding points, press the Esc key to finish the open shape.**

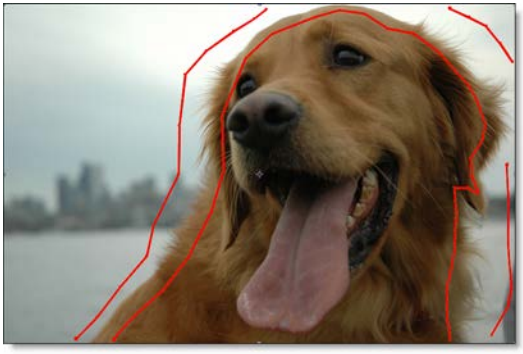
9 **Now, draw shapes to define background areas (what you want to get rid of). Press the Esc key each time you want to finish an open shape.**

If the background has varying colors, the shapes should cover these colors.

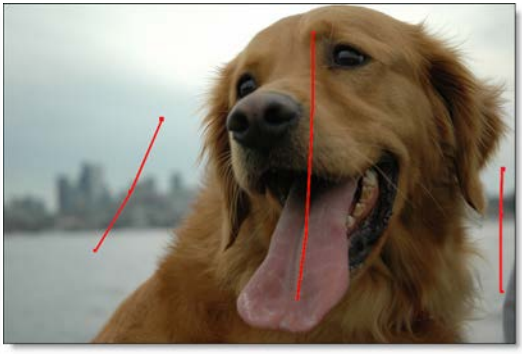
10 **Choose the Reshape tool when you are done drawing open shapes.**

Warning: If you only provide a few sparse shapes, the Open Shape Method will take longer to process with a less accurate result than the Closed Shape Method.

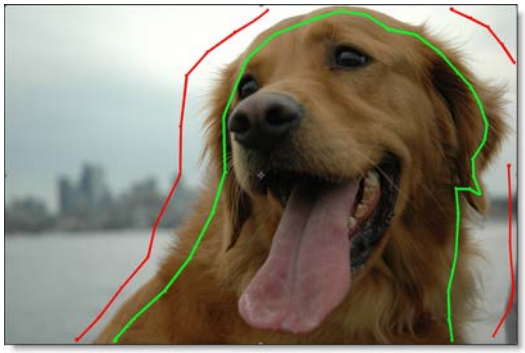
Good Shape Example



Bad Shape Example



11 In the Object List, feel free to change the name and color of your shapes. In the example below, I named the inner shape Foreground and changed the color to green. Also, I named all of the outer shapes Background and left their color set to red. Although this is not a necessary step, it is helpful to identify what the shapes are being used for.

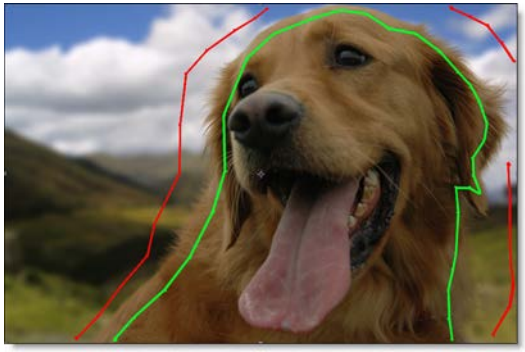


Power Matte won't process until you assign the shapes as either foreground or background.

12 Select the inner, foreground shape and set the type to Foreground in the Object window.

13 Select all the outer, background shapes and set the type to Background in the Object window.

Once a foreground and background shape are assigned, Power Matte processes the matte.The Viewer displays the composite of the foreground over the background based on your shapes. If you have not input a background clip, the foreground will be composited over black. The default color is black.



Now that you have foreground and background shapes, animate them over time so that they follow the motion of what you are cutting out. However, since you already assigned the shapes as foreground and background, Power Matte will try and update every time you adjust the shapes.

14 **Set the View to Foreground. This way Power Matte is not constantly trying to update when you change a parameter.**

15 **Animate the foreground and background shapes over time so that they follow the motion of what you are cutting out.**

It is best to use the Tracker (**Shift-T**) to animate the motion of your shapes as it will most likely ensure that the motion is consistent from frame to frame.

16 **Play through the clip to make sure that the shapes are properly following your object.**

17 **Use View > Matte to display the generated matte.**

18 **Hit the Play button to check your results so far. When you hit the Play button, Power Matte renders each frame.**

19 **If at any time you want to turn off the display of the shapes, click the Overlay icon above the Viewer or press 0 (the number zero) shortcut key.**

In the generated matte, white is foreground, black is background and any gray areas in between represent a level of transparency. If the matte is not acceptable after processing, you can either adjust the shapes or add additional shapes near the region where the matte is not accurate.

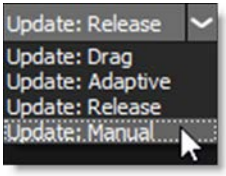
20 **If you see gray areas in the foreground object that should be completely white, make additional foreground shapes in those areas.**

21 **If you see gray areas in the background that should be completely black, make additional background shapes in those areas.**

22 Gray values in Unknown areas can be reduced by increasing the Deartifact value located in the Node parameters.

If you need to adjust the shapes after they have been created and assigned in Power Matte, you can enhance performance by either:

- **Set the View to Foreground while editing shapes.**
- **Set the Update mode to Manual and hit the Enter key when you want to process. This way Power Matte is not constantly trying to update when you change a parameter.**



- **Use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

23 Choose View > Composite to display the Composite.

If you look closely at the edges of our dog example, you will see some white fringing created by the sky from the original image. By activating Power Matte's Color Estimation feature, the fringing can be removed by estimating the color of the foreground in unknown and semi-transparent areas.

Color Estimation Off

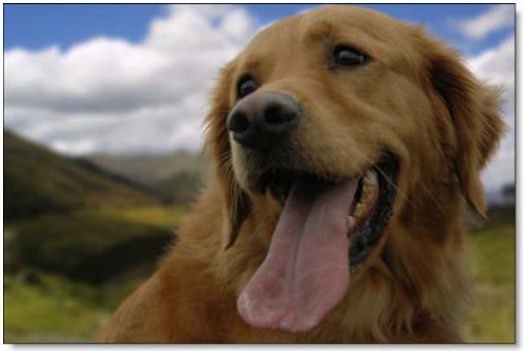
Color Estimation On

Note: Color Estimation can cause color flickering in edge areas of partial opacity if your shape position is not consistent from frame to frame or if your source footage is grainy. Disable Color Estimation if you see flickering in the edge areas.

24 To remove fringing around the object being cutout, go to the Node parameters and turn on Color Estimation.

Original

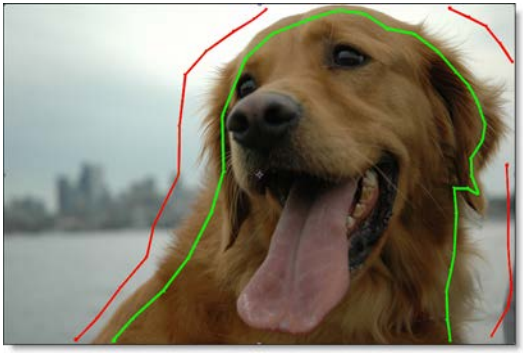
Composite



25 When you press the Play button while viewing the Composite, you will see the result in full color.

Now that I have shown you how to generate a matte using open shapes, an alternative method is to use a mix of open and closed shapes. If you have large contiguous areas of background, surrounding the background with a closed shape and enabling Filled in the Object window will speed up Power Matte's processing.

Open Shape Example



Open/Closed Shape Example

Closed Shape Method

Power Matte creates mattes by using a trimap--a pre-segmented image consisting of three regions of foreground (what you want to cut out), background (what you want to get rid of) and unknown.

The Closed Shape Method uses closed shapes to mark definite foreground and background areas of the image. Any unmarked areas are considered unknown and partial opacity values are then computed for the pixels inside the unknown region. So, make sure that any hair detail, transparent or blurry portions fall within the unknown areas

Note: The Closed Shape method does not handle a foreground object with background holes in it, and therefore the Open Shape method would be a better choice when extracting an object with holes.

Original

Shapes

1. **Define foreground area (what you want to cut out) by drawing a closed shape.**
2. **Start by selecting either Bézier, B-Spline or X-Spline from the Toolbar.**
3. **Draw a shape around the inner edge of the object, in this case, the hiker.**

4 To close the shape, click on the first point that you created.

5 To tell Power Matte that you are using a closed shape, enable Filled in the Object window as well as set the Type for this shape to Foreground.

6 Now, draw closed shapes to define background area (what you want to get rid of). If your foreground object is completely surrounded by background, like the hiker example below, a quick way to define the background area is to first draw a closed shape around the outside of the foreground and then invert it in the Object window. The areas outside of the background shape are then considered as background.

7 After drawing the background shape, enable Filled in the Object window as well as set the Type for this shape to Background. Invert the shape if you drew around the boundary of your foreground object as in the example above.

Once a foreground and background shape are assigned, Power Matte processes the matte. The Viewer displays the composite of the foreground over the background based on your shapes. If you have not input a background clip, the foreground will be composited over black. The default color is black.

Now that you have a foreground and background shape, animate them over time so that they follow the motion of what you are cutting out. However, since you already assigned the shapes as foreground and background, Power Matte will try and update every time you adjust the shapes.

8 **Set the View to Foreground. This way Power Matte is not constantly trying to update when you change a parameter.**

9 **Animate the foreground and background shapes over time so that they follow the motion of what you are cutting out.**

It is best to use the Tracker (**Shift-T**) to animate the motion of your shapes as it will most likely ensure that the motion is consistent from frame to frame.

10 **Play through the clip to make sure that the shapes are properly following your object.**

11 **Use View > Matte to display the generated matte.**

12 **Hit the Play button to check your results so far. When you hit the Play button, Power Matte renders each frame.**

13 **If at any time you want to turn off the display of the shapes, click the Overlay icon above the Viewer or press 0 (the number zero) shortcut key.**

In the generated matte, white is foreground, black is background and any gray areas in between represent a level of transparency. If the matte is not acceptable after processing, you can adjust the shapes.

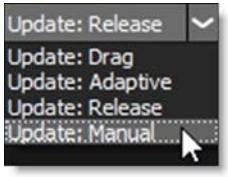
14 **If you see gray areas in the foreground object that should be completely white, adjust the foreground shape in those areas.**

15 **If you see gray areas in the background that should be completely black, adjust the background shape in those areas.**

16 **Gray values in Unknown areas can be reduced by increasing the Deartifact value located in the Node parameters.**

If you need to adjust the shapes after they have been created and assigned in Power Matte, you can enhance performance by either:

- **Set the View to Foreground while editing shapes.**
- **Set the Update mode to Manual and hit the Enter key when you want to process. This way Power Matte is not constantly trying to update when you change a parameter.**



- **Use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

17 Choose View > Composite to display the Composite.

If you look closely at the edges of our hiker example, you will see some white fringing created by the sky from the original image. By activating Power Matte's Color Estimation feature, the fringing can be removed by estimating the color of the foreground in unknown and semi-transparent areas.

Color Estimation Off | Color Estimation On

18 To remove fringing around the cutout object, go to the Node parameters and turn on Color Estimation.

Note: Color Estimation can cause color flickering in edge areas of partial opacity if your shape position is not constant from frame to frame or if your source footage is grainy. Disable Color Estimation if you see flickering in the edge areas after a preview or render.

19 **When you press the Play button while viewing the Composite, you will see the result in full color.**

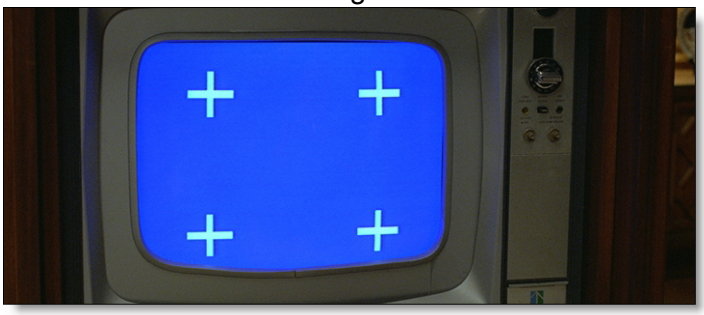
Original

Result

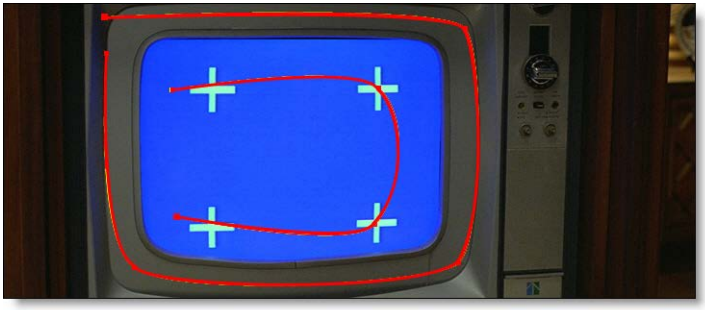
Blue/Green Screen Keying

Keying is a technique for blending two images, in which a color from one image is removed, or made transparent, revealing another image behind it. Either the Open or Closed Shape Method can be used when creating mattes for Blue or Green screen photography. Power Matte doesn't require any specific color for the object to be photographed against, but blue and green screens will be referred to as these are the most common.

Original



Shapes

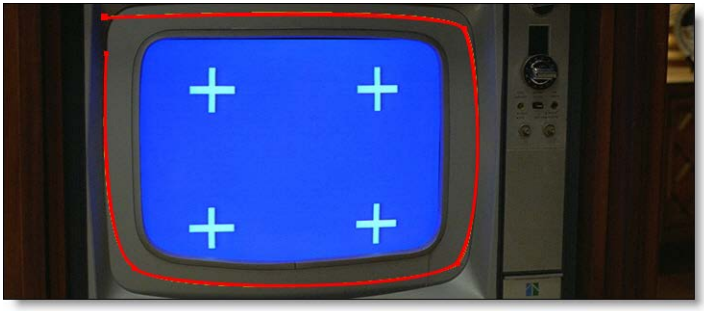


Let's start by creating some open shapes. The shapes should be near the boundary of the foreground or background, but not right up against the edge. Also, if the foreground or background has varying colors, the shapes should cross over these colors.

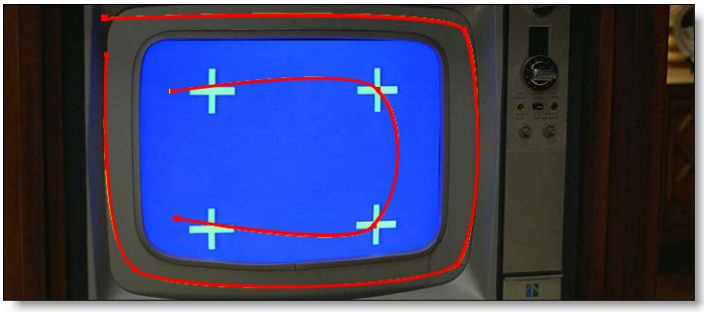
1 **Define foreground area (what you want to cut out) by drawing a open shape.**

2 **Start by selecting either Bézier, B-Spline or X-Spline from the Toolbar.**

3 **Draw a shape around the edge of the object that you want to cutout, in this case, the television screen. When done adding points, press the Esc key to finish the open shape.**



4 **Next, draw a shape to define background areas. In the example below, this would be the blue area within the television screen. Press the Esc key when you want to finish the open shape.**



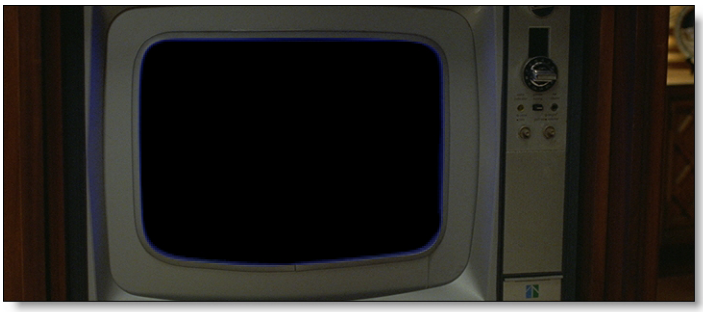
5 **Choose the Reshape tool when you are done drawing the open shapes.**

Power Matte won't process until you assign the shapes as either foreground or background.

6 **Select the foreground shape and in the Object window, set the type to Foreground.**

7 **Select the background shape and in the Object window, set the type to Background.**

Once a foreground and background shape are assigned, Power Matte processes the matte. The Viewer displays the composite of the foreground over the background based on your shapes. If you have not input a background clip, the foreground will be composited over black. The default color is black.



Now that you have foreground and background shapes, animate them over time so that they follow the motion of what you are cutting out. However, since you already assigned the shapes as foreground and background, Power Matte will try and update every time you adjust the shapes.

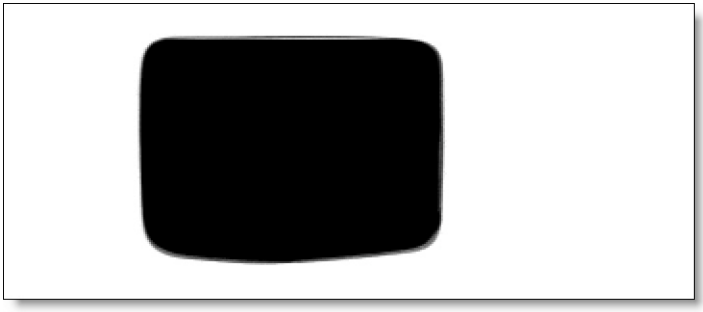
8 **Set the View to Foreground. This way Power Matte is not constantly trying to update when you change a parameter.**

9 **Animate the foreground and background shapes over time so that they follow the motion of what you are cutting out.**

It is best to use the Tracker (**Shift-T**) to animate the motion of your shapes as it will most likely ensure that the motion is consistent from frame to frame.

10 **Play through the clip to make sure that the shapes are properly following your object.**

11 **Use View > Matte to display the generated matte.**



12 **Hit the Play button to check your results so far. When you hit the Play button, Power Matte renders each frame.**

13 **If at any time you want to turn off the display of the shapes, click the Overlay icon above the Viewer or press 0 (the number zero) shortcut key.**

In the generated matte, white is foreground, black is background and any gray areas in between represent a level of transparency. If the matte is not acceptable after processing, you can adjust the shapes.

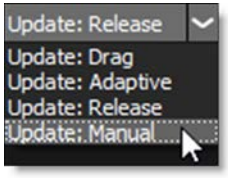
14 **If you see gray areas in the foreground object that should be completely white, adjust the foreground shape in those areas.**

15 **If you see gray areas in the background that should be completely black, adjust the background shape in those areas.**

16 **Gray values in Unknown areas can be reduced by increasing the Deartifact value located in the Node parameters.**

If you need to adjust the shapes after they have been created and assigned in Power Matte, you can enhance performance by either:

- **Set the View to Foreground while editing shapes.**
- **Set the Update mode to Manual and hit the Enter key when you want to process. This way Power Matte is not constantly trying to update when you change a parameter.**

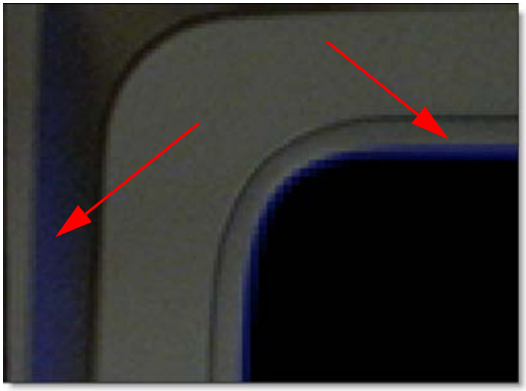


- **Use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

17 **Choose View > Composite to display the Composite.**

When a foreground object has been photographed against a solid blue or green backdrop, the blue or green color can have a tendency to spill onto the foreground object. When extracting an object photographed against one of these colors, you may find it necessary to remove the blue or green spill. This is a process called Color Suppression.

Color Suppression Off



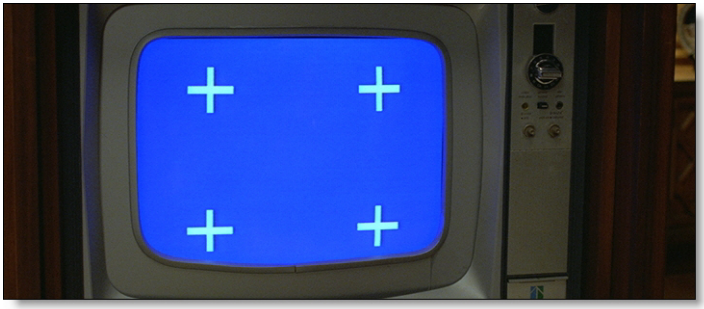
Color Suppression On

18 **To remove color spill from your object, go to the Node parameters and change the Color Suppression > Type parameter from None to Blue or Green.**

19 **Click Play button to see the RGB image results.**

Result

Original



Pin Based Warping

Pin Warp allows you to warp specific image areas using pins, while leaving other areas untouched. Adjustments can range from subtle nip and tucks to something more obvious like repositioning an arm or leg.

Before

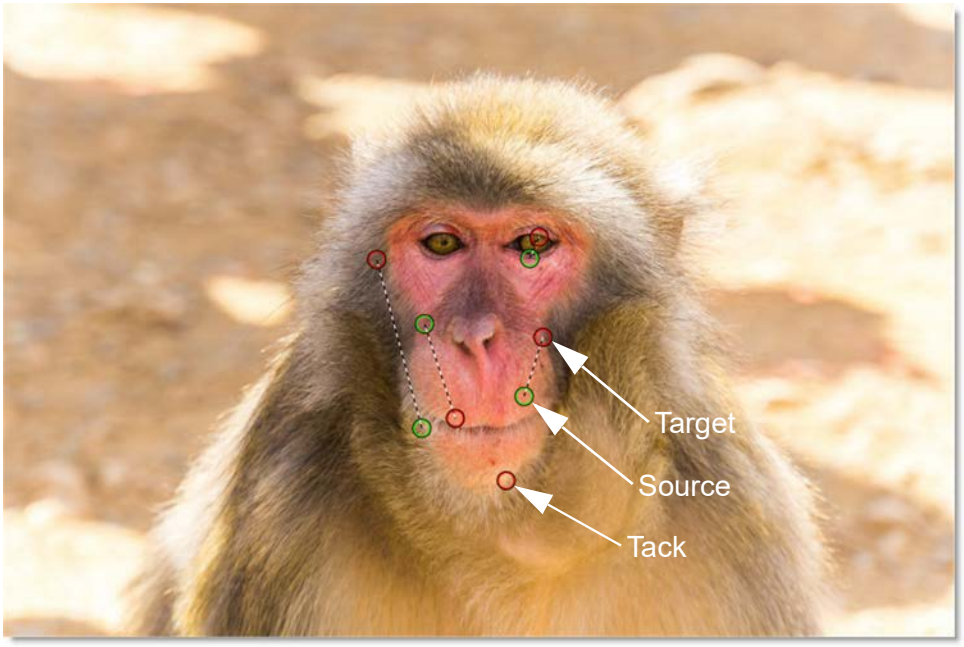
After

Photo by Tim Easley on Unsplash

1. **Load some source footage and create a session.**
2. **In the Trees window, add a Pin Warp node from the Nodes > Warp tab and connect it to the source node.**
3. **Click-drag on the image to create a pin that contains a source and target. You can add up to 20 pins.**

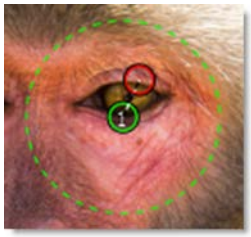
   The farther the target (red circle) is dragged from the source (green circle), the more the image warps.
4. **To constrain the warp, click-release on the image to set a tack.**

The tack acts as a barrier and limits the effects of the warp.



In addition, each pin and tack has a radius which determines its strength.

5 **Hover over a pin to display the radius.**



6 **Shift-drag the pin radius to adjust it.**

7 **To track the pins and tacks, connect a Tracker output into the Pin Warp node's transform input located at the top right of the node and select a point tracker or tracked layer from the Transform pop-up menu.**

The pins and tacks are now transformed by the motion of the tracked layer.

Go to the **Pin Warp** node for more information.

Shape Based Warping

Image warping can take place on a stills as well as moving images. Warping can be used to enhance or exaggerate facial features, adjust sizing of image elements, create talking animals or any other type of image deformation.

Before After

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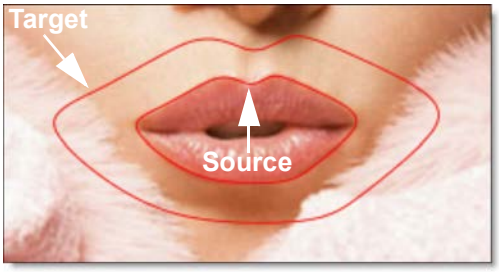
Create Source and Target Shapes

A source and target shape are required for a warp.

1. **Load some source footage and create a session**
2. **In the Trees window, add a Morph node from the Nodes > Warp tab and connect the A input to the source node.**
3. **Single-click in the center of the Morph node to view and edit it.**
4. **Select View > A.**

   Viewing the A side while creating and editing shapes will give faster interaction than View > Output.

5 **Create source and target shapes.**



6 **If necessary, keyframe the position of both the source and target shapes.**

Joining Shapes

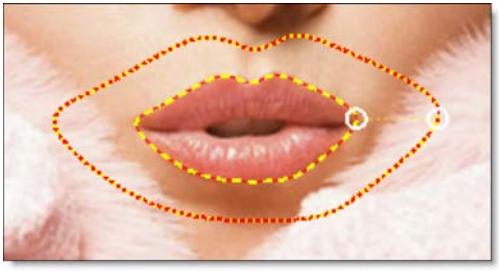
Joining shapes specifies the direction of a warp. Joining shapes is done with the Correspondence tool. When two shapes are joined, correspondence points define where elements in the source shape match to elements in the target shape.

1 **Select the Correspondence (C) tool in the Toolbar.**

2 **Click the source shape and drag a line to the target shape.**

3 **When the cursor is over the target shape, release the mouse button to join the shapes.**

As the shapes are joined, one correspondence point is created on each shape and a line connects them.



4 **Move the correspondence points to match up to like features. For instance, in the image above, the points are placed at the corner of the mouth in both shapes.**

Adding Correspondence Points

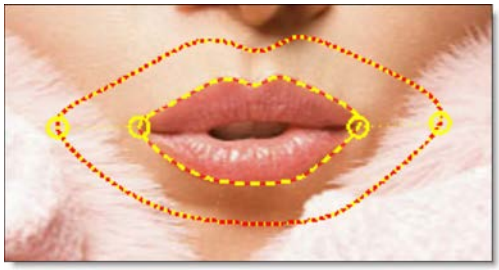
When a new shape is created, Silhouette adds a single correspondence point on the shape. It is best to add and position these points so that logically similar features are connected together. Correspondence points serve as guides that define the location of identifiable areas on a shape.

1 **With the Correspondence tool active, select a shape.**

2 **Alt-click the shape where you want to place the new correspondence point.**

Correspondence points determine how to transform the areas of the image defined by your source and target shapes.

3 **Place correspondence points at key positions on the shape.**



Setting the Distortion

The Distortion parameter warps the image from the source to the target shape.

1 **Change the View to Output.**

The Output view is where you can see the actual warp.

2 **Select the Node parameters tab.**

3 **Set the Distortion to 0 at the start frame and 100 at the end frame.**

Start Middle End

4 **For faster interaction, you can use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

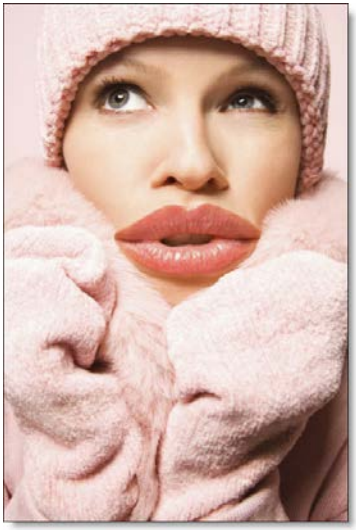
Barrier Shapes

Besides creating shapes to define areas that warp and morph, you can also use shapes as ways of restricting movement beyond certain parts of the image. These shapes are called barrier shapes and tack down an area and keep it stationary. Any unjoined shape will serve as a barrier.

1 **Use a barrier shape (an unjoined shape) to tack down an area and keep it stationary.**

In the example above, the barrier shape will prevent any movement outside of the shape. Compare the results below.

No Barrier



With Barrier

The barrier shape has successfully pinned down the image outside of its boundaries.

Previewing the Warp

1 **Press the Play button in the Timebar.**

Silhouette will render each frame in order. If the view mode is set to Output and you have enough RAM to fit the clip into memory, Silhouette will play the results in real time once it is completed.

Note: If the view mode is set to A Warp, the results of each frame are not cached into memory.

2 **If you see artifacts in the preview, go to the Node tab and change the Precision to Normal first and then Better if you still see artifacts.**

Note: By default, the precision or quality of the warp is set to Draft.

3 **For faster processing, you can use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

Morphing

Image morphing can take place on stills as well as moving images. Morphing has been traditionally used to transform one object or person into another and more recently to seamlessly transform a live action element into a CG (computer generated) object and vice versa.

Start Middle End

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Assigning Inputs

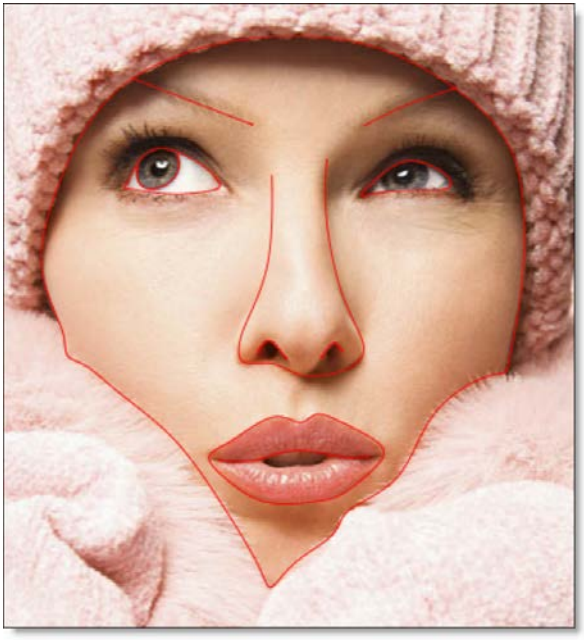
A and B inputs are required for a morph.

1 **Choose two images to morph together and wire them into a Morph node.**

The A input (A-roll) is considered the source and the B input (B-roll) is considered the target. The A-roll will morph into the B-roll.

Create A-roll and B-roll Shapes

1 **Select View > A and create shapes for the A-roll image. Shapes should be added to key areas of the image. When doing a facial morph, shapes should be placed for the face, eyes, eyebrows, nose, nostrils, mouth, lips, etc. You can use both open and closed shapes.**



The A-roll shapes are automatically colored red.

2 **If necessary, keyframe the position of the A-roll shapes.**

3 **Select View > B and create shapes for the B-roll image.**

The B-roll shapes are automatically colored blue.

4 **If necessary, keyframe the position of the B-roll shapes.**

Joining Shapes / Adding Correspondence Points

Joining shapes specifies the direction of a warp.

1 **Select the Correspondence (C) tool and join similar shapes.**

For instance, the shapes for the eyes in the source image are joined to the shape for the eyes in the target image, mouth shapes to mouth shapes, nose shapes to nose shapes--you get the idea.

2 **For the newly joined shapes, add additional correspondence points to the areas where the shapes change direction by Alt-clicking on a selected shape.**

Setting the Distortion and Transparency

The Distortion parameter warps the image from the A-roll to the B-roll shapes while the Transparency dissolves between them.

1 **Change the View to Output.**

The Output view is where you can see the actual morph.

2 **Select the Node parameters tab.**

3 **Set the Distortion to 0 at the start frame and 100 at the end frame.**

4 **Set the Transparency to 0 at the start frame and 100 at the end frame.**

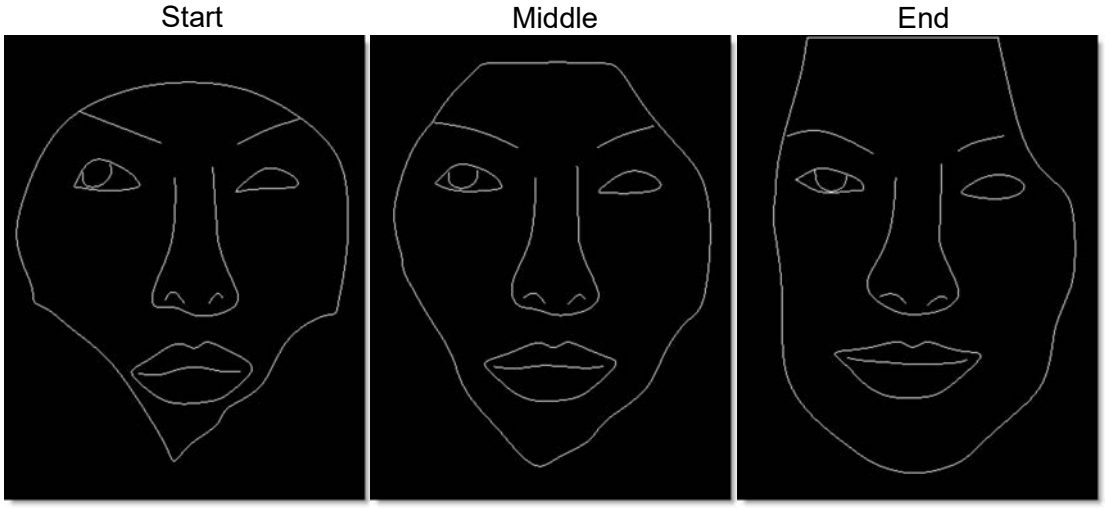
5 **If you'd like, you can set the Distortion and Transparency to start and end at different times in the clip to create a more natural looking morph for your particular clip.**

6 **For faster interaction, you can use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

Previewing the Morph

The Viewer can display a wireframe preview to quickly visualize the morph.

1 **Select View > Wireframe. You can also use Alt-W to toggle the wireframe view mode on or off.**



2 **Press the Play button in the Timebar.**

Silhouette will play a wireframe representation of the A-roll shapes morphing into the B-roll shapes.

3 **Change the View to Output and press 0 to turn off the shape display. This will allow you to see the image better.**

Start Middle End

4 **Press the Play button.**

Silhouette will render each frame. If you have enough RAM to fit the clip into memory, it will playback in real time once it is completed.

5 **If you see artifacts in the preview, go to the Node tab and change the Precision to Normal first and then Better if you still see artifacts.**

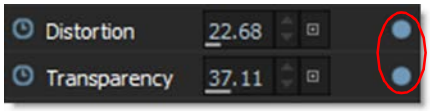
Note: By default, the precision or quality of the warp is set to Draft.

6 **For faster processing, you can use a lower quality proxy image by using the Proxy pull-down menu above the Viewer.**

7 **Press 0 again to turn shape display back on.**

Adjusting the Morph

There are a number of ways to modify the look of the morph. By default, shapes and layers inherit their Distortion, Transparency and Depth from the Morph node settings. To “override” the value at the layer or shape, click the Override icon (dot) to the right of the numeric field and the parameter will override the parent.



1. **Override the Distortion and Transparency to have independent control over these parameters at either the layer or shape.**
2. **Use barrier shapes (unjoined shapes) to tack down areas and keep them stationary.**

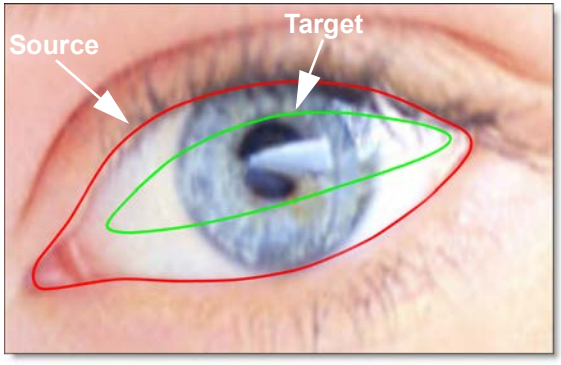
Folding

Sometimes the warping of a pair of joined shapes can overtake other shapes (joined or barrier). The overtaking shapes will necessarily fold over or under the shapes they overtake. For instance, you can warp eye lids over a pupil without distorting the pupil, as seen below.

1 **Select View > A.**

Viewing the A roll while creating and editing shapes will give faster interaction than View > Output.

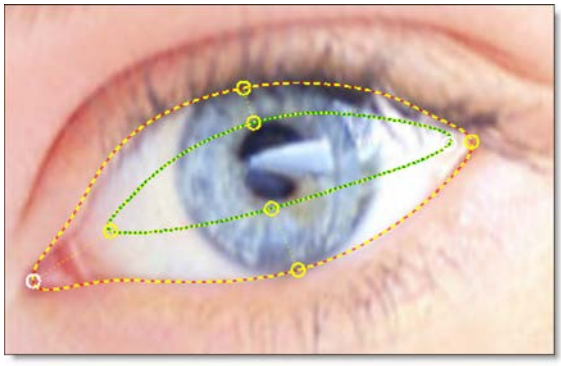
2 **Create source and target shapes.**



3 **Select the Correspondence (C) tool and join the source to the target shape.**

The source shape describes the current form of the object, while the target shape describes where you want it to fold.

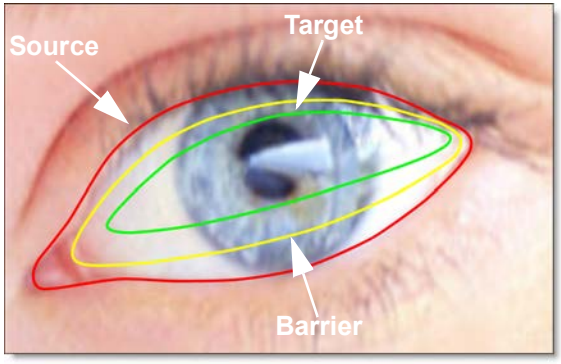
4 **Add correspondence points where necessary.**



5 **Create a barrier shape by copying and pasting the source shape.**

Note: Folding can happen even with non-barrier shapes. Folding happens anytime one shape crosses over another.

6 **Size the barrier shape to be slightly smaller than the source shape.**



By using a barrier shape, the source shape will appear to fold over or under (depending on shape order in the Morph node's Object List) as it is transformed into the target shape.

7 **In the Object List, arrange the barrier shape to be below the source and target shapes.**

The upper level shapes or layers will appear to fold over the lower, barrier shape. The portion of the image between the barrier shape and target shape is not affected.

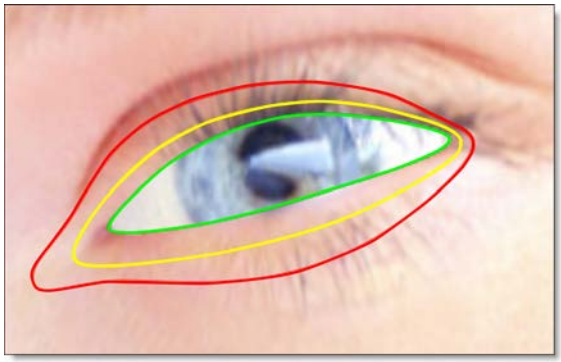
Note: The rendering order in the Object List is from bottom to top, so objects that are higher up are rendered in front of objects lower down.

8 **Select the Node parameters tab.**

9 **Change the View to Output.**

The Output view is where you can see the actual warp.

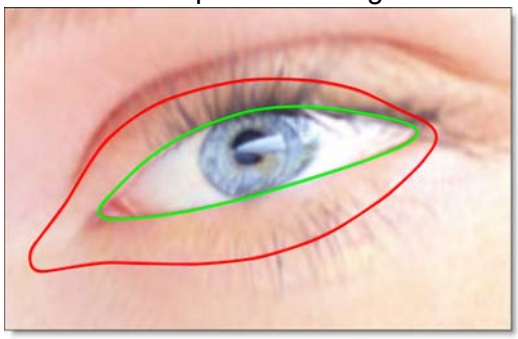
10 **Set the Distortion to 100.**



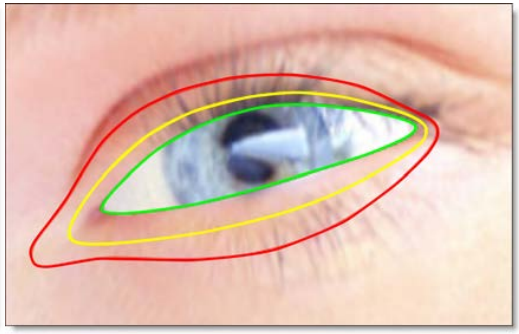
The eyelid folds over the eye creating a blink effect.

Check out the difference between the warp with and without folding.

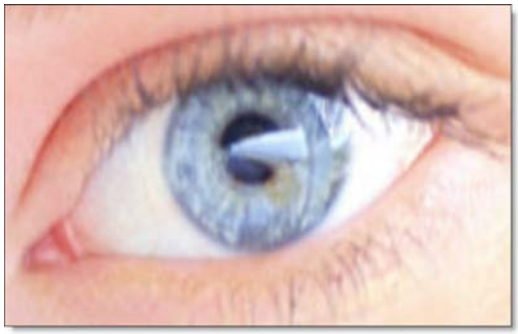
Warp w/out folding



Warp with folding



Original



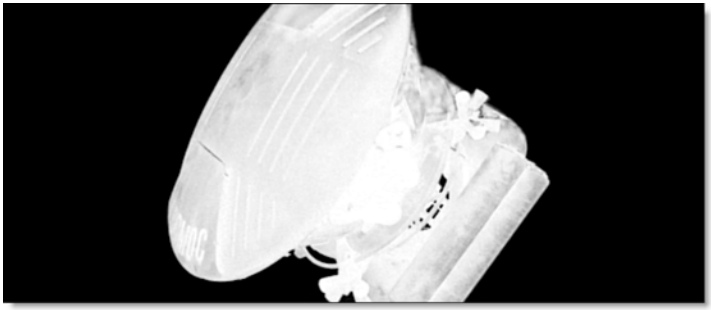
zMatte

Using proprietary matte extraction techniques, zMatte quickly and simply creates mattes with minimal parameters even if you are dealing with fine hair detail, smoke, or reflections.

Blue/Green Screen Keying

Of course, you can use zMatte to create just a single matte for blue/green screen footage, but we like to use an inner / outer keying method that involves creating a Primary Matte which has gray values in the foreground's edge. This will give a nice, smooth edge in the final composite. Next, the trick is to use the Secondary Matte to fill in any gray areas of the Primary Matte while retaining the gray values in the edge. You can do this by adjusting the Blur, Shrink/Grow and/or Wrap parameters of the Secondary Matte to retain the Primary Matte's edge values.

1. **Load some green or blue screen source footage and create a session.**
2. **In the Trees window, add a zMatte node from the Nodes > Key tab and connect it to the source node.**
3. **Single-click in the center of the zMatte node to view and edit it.**
4. **Start by selecting Primary Matte from the View pop-up menu.**
5. **Set the Primary Matte > Extract On to Blue or Green Screen.**
6. **Adjust the Background so that the background areas are completely black.**
7. **Set the Foreground so that the Primary Matte has gray values, especially in the edges.**



This Primary Matte will be used for the edges.

Note: If you are not going to use the Inner / Outer Keying method, you would adjust the Foreground so that the foreground values would be completely white in the Primary Matte. In this case, a Secondary Matte would not be used.

8 **From the View menu, select Secondary Matte.**

The screen is black, because you must first enable it.

9 **Expand the Secondary Matte group and click on the Enable checkbox.**

You can now see the Secondary Matte in the Viewer.

10 **Set the Secondary Matte > Extract On to the same setting as the Primary Matte.**

11 **Adjust the Secondary Matte so that the foreground is completely white and the background is completely black.**

12 **Switch the View menu to Combined Matte.**

The Combined Matte view shows the combination of the two mattes.

13 **Adjust the Secondary Matte > Wrap parameter to pull back the hard edges of the Secondary Matte to reveal the gray edges of the Primary Matte.**

Note: You could also use Secondary Matte > Shrink/Grow and Blur instead of or in conjunction with Wrap to blend the two mattes together.

14 **Change the View pop-up menu to Composite.**

If you have not input a background, the foreground will be composited over black.

15 **If you have a clip that you would like to use for the background instead of black, connect it to the Background input of zMatte.**

The foreground will then be composited over the background.

If you see any color spill from the blue or green screen, it can be eliminated using the Color Suppression controls.

Green Color Spill

16 **Expand the Color Suppression group and click the Enable check box.**

17 **Adjust the Color Suppression > Foreground and Range controls as needed.**

Green Suppressed

Generating Mattes Without A Blue/Green Screen

If your footage does not use a blue or green screen background, you have a number of matte extraction methods to choose from such as: Luminance, Hue, Saturation, Average, Red, Green, Blue, Cyan, Magenta and Yellow.

1 **Change the Primary Matte > Extract On parameter to create a matte based on a whatever image values you choose. Extract On determines the image values that will be used to generate the matte.**

You may have noticed that the Foreground and Background numeric fields gray out when not using the Blue or Green Screen extraction methods. Position and Range controls are used instead.

2 **Change the Primary Matte > Position parameter if you want to select different values to be used for the matte.**

The Position control selects the image values to be used in the matte based on the Extract On setting. If the matte is created using Luminance, a high Position value shows the brightest image values as white values in the matte. A low Position value shows the darkest image values as white values in the matte.

3 **Increase the Primary Matte > Range control to add more values to the matte. Decrease for less values.**

Range increases or decreases the range of values in the matte. A low Range value indicates a narrow range of values. A high Range value indicates a large range of values included in the matte.

4 **The rest of the Primary Matte matte controls can be used the same as when using the Blue or Green Screen extraction methods.**

Holdout Matte/Garbage Matte

A Holdout Matte defines foreground areas that should not be keyed out, while a Garbage Matte defines background areas that should be keyed out. zMatte has Holdout Matte and Garbage Matte auxiliary inputs that can come from a source image or a node like Roto.

1 **If there are foreground areas that are not keying properly, hook a Roto node into the Holdout Matte input. Roto the appropriate foreground areas and they will be added to the output matte.**

2 **If there are background areas that are not keying properly, hook a Roto node into the Garbage Matte input. Roto the appropriate background areas and they will be subtracted from the output matte.**

Using Light Wrap

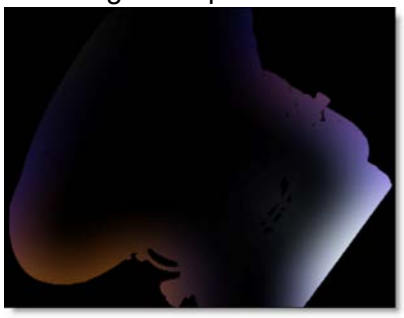
Light Wrap helps blend the foreground into the background by making the color of the background wrap into the foreground edges without completely losing the edge.

1 **Adjust the Light Wrap > Brightness setting to the appropriate brightness.**

2 **Change the View to Light Wrap.**

3 **Using the Light Wrap > Wrap control, set the thickness of the Light Wrap.**

Light Wrap Source



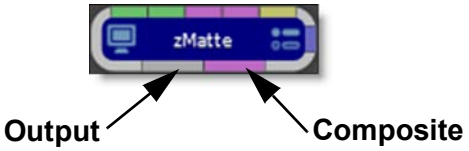
4 **Switch the View back to Composite.**

No Light Wrap

With Light Wrap

zMatte Output Options

zMatte can output either the output (foreground plus generated matte) or a composite.



1 **If you plan to do further work on the RGBA channels downstream from zMatte, use zMatte's Output. It will output the foreground plus the generated matte.**

2 **Use zMatte's optional Composite output if you want zMatte to do the composite.**

Go to the **zMatte** node for more information.

Depth

The Depth node contains a dedicated toolset for creating depth channels.

Creating Depth Objects

There are a number of tools to create depth maps for 2D images which include: Constant, Horizon, Ramp, Hall, Tunnel, Edges, and Alpha.

Constant

The Constant depth object sets a constant depth for the entire frame. It is useful for setting the depth of objects that are completely flat.

1. **Load some source footage and create a session.**
2. **In the Trees window, add a Depth node from the Nodes > Image group and connect it to the source node.**
3. **Single-click in the center of the Depth node to view and edit it.**
4. **Select the Constant icon and click on the screen to create the object.**

5. **Click the D icon above the Viewer or press the D key to view the depth map.**

6. **In the Object window, adjust the Depth numeric field to set the level of depth.**

A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by **Ctrl(Win)/Cmd(Mac)**-vertical dragging on the image in the Viewer.

Before

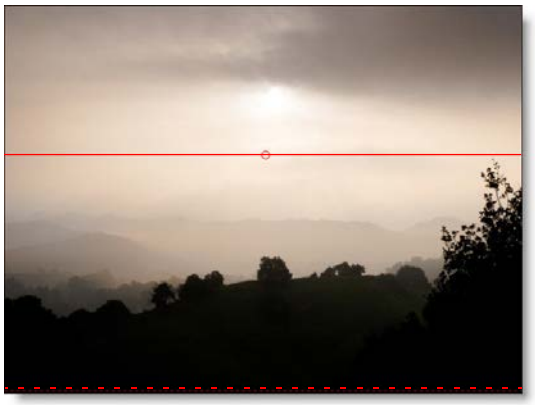
Constant

7 **Press the D key to toggle the Depth view off.**

Horizon

The horizon depth object creates a horizon line.

1 **Select the Horizon icon and click on the screen to create the object.**



2 **The position can be set by dragging the center point.**

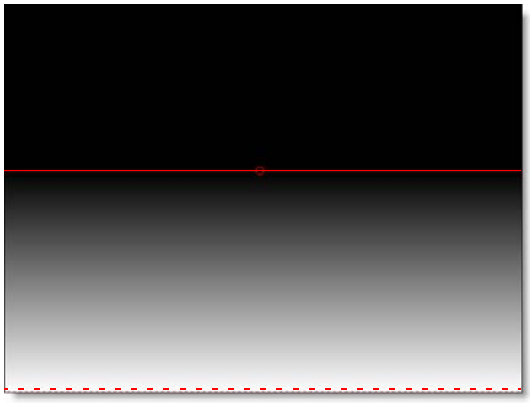
3 **The rotation can be set by dragging the solid line.**

4 **The size can be set by dragging the dashed line.**

5 **Click the D icon above the Viewer or press the D key to view the depth map.**

6 **Select the Blend Amount icon above the Viewer and adjust the slider that appears to control how much of the image is mixed into the Depth map. The setting is remembered the next time you view the Depth map.**

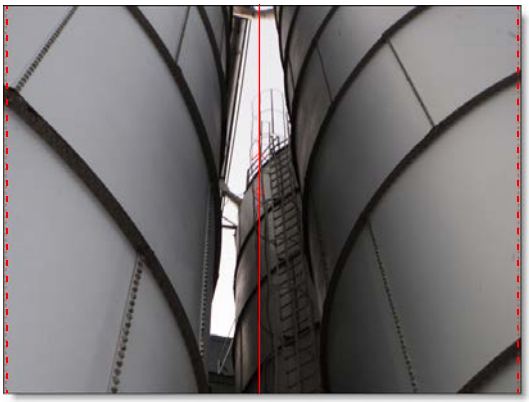
7 **In the Object window, adjust the Near and Far Depth numeric fields to set the level of depth.**



Ramp

The Ramp depth object creates a horizontal or vertical ramp blending out from the center.

1 **Select the Ramp icon and click on the screen to create the object.**



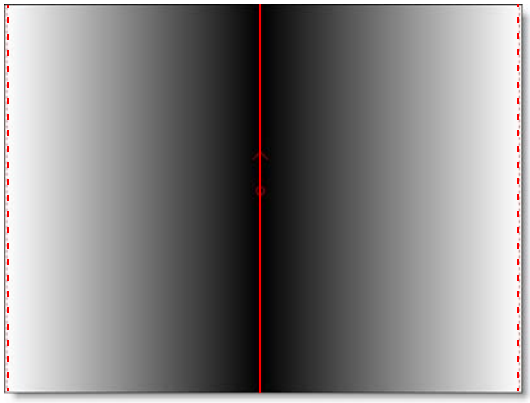
2 **The position can be set by dragging the center point.**

3 **The rotation can be set by dragging the solid line.**

4 **The size can be set by dragging the dashed lines.**

5 **Click the D icon above the Viewer or press the D key to view the depth map.**

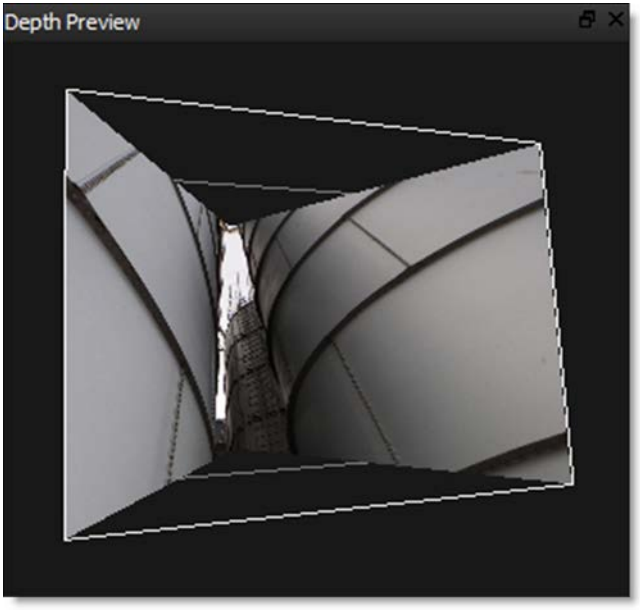
6 **In the Object window, adjust the Center, Left and Right Depth numeric fields to set the level of depth.**



7 **Press the D key to toggle the Depth view off.**

Use the Depth Preview window to visualize and edit the objects' depth position in 3D space.

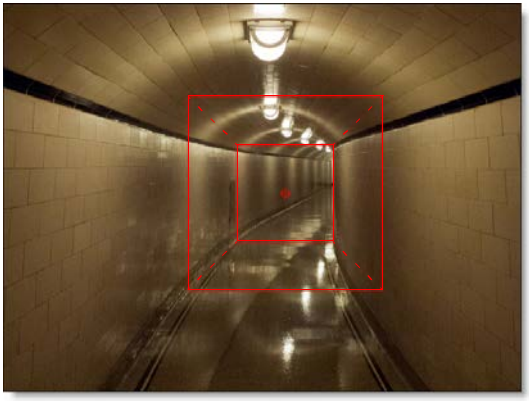
8 **Click and drag in the Depth Preview window to move the image around in a perspective view, and then adjust the depth of your objects as needed.**



Hall

The Hall depth object creates a perspective gradient as if you are looking down a hallway.

1 **Select the Hall icon and click on the screen to create the object.**



2 **The position can be set by dragging the center point.**

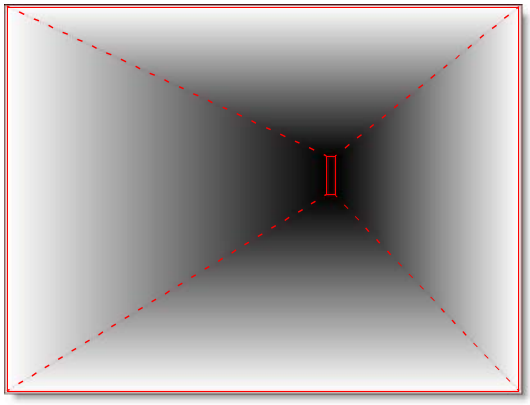
3 **The rotation can be set by dragging the corner of one of the squares.**

4 **The outer square can be offset from the center position by Alt-dragging the center point or outer square.**

5 **The size can be set by dragging the inner and outer squares.**

6 **Click the D icon above the Viewer or press the D key to view the depth map.**

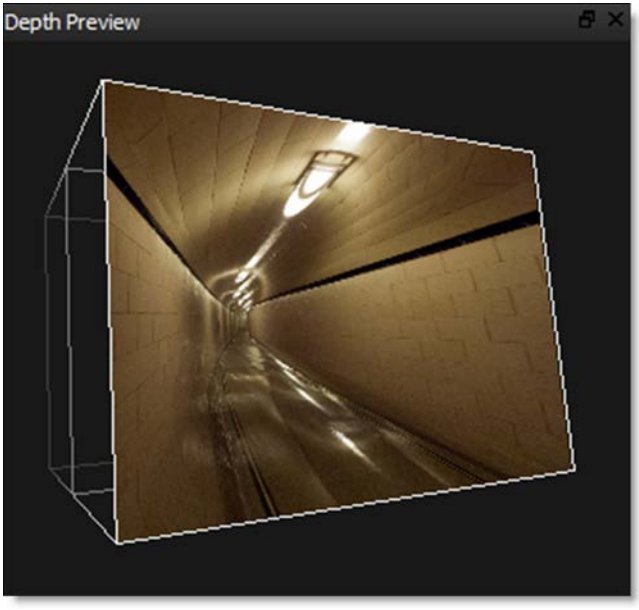
7 **In the Object window, adjust the Inner and Outer Depth numeric fields to set the level of depth.**



8 **Press the D key to toggle the Depth view off.**

Use the Depth Preview window to visualize and edit the objects' depth position in 3D space.

9 **Click and drag in the Depth Preview window to move the image around in a perspective view, and then adjust the depth of your objects as needed.**



Tunnel

The Tunnel depth object creates a circular gradient as if you are looking down a tunnel.

1 **Select the Tunnel icon and click on the screen to create the object.**

2 **The position can be set by dragging the center point.**

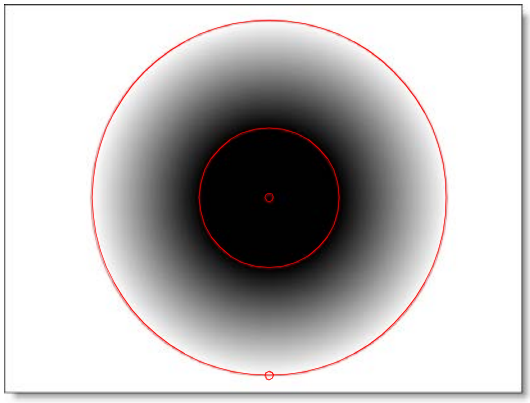
3 **The outer circle can be offset from the center position by Alt-dragging the center point or outer circle.**

4 **The size can be set by dragging the inner and outer circles.**

5 **The aspect ratio can be set by dragging the point at the bottom of the outer circle.**

6 **Click the D icon above the Viewer or press the D key to view the depth map.**

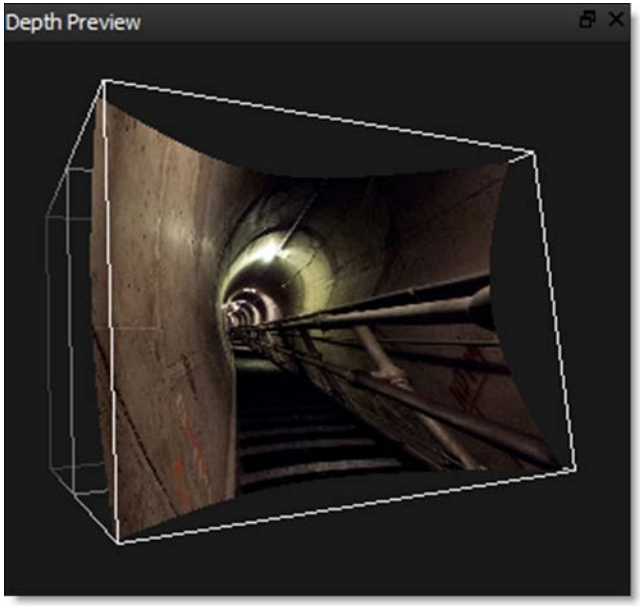
7 **In the Object window, adjust the Inner and Outer Depth numeric fields to set the level of depth.**



8 **Press the D key to toggle the Depth view off.**

Use the Depth Preview window to visualize and edit the objects' depth position in 3D space.

9 **Click and drag in the Depth Preview window to move the image around in a perspective view, and then adjust the depth of your objects as needed.**



Edges

The Edges depth object runs an edge detection and objects with edges or a lot of structure are placed in front.

1 **Select the Edges icon and click on the screen to create the object.**

2 **Click the D icon above the Viewer or press the D key to view the depth map.**

3 **In the Object window, adjust the Amount to set the edge brightness.**

4 **Change the Threshold to limit the amount of edges that are detected.**

Before

Edges+Horizon

5 **Press the D key to toggle the Depth view off.**

Alpha

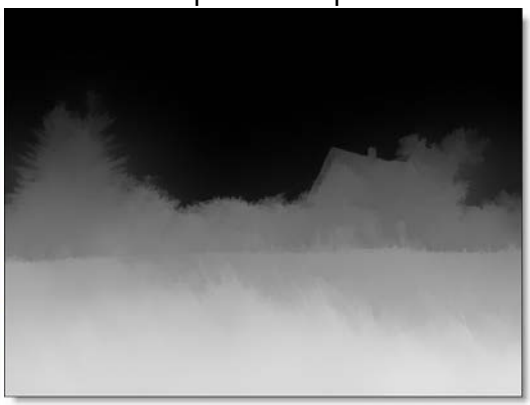
Converts the alpha channel hooked into the Depth node's alpha inputs into a depth map.

1. **Generate an alpha channel from either the Power Matte, Roto, Paint or zMatte nodes.**
2. **Connect the output of the node generating the alpha into one of the Depth node's alpha inputs. For instance, Alpha 1.**
3. **In the Depth node, select the Alpha icon and click on the screen to create the object.**

4. **In the Object window, select the node input that you plugged your alpha source into.**
5. **Click the D icon above the Viewer or press the D key to view the depth map.**

Before

Depth from Alpha



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The alpha channel produced in one of the other Silhouette nodes is converted to a depth map. In the above example, Power Matte was used with open shapes placed far apart which generates an organic looking gradient with edge detail.

Note: Another beneficial node to use in conjunction with the Depth node is Roto Blend which blends the opacity of shapes together creating smooth gradients. Go to the **Roto Blend** tutorial to see how it works.

6 Select Constant, Linear, Radial or Ramp from the Depth Type pop-up in the Object window.

- Constant sets a constant depth for the entire depth map.
- Linear fills the depth map in areas of the original alpha with a linear gradient containing two depth values.
- Radial fills the depth map in areas of the original alpha with a radial gradient.
- Ramp fills the depth map in areas of the original alpha with a linear gradient containing three depth values.

7 Depending on the Depth Type selected, adjust the depth numeric fields that are displayed.

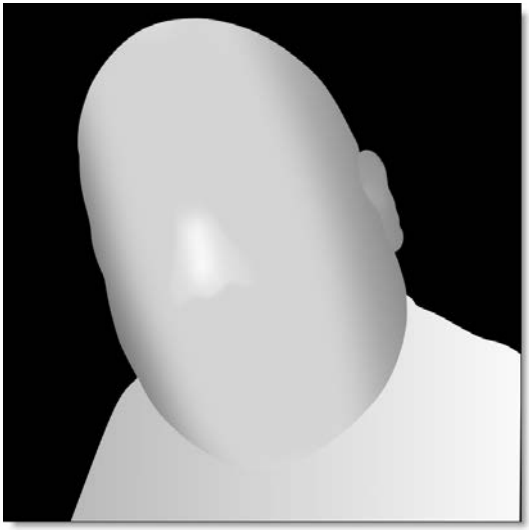
8 Press the D key to toggle the Depth view off.

Combining Shapes with Depth Objects

All of the tools from the Roto node are included in the Depth node so that they may be used in together with the depth objects. Multiple gradients used in conjunction with shapes can create a virtual soft box yielding natural depth gradients. The workflow is to create one or more gradient depth objects in a layer and then use a shape to mask them.

Before

After



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1 **Add a gradient depth object inside of a layer.**

2 **Click the D icon above the Viewer or press the D key to view the depth map.**

3 **Create the proper depth shading using the gradient.**

A shape can now be used to mask the gradient.

4 **Create a shape to mask the gradient.**

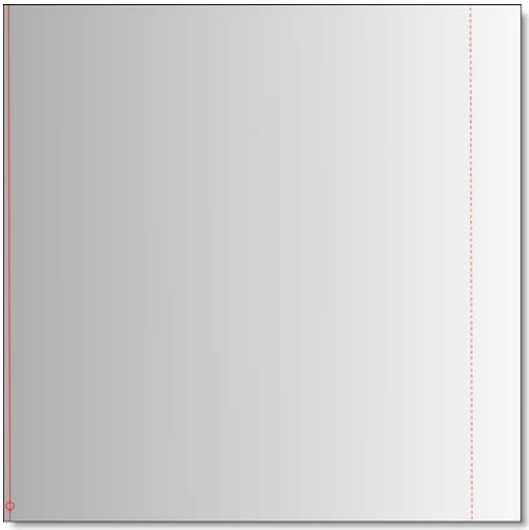
5 **Set the shape's Depth > Type to None.**

Setting the shape's depth to none is done since the shape is not contributing to depth in this example--it is only masking it.

6 **Select the layer and enable its Depth > Obey Alpha control.**

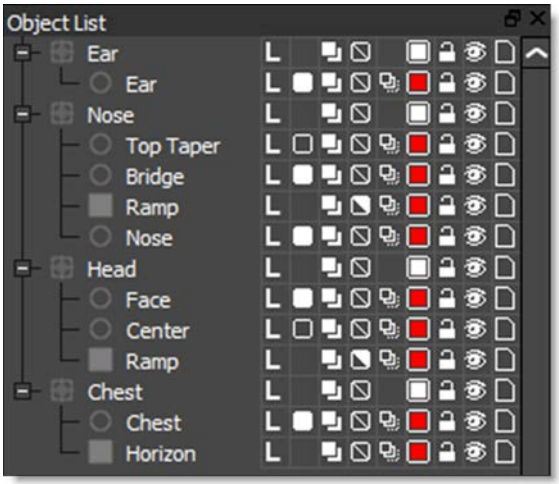
The layer now uses the alpha from the shape to mask whatever else is in the layer, in this case, the gradient.

Gradient



Gradient Masked By Shape

7 **Use multiple gradients, mix them together with Blend Modes and then mask them with one or more shapes.**



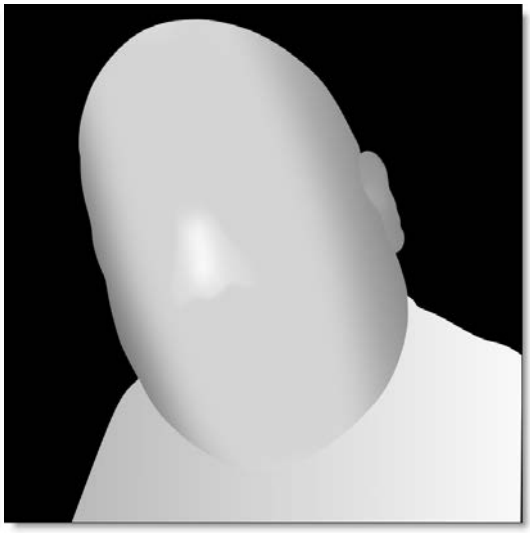
Each layer allows separate control over the Near Depth > and Far Depth.

8 **Select a layer and use the Near Depth and Far Depth controls to adjust the near and far depth for the entire layer.**

The technique of using gradients masked by shapes within layers is a very powerful feature which creates accurate and realistic depth maps.

Before

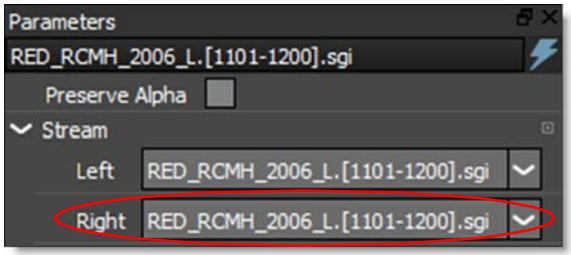
After



Working with Stereo Images

Creating a Session Using Left and Right Clips

1. **Load left and right clips and create a session based on the left view.**
2. **In the Trees window, add a Roto node from the Nodes > Image group and connect it to the source node.**
3. **Add a Paint node after the Roto node.**
4. **Double-click the source node in the Trees window to view and edit it.**
5. **In the Node parameters, select the right clip in the Stream > Right pop-up menu.**



6. **Single-click in the center of the Roto node in the Trees window to view and edit it.**

   You are now ready to create shapes.

Creating a Session Using Stereo EXR Files

Since stereo EXR files contain both the Left and Right Views within one file, they are automatically connected to the Left and Right views.

Using Merge Views to Create Stereo

You can use the Image > Merge Views node to merge input images into a combined left, right and depth view. This bypasses the source node's Stream parameters.

Stereo Roto

1. **Above the Viewer, make sure that the Left View icon (Shift-1) is highlighted.**

When using a stereo EXR file or when left and right clips have been assigned in the Source node's Stream > Left and Right parameters, the Viewer displays additional view modes.

The Left View icon displays the Left View in the Viewer.

The Right View icon displays the Right View.

The Left/Right View icon displays both the Left and Right Views simultaneously.

When shapes and layers are created, they will be associated with either the Left or Right View.

2 Create a shape around an object and keyframe as necessary.

Since the Left View is selected, the shape is automatically associated with the Left View and an **L** is displayed for it in the Object List's View icon.

3 **Select the shape if it is not already selected and from the Edit > Stereo menu, choose Duplicate > New Layer.**

The shape and all of its keyframes from the Left View are duplicated to the Right View in a new layer and the two shapes are linked together. The newly duplicated shape and layer have a **R** displayed for it in the Object List's View icon signifying that it is associated with the Right View.

Note: Clicking on the View icon in the Object List toggles which view the object is located in.

When using shapes inside of a transformed layer, you can duplicate the layer instead. This will copy the layer along with its transform data into the other view, copy any unlinked stereo children into it and then link the shapes. You can stereo duplicate one layer at a time using this method.

4 **Select the Right View (Shift-2).**

You probably noticed that the shape in the Right View does not line up with the object it is associated with. This is because the Right View is offset from the Left View to create the stereo effect. However, you can use the Stereo Align tool in conjunction with a layer to negate the offset between the Left and Right Views.

5 **In the Object List, click on the layer that was created for the duplicated shape.**

Clicking on the layer makes it the active layer and a check appears.

You are now ready to align the two views.

6 **Select the Stereo Align icon (Shift-4) above the Viewer.**

When activated, Stereo Align uses a negative mode which inverts one of the views and mixes it with the other. This creates an embossed effect when similar image areas are not aligned.

7 **To perform an automatic alignment, press Shift-Alt and click on the image feature that you would like to align.**

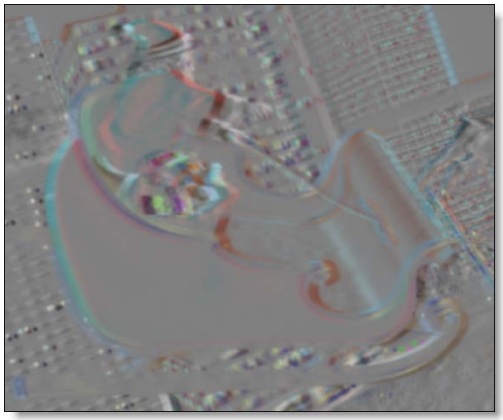
or

8 **Click and drag the move cursor that appears to align the views in the area of your shape. You can also Ctrl-drag for finer accuracy. When similar image features are perfectly aligned for the object you are rotoscoping, you will see a solid gray color.**

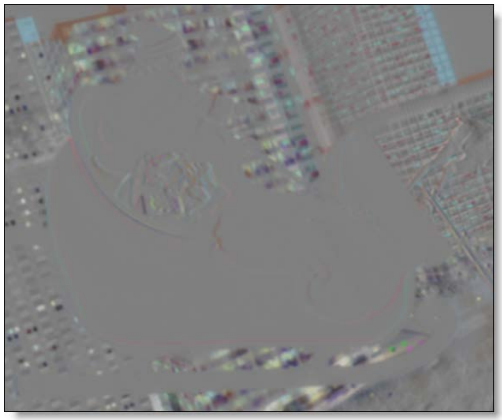
Note: The amount you move the view in Stereo Align mode is stored in the Stereo Offset parameter of the active layer which is set to animate by default.

If you need to align vertically (not common), you can either use the **Up/Down Arrow** keys or press the **Shift** key while clicking and dragging the move cursor in the Viewer.

Not Aligned



Aligned



Note: You can automatically align without being in align mode by pressing **Shift-Alt** and clicking on an image feature.

9 **If needed, you can keyframe the Stereo Offset**

10 **Deactivate Stereo Align mode and the shape will be aligned in the Right View.**

If the object you are rotoscoping moves through various depths, you will want to keyframe the Stereo Offset using the Stereo Align mode at various frames.

Note: If you are rotoscoping objects at different depths, place them in separate layers so that different Stereo Offsets can be set on a per layer basis.

11 **Adjust the shape keyframes as needed for the shape in the Right View.**

12 **Select the Left/Right View (Shift-3).**

In the Left/Right View, the Viewer displays both the left and right clips.

13 **To change whether the Left and Right Views are arranged either horizontally or vertically in the Viewer, press the Stereo Split Mode icon.**

In the Left/Right View, selecting one of the linked shapes in the Viewer selects the other as well, and you can edit both shapes at once. If you only want to work on one shape at a time in the Left/Right View, just make sure that only one of them is selected in the Object List.

Linking Shapes

As an alternative to using Edit > Stereo > Duplicate or Edit > Stereo > Duplicate > New Layer as outlined in the previous exercise, shapes of the same type and the same number of control points can be linked together for stereo rotoscoping. Once linked, the two shapes can be simultaneously selected and edited in the Left/Right View.

1 **Select the Left View (Shift-1) and create a shape.**

2 **Choose the Right View (Shift-2) and create a shape of the same type and number of control points as the one you just created in the Left View.**

3 **Press the Left/Right View icon (Shift-3) above the Viewer.**

4 **Select both shapes in either the Object List or directly in the Viewer.**

5 **From the Edit > Stereo menu, choose Link.**

The two linked shapes can now be simultaneously selected and edited when in the Left/Right View.

Stereo Paint

In general, painting on stereo images is the same as painting with single images.

1 **Double-click the Paint node in the Trees window to view and edit it.**

The stereo view mode determines whether you are painting on the Left View, Right View or both the Left and Right Views at the same time.

2 **Select the Left View (Shift-1).**

3 **Choose the Color brush (Shift-C).**

4 **Paint on the image in the Viewer by pressing and dragging with your pen or clicking and dragging with your mouse.**

5 **Select the Right View (Shift-2) and paint on the image.**

6 **Select the Left/Right View (Shift-3).**

7 **To change whether the Left and Right Views are arranged either horizontally or vertically in the Viewer, press the Stereo Split Mode icon.**

8 **Paint on the image.**

Paint is applied to both the left and right images simultaneously. However, the location of the paint on the Left View will be offset slightly from the Right View. To paint on both the Left and Right Views at the same time and in the same location, you will need to add a layer and then use the Stereo Align mode to line up the two views.

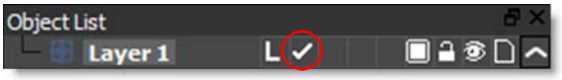
9 **Click Add Layer in the Object List.**

Two layers are added since you are in the Left/Right View.

10 **Delete one of the layers since you only need one of them.**

11 **Select the remaining layer.**

Immediately after selecting the layer, a check appears which means that it is the active layer.



You are now ready to align the two views.

12 **Select the Stereo Align icon (Shift-4) above the Viewer.**

When activated, Stereo Align uses a negative mode which inverts one of the views and mixes it with the other. This creates an embossed effect when similar image areas are not aligned.

13 **To perform an automatic alignment, press Shift-Alt and click on the image feature that you would like to align.**

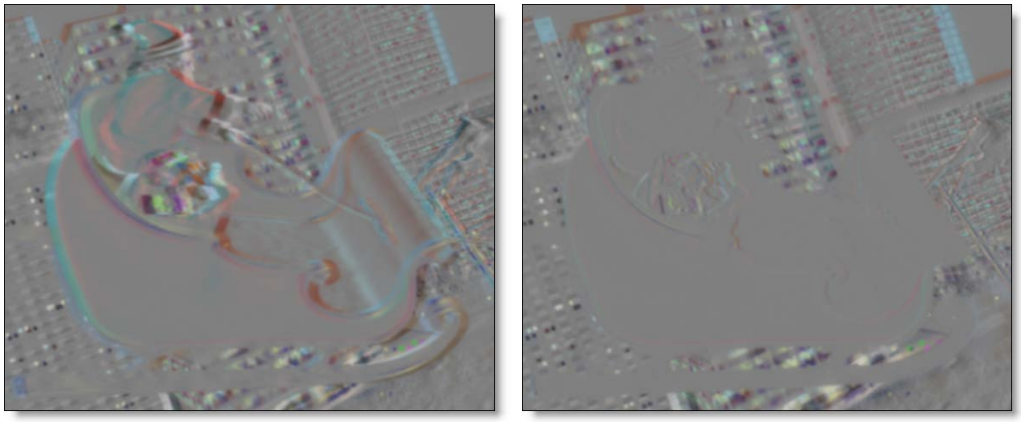
or

14 **Click and drag the move cursor that appears to align the views in the area where you will be painting. You can also Ctrl-drag for finer accuracy. When similar image features are perfectly aligned for the object you are painting, you will see a solid gray color.**

Note: The amount you move the view in Stereo Align mode is stored in the Stereo Offset parameter of the active layer which is set to animate by default.

If you need to align vertically (not common), you can either use the **Up/Down Arrow** keys or press the **Shift** key while clicking and dragging the move cursor in the Viewer.

Not Aligned **Aligned**



If the object you are painting moves through various depths, you will want to set the Stereo Align setting on each frame.

Note: You can automatically align without being in align mode by pressing **Shift-Alt** and clicking on an image feature.

15 **Deactivate Stereo Align mode.**

16 **Paint on the image again.**

Once aligned, painting with the Left/Right View activated will paint on the same location of the image in both views.

17 **Paint some more frames in the clip.**

As frames are painted, markers are shown in the Timebar to provide a visual display of which frames are painted. Red markers are displayed for painted frames in the Left View, blue markers for the Right View and green markers for frames painted in both the Left and Right View.

Duplicating Strokes from One Stereo View to Another

By default, strokes only get painted into their original view when they are played back. The Duplicate feature in the Auto Paint window will duplicate strokes from one view to another on the current frame.

1 **In a stereo session, make sure that the Left View icon (Shift-1) is highlighted above the Viewer.**

2 **Paint strokes in the Left View.**

3 **In the Auto Paint window, select the strokes to be duplicated.**

4 **Select Duplicate L>R in the Auto Paint window.**

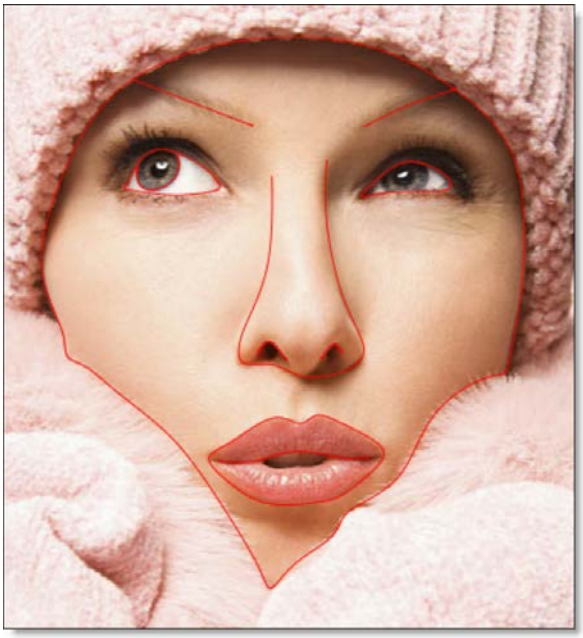
The paint strokes are duplicated from the Left to the Right View.

Note: If a layer with a stereo offset is selected prior to duplicating, the stereo offset is taken into account when duplicating the strokes.

Stereo Morphing

1 **Select the Left View (Shift-1).**

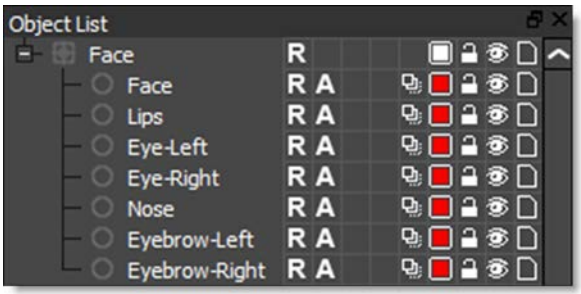
2 **Create a morph just as you would if working with mono images except make sure that all shapes are in layers. This will allow you to easily adjust the Stereo Offset later.**



Once you have created shapes for the A and B rolls, specified shape correspondences and have animated the distortion and transparency, you can move onto to handling stereo specific issues. The first step is to duplicate all of your shapes and layers to the right side. You can do this by using the Edit > Stereo > Duplicate feature.

3 **Select a layer and from the Edit > Stereo menu, choose Duplicate. Repeat this for each layer in the Left view as this operation can only be done one layer at a time.**

Edit > Stereo > Duplicate copies the layers, its shapes and all of their keyframes from the Left View, duplicates them in the Right View and links them together. The newly duplicated layer and shapes have a **R** displayed for them in the Object List's View icon signifying that it is associated with the Right View.



Note: Clicking on the View icon in the Object List toggles which view the object is located in.

4 **Select the Right View (Shift-2).**

You probably noticed that the shapes in the Right View do not line up with the objects associated with them. This is because the Right View is offset from the Left View to create the stereo effect. However, you can use the Stereo Align tool in conjunction with a layer to negate the offset between the Left and Right views.

5 **In the Object List, click one of the Right view layers.**

Clicking on the layer makes it the active layer and a check appears.

You are now ready to align the two views.

6 **Select the Stereo Align icon (Shift-4) above the Viewer.**

When activated, Stereo Align uses a negative mode which inverts one of the views and mixes it with the other. This creates an embossed effect when similar image areas are not aligned.

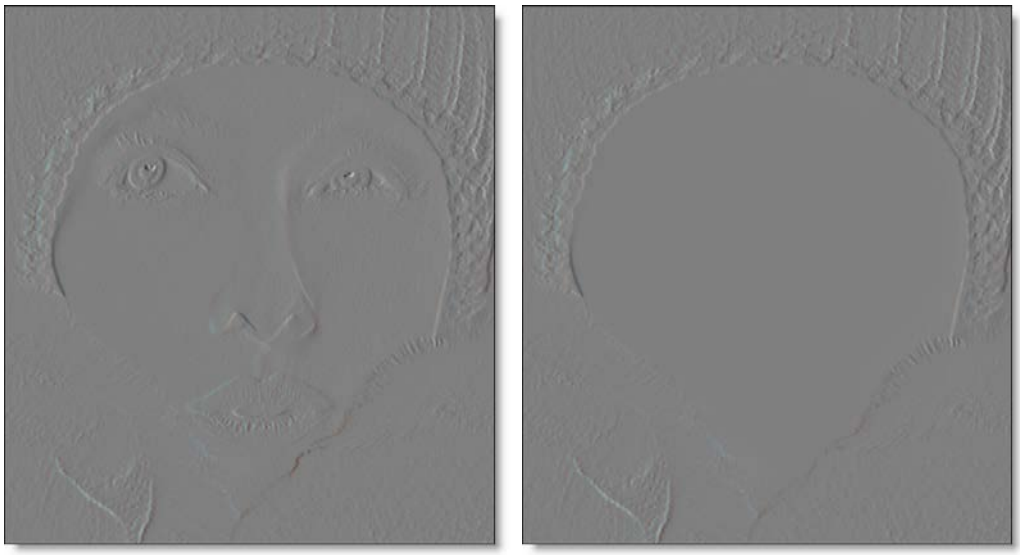
7 **To perform an automatic alignment, press Shift-Alt and click on the image feature that you would like to align.**

or

8 **Click and drag the move cursor that appears to align the views in the area of your shape. You can also Ctrl-drag for finer accuracy. When similar image features are perfectly aligned for the object, you will see a solid gray color.**

Note: The amount you move the view in Stereo Align mode is stored in the Stereo Offset parameter of the active layer which is set to animate by default.

Not Aligned **Aligned**



Note: You can automatically align without being in align mode by pressing **Shift-Alt** and clicking on an image feature.

If the object you are morphing moves through various depths, you will want to keyframe the Stereo Offset at various frames.

9 **Keyframe the Stereo Offset if necessary.**

10 **Deactivate Stereo Align mode and the shapes will be aligned in the Right View.**

Note: If you are morphing objects at different depths, place them in separate layers so that different Stereo Offsets can be set on a per layer basis.

11 **Adjust the Stereo Offset for all of the Right View layers.**

If you need to make shape adjustments in the Right View, viewing the A or B roll will give faster interaction than View > Output.

12 **Adjust the shape keyframes as needed for both the A roll and B roll shapes in the Right View making sure to select View > A or View B as appropriate.**

13 **Select the Left/Right View (Shift-3).**

In the Left/Right View, the Viewer displays both the left and right clips and their shapes.

14 **To change whether the Left and Right Views are arranged either horizontally or vertically in the Viewer, press the Stereo Split Mode icon.**

In the Left/Right View, selecting one of the linked shapes in the Viewer selects the other as well, and you can edit both shapes at once. If you only want to work on one shape at a time in the Left/Right View, just make sure that only one of them is selected in the Object List.

15 Change the View to Output and press 0 to turn off the shape display. This will allow you to see the image better.

Start Middle End

16 Press the Play button.

Silhouette will render each frame of the left and right clips. If you have enough RAM to fit the clip into memory, it will playback in real time once it is completed.

Using the 3D Preview

Silhouette provides a 3D Preview window for displaying the stereo image.

1 **Click the 3D Preview icon or press Shift-6.**

If you have multiple monitors, the 3D Preview opens full screen while on a single monitor system, it opens centered and smaller.

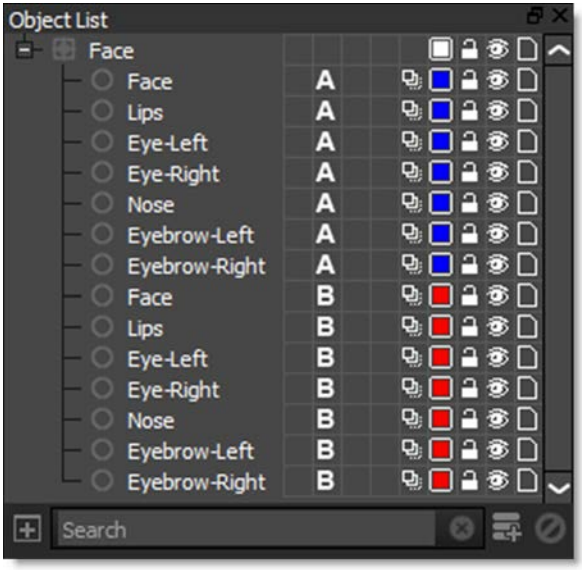
2 **When the 3D Preview opens, right-click on it and select your display type.**

3 **On a single monitor system, right-click on the 3D Preview and select Fullscreen.**

Using Multiple Object Lists

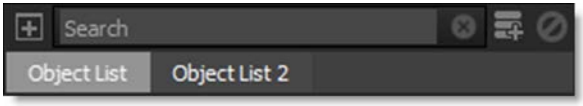
Multiple Objects Lists in conjunction with filtering can be used to organize left or right stereo objects, A or B morph shapes or anything else for that matter.

1 **Set up a stereo session with objects in the left and right views or a morph project with A and B shapes.**



2 **Click the Add Dock icon to create an additional Object List.**

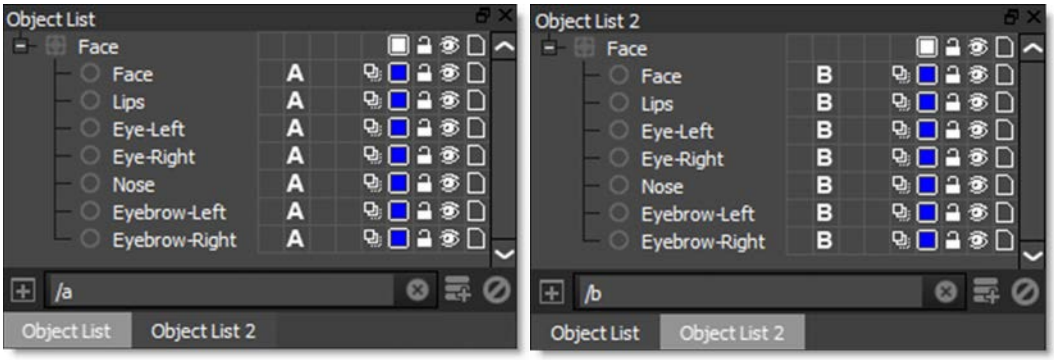
Each additional Object List dock is named with a number and is displayed as a tab below the Object List.



The Object Lists are identical until you filter them. With two Object Lists open, for instance, you can filter one on /l and the other on /r for stereo projects or filter on /a in one and /b in the other for morphing. If you then switch an object's view assignment from left to right or from A to B, it will cause it to jump between the two lists.

3 **In the Search field of the main Object List, enter /l if you are working in a stereo project or /a if in a morph project.**

4 **In the Search field of Object List 2, enter /r if you are working in a stereo project or /b if in a morph project.**



You can now easily switch between the Object Lists.

Note: Closing one of the added docks will also delete it.

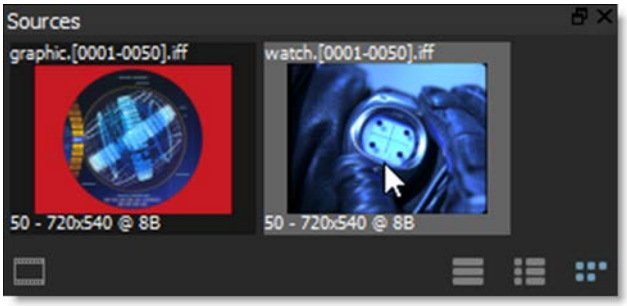
Video Fields and 3:2 Pulldown

When working with footage that contains video fields, you have the option of either deinterlacing or removing 3:2 Pulldown.

Working with Video Fields

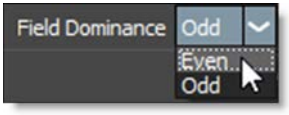
1 **Import some video media that contains fields and create a session.**

2 **Click on the imported clip in the Sources window.**



3 **In the Object window, select Deinterlace from the Field Handling pop-up menu.**

4 **Choose Even (NTSC) or Odd (PAL) deinterlacing from the Field Dominance pop-up menu.**



5 **Press the F button in the Timebar located at the bottom right of the Viewer to expand the Timeline and increment in fields (half frames).**

6 **Edit whatever node you are working on in field mode.**

7 When it is time to render, select Field Handling > Interlace and Field Dominance > Even (NTSC) or Odd (PAL) in the Render Options window.

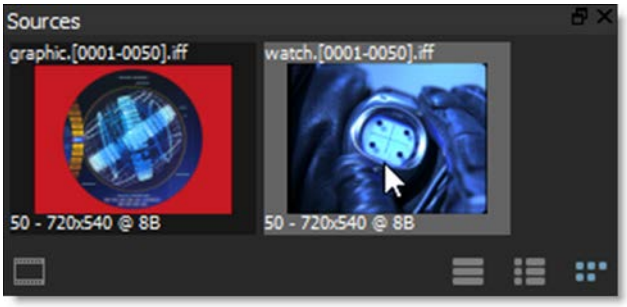
Working with 3:2 Pullup / Pulldown

1 Import some 3:2 based media and create a session.

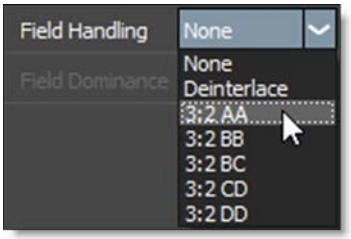
2 Step through the beginning of your clip and determine the first field blended frame using the 3:2 Pullup setting in the chart below.

First frame with field blending	3:2 Setting
1	BC
2	BB
3	AA
4	DD
5	CD

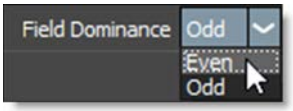
3 Click on the imported clip in the Sources window.



4 In Object window, select the appropriate 3:2 setting from the Field Handling pop-up menu.



5 **Choose Even (NTSC) or Odd (PAL) deinterlacing from the Field Dominance pop-up menu.**



6 **When you choose the 3:2 value, the length of your clip changes in the Sources window.**

7 **Change the Session > Settings to reflect the new clip length.**

8 **When it is time to render, select the desired Field Handling > 3:2 setting and Field Dominance > Even (NTSC) or Odd (PAL) in the Render Options window.**

ROI (Region of Interest)

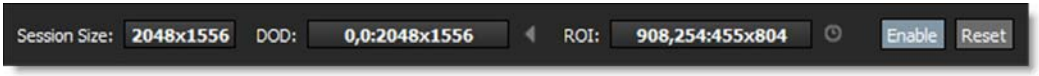
ROI (Region of Interest) crops the image in the Viewer to a user defined size and can be animated. This is especially useful when you only need to work within a smaller region of a larger image as it will use less memory and process faster. If expanded, the ROI will display overscan pixels which can then be manipulated.

Using a Smaller ROI for Performance

The ROI can be made smaller than the session size to speed up processing and save memory. This is especially useful when working with larger images.

1. **Load some source footage and create a session.**
2. **Single-click in the center of the source node in the Trees window to view and edit it.**
3. **Display the ROI controls by clicking the ROI icon above the Viewer.**

Once the ROI icon is activated, the ROI controls appear above the Viewer.



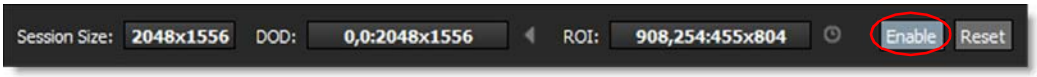
4. **Drag one of the corner points to size the ROI.**

   Note: You can also **Ctrl-Shift-drag** a square region in the Viewer to draw a ROI region.
5. **Move the ROI by clicking and dragging its bounding box.**
6. **Animate the ROI by enabling the Animate icon and adjust the ROI at various frames.**

7. **To avoid moving the ROI by mistake after it has been set, disable the Viewer > ROI icon.**

This hides the ROI controls, but it is still active.

Note: To temporarily turn off the ROI effect, toggle the Enable icon.



8 **To render the ROI, make sure that Render ROI is enabled in the Render Options.**

Using the ROI to Reveal Overscan Pixels

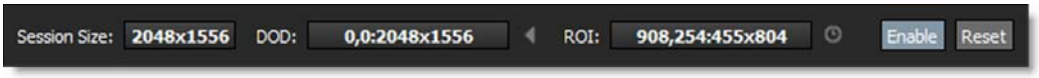
If the source's DOD (Domain of Definition) is larger than the session, the ROI can expand to reveal overscan pixels which can then be manipulated.

1 **Load some source footage whose DOD is larger than the session you are working in.**

2 **Single-click in the center of the source node in the Trees window to view and edit it.**

3 **Display the ROI controls by clicking the ROI icon above the Viewer.**

Once the ROI icon is activated, the ROI controls appear above the Viewer.



4 **Click the Set ROI to DOD icon in the Viewer.**

The ROI will automatically be set to match the size of the source's DOD and will reveal any overscan pixels.

Rendering

When you have you completed your work in Silhouette, you will need to render the final result.

1 **In the Trees window, add Output nodes after the nodes that you would like to render.**

2 **In the Output node, set the file format type.**

The format setting allows you to select from various file formats. We currently can save to the following file formats: Cineon, DPX, IFF, JPG, OpenEXR, PNG, SGI/RGB, TIFF and TARGA.

3 **Enter the path and file name for the rendered file in the File field. You can either type in the path and name in the File field or click the Browse icon on the right.**

As far as filenaming is concerned, you only have to type in a name as periods, hash marks for padding and file extensions are not required unless you want to manually enter them. See below.

4 **If you choose to manually enter the file padding and extension, the filename should have 3 things:**

- **The image name.**
- **# for the frame placeholder.**
- **An extension: .exr = exr files, .cin = Cineon files, .tif = Tiff files, etc.**

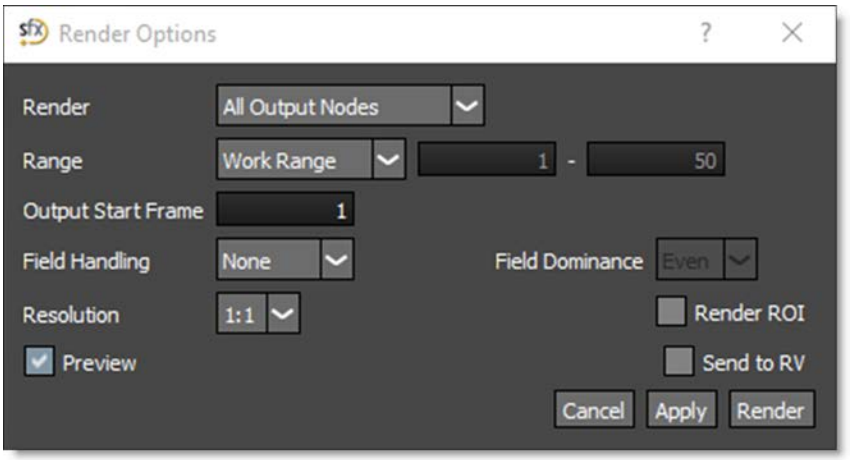
Therefore, if you enter a name something like test.####.exr,. Silhouette will render out test.0001.exr, test.0002.exr, etc. You can confirm how the files will be formatted by looking in the Output node's Sample field. The Sample field displays all of the files that will be produced by the node.

5 **Choose the appropriate channels to render. You can choose from RGB, Alpha and Depth.**

6 **If you are rendering a stereo project, select whether you want to render the Left, Right or Both the Left and Right Views simultaneously using the Views pop-up menu.**

7 **Select Session > Render Session.**

The Render Options window opens.



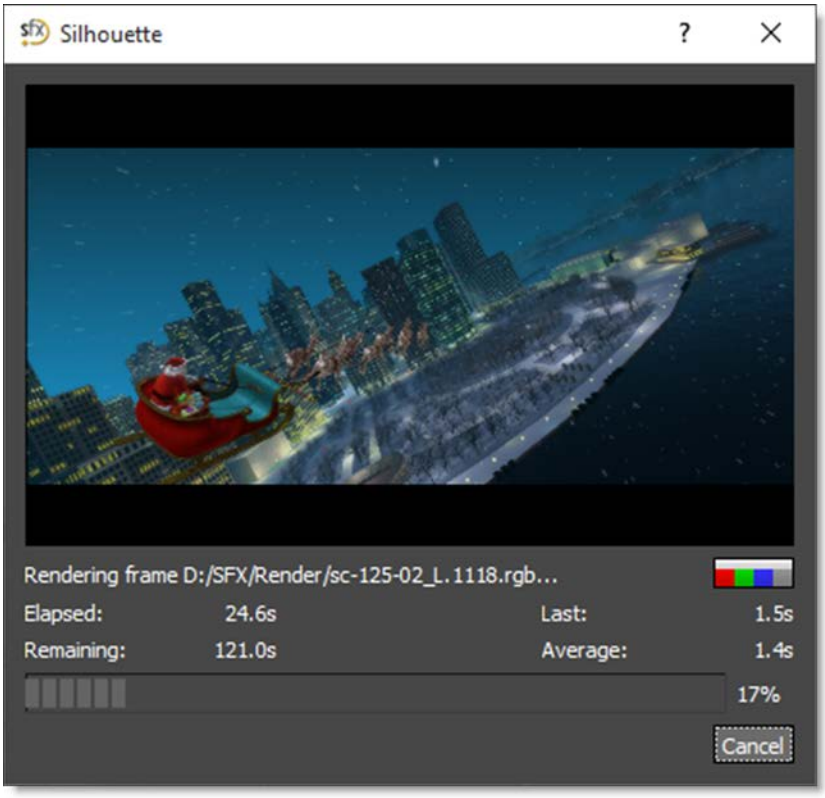
8 **Choose whether to render All Output Nodes or just the Selected Output Nodes.**

Note: Output nodes have to be selected for the Selected Output Nodes option to work.

9 **Select the range of frames to render.**

At this point, you could just hit the Render button to render to disk. Alternatively, you could open a Preview window that displays each rendered image as well as render statistics while rendering.

10 **Enable Preview and select Render.**



The Preview window opens. Pressing the **R**, **G**, **B**, and **A** buttons toggles viewing of the respective channels while **C** displays the RGB channels.

Rendering the Automatic Data Window

The Automatic Data Window rendering option looks at the alpha channel and determines the data window from that. Then, it writes only the pixels in the data window to an EXR file. For SXR files, it writes the combined data window between the two views. This greatly speeds up loading these files into a compositing system.

Note: This option is not compatible with the SFX_EXR_USE_DATA_WINDOW environment variable.

1 **To render the EXR data window based on the alpha channel, set OpenEXR as the file format in the Output node.**

2 **Enable the Automatic Data Window option.**

Silhouette will now look at the alpha channel to determine the data window and render only the pixels in the data window to the file.

Rendering EXR Multi-Part Files

The Output Multi-Part node renders EXR multi-part files.

1 **From the Image tab, add an Output Multi-Part node to the Trees window.**

2 **Connect the output of different nodes into the Output Multi-Part node's inputs.**

If you would like more than the 4 default inputs, more can be added.

3 **Right-click on the Output Multi-Part node and select Add Input. Right-click on an input port to remove it. You can add as many inputs as you want, but the inputs will get smaller.**

If there is more than one input, each output part name is appended with the upstream node's name.

Command-Line

Silhouette on the command-line allows you to execute projects with a variety of commands to control the rendering process.

1 **Open a Terminal window.**

The Silhouette command-line program is named **sfxcmd** and is located in the following locations depending on your operating system:

- **Linux: Location determined at installation**
- **Macintosh: /Applications/SilhouetteFX/Silhouette6**
- **Windows: C:\Program Files\SilhouetteFX\Silhouette6**

2 **Use the cd command to navigate to the location of the sfxcmd command-line program.**

3 **Type: sfxcmd**

The Silhouette command-line options are displayed in the Terminal window.

Command-line options are of the form: **-option value**, where **value** may be optional. Required arguments are in pointy brackets (**< >**) and optional arguments are in brackets(**[ ]**). If the value must be from a list of possible values, the available values are separated by **|**. The basic form of the sfxcmd argument is: **sfxcmd <projectname> [options]**

4 **To render a project called vfx-125-02.sfx located at D:/SFX/projects, type: sfxcmd D:/SFX/projects/vfx-125-02.sfx**

By default, the project is rendered using the settings in the project unless changed by command-line options.

5 **To render every other frame, use the -step command as follows: sfxcmd D:/SFX/projects/vfx-125-02.sfx -step 2**

Use **-range** or **-f** to specify single or multiple ranges of frames to render and **-start** to override the starting frame number of the rendered frames.

6 **The vfx-125-02 project starts at frame 1 and has a duration of 78 frames, but you want the rendered files to start at 1001. To do this, type: sfxcmd D:/SFX/projects/vfx-125-02.sfx –range 1-78 –start 1001**

If your project has multiple sessions, you would need to target one of the sessions to render. If you are too lazy to open up the Silhouette user interface to determine the session name, you can use the **-info** command.

7 **To print information about the overall project, type: sfxcmd D:/SFX/projects/vfx-125-02.sfx -info**

When **–info** is used, rendering is disabled and the project information is displayed.

```
Project: D:/SFX/projects/vfx-125-02
FileSource: bg.[0001-0078].rgb
FileSource: engine.[0001-0078].rgb
FileSource: bg_big.rgb
FileSource: gas.[0001-0078].rgb
FileSource: lens.[0001-0078].rgb
FileSource: parts.[0001-0078].rgb
FileSource: ship.[0001-0098].rgb
Session: vfx-125-02-v1
        Size: (2048, 1556)
        Aspect: 1.0
        Duration: 78.0
        Start: 1
        Rate: 24.0
        Work Range: (1.0, 78.0)
        Node: zMatte
        Node: Roto - Garbage
        Node: Screen Smoother
        Node: Roto Holdout
        Node: engine.[0001-0078].rgb 2
        Node: Tracker
        Node: Math Composite 1
        Node: engine.[0001-0078].rgb 2
        Node: bg.[0001-0078].rgb
        Node: gas.[0001-0078].rgb 1
        Node: Math Composite 2
        Node: lens.[0001-0078].rgb
        Node: Math Composite 4
        Node: parts.[0001-0078].rgb
        Node: Composite
        Node: Output
        Node: ship.[0001-0098].rgb 2
Session: vfx-125-02-v2
        Size: (2048, 1556)
        Aspect: 1.0
        Duration: 78.0
```

Start: 1
Rate: 24.0
Work Range: (1.0, 78.0)
Node: zMatte
Node: Roto - Garbage
Node: Screen Smoother
Node: Roto Holdout
Node: engine.[0001-0078].rgb 2
Node: Tracker
Node: Math Composite 1
Node: engine.[0001-0078].rgb 2
Node: bg.[0001-0078].rgb
Node: gas.[0001-0078].rgb 1
Node: Math Composite 2
Node: lens.[0001-0078].rgb
Node: Math Composite 4
Node: parts.[0001-0078].rgb
Node: Composite
Node: Output
Node: ship.[0001-0098].rgb 2

8 **To render the vfx-125-02-v2 session from the vfx-125-02 project, type the following: sfxcmd D:/SFX/projects/vfx-125-02.sfx -session vfx-125-02-v2**

There are lots of possibilities, so see the **Command-Line** chapter for a complete list of options and descriptions.

Keyboard Customization

Keyboard shortcuts can be customized by using a text editor to modify a Python script located in the scripts folder of your Silhouette installation.

To modify your Silhouette keyboard shortcuts:

1 **Go to the scripts folder of your Silhouette installation.**

2 **For Windows, go to C:\Program Files\SilhouetteFX\Silhouette6\resources\scripts.**

or

3 **For Linux, go to /SilhouetteFX/silhouette6/resources/scripts.**

or

4 **For Macintosh, go to /Applications/Silhouette6, right-click on *Silhouette* and select Show Package Contents.**

A new Browser window opens.

5 **In the new Browser window, go to Contents/Resources/scripts.**

Inside the scripts folder, you will find a *keybinds.py* file. As a precaution, it would be a good idea to make a backup of this file.

6 **Make a copy of the *keybinds.py* file and rename the copy *keybinds.py.bak*.**

7 **Using a text editor, open the *keybinds.py* file.**

8 **Scroll down and replace the existing shortcuts with those of your choosing.**

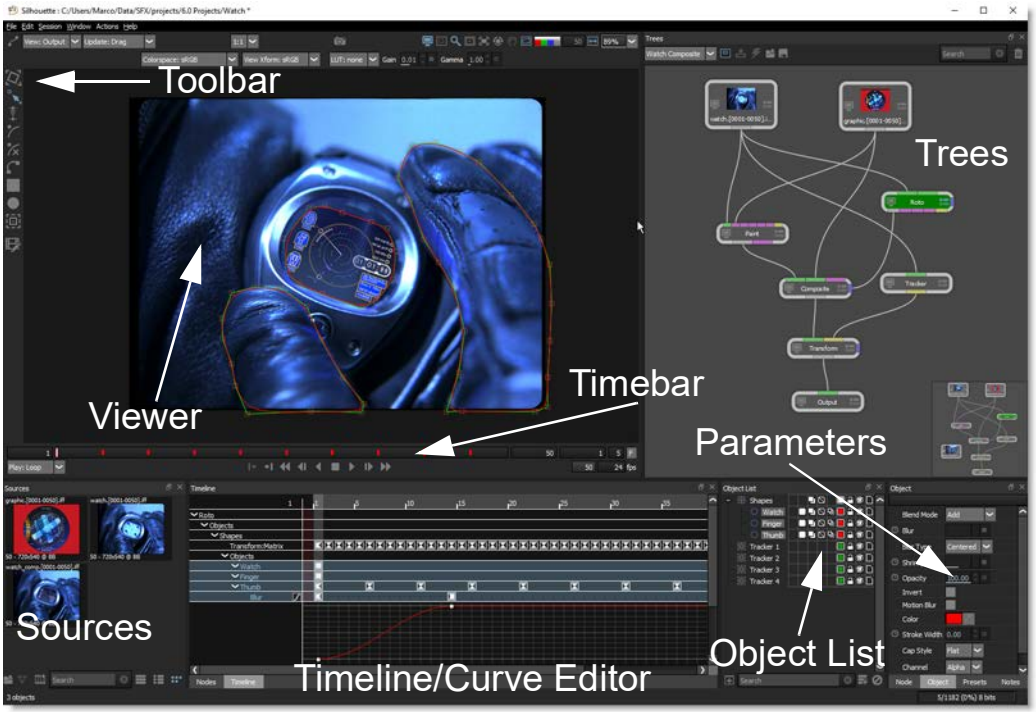
9 **Save the file.**

10 **Restart Silhouette for the new keyboard shortcuts to be active.**

USER INTERFACE

Silhouette uses a combination of traditional pull-down menus, toolbars and pop-up menus. Quick keys are provided for most functions and are shown next to the pull-down menu equivalent. Pop-up tool tips describe the function of buttons when the cursor is dragged over them. Pop-up and floating windows are used where appropriate.

The Silhouette interface is comprised of Sources, Trees, Viewer, Toolbar, Timebar, Timeline/Curve Editor, Node and Object Parameters, Presets, Object Lists and Nodes windows.



Concepts

Projects

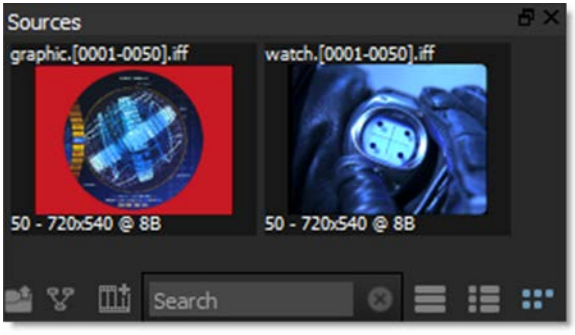
A project contains sessions, trees, nodes and source media.

Sessions

A session in Silhouette is where you composite, rotoscope and paint. It describes the resolution, bit depth, duration, frame rate and aspect ratio as well as what nodes you will be using. More on nodes below. Typically, you may have a job that requires you to work on multiple shots. A session would be created for each shot that you will work on. You can have as many sessions as you want, but can only work on one session at a time.

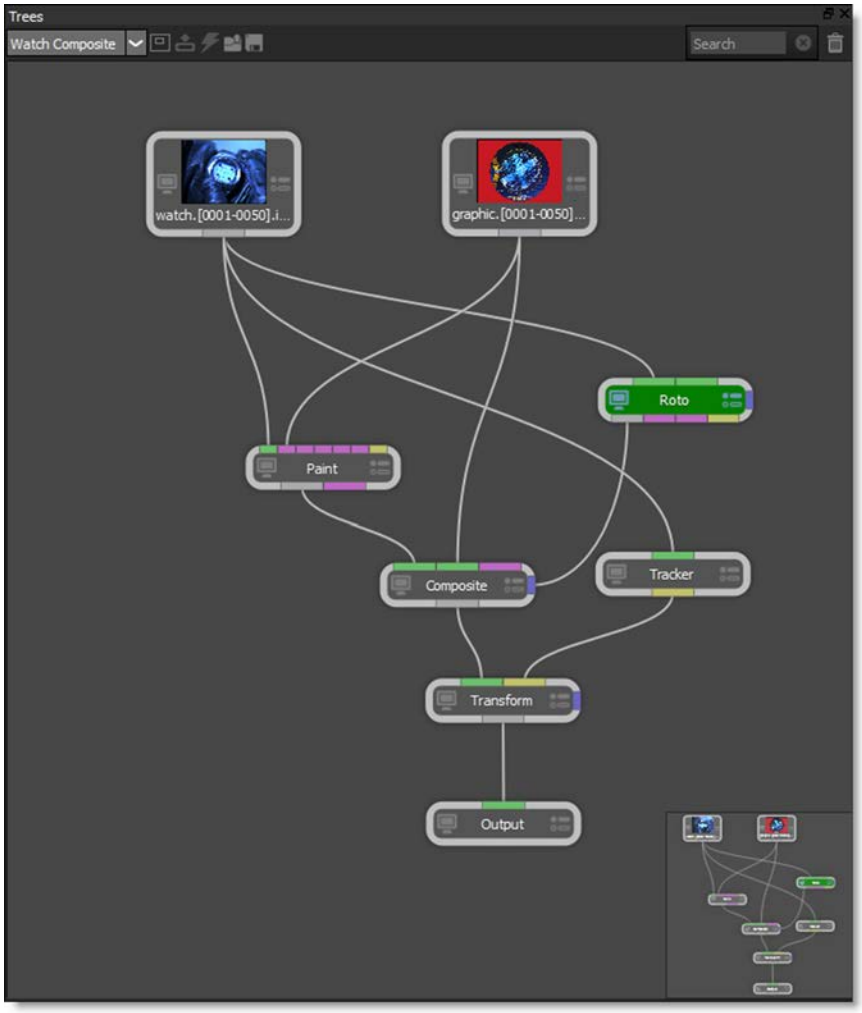
Sources

Sources are sequential images--clips. The location, frame rate, raster type, image size, and other information about the sources is stored for your reference.



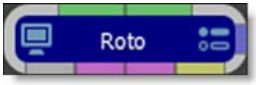
Trees

Trees are the combination of sources and nodes that are used to create the desired effect.



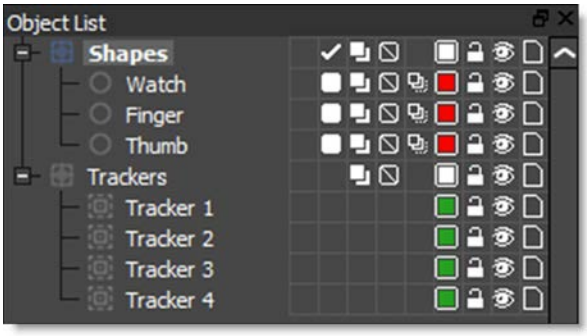
Nodes

Individual nodes that perform image processing functions are connected together to form a tree.



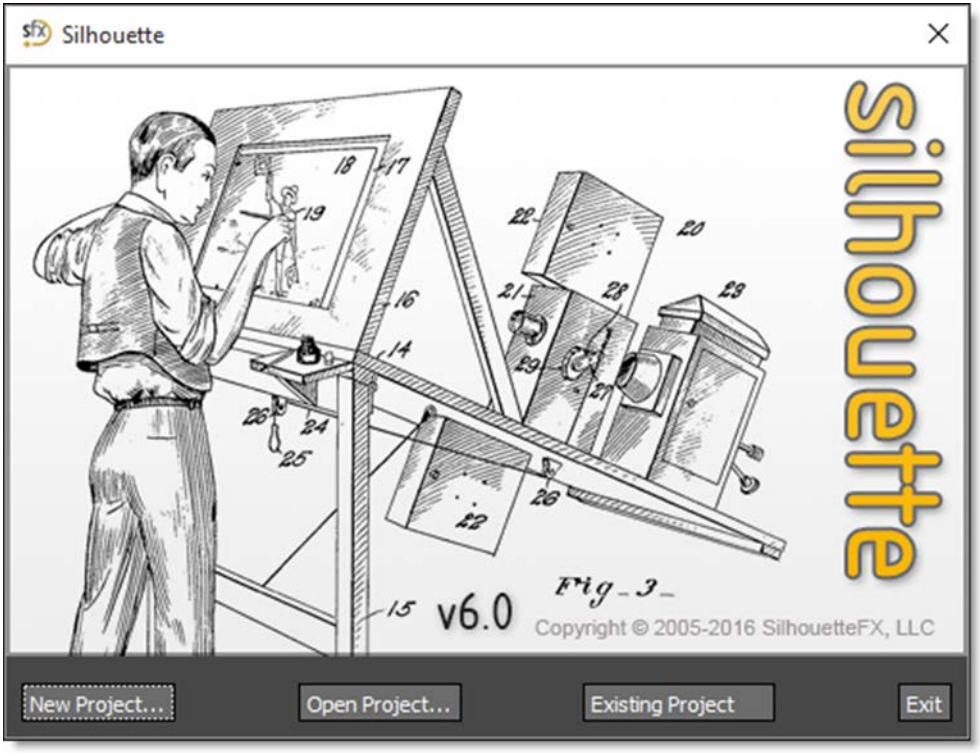
Objects

Objects are items such as shapes, layers, trackers and brushes that are used by the nodes.



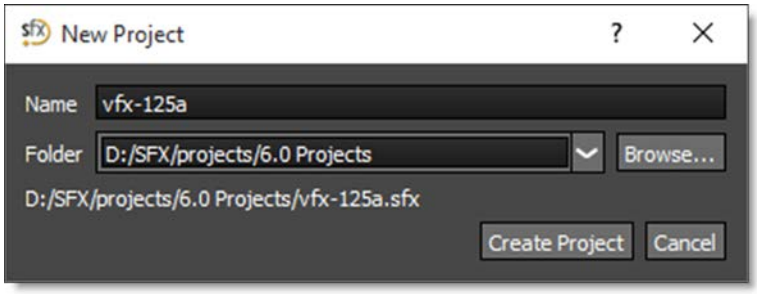
Projects

When you start Silhouette, you are required to create or open a project, after which the user interface opens. A project contains sessions, trees, nodes and source media. A session in Silhouette is where you composite, rotoscope and paint.



New Project

When a new project is created, a folder is generated using the name of the project and contains the project file as well as paint data, autosave, and backups.



Open Project

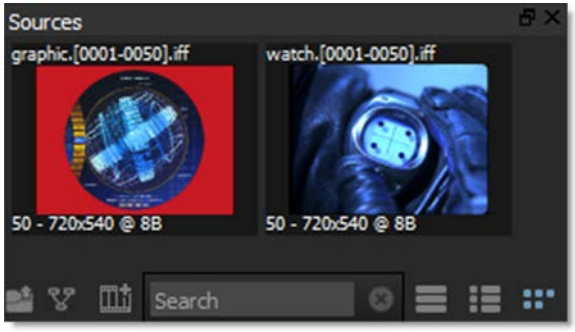
Opens existing projects using a file browser.

Existing Project

Quickly open one of the ten most recent projects.

Sources

At the bottom left of the user interface, you will find the Sources window. This is where you import footage and create sequences or sessions.



The clip name, resolution, bit depth and duration is displayed on the image thumbnail.

Import

Opens a file browser to import footage.

New Session

Creates a new session based on the selected source.

New Sequence

Creates a new sequence in the Sequence Editor.

Search

Clips and sequences can be searched for by entering text in the Search field. Once text is entered, only matching items are shown. Clear the search text to return the Sources window to its normal state.

Rename

Right-click on a source or sequence to rename it.

Source Views

List View

Displays the source information as text only.

List View with Thumbnails

Displays the source information as a thumbnail and text.

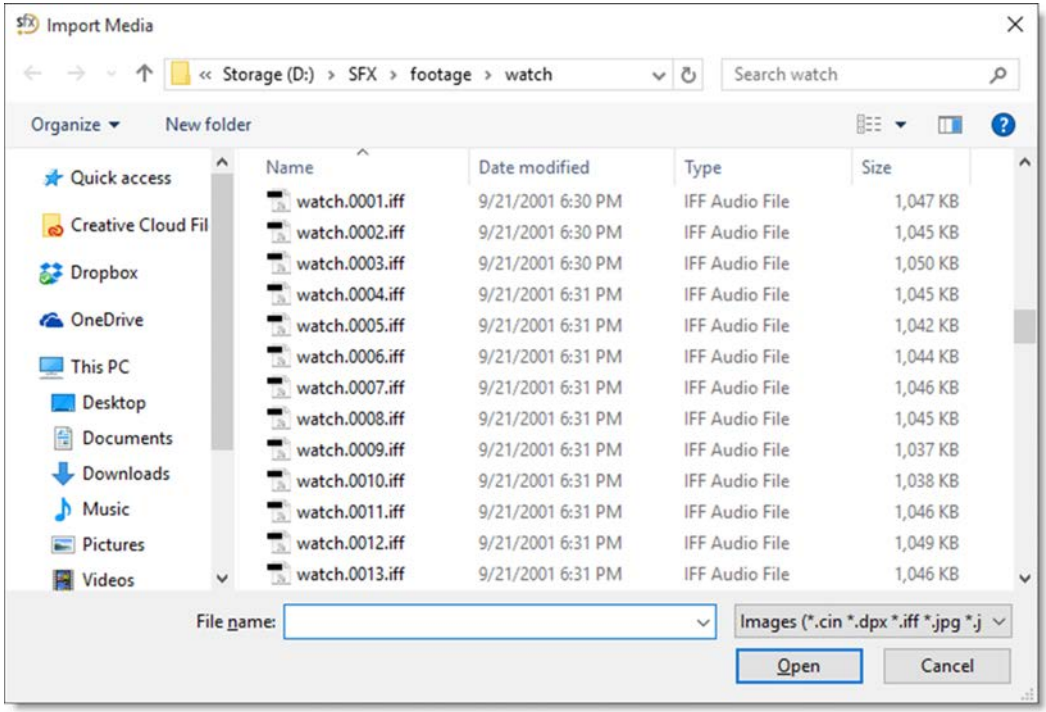
Thumbnail View

Displays the source information as a thumbnail only.

Import Media

Footage is imported by selecting File > Import > Media, by double-clicking on an open space in the Sources window or by pressing the Import icon at the bottom left of the Sources window.

When the File Browser opens, you can import a single frame, the entire clip or a range of frames.



Import Options

Selection	Action
Select the first frame in a clip	Imports the entire clip
Select a range of frames	Imports the selected range of frames
Select any single frame other than the first frame	Imports only that frame

We currently support the following file formats: Cineon, DPX, IFF, JPEG, OpenEXR, PNG, SGI/RGB, TIFF and TARGA.

Open
Loads the selected media into the Sources window.

Cancel
Cancels the import operation.

Go to the **Importing Media** tutorial to see how it works.

Source In and Out Points

Each clip in the Sources window can have a different in and out point which are used when creating a new session or editing in the Sequence Editor.

To set a clip's in and out point:

1 **Double-click on a clip in the Sources window.**

The clip is loaded into the Viewer and Mark IN and Mark OUT icons appear.

2 **Set the Timebar to the in point.**

3 **Click the Mark IN icon or press the I key.**

4 **Set the Timebar to the out point.**

5 **Click the Mark OUT icon or press the O key.**

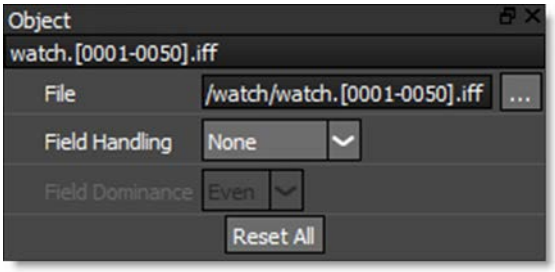
When you are done setting the clip's in and out points, change the Viewer back to the session.

6 **Click on a node in the Trees window.**

The result of the Trees window is now displayed in the Viewer.

Source Settings

Source media settings can be modified in the Object window. You can access these settings by clicking on the media in the Sources window.



Renaming Media

The source can be renamed using the name field.

Replacing Media

The File field is used to replace media.

If the media is moved from its location on disk after you have imported it, Silhouette will no longer be able to find it. However, you can easily relink the media so you can replace your existing clip with a new one. You can either manually type in the path or click the Browse icon at the far right of the File field.

Go to the **Replacing Media** tutorial to see how it works.

Managing Media Paths

You can virtualize media paths in order to improve asset sharing between users, asset management and render servers by specifying the file path with a SFX_MEDIA environment variable.

Go to the **Managing Media Paths** tutorial to see how it works.

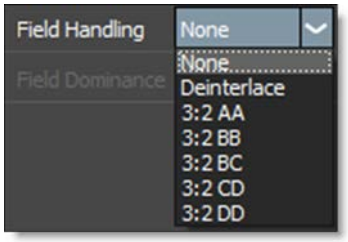
Managing Media Paths - Scripting

System administrators are able to create their own content resolvers with Silhouette's scripting system. A content resolver can remap footage automatically on import and when it is used.

- **A content resolver can remap the footage path when it is imported. For instance, our default resolver remaps anything under the $SFX_MEDIA variable to start with a "sfx:" scheme.**
- **A content resolver can remap the footage file path when it is used. For instance, our default resolver remaps anything starting with the sfx: scheme to a path starting with the directory $SFX_MEDIA points to.**

Field Handling

You can choose from either Deinterlace or one of the 3:2 settings.



See the **Appendix F - Video Fields** chapter for a detailed explanation of video fields.

None

No field processing takes place.

Deinterlace

Deinterlaces the video frame into two separate fields.

3:2 AA

Removes 3:2 Pulldown based on the AA frame being the first frame.

3:2 BB

Removes 3:2 Pulldown based on the BB frame being the first frame.

3:2 BC

Removes 3:2 Pulldown based on the BC frame being the first frame.

3:2 CD

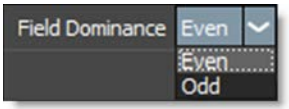
Removes 3:2 Pulldown based on the CD frame being the first frame.

3:2 DD

Removes 3:2 Pulldown based on the DD frame being the first frame.

Field Dominance

Select either Even or Odd dominance depending on whether you are working with NTSC or PAL images.



Even

Use for NTSC images.

Odd

Use for PAL images.

Go to the **Working with Video Fields** and **Working with 3:2 Pullup / Pulldown** tutorials to see how they work.

Interpretation

Interpretation is only displayed in the Edit Source menu when using DPX files. It detects and sets whether DPX files are Logarithmic or Linear. Sometimes the program used to create the DPX files writes the wrong header information into the file causing Silhouette to think it is Logarithmic when it is Linear and vice versa. The controls below allow you to explicitly set whether or not the file is Logarithmic or Linear.

Auto

Automatically figures out whether the DPX file is Logarithmic or Linear.

Log

Manually sets the DPX file to Logarithmic.

Lin

Manually sets the DPX file to Linear.

Autosave and Backups

An autosave and backup system ensures that you will not lose any of your work. Autosaves and backups are stored in the project folder.

Autosaves

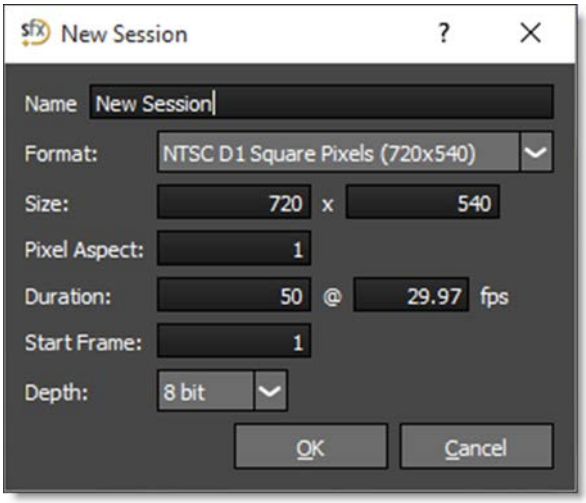
The Auto Save > Interval (minutes) preference specifies how often to update the autosave file which is named autosave.sfx. If Silhouette crashes, you are given the choice to open the autosave file when re-opening the project. When projects are closed or saved normally, the autosave file is automatically deleted.

Backups

The Auto Save > Maximum # of Backups preference controls how many backup files are created. Each time a project is saved, a backup copy is stored. The most recent backup is backup.sfx, the second most recent is backup.1.sfx, then the next is backup.2.sfx, etc., up to the maximum number of 5. As each new backup is added, the files are rotated upward.

Sessions

A session in Silhouette is where composite, rotoscope and paint. Typically, you may have a job that requires you to work on multiple shots. A session would be created for each shot that you will work on. You can have as many sessions as you want, but can only work on one session at a time.



Go to the **Creating Sessions** tutorial to see how it works.

New Session

You must create a session before you can start working with your footage. It describes the resolution, bit depth, duration, frame rate and aspect ratio as well as what nodes you will be using. You can create a new session by:

1 **Selecting a clip in the Sources window and pressing either Ctrl(Win)/Cmd(Mac)-N, selecting Session > New Session or clicking the New Session icon at the bottom of the Sources window.**

2 **Dragging the clip thumbnail from the Sources window to the Trees window.**

Note: If an in and out point has been marked for a source clip, the marked duration will be used for the session duration. For more information on source clip in and out points, see **Source In and Out Points**.

Editing Sessions

Once you have created a session, you can change its settings at any time by either 1) Selecting Session > Session Settings or 2) Pressing **Ctrl(Win)/Cmd(Mac)-Shift-S**. In either case, the session window opens and you can change the settings.

Switching Sessions

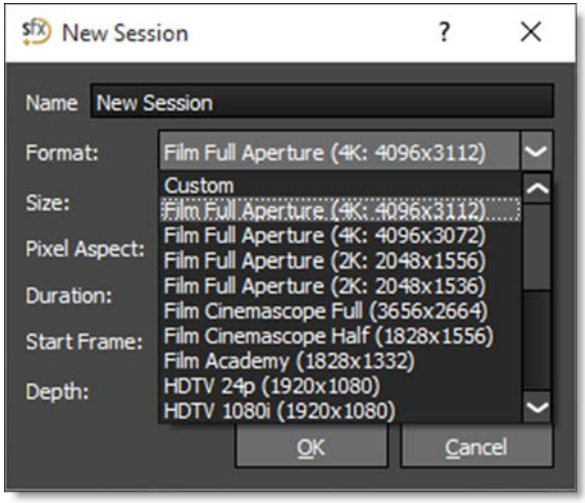
To switch between sessions, select it from the pop-up at the top of the Trees window or from the Session > Current Session menu.

Deleting Sessions

Delete a session using the Session > Delete Session menu. Whatever is the currently selected session is deleted.

Session Window

The Session window has a variety of settings for format, image size, pixel type, and frame rate. You can choose one of the preset formats or create a custom format.



Name

Determines the name of the session.

Format

A number of preset formats can be selected from the Format pop-up menu. When one of the options is selected, the session fields are preset with the appropriate data. See the **Appendix C - Session Formats** chapter for a complete listing of all format presets.

Format Presets

- **Custom**
- **Film Full Aperture (4K: 4096x3112)**
- **Film Full Aperture (4K: 4096x3072)**
- **Film Full Aperture (2k: 2048x1556)**
- **Film Full Aperture (2k: 2048x1536)**
- **Film Cinemascope Full (3656x2664)**
- **Film Cinemascope Half (1828x1556)**
- **Film Academy (1828x1332)**
- **HDTV 24p (1920x1080)**
- **HDTV 1080i (1920x1080)**
- **HDTV 1080, Anamorphic 1280x1080**
- **HDTV 720p (1280x720)**
- **NTSC (640x480)**
- **NTSC (648x486)**
- **NTSC DV 720x480)**
- **NTSC DV Widescreen (720x480)**
- **NTSC D1 (720x486)**
- **NTSC D1 Square Pixels (720x540)**
- **PAL D1/DV (720x576)**
- **PAL D1/DV Square Pixels (768x576)**
- **PAL D1/DV Widescreen (720x576)**

Size

Width

Sets the width of the image.

Height

Sets the height of the image.

Pixel Aspect

Sets the pixel aspect ratio of the image.

Duration

Sets the length of the session.

FPS

Sets the frame rate of the session.

Start Frame

Sets the start frame for the session. The Player, Timeline and Render Options incorporate this value into their numbering.

Depth

Sets the bit depth of the session.

8 bit

Sets the bit depth to 8 bits per channel.

Float 16

Sets the bit depth to 16 bit floating point. Use for film sessions using OpenEXR, DPX and Kodak Cineon files. Float 16 will have slightly less precision than Float 32 but will take up much less memory.

Float 32

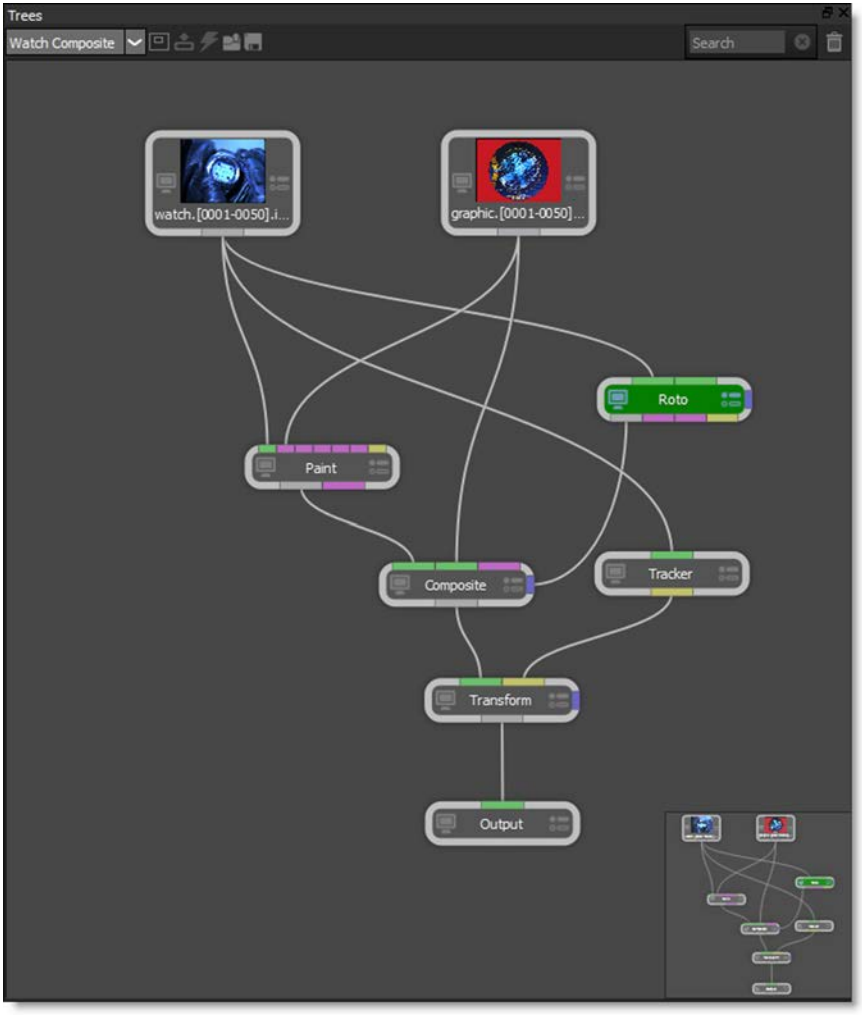
Sets the bit depth to 32 bit floating point. Use for film sessions using OpenEXR, DPX and Kodak Cineon files. Float 32 will be higher precision than Float 16, but will take up much more memory.

OK

Creates a new session in the Trees window. When you click OK, the session is automatically created.

Trees

The power of Silhouette lies in the Trees window where your effects are built. A tree is a series of clips and nodes, such as color correction, image processing and composite nodes, plugged together to create the desired effect. The tree is grown by adding clips and nodes in any order. The ability to view any node while editing another allows for very complex composites that can be set up and rendered in one pass.



Session Selector

There is a Session Selector at the top of the Trees window where you can select the session to work on.

Overview

The Overview displays a miniature version of the entire Trees window at the bottom right.

Extract Nodes (E)

Click on a node and select the Extract icon at the top of the Trees window to extract it from the Tree.

Enable/Disable Nodes (D)

Click on a node and select the Toggle Enable State icon at the top of the Trees window to disable it. Click the icon again to enable it.

Load Nodes

Loads previously saved nodes.

Save Nodes

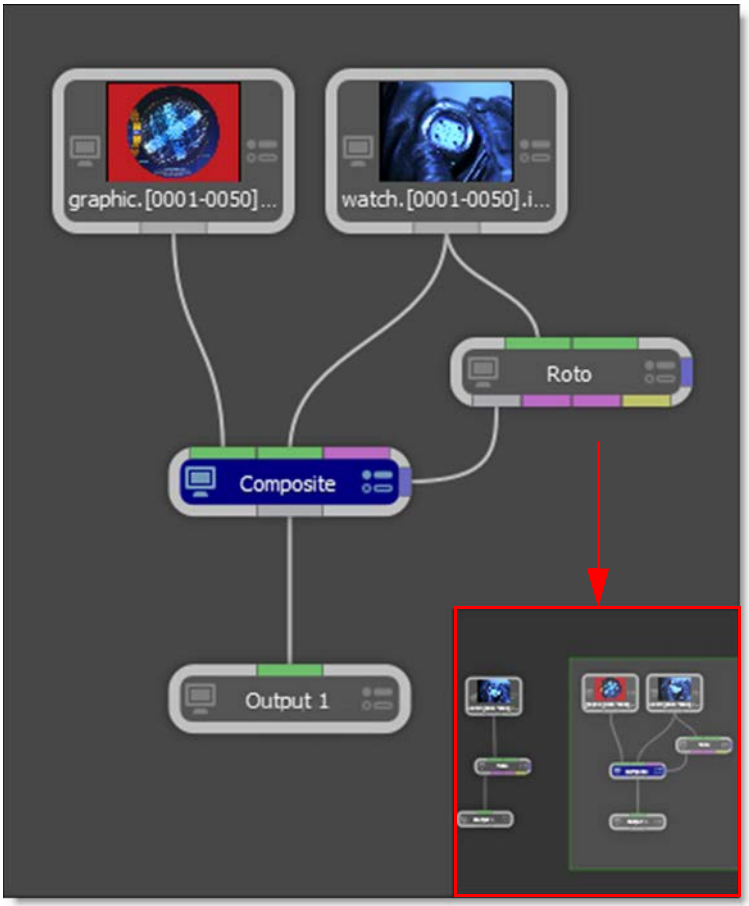
Saves selected nodes.

Note: The Paint node can't be saved using Save Nodes.

Delete Session

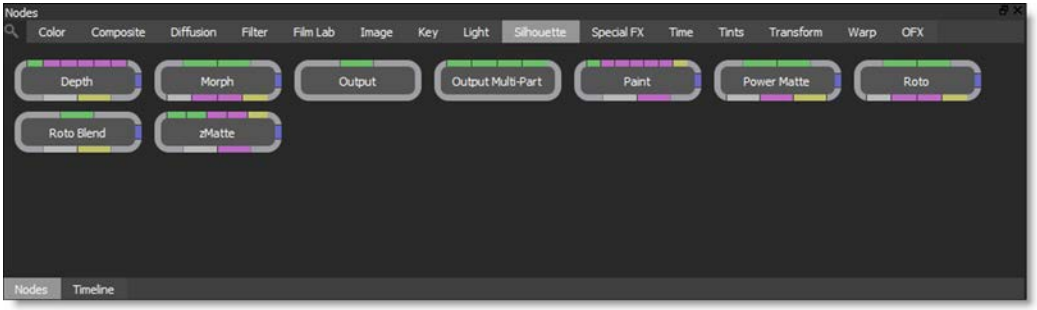
Deletes the current session.

Inside this Overview, a gray rectangle signifies the visible portion of the Tree which you click and drag to pan. If the gray rectangle is moved off screen, just click in the Overview and it will reappear.



Nodes

Silhouette is a node based system and different nodes are used for various functions. Located in the Nodes window at the bottom of the screen, nodes are grouped into the following categories: Color, Composite, Diffusion, Filter, Film Lab, Image, Key, Light, Silhouette, Special Effects, Time, Tints, Transform and Warp.

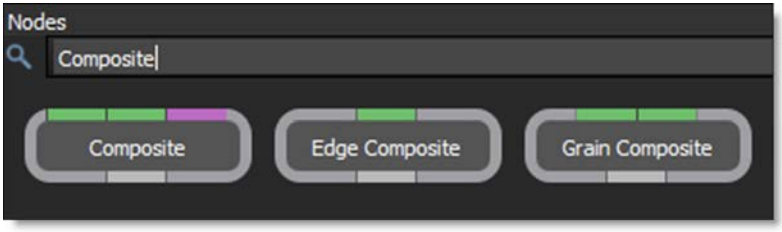


Nodes can be dragged and dropped to the Trees window and then wired up to the appropriate inputs. Once active in the Trees window, the node's controls appear in the Node parameters window and if required, the relevant tools show up in the Toolbar.

Node Search

To search for nodes in the Nodes window, click the Search icon at the top left of the Nodes window.

Enter the node into the search field and it will appear.



Click the Search icon when done to return to the normal Nodes window view.

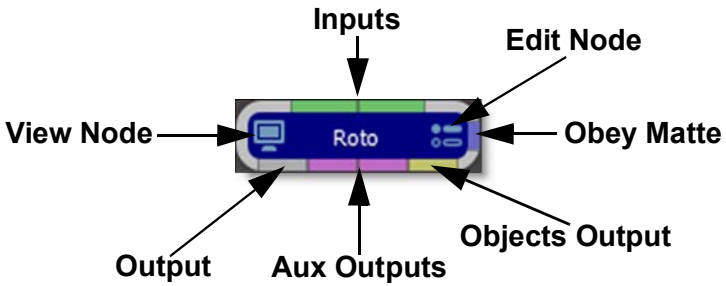
Note: With the mouse in the Nodes Window, you can press the **Enter** key to enter search mode, and the **Esc** key to leave it.

Node Connections

Nodes can be configured for either vertical or horizontal layouts. Vertical layout sets the node's input and output at the top and bottom of the node while horizontal layout sets the node's input and output on the sides of the node. This is controlled by a User Interface > Tree Layout preference.

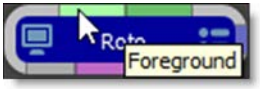
Vertical Layout

The different colored bars on the border of the nodes allow you to connect them together.



Inputs

The colored bars on top of a node are the inputs. Depending on the node, the type of input required may change. Green bars are foreground and background inputs, purple bars are auxiliary inputs, and yellow bars are transform inputs. Tool tips pop up when you hover over a node's input or output to easily identify it.



Output

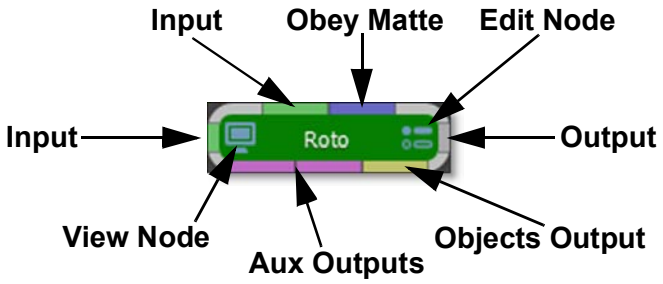
The colored bars on the bottom of a node are outputs. The gray colored bar is the main output, purple bars are auxiliary outputs, and yellow bars are object outputs--like layers. You use the output of a node to feed it into the input of other nodes.

Obey Matte

The blue colored bar at the far right is the obey matte input. Whatever is plugged in to the obey matte input will constrain or limit the effect of the node.

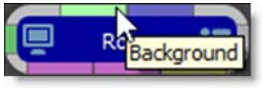
Horizontal Layout

The different colored bars on the border of the nodes allow you to connect them together.



Inputs

The colored bars on the left side and top of a node are the inputs with the primary input being on the left side. Depending on the node, the type of input required may change. Green bars are foreground and background inputs, purple bars are auxiliary inputs, and yellow bars are transform inputs. Tool tips pop up when you hover over a node's input or output to easily identify it.



Output

The gray colored bar at the right side of a node is the main output. The colored bars on the bottom of a node are outputs. Purple bars are auxiliary outputs and yellow bars are object outputs--like layers. You use the output of a node to feed it into the input of other nodes.

Obey Matte

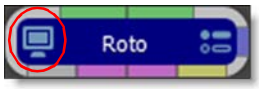
The blue colored bar at the top right is the obey matte input. Whatever is plugged in to the obey matte input will constrain or limit the effect of the node.

View / Edit Node

You can view one node in the Viewer while editing the parameters of a different node.

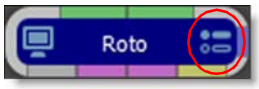
View Node

When enabled, the View Node icon on the left side of the node displays the result of that node in the Viewer.



Edit Node

When enabled, the Edit Node icon on the right side of the node displays its parameters in the Node parameters window.



Single-click the center of a node to simultaneously enable the View Node and Edit Node icons.

Adding Nodes

There are various ways to add nodes to a tree:

1. **Click and drag a node from a Nodes window onto the center of an existing node wire where it will be inserted.**
2. **Single-click a node in the Nodes window to add it after the selected node or place it in the center of the Trees window if nothing is selected.**
3. **Use the Backtick key or right-click in the Trees window to add a node from the pop-up menu. It is added after the selected node or is placed near the cursor if nothing is selected.**
4. **Click and drag a node from the Nodes window on top of an existing node and a new branch is created.**

Connecting Nodes

There are various ways to connect nodes in a tree:

1. **Connect nodes together by dragging from the output of one node to the input of another node or vice-versa.**
2. **Select one or more nodes using Cmd(Win)-Ctrl(Mac)-click and then Shift-click on a target node. All selected nodes will wire up to the input bars on the target node in the order the source nodes were selected.**
3. **Drag an unconnected node over a wire, line it up with the input port you want to connect and then release once it automatically connects.**

4 **Touch input/output bars until they highlight, wait .3 seconds, the ports will connect, and then they will unhighlight as they can no longer connect again.**

5 **Swap inputs by dragging one of the wires and placing it on the other connected input.**

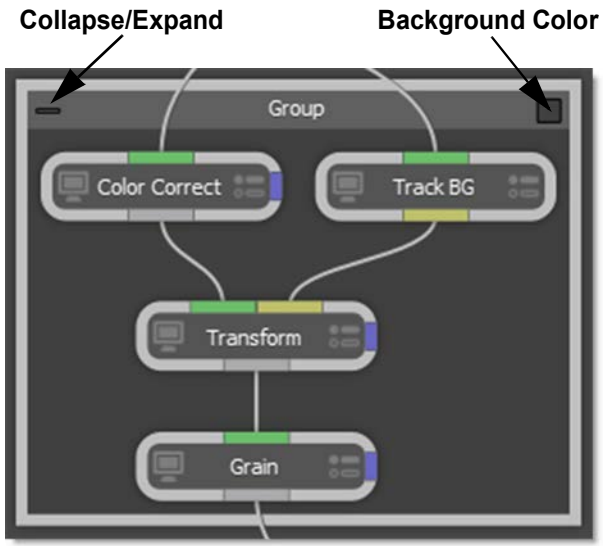
6 **Shift-clicking**

- **Node: If Shift-clicking on a node, the node becomes the target node. Any selected nodes become the source nodes that get wired to the inputs of the target node in selection order.**
- **If the bar is an input bar then the behavior above applies, but instead of using the primary input, the clicked bar is used. This will only work with a single node since multiple nodes can't be wired to the same input bar.**
- **If the port is an output bar, then a wire is added from the output bar to the primary inputs of all selected nodes.**

Note: You can't use a Source clip's node input, only its output.

Grouping Nodes

Nodes in the Trees window can be grouped, collapsed or expanded.



Using Node Groups

- **To group one or more nodes, right-click on one of the selected nodes and choose Group Nodes. A group window appears around the nodes.**
- **Ungroup nodes by right-clicking on the node group and select Ungroup.**

- **Rename the node group by right-clicking over the group and select Rename.**
- **Change the background color of the group by clicking on the color pot to the right of the title.**
- **Double-click on the group or click the collapse/expand icon to the left of the title to collapse/expand the group.**
- **Click-drag anywhere in the group (not on a node) to move the group.**

Deleting Nodes/Wires

- **Click on a node to select it and press the Delete key.**
- **Click on a wire to select it and press the Delete key.**

Disconnecting Nodes

There are various ways to disconnect nodes from a tree:

- **Click on a node and select the Extract icon at the top of the Trees window.**

- **Click on a node to select it and press E to extract it.**
- **Shake a node to the left and right to detach it.**

Disabling Nodes

- **Click on a node and select the Toggle Enable State icon at the top of the Trees window.**

- **Click on a node to select it and press D to disable it. If disabled, pressing D will enable the node.**

or

- **Click on a node's Edit Node icon to edit its parameters.**
- **Press the lightning bolt icon at the top of the Node parameters.**

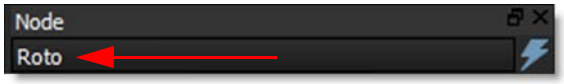
Renaming Nodes

It is a good idea to rename your nodes, especially when you have a large tree, for organizational purposes.

To rename a node:

1 **Click on a node's Edit Node icon to edit its parameters.**

2 **Type in a new name at the top of the Node parameters window.**



Replacing Nodes

You can replace any node in the tree with another node within the Node Selector or with any other node in the Trees window.

To replace a node:

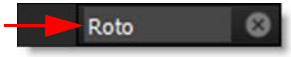
1 **Alt-click and drag a node on top of another node and release.**

Searching Nodes

You can search for nodes by using the Search field at the top right of the Trees window.

To search for nodes:

1 **Enter the node's name in the Search field at the top right of the Trees window and hit Enter.**



The node is selected in the tree.

2 **Hit Enter again to select the next node of the same name.**

3 **Click the X to the right of the Search field to clear the search.**

Node Panning

Drag selected nodes and hit them against the edge of the Trees window to automatically pan the window the width of a node. Repeat to keep panning.

Trees Window Pan/Zoom Shortcuts

Shortcut	Action
Middle-mouse drag	Pans the tree
Space Bar-drag	Pans the tree
Scroll wheel	Zooms the tree in and out
+ or **=**	Zooms the tree in
-	Zooms the tree out
Click and Drag in Overview	Pans the Overview overlay

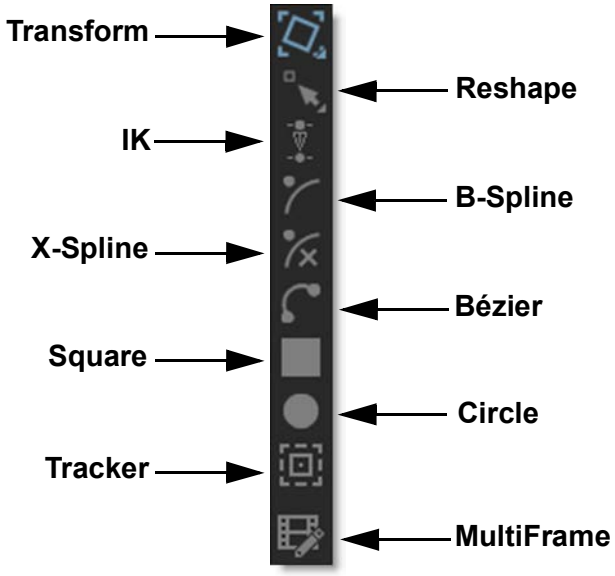
Toolbar, Node and Object Parameters, Presets

Controls for selected objects such as nodes, shapes, layers, and trackers are set using the Toolbar, Node and Object windows. In addition, notes can be assigned to shapes, layers and trackers in the Notes window.

Note: When dragging numeric fields, press the **Ctrl(Win)/Cmd(Mac)** key while dragging for finer control.

Toolbar

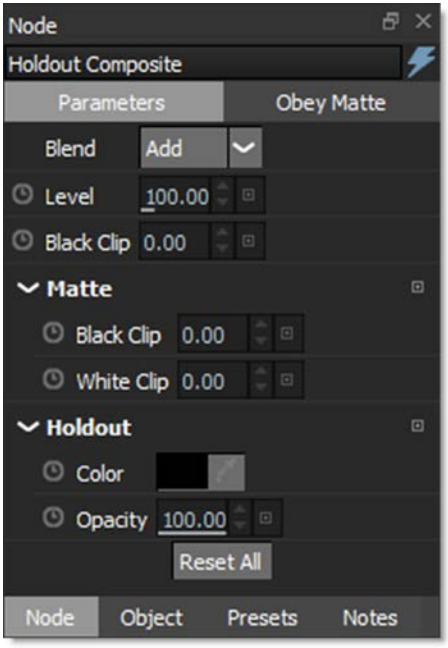
Along the left side of the Viewer is the Toolbar. It contains icons that select various tools. The contents of the Toolbar will change depending upon the node that is selected.



Parameters

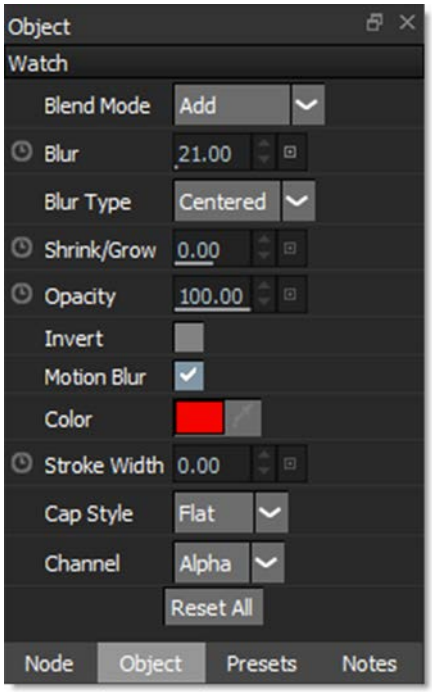
Node

When a node in the Trees window is edited, its controls appear in the Node parameters window.



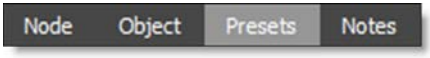
Object

All of the editable parameters of a shape, layer or tracker can be adjusted in the Object parameters window. When a shape is selected, you will see the controls listed below.



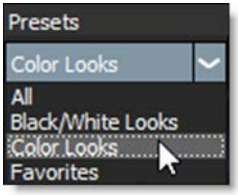
Presets

The Presets window allows you to select from a set of pre-defined presets. When the Presets tab is selected, the Presets window is visible and displays the current node's available presets.



Presets for most nodes have been created so that you can easily click through the various choices.

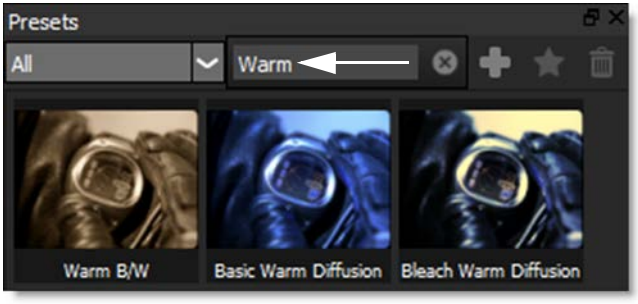
Most nodes contain multiple preset groups which are selectable at the top of the window.



Clicking once on a preset modifies the image in the Viewer. As you click on different presets, the image in the Viewer will update. This allows you to quickly try out several different presets.

Preset Searching

Presets can be searched for by entering text in the search field located at the top of the Presets window. Clear the search text to return the Presets window to its normal state.



To search for a preset:

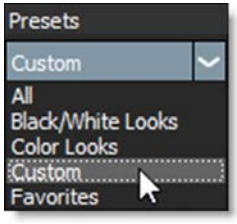
1. **Select a node, for instance Special Effects > Looks.**
2. **In the Presets window search field, type *Warm.***

   All presets with Warm in the name are shown.
3. **Click the X to the right of the search text to clear the search.**

Create Preset

Creates a custom preset in the Presets window based on the current parameter settings.

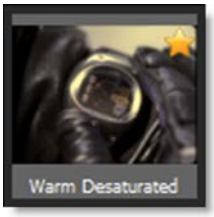
To sort the Presets window by Custom presets, select Custom in the Presets pop-up menu.



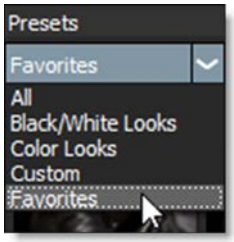
Favorites

Presets can be tagged as a Favorite allowing them to be sorted separately in the Presets window. You can tag a preset as a Favorite by selecting the preset and pressing the Favorite icon located at the top right of the Presets window.

Presets tagged as a favorite display a yellow star at the top right of the preset.



To sort the Presets window by Favorites, select Favorites in the Presets pop-up menu.



Delete Preset

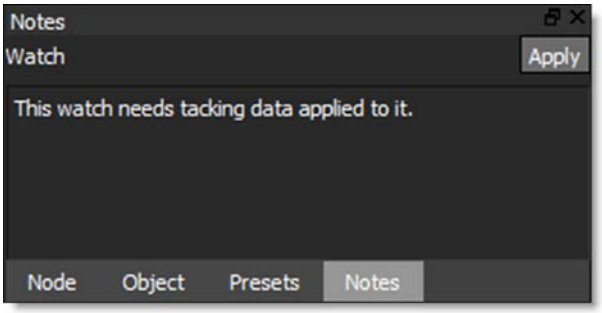
Deletes custom presets.

Rename Preset

Right-click on a custom preset, select Rename Preset and type in the new name.

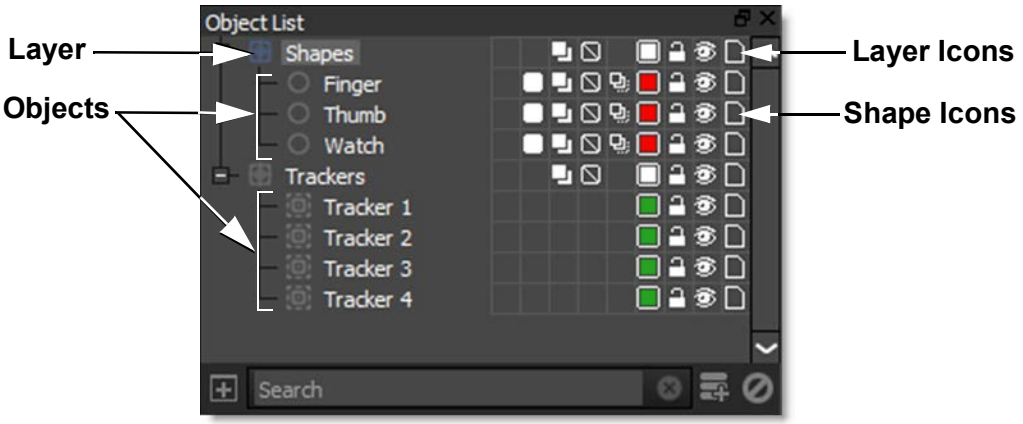
Notes

The Notes window allows you to type a note for selected objects.



Object List

In nodes that contain shapes, the Object List is where you can select, lock, combine, rename or delete shapes, layers and trackers. Layers are containers for shapes and other objects and have their own individual transforms.



Search

Objects can be searched for by entering text in the Search field located at the bottom of the Object List. Once text is entered, only matching items are shown. Clear the search text to return the Object List to its normal state.

- **If you type /l or /r at the end of a query, it will filter only left or right stereo objects.**
- **If you type /a or /b at the end of a query, it will filter only A or B morph objects.**

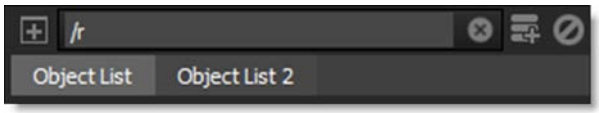
For instance, to show all right side objects, just type /r. To show all left side objects starting with the word deer, type deer/l. Entering deer/rb would match all right side B objects that have the word deer in the name.

Add Dock

Multiple Objects Lists in conjunction with filtering can be used to organize left or right stereo objects, A or B morph shapes or anything else for that matter.

Clicking the Add Dock icon creates additional Object Lists. Each additional

Object List dock is named with a number and is displayed as a tab below the Object List.



With two Object Lists open, for instance, you can filter one on /l and the other on /r for stereo projects or filter on /a in one and /b in the other for morphing. If you then switch an object's view assignment from left to right or from A to B, it will cause it to jump between the two lists.

Note: Closing one of the added docks will also delete it.

Add Layer

Located at the bottom of the Object List, this icon creates a new layer. Layers are used to organize shapes, trackers and other objects, but more importantly they are used to contain the motion information from trackers.

Note: Dragging objects onto the New Layer icon will create a new layer and move the objects into it in one operation.

Deleting

Select an object in the list and press **Ctrl(Win)/Cmd(Mac)-X,** hit the **Delete** key or use the Delete icon at the bottom of the Object List.

Renaming

You can rename an object by either:

- **Clicking on the object once to select it, hitting the Enter key, typing in the new name and pressing Enter again.**

- **Double-clicking the object, typing in a new name and hitting the Enter key.**
- **Right-clicking on the object, selecting Rename and typing in a new name.**

Selecting

Clicking the name of an object selects it. Multiple objects can be selected by **Shift**-clicking on them. **Ctrl**-clicking will add to the selection of objects that are located at different levels of the Object List while **Ctrl**-clicking an object after it is selected will deselect it. In addition, if you **Shift**-click a color pot in the Object List, you select all objects of the same type and color.

Note: In File > Preferences > Shape on Windows and Linux or Silhouette > Preferences > Shape on Mac, there is a Template Color setting that sets the color and opacity of unselected shapes. This feature is enabled by using **Shift-W**.

Moving

Objects can be moved by dragging and dropping them to a new position in the list or within another layer.

Expanding / Collapsing Layers

Expand All

Shift-clicking the +/- icon expands or collapses all nested layers inside that layer.

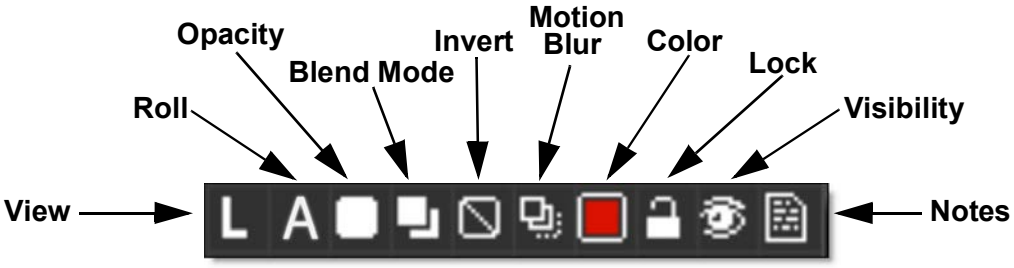
Expand or collapse multiple layers at once

If expanding or collapsing a selected layer using +/- icon, then any other selected layers with the same parent will also expand or collapse. This can be combined with **Shift** to expand or collapse children as well.

Icons

Shape Icons

There are number of icons directly to the right of a shape's name that can be used to modify shapes. The Opacity, Blend Mode, Invert, Motion Blur and Color icons duplicate the functionality of the Shape parameters in the Object window and does so because it is often easier to change these settings in the Object List when multiple shapes are selected.



View

The View icon, which only shows up when using stereo sources, displays either a **L** for Left View or **R** for Right View and indicates which view the shape or layer is assigned to. Clicking on the View icon toggles which view the shape or layer is located in.

Roll

The Roll icon, which only appears when using the Morph node, determines whether the shape resides in the A-roll or B-roll. Morph Shapes create themselves in the proper "roll" when viewing A or B. If viewing any other View mode, creating a shape will default to A. The Object List shows the A/B state and clicking the A or B will toggle the shape to the other roll. Viewing A or B will only show A or B shapes, as appropriate. Creating a shape on the B-roll will automatically set the shape color to blue. Also, Select All in A or B will only select A or B shapes, respectively.

Opacity

Indicates the opacity level of a shape. It is white when opacity is 100%, black when 0% and a shade of gray when somewhere in between. When keyframing is activated for Opacity in the Shape parameters, you can quickly keyframe the opacity of a shape from 100% to 0% by toggling this icon.

Note: In File > Preferences on Windows and Linux or Silhouette > Preferences on Mac, there is a Shape > Fade Outline with Opacity setting that draws unselected/inactive shape outlines using the Opacity value. This preference can be toggled using the **V** key so that you can easily see any shapes that are at 0% opacity.

Blend Mode

Controls how shapes are blended together. Each click of the icon cycles through the blend modes. See the **Blend Mode** section for information.

Invert

Inverts selected shapes.

Motion Blur

Turns Motion Blur on or off for selected shapes.

Outline Color

Sets the color of selected shape's outlines.

Left-clicking the color pot opens a standard color picker while right-clicking on the color pot opens a pop-up color menu with 16 primaries.

Lock

Locks/Unlocks selected objects. A locked shape cannot be edited or changed and is italicized in the Timeline.

Visibility

Click the Visibility icon to hide or show selected objects. Only visible shapes are rendered. To solo an object, **Alt**-click on its Visibility icon. **Alt**-**Ctrl**-click to force the visibility of all objects to the on position.

Notes

Select an object and click the Notes icon to bring the Notes window forward above the Object List.

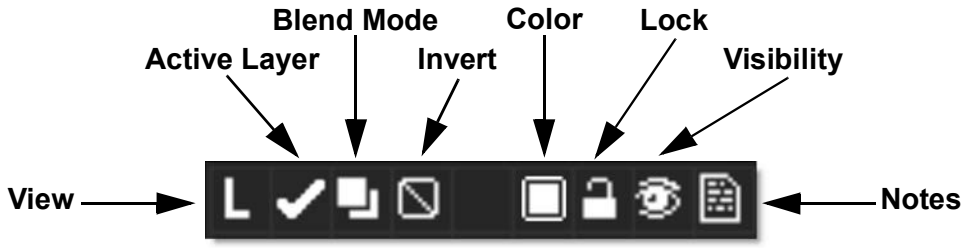
You can type a note for selected objects. Currently, shapes, trackers, depth objects, and layers are supported. Because you can type multiple paragraphs into the Notes window, you must press Apply to assign the note. The Notes icon changes once a note is applied to the object.

- **Hovering over the Notes icon displays the note, if there is one, as a tool tip.**

- **The Status Bar displays the object name and the note for the selected object.**

Layer Icons

There are some icons directly to the right side of a layer's name that can be used to modify layers.



The Layer's View, Blend Mode, Invert, Color, Lock, Visibility and Notes icons have similar functionality to the ones used by other objects.

Active Layer

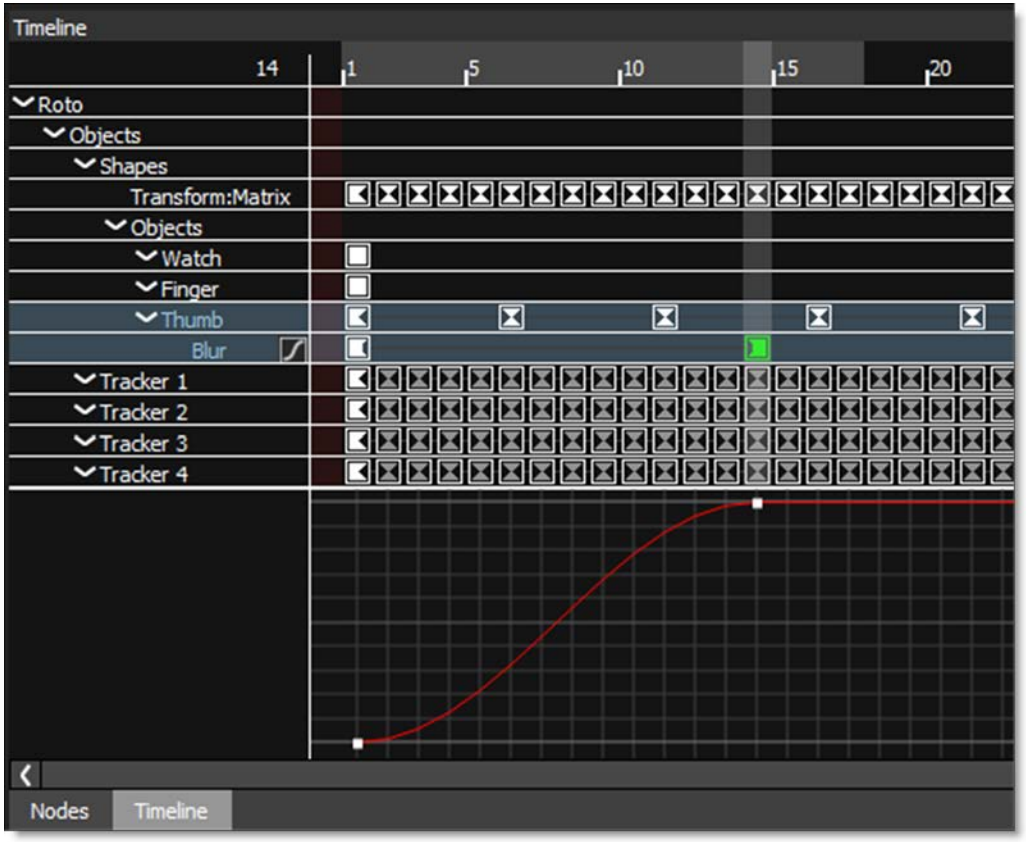
The Active Layer box displays a check mark when the layer is selected. Clicking the checkbox will toggle the state of the Active Layer.

Object List Shortcuts

Shortcut	Action
Click on an object	Selects the object
Shift-click an object	Adds an object to the current selection
Ctrl(Win)/Cmd(Mac)-click on an object	Toggles the object selection
Shift-click color pot	Selects shapes of same color
Alt-click the Visibility icon	Solos an object
Alt-Ctrl-click the Visibility icon	Forces the visibility of all objects to the on position
Shift-click the +/- icon	Expands or collapses all nested layers inside that layer
Double-click an object	Selects the object so it can be renamed

Timeline

The Timeline is an overall view of all animated parameters. Animation is the process of setting values at various frames, or keyframes as they are called. These keyframes transition from one to another over time. The Timeline provides you with the tools necessary to view, edit, move or delete keyframes as well as change their interpolation type.



The Timeline is divided in three parts:

- **Parameter List: lists all animateable parameters for a particular process.**
- **Timeline: displays keyframes over time.**
- **Curve Editor: The Curve Editor is a view mode in the Timeline that allows you to work with keyframe animations expressed as curves on a graph. The Curve Editor is only displayed once the Curve Editor icon is enabled.**

Go to the **Using the Timeline** tutorial to see how it works.

Parameter List

The Parameter list shows all objects in the current session. This list is arranged in a collection of shapes, filters, trackers and their associated parameters. Click the twirly to the left of the parameter to either show or hide parameters of a particular object.

Timeline

The Timeline is an overview of your objects and their keyframes. In the Timeline, you can edit a keyframe's position in time, but not its value.

Work Range

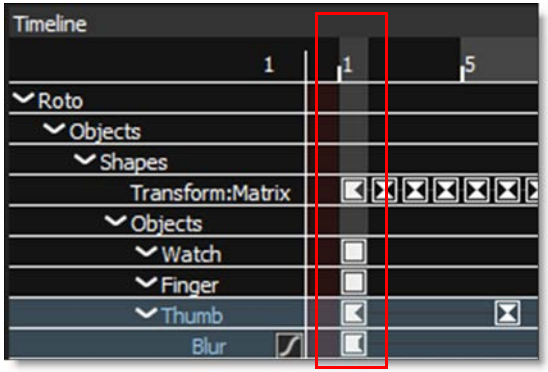
The Timeline displays the full session range with the work range displayed using a gray bar at the top of the Timeline.

The work range can quickly be adjusted by:

- **Ctrl-drag the ends of the work range bar to change the start and end.**
- **Ctrl-drag the work range bar to slide it forward and back while maintaining the duration.**

Current Time Indicator

The vertical line in the Timeline is the current time that you are parked at. To move the Current Time Indicator, just click and drag the shuttle slider below the Viewer or in the top line of the Timeline.



To center the timeline on the current frame, click the top left corner of the Timeline above the object labels.

Out of Bounds Indicator

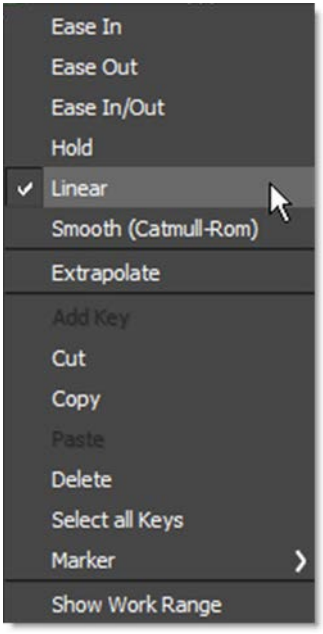
The area before the first frame and after the last frame (the area between the actual session range and the work range, if extended) is shaded red in the timeline to show the usable, but out of bounds area.

Zooming and Panning the Timeline

The Timeline shows the duration specified for the current session. You can zoom in or out using the mouse scroll wheel to see the Timeline in more or less detail and can pan horizontally or vertically using the **Spacebar** while clicking and dragging.

Timeline Pop-up Menu

Right-click over a selected keyframe in the Timeline or point in the Curve Editor to open the Timeline pop-up menu.



Interpolation

Ease

Ease allows you to smoothly transition in or out of a keyframe.

- **Ease In**

Eases in to the selected keyframe.

- **Ease Out**

Eases out of the selected keyframe.

- **Ease In/Out**

Eases in and out of a selected keyframe.

Hold

There is no interpolation and abrupt switches in value occur at keyframes.

Linear

When values change, a straight line with sharp, abrupt angles from one keyframe to the next is drawn.

Smooth (Catmull-Rom)

Smooth (Catmull-Rom) creates a smooth animation curve between keyframes.

Extrapolate

Extends the path of the curve beyond the first or last points.

Note: When the Shape > Interpolation Engine preference is set to Spatial (Nuke-compatible), shape keyframes can only be set to Smooth (Catmull-Rom), Hold and Extrapolate. This ensures that shapes using Smooth (Catmull-Rom) interpolation in Silhouette exactly match the result in Nuke when exported.

Add Key

Right-click over the property you are interested in at the desired frame in the Timeline and select Add Key. Keyframes will be added to that property for all selected objects.

Note: You can also **Alt**-click in the Timeline to add a keyframe.

Cut

Deletes the currently selected keyframe or keyframes.

Copy

Copies the currently selected keyframe or keyframes.

Paste

Pastes the currently selected keyframe or keyframes.

Delete

Deletes the currently selected keyframe or keyframes.

Note: Individual shape points can be copied and pasted between keyframes using **Ctrl(Win)/Cmd(Mac)-Alt-C** to copy and **Ctrl(Win)/Cmd(Mac)-Alt-V** to paste.

Select All Keys

When hovering over a track, it will select all keyframes for that track. If not over a track (empty area), it will select all keyframes in the timeline.

Marker

Marker allows for the creation, editing or deletion of markers. Markers are a handy way of placing notes at specific points in time and are displayed as light blue squares at the top of the Timeline.

Hovering the cursor over the marker will display the marker's text as a tool tip.

Create/Edit

A dialog box opens where you can enter, change, or clear text for the marker. When you enter text and click OK, a marker is displayed.

Delete

Deletes the marker at the current frame.

Delete All

Deletes all markers.

Show Work Range

When enabled, the Timeline displays the start and end frames of the Work Range. This is useful when moving keyframes outside the session time range.

Moving One Keyframe in Time

A single keyframe can be moved by selecting it and then dragging it to a new location.

Moving a Selection of Keyframes in Time

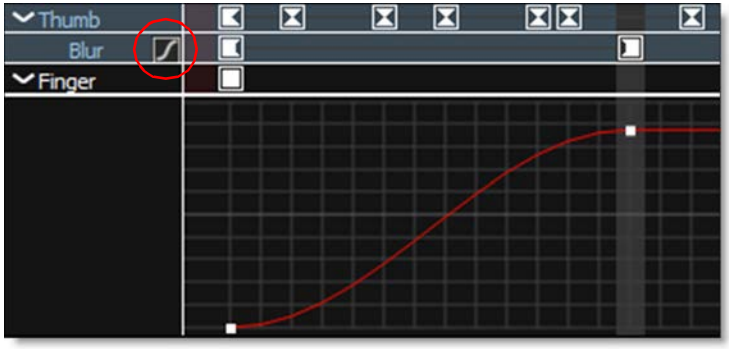
Multiple keyframes can be moved by first selecting a range using the **Shift** key and then dragging on them to a new location.

Selecting Objects

Objects can be selected within the Timeline. Clicking the name of an object selects it. Multiple objects can be selected by **Shift**-clicking on them. **Ctrl**-clicking an object after it is selected will deselect it.

Curve Editor

The Curve Editor is a view mode in the Timeline that allows you to work with keyframe animations expressed as curves on a graph. It allows you to visualize the interpolation of the animation.



The Curve Editor is only displayed once the Curve Editor icon, located to the right of the parameter in the Timeline, is enabled.

Timeline Keyboard Shortcuts

Shortcut	Action
Scroll wheel	Zooms the Timeline in and out
Shift-Middle-mouse drag	Zooms the Timeline in and out
Space Bar-drag	Pans the Timeline
Middle-mouse drag	Pans the Timeline
Single-click keyframe	Selects one keyframe
Ctrl(Win)/Cmd(Mac)-click keyframe	Toggle the keyframe selection
Shift-click keyframes	Selects a range of keyframes
Alt-click	Inserts a keyframe
Right-click keyframe	Opens Timeline pop-up menu
Click-drag keyframe	Moves the keyframe
Ctrl-drag the ends of work range bar	Changes the start and end of the work range
Ctrl-drag the work range bar	Slides the work range forward and back
Click top left corner of the Timeline	Centers the timeline on the current frame

Curve Editor Keyboard Shortcuts

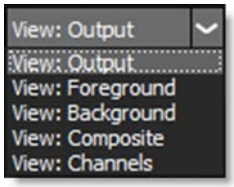
Shortcut	Action
Alt-click on curve	Inserts a point on the curve
Click-drag curve point	Moves the curve point
+ or **=**	Zooms the Curve Editor in
-	Zooms the Curve Editor out
Space Bar-drag	Pans the Curve Editor
Hover cursor over curve	Displays the current curve value
Right-click curve point	Opens Curve pop-up menu

Viewer

Silhouette uses a Viewer for image editing as well as for clip playback. Some features include: viewing individual color channels, the simultaneous display of RGB and alpha channels, the selection of stereo views as well as the superimposition of shapes over images.

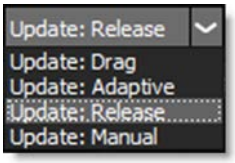
View

Offers various View options for the selected node. The View choices will depend on the node.



Update

Determines when processing takes place. The **!** key cycles through the Update modes.



Drag

Tries to process at the current resolution as fast possible.

Adaptive

Tries to process as fast possible by first processing a 4:1 proxy and then full resolution.

Release

Processes once the mouse or pen is released. This the default setting.

Manual

Silhouette does not process. If you place the cursor within the Viewer window and hit the **Enter** key, Silhouette will manually process any changes.

Stereo View Modes

The stereo view modes, which only show up when using stereo sources, determine whether you are working on the Left View, Right View or both the Left and Right Views at the same time.

Left View (Shift-1)

Left View displays the left clip in the Viewer.

Right View (Shift-2)

Right View displays the right clip in the Viewer.

Left/Right View (Shift-3)

Left/Right View displays both the left and right clips in the Viewer at the same time.

Depth (D)

Displays the Depth channel.

Stereo Split Mode

Only available once the Left/Right View is active, Stereo Split Mode determines whether or not the Left and Right Views are arranged horizontally or vertically.

Horizontal

Arranges the Left and Right Views horizontally.

Vertical

Arranges the Left and Right Views vertically.

Stereo Align (Shift-4)

Stereo Align utilizes layers to line up two stereo clips which will effectively negate the offset between them. Aligning the clips in this manner allows painting on the same location of the Left and Right Views simultaneously, while for rotoscoping, it means shapes created for the Left View can be easily duplicated to the Right View in the proper position.

Note: Stereo Align can only be selected and used once a layer is selected.

When activated, Stereo Align uses a negative mode which inverts one of the views and mixes it with the other. This creates an embossed effect when similar image areas are not aligned.

Automatic Alignment

With a layer selected, stereo sources can be aligned automatically by pressing **Shift-Alt** and clicking on the image feature that you would like to align. **Shift-Alt** will function whether or not the Stereo Align view mode is enabled.

Note: **Shift-Alt** can only be used once a layer is selected.

Manual Alignment

Enable Stereo Align and drag on the Viewer to align the views.

When similar image features are perfectly aligned, you will see a solid gray color. The amount you move the view in Stereo Align mode is stored in the Stereo Offset parameter of the active layer which is set to animate by default. Animation of this parameter is needed for clips that contain depth changes.

Stereo Align Keyboard Shortcuts

Shortcut	Action
Shift-Alt and click	Automatically sets the Stereo Offset horizontally
Ctrl-Shift-Alt and click	Automatically sets the Stereo Offset horizontally and vertically
Click and drag in Viewer	Moves the Stereo Offset horizontally
Ctrl-drag in Viewer	Moves the Stereo Offset horizontally in finer increments
Shift-click and drag in Viewer	Moves the Stereo Offset horizontally and vertically
Alt-click in Viewer	Resets the Stereo Offset
Arrow keys	Moves the Stereo Offset by 1 pixel
Shift-Arrow keys	Moves the Stereo Offset by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves the Stereo Offset by one tenth of a pixel
Hold down **Arrow** keys	Moves the Stereo Offset continuously

Anaglyph Preview (Shift-5)

Activates Anaglyph Preview mode so that you can check your stereo image in 3D using red-blue glasses.

There are four anaglyph viewing modes that you can choose from. The default mode is set using the Viewer > Anaglyph Mode preference.

3D Preview (Shift-6)

Opens a 3D Preview window for displaying the stereo image. If you have multiple monitors, the 3D Preview opens full screen while on a single monitor system, it opens centered and smaller.

The 3D Preview has a pop-up menu containing zooming controls and display selection choices. The pop-up menu is accessed by right-clicking in the 3D Preview window.

Zoom > Fit

Zooms the image to fit into the 3D Preview.

Zoom > 1:1

Sets the image to a 100% zoom level and centers it in the 3D Preview.

Fullscreen

Sets the 3D Preview to full screen.

Note: On a single monitor system, the **Esc** key will minimize the 3D Preview.

Display Type

A list of displays are available to choose from.

Anaglyph (Color)

Preserves most of the color but causes retinal rivalry.

Anaglyph (Gray)

Creates a lighter image than a true anaglyph but results in more ghosting. No color is preserved.

Anaglyph (Half-Color)

Preserves less of the color but reduces the retinal rivalry.

Anaglyph (Optimized)

Discards all of the red component from the original images and replaces it with a manufactured red channel derived from the green and blue components. The advantages are almost no retinal rivalry.

Hardware Interlaced Left First/Right First

Interlaced mode requires a 3D monitor that uses interlacing like the Zalman passive display. Select the Left or Right Hardware Interlaced mode to determine which eye comes first--Left or Right. This needs to match up with how the monitor does the 3D effect.

Stereo View Shortcuts

Shortcut	Action
Shift-1	Selects the Left View
Shift-2	Selects the Right View
Shift-3	Selects the Left/Right View
Shift-4	Selects Stereo Align
Shift-5	Anaglyph Preview
Shift-6	3D Preview
D	Displays the depth map

Proxy

Sets the viewer resolution. The higher the number, the lower the resolution.

The higher the proxy setting, the more frames you can play.

1:1

1:1 keeps the image quality at full resolution.

2:1

2:1 lowers the image resolution by 1/2.

3:1

3:1 lowers the image resolution by 1/3.

Snapshot

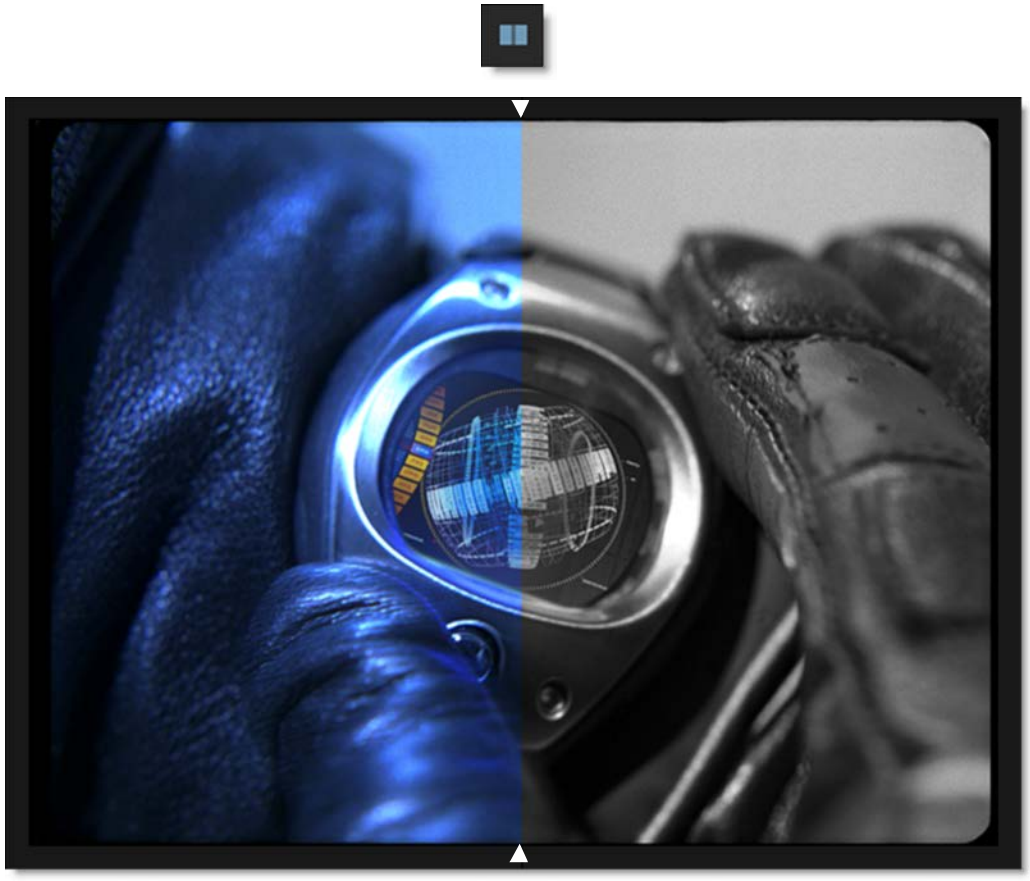
Captures the image in the Viewer so that it can be compared with other nodes or Viewer modes using Toggle Snapshot, Vertical Split, and Horizontal Split snapshot modes.

Toggle Snapshot

Cycles between the snapshot and the current image.

Vertical Split

Compares the snapshot and the current image using a vertical split. Move your cursor into the image area over the split line and when the cursor changes to a double-arrow, click and drag to move the split. Depending on the image, the split line may not be obvious, so triangular sashes on the outside of the image help you find it.



Horizontal Split

Compares the snapshot and the current image using a horizontal split. Move your cursor into the image area over the split line and when the cursor changes to a double-arrow, click and drag to move the split. Depending on the image, the split line may not be obvious, so triangular sashes on the outside of the image help you find it.

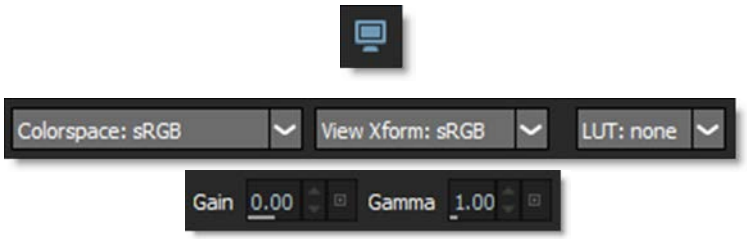
Blend Amount

Blend Amount, which is only available in the Depth and Morph nodes, appears when a blendable view mode is selected.

In Morph, it appears when View A/B is selected and in the Depth node, it is displayed when the depth map is viewed. Clicking the Blend Amount icon pops up a slider that can be moved from 0 to 100. You can also click and slide on the icon instead of using the slider.

Display Options

The Display Options icon reveals the color management options which remain visible as long as it is enabled.



Silhouette uses the OpenColorIO standard originally developed by Sony Pictures Imageworks for its color management. You can load custom color configuration files and custom LUTs, apply color space conversions, as well as use other controls for fine tuning. Silhouette includes a set of preset color profiles, plus you can configure and use your own by specifying one in the Color Management > OCIO Configuration preference.

For a more detailed explanation of OpenColorIO, including generating LUT's and suggested workflows, please visit **http://opencolorio.org/**.

Note: The color management functionality provided in the Display Options is for display purposes only. The color profiles, LUTs, and colorspace conversions applied in the Viewer do not affect the rendered image.

Color Management

Colorspace

Sets the input colorspace of the scene. The following colorspaces are provided: Linear, sRGB, rec709, Cineon, Gamma 1.8, Gamma 2.2, Panalog, REDlog, ViperLog, AlexaV3LogC, PLogLin, SLog, Raw.

Silhouette automatically tries to determine the colorspace based on the data in the file and other information from the header. If a colorspace can't be detected, Linear will be selected.

Display

If you are using a custom OCIO configuration with multiple Display options, the Display pop-up menu appears for you to choose the colorspace of the display. The default OCIO configuration only has one display option. Additional devices can be added in a custom configuration and will show up in this menu.

Note: When there is only one Display option, the Display pop-up menu is hidden.

View Xform (Transform)

Select a colorspace transform to apply to the scene. You can select from sRGB, rec709 or None.

LUT

Select a custom LUT to apply to the scene.

Choose

A number of LUT formats are supported including: Flame, Lustre, Color Correction Collection, Color Correction, Cinespace, Houdini, Iridas itx, Iridas cube, Pandora mga, Pandora m3d, Sony Pictures Imageworks 1D, Sony Picture Imageworks 3D, Sony Picture Imageworks mtx, Truelight and Nuke vf.

Note: Selecting a LUT disables the Colorspace and View Xform controls.

Clear List

Clears the LUT list.

Gain

Adjusts the brightness of the image in F-stops. Gain is applied before the display transform.

Gamma

Adjusts the gamma of the image. Gamma is applied after the display transform.

Go to the **Color Management** tutorial to see how it works.

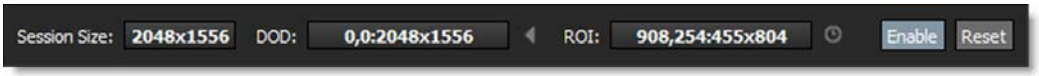
ROI (Region of Interest)

ROI (Region of Interest) crops the image in the Viewer to a user defined size and can be animated. This is especially useful when you only need to work within a smaller region of a larger image as it will use less memory and process faster. If expanded, the ROI will display overscan pixels which can then be manipulated.

Go to the **Region of Interest** tutorial to see how it works.

ROI Controls

Once the ROI icon is activated, the ROI controls appear above the Viewer.



ROI Keyboard Shortcuts

Shortcut	Action
Initial click-drag bounding box	Sets the ROI
Click-drag bounding box points	Scales the ROI
Click-drag bounding box	Positions the ROI
Ctrl-Shift-drag	Draws a new ROI

Enable

You can toggle the ROI effect on and off by clicking on the Enable icon.

ROI Manual Input

If you click on the numeric field to the right of the ROI label, the fields become editable. Just click in the field you want to edit, type in a number and press the Set button.

Animating the ROI

Enable the animate icon and change the position or size of the ROI at various frames.

Set ROI to DOD

The Set ROI to DOD icon automatically sets the ROI to match the size of the source's DOD (Domain of Definition). If the source's DOD is larger than the session, the ROI will expand revealing the overscan pixels which can then be manipulated.

Reset

Resets the ROI to the session size.

ROI Notes

1 **Rendering EXR Files**

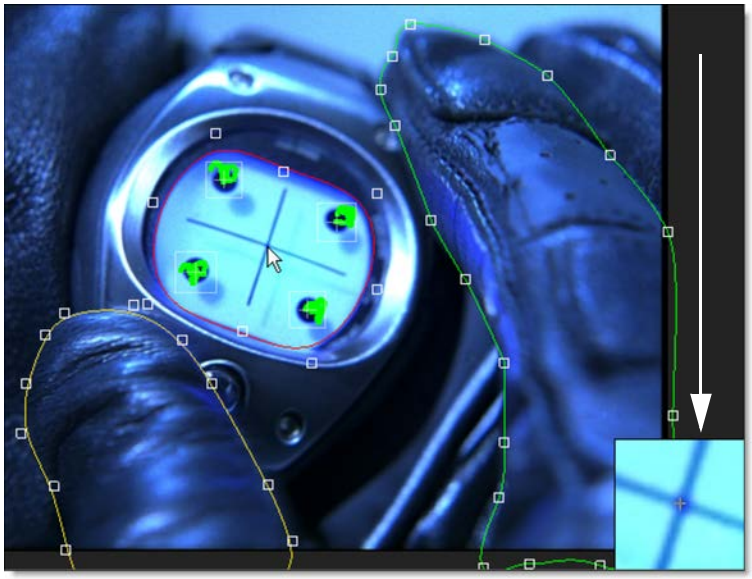
- **The ROI becomes the data window and the session becomes the display window.**
- **The ROI window is rendered along with the ROI window's coordinates. This will allow you to automatically composite the ROI window into its proper location.**

2 **Rendering Non-EXR Files**

For non-EXR file formats, the ROI window is cropped/padded to the session size by default.

Magnifier

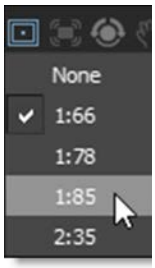
The Magnifier opens a magnification window at the bottom right corner of the Viewer and displays a zoomed area around the cursor location. It is useful for precise control point, tracker and paint placement. The Magnifier is available in the Reshape and Tracker tools as well as Paint.



Masks

Masks aid you in determining what will be projected on film or shown on television by adding reticles and or a variable opacity mask to the Viewer.

The following aspect ratio's are supported: 1:66, 1:78, 1:85, 2:35 as well as Safe Action for video. When an aspect ratio is selected from the Mask pull-down menu, the mask settings defined in the Viewer Preferences are activated. See the **Viewer Preferences** section for more information.



Creating Custom Masks

In the Silhouette/resources folder of your installation, there are two files: formats.xml and masks.xml.

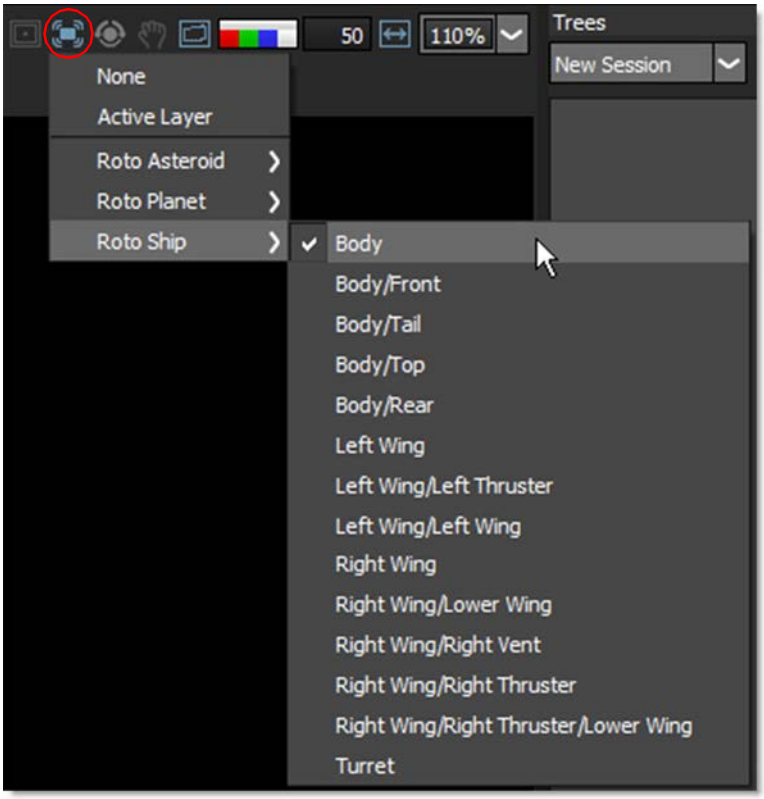
You can add your own custom masks to the masks.xml file. The rectangle values are multiplied by the image width/height to figure out where the mask should be placed. For example, Safe Action is a 90% rectangle, so the border is .1, .1, .9, .9 (i.e. 10%, 10%, 90% 90%) of the image size.

You associate certain masks with certain formats by adding a "Mask" entry to the formats in formats.xml. You can add any number of masks to each format. These masks will be available in the mask selector in the Viewer, depending on the session format.

Note: You can't associate masks with "custom" session formats. Instead, you should add a new format to your formats.xml file if you have an odd format you want to use with masks.

Stabilize

The Viewer is stabilized based on the selected layer's tracking data.



Rotate

Activates Viewer rotation mode. **Shift-Ctrl-R** toggles the Viewer rotation mode. Rotating the Viewer can facilitate rotoscoping and painting.

Adjust Rotation

Once Rotate is enabled, the Adjust Rotation editing control becomes available.

Adjust Rotation allows you to click and drag in the Viewer to set the angle. **Shift-R** toggles the rotation editing mode on/off.

Go to the **Viewer Rotation** tutorial to see how it works.

Overlay

Toggles the display of overlays which are lines, shapes or objects that Silhouette superimposes over the image. **0,** the number zero, toggles the overlay.

RGBA

Displays various combinations of the red, green, blue and alpha channels.

Selecting Channels

Clicking on the Red, Green, Blue or Alpha buttons solo that channel as a gray scale image. The horizontal white bar above the RGBA buttons quickly toggles the display of the image back to full color mode.

Solo Channels

Alt-R/G/B/A toggles the red, green, blue and alpha channels on and off.

Alpha Display

Cycle Alpha

Either press the Alpha button (to the right of the blue button) or the **A** key to cycle the state of the alpha display. Pressing once superimposes the alpha channel over the image. Pressing a second time displays the alpha channel over black. Hitting it again shows only the color image.

Note: To view a shape's alpha channel, you must first set the View to Output before pressing the Alpha button or the **A** key.

Display Alpha - No Overlay

Shift-A toggles the View to Output, superimposes the alpha channel over the image and deactivates the Overlay. Pressing **Shift-A** again returns the Viewer to its previous state.

Display Roto Node's Output Alpha

Alt+O toggles the view mode to Output and displays the alpha. Pressing **Alt-O** again returns the Viewer to its previous state.

Alpha Mix

The numeric entry box next to the RGBA buttons controls the opacity of the alpha channel when it is superimposed over the image.

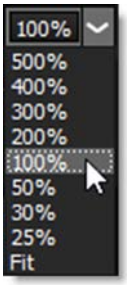
Go to the **Using the RGBA buttons in the Viewer** tutorial to see how it works.

Aspect Ratio

Activates pixel aspect ratio correction in the Viewer as defined in the session settings. For instance, this lets you view Cinemascope ratio images as they would appear when projected.

Zooming and Panning

Sets the zoom factor for the image.



25%-500%

Choose from one of the preset zoom percentages. 100% displays the image at its actual size at a ratio of one image pixel to one screen pixel.

You can also zoom the image using the scroll wheel on your mouse, the **+** or **=** keys to zoom in, and the **-** key to zoom out or press **Space Bar-Shift** and drag up or down.

Fit

Either pressing the **F** keyboard shortcut or selecting Fit from the zoom pop-up window will display the image as large as possible within the Viewer window.

Home

You can either press the **H** keyboard shortcut or double-click the middle mouse button to set the image to a 100% zoom level and center it in the Viewer.

Center Selected Object

Press **Ctrl(Win)/Cmd(Mac)-F** to center the select object in the Viewer.

Go to the **Viewer Navigation** tutorial to see how to zoom and pan the Viewer.

Viewer Keyboard Shortcuts

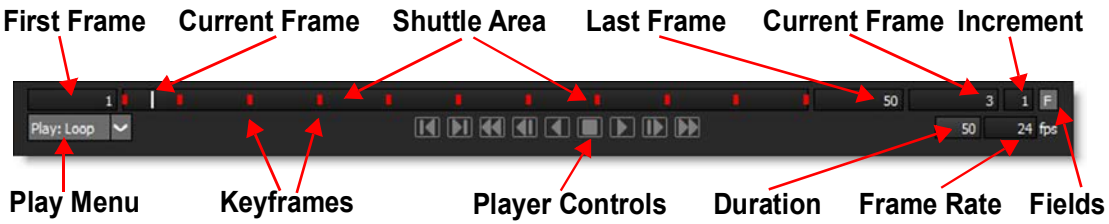
Shortcut	Action
F1	The composite workspace is displayed
F2	The Viewer is displayed full screen
F3	The Viewer and Timeline are displayed
F4	The Viewer and Trees window are displayed
F5	The dual monitor workspace is displayed
0	Toggles the display of overlays which are lines, shapes or objects
1-7 (Number Keys)	Switches the Viewer > View menu
~	Cycles through the update modes
A	Cycles the display between the full color image, the alpha channel superimposed over the image, and the alpha channel by itself
Shift-A	Toggles the View to Output, superimposes the alpha channel over the image and deactivates the Overlay
Alt-R/G/B/A	Toggles the red, green, blue and alpha channels on and off
Alt-O	Toggles the Roto node's view mode to Output and displays the alpha. Pressing **Alt-O** again returns the Viewer to its previous state.
Shift-Ctrl-R	Toggles the Viewer rotation mode on/off
Shift-R	Toggles the Viewer rotation editing mode on/off

Viewer Pan/Zoom Keyboard Shortcuts

Shortcut	Action
Middle-mouse drag	Pans the image
Space Bar-drag	Pans the image
+ or **=**	Zooms the image in
-	Zooms the image out
Shift-Middle-mouse drag	Zooms the image in and out
Scroll wheel	Zooms the image in and out
Space Bar-Shift-drag up and down	Zooms the image in and out
F	Fits the image in the Viewer
H or Middle-mouse double click	Centers the image in the Viewer at 100%
Ctrl(Win)/Cmd(Mac)-F	Centers selected object in the Viewer
‘	Opens a context menu over pen/mouse location

Timebar / Player Controls

The Timebar below the Viewer provides you with controls to play your clips as well as navigate your session.



Timebar

Keyframe Markers

Colored markers in the Timebar shuttle area signify where selected objects have keyframes. Objects that display keyframes in the Timebar are shapes, trackers and painted frames. Path keyframes are shown for shapes, position keyframes for trackers and painted frames when in the Paint node.

The color of the markers is determined by the object color. If multiple selected objects have a keyframe on the same frame, the most recently selected object's color has precedence. A white marker is used to signify the current frame and hovering over a marker displays a tool tip showing the keyframe time.

Shift-Alt-clicking and dragging a marker will move the keyframe in time.

Note: In the Paint node, selecting a paint tool ignores the object selection and displays paint keyframe markers instead. To see the keyframe markers of selected objects, select a non-paint tool like Reshape, Transform or Tracker.

First Frame

The numeric entry box on the left displays the first frame to be viewed. Enter a new number in the numeric entry box to change the start frame and hit **Enter**. Frame numbers located before the start frame, including negative numbers, can be entered. This is useful when adjusting motion blur at the start of a shot.

Last Frame

The numeric entry box to the right of the shuttle slider displays the last frame to be viewed. Enter a new number in the numeric entry box to change the last frame and hit **Enter**. Frame numbers located beyond the end frame can be entered. This is useful when adjusting motion blur at the end of a shot.

Current Frame

The second numeric entry box to the right of the shuttle slider displays the currently viewed frame. Enter a new number in the numeric entry box and hit **Enter** to move directly to that frame.

Increment

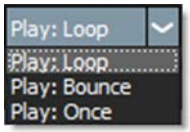
The far right numeric entry box controls the amount of frames that the Viewer increments from frame to frame.

Fields

When selected, the Fields button changes the Timebar and Timeline to advance and display in half frame increments.

Play Menu

Changes the playback mode. The Play menu is located at the bottom-left of the Viewer.



Once

Plays the clip once when you press the Play button.

Loop

Plays the clip in a continuous loop when you press the Play button.

Bounce

Plays the clip continuously, alternately forwards, then backwards when you press the Play button.

Playback Controls

These controls affect playback.

Shuttle

Clicking and dragging in the shuttle area shuttles through the clip.

Previous Key

Moves to the previous keyframe.

Next Key

Moves to the next keyframe.

Home

Moves to the first frame.

Previous Frame

Step backward 1 frame.

Play Backward

Plays backward.

Stop

Stops playback.

Play

Plays forward.

Next Frame

Step forward 1 frame.

End

Moves to the last frame.

Playback Controls Keyboard Shortcuts

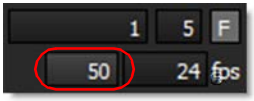
Shortcut	Action
Z	Step backward 1 frame
Shift-Z	Moves to the previous keyframe
X	Step forward 1 frame
Shift-X	Moves to the next keyframe
J	Plays backward
K	Stops or starts playback
L	Plays forward
Space Bar	Stops playback
Home	Moves to the first frame
End	Moves to the last frame
Click and drag in the shuttle area	Shuttles through the clip
Shift-Alt-click and drag a keyframe marker	Moves the keyframe in time

Frame Rate

Sets the frame rate for the clip in the Viewer. Enter the desired frame rate, for instance: 24 fps (film), 25 fps (PAL), 29.97 fps (NTSC DF) or 30 fps (NTSC NDF).

Duration

Displays the duration of the clip in the Viewer.



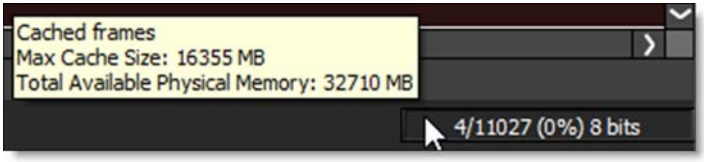
Real-Time Playback

RAM Cache

Silhouette can cache frames into RAM to guarantee real-time playback. When you hit the play button, each frame is cached into RAM. Once the clip is played through once, it will then play in real-time if enough RAM is available. At the bottom right corner of the interface, there is a numeric readout (Cache Display). It displays the length of your clip, the maximum frames that can be cached into RAM, the percentage of RAM currently being used as well as the session's bit depth.

If your clip is longer than the maximum frames that can be cached into RAM, the clip will not play in real-time.

Hovering over the Cache Display will reveal a tool tip that shows the maximum cache size and total available physical memory in megabytes.



Preload Frames

Source frames are automatically cached in a background thread. The amount of preloaded frames is controlled by a Cache > Preload Frames preference with the default value being 10 frames.

Go to the **Optimizing Playback** tutorial to see how you can playback the maximum amount of frames.

Purge RAM Cache

The RAM cache can be purged by right-clicking on the Cache Display and selecting the Purge RAM Cache option or by selecting Session > Cache > Purge RAM Cache. If selected, currently cached frames are cleared from RAM.

Sequence Editor

Silhouette can perform editing tasks such as cutting, joining, moving, copying, replacing, trimming, retiming and repeating clips in the Sequence Editor. The sequence can then be used as an element in the Trees window.

Go to the **Sequence Editor** tutorial to see how it works.

Creating a Sequence

A sequence is comprised of multiple clips edited together. To create a new sequence, select the New Sequence icon in the Sources window.

A sequence object is created in the Sources window and the Sequence Editor appears. Drag and drop clips from the Sources window into the Sequence Editor to build the sequence.

If you select one or more clips in the Sources window before pressing the New Sequence icon, the clips are assembled in selection order using in and out points, if they are set, into a new sequence.

Marking In and Out Points

Each clip in the Sources window can have a different in and out point. In and out points are also useful within the sequence to define a region to be moved, copied, replaced or deleted. Double-click on a clip in the Sources window to load it into the Viewer and Mark IN and Mark OUT icons appear.

Mark IN (I)

Sets the in point.

Mark OUT(O)

Sets the out point.

Clear Both Marks

Clears both the in and out points.

Go to IN

Jumps to the in point.

Go to OUT

Jumps to the out point.

When setting in and out points for a clip, the clip takes over the Viewer. To return the Viewer to a sequence or a node, double-click the sequence in the Sources window or a node in the Trees window.

Selecting Clips / Frames

Once selected, the area is highlighted.

Clips

Click on a single clip to select it or **Ctrl**-click on multiple clips to select more than one. You can also drag select clips to select them.

Note: Single-clicking on an open area of the Sequence Editor will clear the selection.

Frames

To select an arbitrary range of frames, which possibly spans multiple clips in the sequence, select Mark IN and Mark OUT.

Moving, Copying, Replacing, Deleting

The highlighted selection can be moved, copied, replaced or deleted.

Moving

Click-drag somewhere in the highlighted region and then drop to a new location. The selection is moved.

Copying

Shift-drag somewhere in the highlighted region and then drop to a new location. The selection is copied.

Replacing

The **Alt** key is used to replace either a destination clip or a marked region while dragging and dropping.

Deleting

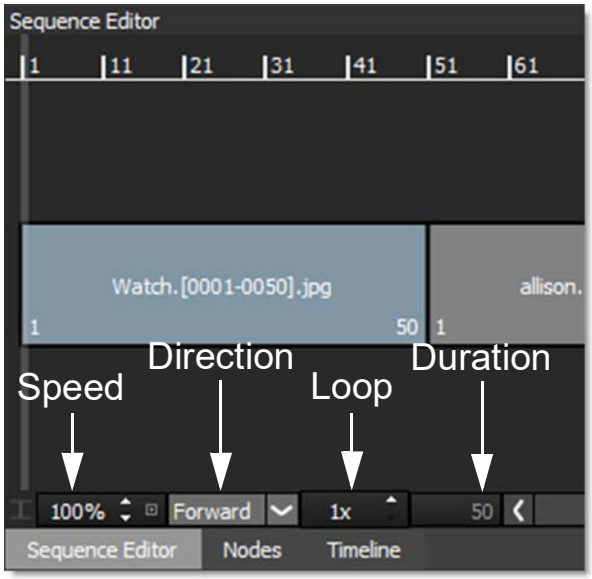
Press the **Delete** key. The selection is deleted.

Add Edit

Adds an edit in the sequence at the location of the current frame in the Timebar, splitting the clip into two.

Segment Controls

At the bottom left of the Sequence Editor are segment related controls--a segment being a selection of one or more clips.



Segment Speed

Controls the selected clips speed and is specified as a percentage. A value of 50 slows down by 50%, a value of 100 does nothing, and a value of 200 is twice as fast.

Segment Direction

Specifies the playback mode for selected clips.

Forward

Plays the selected clips forward.

Reverse

Plays the selected clips backward.

Bounce

Plays the selected clips forward and then backward.

Loop Count

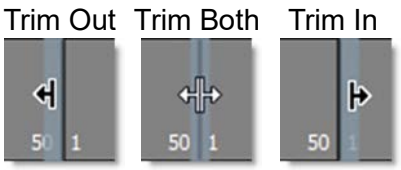
Repeats selected clips by the specified amount as well as creates freeze frames when using single frame clips.

Segment Duration

Displays the duration of the currently selected segment.

Trimming

The head and tail of a clip can be lengthened or shortened using the Trim controls.



Clicking on a cut enables trimming and displays both sides of the cut in the Viewer.

- **Click the center of a cut and drag to trim both sides of the cut simultaneously.**

- **Click and drag to the left of the cut and the out point is trimmed.**

- **Click and drag to the right of the cut and the in point is trimmed.**

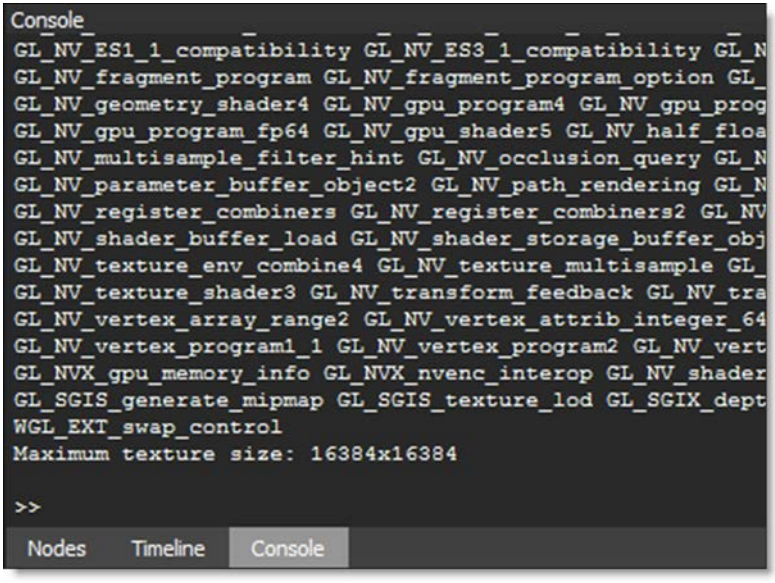
Note: After selecting the left, right or center of a cut, the left and right arrow keys can be used to trim frames one at a time.

Sequence Editor Keyboard Shortcuts

Shortcut	Action
Scroll wheel	Zooms the Sequence Editor in and out
Shift-Scroll Wheel or Middle-mouse drag	Zooms the Sequence Editor in and out 10x faster
Space Bar-drag	Pans the Sequence Editor
Middle-mouse drag	Pans the Sequence Editor
I	Sets a Mark IN point
O	Sets a Mark OUT point
Shift-Drag/Drop Selected Clips	Copies the selected clips
Alt-Drag/Drop Selected Clips	Replaces the destination clip or marked region
Delete	Deletes the selection

Console

The Console is located in a tab in the Timeline area. It displays the various modules loaded by Silhouette as well as information about your machine. The Console information can be cut, copied or pasted and we may ask you for its contents when providing customer support.

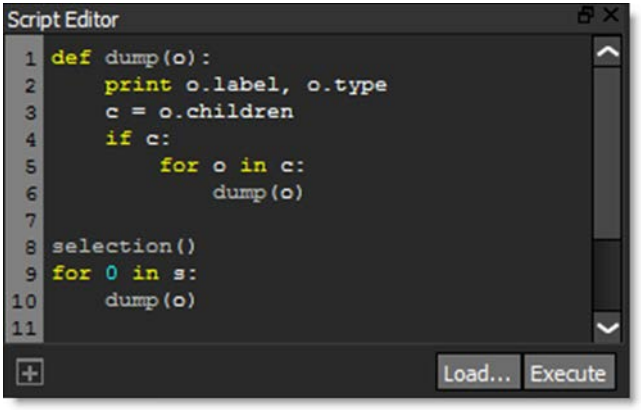


The console can also be used as an interactive Python interpreter. You can type basic python expressions, including loops, import custom Python modules and call custom functions, etc. The **Tab** key displays a completion list of available methods/attributes.

Script Editor

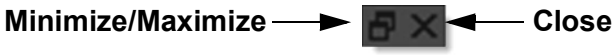
Hidden by default, the Script Editor can be opened with View > Script Editor and is located at the bottom of the Sources window. When displayed, it allows a script to be edited and tested efficiently without having to type it in the Console each time. Scripts can also be loaded from a file by using the Load button.

To use the Script Editor, press the Execute button to run the script and the Console will display the results if the script prints anything. While the editor has focus, **Alt-Enter** will execute the script as well.



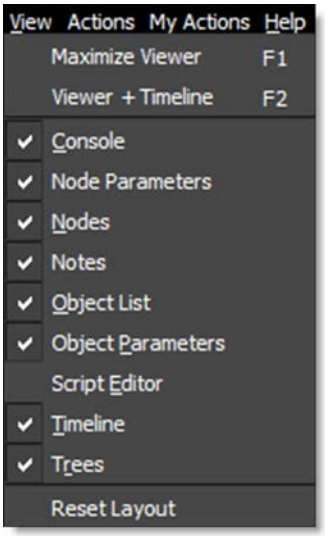
Windows and Adjustments

The Silhouette interface contains multiple windows. Windows can be closed, torn off to be a floating window, or moved to a new location. The upper right portion of the window has two icons: a Minimize/Maximize and a Close icon.



Opening and Closing Windows:

- **Click the Close icon to close a window.**
- **Once a window has been closed, it can be reopened by selecting it from the View pull-down menu.**



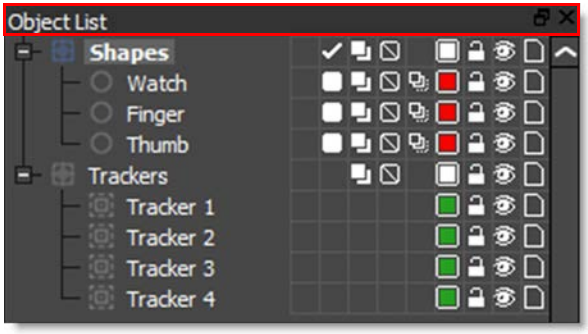
Creating Floating Windows:

- **Click the Minimize/Maximize icon to make the window a floating window.**

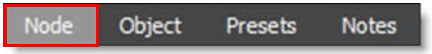
Moving Windows:

- Click and drag a window's title bar and place it in a new location. This moves all of the tabs docked in the window as one unit.

Title Bar



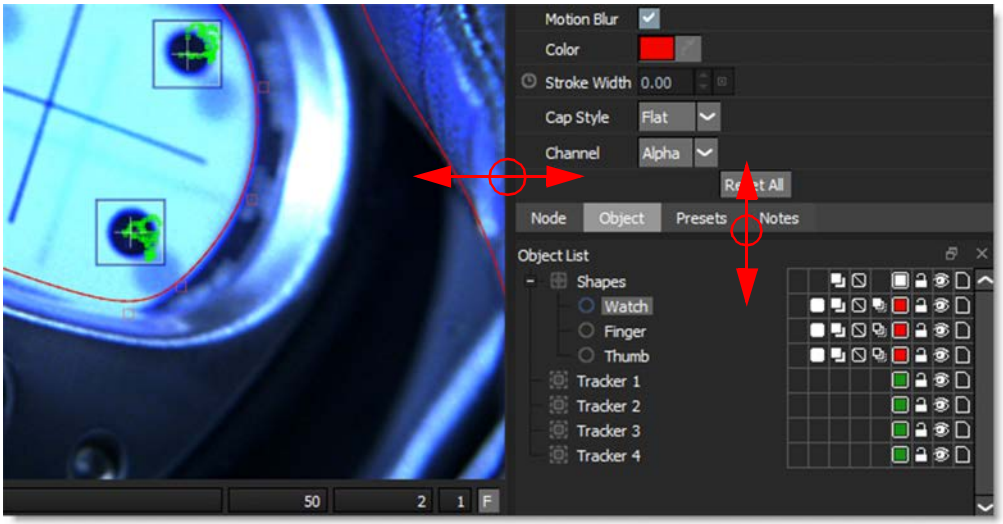
- Click and drag a tab and place it in a new location. This moves only the single tab.



- If you drop the window in the center of an existing window, a tab will be created so that both windows will share the same space. This is the same as the Node, Object, Presets and Notes windows sharing the same location.
- Windows can be docked next to each other. For instance, you can put the Object List to the left of the Trees window with both being docked to the right of the Viewer.

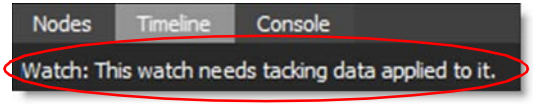
Sashes

By clicking and dragging the sashes, dividing lines between areas of the screen, you can customize the Silhouette interface.



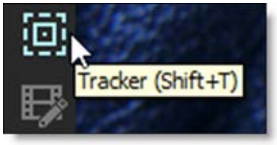
Status Bar

The Status Bar is located at the bottom left of the user interface and displays various messages.



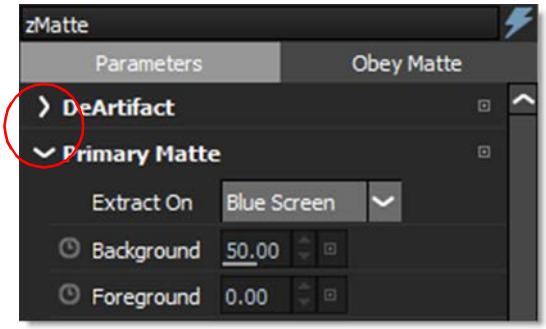
Tool Tips

Hovering the cursor over an icon will pop up a tool tip that displays its function.



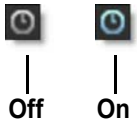
Twirly Icons

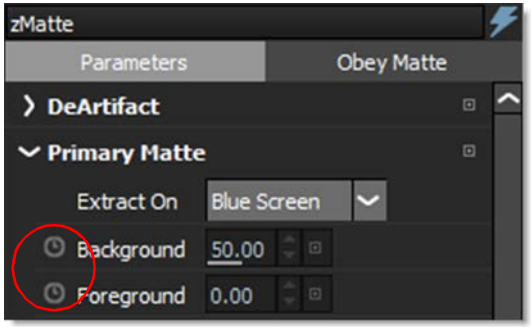
Effect groups in the Node and Object parameter windows can be expanded and collapsed using the Twirly icons located to the left of the group.



Animate Icons

Animateable parameters in the Parameters and Object windows have an Animate icon to the left of them. Keyframes are set when the Animate icon is enabled (highlighted).





Numeric Keyboard

Single clicking on a numeric field opens a numeric keyboard.

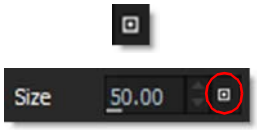
Numeric Fields

Drag on a numeric field to adjust the value. You can adjust any value with finer precision by pressing **Ctrl(Win)/Cmd(Mac)** while dragging.

Note: When the cursor is hovering over a Numeric Field, the Arrow keys can adjust the value.

Reset Icons

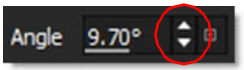
Individual parameters as well as parameter groups can be reset to their default settings using the Reset icon.



Mouse Wheel Adjustments

Hover over a numeric field and use the mouse wheel to adjust it. Hold **Shift** for a 10 time larger change. Hold **Ctrl(Win)/Cmd(Mac)** for 10 time smaller change.

Spin Box



Spin boxes change values according to the following key strokes:

- **Click = change by 1 pixel.**
- **Shift-click = change by 10 pixels.**
- **Ctrl-click = change by 0.1 pixel.**
- **Middle-Mouse button-click, hold and drag back and forth over spin box arrows adjusts the value.**

Note: When the cursor is hovering over a Spin Box, the Arrow keys can adjust the value.

Pull-Down Menus

File

New Project

Creates a new project.

Open Project

Opens projects.

Open Backup

Opens a browser that lists the available backups by date and time which can then be loaded.

Save Project and Save Project As

Projects can be saved by choosing Save and Save As.

Revert Project

You can revert to the last saved version by selecting Revert.

Lock Project

Locks a project so that it can't be modified and displays LOCKED in the Title Bar. To retain the Lock Project state, enable it and save the project.

Close Project

Closes the current project.

Recent Projects

The last ten recently opened or saved projects can be selected and opened in Recent Projects.

Import

Media

Imports media into the project.

Shapes

Imports shapes into the project.

Export

Exports selected shapes from the project.

Edit

Undo

Undo operations.

Redo

Redo operations.

Cut

Cuts the selected object.

Copy

Copies the selected object.

Paste

Pastes the selected object.

Select All

Selects all shapes.

Deselect All

Deselects all shapes.

Stereo

This is where you can link, unlink and duplicate shapes for stereo rotoscoping.

Link

Links two selected shapes of the same type and the same number of control points for stereo rotoscoping. Linking allows the two shapes to be simultaneously selected and edited in the Left/Right View.

Note: Linked shapes are bolded in the Object List when one or both of a linked pair is selected.

Unlink

Unlinks selected shapes.

Duplicate

Duplicates a selected shape or a single layer containing shapes to the other view and automatically links it. When a layer is duplicated, all of its transform data is copied as well.

Duplicate > New Layer

Duplicates a selected shape to the other view, automatically links it and places it in a new layer.

Note: Duplicate > New Layer is not available if you are in the Left/Right View.

Session

New Session

Creates a new session.

Delete Session

Deletes the current session.

Current Session

Selects a session to edit.

Render Session

Opens the render settings.

Session Settings

Opens the session settings.

Cache

Caching speeds up image playback by pre-loading the frames into RAM or on disk. Frames are loaded into RAM when you play them back.

Purge RAM Cache

Purges the RAM cache. The RAM cache can also be purged by right-clicking on the Cache Display at the bottom right of the user interface and selecting Purge RAM Cache. If selected, currently cached frames are cleared from RAM.

Window

The various Silhouette interface windows are displayed with checkboxes next to them. When the box is checked next to an item, that particular window is displayed in the user interface.

Workspace

Silhouette workspaces can be selected, saved or deleted.

Note: The stock workspaces can't be deleted or modified.

Composite (F1)

The composite workspace is displayed.

Roto (F2)

Similar to the composite workspace, but the Object List shares the same space as the Trees window.

Maximize Viewer (F3)

The Viewer is displayed full screen.

Viewer + Timeline (F4)

Only the Viewer and Timeline are displayed.

Viewer + Timeline (F5)

Only the Viewer and Trees are displayed.

Dual Monitor (F6)

The Silhouette user interface is spread across two monitors with the Trees window displayed full screen on the right monitor.

Save Workspace

Saves the current workspace.

Delete Workspace

Deletes the current workspace.

Actions

The Actions menu executes various scripts located in Silhouette/resources/scripts/actions. For information on how to create custom scripts that show up in the Silhouette > Actions menu, see the Silhouette Customization Guide for more information.

Batch

Rename

Renames selected objects to match first selected object.

Copy

Selection

Copies one or more selected shapes in a layer as well as the parent layer hierarchy and transforms. Put another way, this copies the parent layer and its shapes and then deletes all unselected shapes.

Create

Corner-Pin Layer

Creates a corner-pinned layer from four selected point trackers.

Tracked layer

Creates a tracked layer from one to three trackers.

Edit

Convert to Bézier

Converts the selected shapes to Bézier shapes.

Note: The original shape is hidden after the Action has been executed.

Duplicate

Duplicates a selected object at the same level in the Object List as opposed to Copy/Paste which places the pasted object at the top of the Object List.

Propagate Blend Mode

Sets the blend mode of shapes to their parent layer's blend mode if it is not Add.

Keyframes

Select All

Selects all keyframes.

Select Layer

Selects all layer keyframes.

Select Shape

Selects all shape keyframes.

Select Tracker

Selects all tracker keyframes.

Render

Layers to Separate Files

Renders layers to separate files.

Shapes to File Tree

Renders all shapes in the selected Roto node, each to its own file, organized by folders based on layer names.

Shapes to Separate Files

Renders shapes to separate files.

Select

Various selection actions are provided.

All

Selects all items.

Hidden Objects

Selects hidden objects.

Layers

Selects all layers.

Siblings

Selects all siblings of a selected object in the current layer. For any selected objects, add all similar objects in that object's layer to the selection.

Single Point Shapes

Selects single point shapes.

Transparent Shapes

Selects all transparent shapes.

Time

Jump to Transparent

Looks at the selected shapes and jumps the Timebar to the first entirely transparent opacity keyframe it finds.

Shift Source Time

A clip can be shifted in time by inputing both the source frame and the destination session frame. This automatically calculates and sets the Source node's Time Shift parameter.

Help

About

Shows the Silhouette version.

User Guide

Opens the Silhouette User Guide.

Customization Guide

Opens the Silhouette Scripting Guide.

What's New

Opens the Silhouette What's New document.

License

Opens the Deactivate window which has two choices: Internet Deactivate and Advanced Options.

NODES

Node Groups

Silhouette is made up of a variety of image processing nodes. These nodes can be connected together within the Trees window to accomplish the desired effect. The nodes are organized into various groups according to their function:

Color

Black and White, Chromatic Aberration, Clamp, Color Correct, Defringe, Develop, High Contrast, Invert, Kelvin, Low Contrast, Match, Polarizer, Printer Points, Selective Color Correct, Shadows/Highlights, Telecine, Tone Adjust, Vignette.

Composite

Alpha to Color, Color Paste, Color to Alpha, Composite, Copy, Drop Shadow, Edge Composite, Fade Color, Grain Composite, Holdout Composite, Light Wrap, Math Composite, Mix, Non-Additive Mix, Optical Dissolve, Premultiply, Slap Comp, Swap Channels, Switch Matte, Unpremultiply.

Diffusion

Center Spot, Depth of Field, Diffusion, Double Fog, Fog, Frost, Mist, Net, Rack Focus, Silk, Split Field.

Filter

Blur, Bump Shade, Deartifact, Deband, Deblock, Deflicker, Defog, Degrain, Despeckle, Detail, Displace, Edge Detect, Grain, Mosaic, Scatter, Scratch, Sharpen.

Film Lab

Bleach Bypass, Cross Processing, Film Stocks, Grunge, Overexpose, Three Strip, Two Strip.

Image

Checkerboard, Color, Color Bars, Depth, Fractal Noise, Grid, Linear Gradient, Merge Views, Null, Output, Output Multi-Part, Paint, Radial Gradient, Roto, Roto Blend, Split Views.

Key

Color Suppress, Difference Matte, Matte Repair, Power Matte, Screen Smoother, zMatte.

Light

Glow, Glow Darks, Glow Edges, Lens Flare, Rays, Reflector, Relight, Star, Streaks.

Silhouette

Depth, Morph, Output, Output Multi-Part, Paint, Power Matte, Roto, Roto Blend, zMatte.

Special Effects

Cartoon, Color Infrared, Color Shadow, Day for Night, Harris Shutter, Infrared, Looks, Night Vision, Pastel, Pencil, Texture, X-Ray.

Time

Retime, Reverse, Time Blur.

Tints

Color Gradient, Color Spot, Colorize Channel, Colorize Gradient, Dual Gradient, ND Gradient, Photographic, Radial Tint, Split Tone, Sunset, Tint.

Transform

Camera Shake, Crop, Flip, Flop, Keystone, Resize, Tracker, Transform.

Warp

Bump Distort, Lens Distortion, Morph, Pin Warp, Turb Distort.

OFX

Third party OFX nodes.

Common Node Controls

There are a number of common node controls that appear in Silhouette. For simplicity they are listed here.

Blur

Horizontal

The image is blurred by a quality blur along the X-axis.

Vertical

The image is blurred by a quality blur along the Y-axis.

Gang

The horizontal and vertical values can be ganged together.

Black and White

Selects the type of black and white filter to be applied to your color image.

Normal

Converts the color image to a monochrome image.

Red

Simulates a red filter in black and white photography.

Green

Simulates a green filter in black and white photography.

Blue

Simulates a blue filter in black and white photography.

Yellow

Simulates a yellow filter in black and white photography.

Orange

Simulates an orange filter in black and white photography.

Disabling Nodes

You can disable a selected node by clicking the lightning bolt icon at the top of the Node parameters. The node will dim in the Trees window when disabled.

This has the same effect as pressing the **D** key in the Trees window to toggle the enable/disable state of a selected node.

Grad

Grad is the gradient transition area between the filtered image and the original. Its direction, corners, size and angle can be adjusted.

Enable

Turns the grad on and off.

ND Brightness

Darkens the colored portion of the grad.

Type

Controls the direction of the grad.

Top-to-bottom

The direction of the grad is from top to bottom.

Bottom-to-top

The direction of the grad is from bottom to top.

Left-to-right

The direction of the grad is from left to right.

Right-to-left

The direction of the grad is from right to left.

Horizontal Strip

Horizontal strip grad.

Vertical Strip

Vertical strip grad.

Size

The size of the grad.

Angle

The angle of the grad.

Matte

In some of the nodes, a matte is generated to create the desired effect. The Matte controls consist of Position, Range and Blur parameters, and they work the same in all of the nodes. The white areas of the matte are the areas that will be affected by the node, while the black areas remain unaffected. The matte is extracted based on luminance, in most cases, and is created using the Position and Range parameters.

Position

Selects the values to be included in the matte. A higher Position value shows more white values from the original image as white values in the matte. A lower Position value shows more black values from the original image as white values in the matte.

Range

Controls the range of values to be used for the matte. Once you've selected the "Position", you can then add or subtract the "Range" of values to be included in the matte. A higher Range value includes more white values in the matte while a lower Range value includes less values in the matte.

Blur

The matte is blurred by a quality blur.

Spot

A spot in the form of a radial gradient is used to limit the effect of the filter.

Position

There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the spot can be adjusted.

Position X

The horizontal position of the spot.

Position Y

The vertical position of the spot.

Aspect

The aspect ratio of the spot.

Radius

The un-blurred radius of the spot.

Falloff Radius

The blurred edge radius.

Falloff

Moves the falloff towards the spot center point.

Invert

Inverts the spot.

Obey Matte

In the Node parameters window for all nodes, there is an Obey Matte tab with controls that limit the effect of the node based on the node's obey matte input.

Obey

When enabled, the effect of the node is limited by the alpha channel connected to the obey matte input of the node.

Invert

Inverts the obey matte input.

Opacity

Controls the opacity of the obey matte input.

Channel

Determines which channel to use as the obey matte source.

Red

Uses the red channel.

Green

Uses the green channel.

Blue

Uses the blue channel.

Alpha

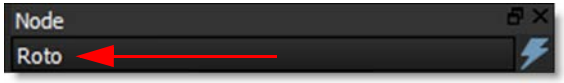
Uses the alpha channel.

Luminance

Uses the average luminance of the RGB channels.

Renaming Nodes

Nodes can be renamed by changing typing in a new name at the top of the Node parameters window.



Temperature

Color

Sets the color through the use of a standard color picker.

Opacity

Sets the opacity of the warming or cooling.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

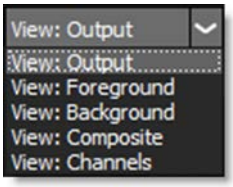
Exposure Compensation adds back the brightness loss as a result of the warming or cooling.

Transform

In nodes that contain trackable items, the Transform pop-up selects available point trackers and tracked layers from the input Tracker node.

View Menu

Offers various View options for the selected node. The View choices will depend on the node.



The numeric keys can quickly switch the view. For instance, for the Roto node: 1 is Output, 2 is Foreground, 3 is Background, 4 is Color Comp, 5 is Composite and 6 is Channels.

Alpha to Color

Description

Copies the alpha channel into the RGB channels as a color.

Node Group

Composite.

Controls

Color

The color can be set through the use of a standard color picker.

Black and White

Description

Black and White converts color images to black and white simulating the look of Black and White photographic filters.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Filter

The Filter pop-up selects the type of black and white filter to be applied to your color image. Go to the **Black and White** section of Common Node Controls to see how the Black and White controls work.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Bleach Bypass

Description

Bleach Bypass is a film laboratory technique where, by skipping the bleach stage in the color processing sequence, silver is retained in the image along with the color dyes. The result is effectively a black and white image superimposed on a color image. Bleach Bypass images have increased contrast, reduced saturation, often giving a pastel effect.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Sets the intensity of the bleach effect.

Saturation

Adjusts the saturation of the image. Positive values saturate, negative values desaturate.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Temperature

Sets the color temperature of the image. Dragging the numeric field to the right makes the image cooler (bluer) and dragging the numeric field to the left makes the image warmer (redder).

Blur

Description

Blurs the image with individual horizontal and vertical controls. It's fast, high quality and blurs outside the frame which removes the dark inward bleeding edges of most blurs.

Node Group

Filter.

Controls

Blur

Horizontal

The image is blurred by a fast, quality blur along the X-axis.

Vertical

The image is blurred by a fast, quality blur along the Y-axis.

Gang

The horizontal and vertical values can be ganged together.

Expand

Grows the DOD (Domain of Definition) to allow the image to expand outward and pull in transparent pixels. You would use this when blurring an image with an alpha channel and a small DOD, so the blur can spread outward without clipping against the edge of the DOD.

Bump Distort

Description

Distorts an image based on the second input's luminance values to create a glass effect. It is also useful for creating heat waves.

Node Group

Warp.

Controls

Amount

Sets the amount of distortion.

Angle

Changes the angle of the distortion.

Smoothing

Smooths out the distortion.

Bump Shade

Description

Light and shadow are applied to the image according to the second input's luminance values simulating a relief texture or embossing effect.

Node Group

Filter.

Controls

Depth

Sets the embossing effect to be appear inward or outward.

Width

Sets the width of the embossing effect.

Elevation

The position of the light above the plane.

Light Direction

Sets the direction of the light.

Light Color

The light color can be set through the use of a standard color picker.

Camera Shake

Description

Simulates camera shake using random changes in amplitude, speed, scale, rotation, and motion blur.

Node Group

Transform.

Controls

Amplitude

Sets the size of the camera shake.

Speed

The speed of the camera shake.

Scale

Determines the camera shake fluctuation.

Rotate

Sets the rotation of the camera shake.

Randomize

Randomizes the camera shake.

Motion Blur

Enable

Turns Motion Blur on or off. The default is off.

Shutter Angle

Determines how long the camera shutter stays open when a picture is taken--higher values create more motion blur. The range of the Shutter Angle is 0-720 and defaults to 180. Measured in degrees, it simulates the exposure of a rotating camera shutter. The shutter angle uses the footage frame rate to determine the simulated exposure. For example, a shutter angle of 180

degrees (50% of 360 degrees) for 24fps footage creates an effective exposure of 1/48 of a second. Typing 1 degree applies almost no motion blur, and typing 720 degrees applies a high degree of motion blur.

Shutter Phase

Offsets the point in time, either forward or reverse, when the shutter opens. The range of the Shutter Phase is -360 to 360 and defaults to -90.

Motion Samples

Renders intermediate frames equal to the Motion Samples value and accumulates them, one over the other, on a single frame. The higher the number, the smoother the motion. The Motion Samples range is from 1-256 and defaults to 16.

Note: Normally, motion blur is calculated going forward, so if there is no motion beyond the end of a clip, there won't be motion blur on the last frame. To work around this, add an extra frame or two to the end of the work range in the Timebar and move the last transform keyframes to be outside of the session range.

Cartoon

Description

Converts the image into a cartoon.

Node Group

Special Effects.

Controls

Amount

Adjusts the amount of the cartoon effect.

Detail

Adjusts the detail. If the value is increased, you will see more detail while decreasing the value will have an overall smoothing effect.

Line

Adjusts the size of the cartoon's outline.

Note: If you are working in a host application that supports proxy resolutions, it is important to view the line strength at full size to determine what the final output will look like.

Center Spot

Description

Diffuses and blurs distracting backgrounds while keeping a center spot in focus. The center spot can be moved, sized, the amount of blur can be controlled, and a warming filter makes it ideal for portraits and skintones.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Blur

Sets how much the image is blurred.

Spot

A spot in the form of a radial gradient is used to control where blur is added to the image. Go to the **Spot** section of Common Node Controls to see how the Spot controls work.

Temperature

Applies a warming filter to the image. Go to the **Temperature** section of Common Node Controls to see how the Temperature controls work.

Checkerboard

Description

Generates a checkerboard.

Node Group

Image.

Controls

Amount

Sets the amount of diagonal squares.

Chromatic Aberration

Description

Chromatic aberration is caused by a lens having a different refractive index for different wavelengths of light and is seen as fringes of color around the edges of the image. This fringing is removed by un-distorting the individual color channels.

There are some new types of color fringes that are not chromatic aberration. These effects might be visible as purple or blue fringes and are visible around overexposed areas in most cases. If the following conditions apply, your image most likely has true chromatic aberration as opposed to color fringing caused by sensor overloading:

- **Corners should show most color fringes whereas the center should show none.**
- **Color fringes should be not only at the edges of overexposed areas but at lower contrast edges, too.**
- **Color fringes should be of complementary color (red-cyan, green/magenta, and blue-yellow) on opposite sides of a dark or bright area.**
- **Color fringes should be in all corners with the same direction and pointing out from the center.**

Node Group

Color.

Controls

Red/Cyan, Green/Magenta, Blue/Yellow

Use the appropriate color group to remove the chromatic aberration. For instance, if you see red/cyan fringing, use the Red/Cyan group. Start by adjusting the Distortion parameter.

Distortion

Pulls the corners of the image in or out. Negative values pull the corners of the image inward while positive values pull the corners of the image outward.

Anamorphic Squeeze

Anamorphic Squeeze corrects for the squeeze found in anamorphic motion picture lenses.

Curvature X and Y

Curvature X and Y correct for non-radial, asymmetric distortions found in anamorphic motion picture lenses.

Note: Anamorphic Squeeze and Curvature X and Y only work once the Distortion parameter has been adjusted.

Center X and Y

Determines the center point for the distortion.

Clamp

Description

Clamps out super-blacks and or super-whites by default.

Node Group

Color.

Controls

Min

Clamps out super-blacks.

Max

Clamps out super-whites.

Note: If Max < Min, then Max will internally be set to the maximum possible value. For instance, only super-whites would be clamped out.

Color

Description

Generates a solid field of color.

Node Group

Image.

Controls

Color

The color can be set through the use of a standard color picker.

Color Bars

Description

Generates a HD SMPTE color bars test pattern.

Node Group

Image.

Controls

Bar Intensity

Scales the bar intensity.

Output IRE

Maps the 16-235 range to 0-255.

Color Correctors

Description

Silhouette includes a number of different color correctors that are handy for adjusting an image's color. They include: Color Correct, Printer Points, and Telecine.

Color Correct

Color Correct manipulates hue, saturation, brightness, contrast, gamma, temperature, cyan/magenta, red, green and blue values of the overall image and separately in user definable shadow, midtone and highlight areas.

Printer Points

Printer Points manipulate the red, green and blue values of the overall image and separately in user definable shadow, midtone and highlight areas using motion picture laboratory printer points as the unit of measure. When creating color prints for motion pictures, a contact printer performs scene-to-scene color corrections. The most popular printing method is additive printing that uses three separate colored sources - red, green, and blue which are combined to form the light source that exposes the film. The red, green, and blue light valves in the printer are adjusted in values of 1, 2, 3... up to 60 for each primary color and are called printer points or printer lights.

Telecine

Telecine emulates the method of color correction done in a telecine film to tape transfer suite. Hue, saturation, brightness, contrast, gamma and pedestal values of the overall image can be adjusted as well as separately in user definable shadow, midtone and highlight areas.

Node Group

Color.

Master, Shadows, Midtones, Highlights

All of the color correctors can adjust an image by using its master, shadows, midtones and highlight groups. The Telecine filter uses the following terminology: Lift (shadows), Gamma (midtones) and Gain (highlights). The master settings affect the entire image while adjusting parameters within the shadows, midtones and highlights will only affect those specific areas.

If you are unsure about what values are included in the shadows, midtones and highlights, you can use the View pop-up menu. It will allow you to view the shadows, midtones and highlights as a black and white matte. The white areas are the areas that will be adjusted by that particular group. For instance, if you see white areas while viewing the midtones, then midtone color adjustments will affect only those white areas. If you want to change the default areas defined by the shadows, midtones and highlights, you would use the Position and Range parameters.

Position

Position pinpoints the values to be considered as shadows, midtones, or highlights. A low Position value uses the darkest image values, while a high Position value uses the brightest.

Range

Increases or decreases the range of values considered as shadows, midtones or highlights. A low Range value indicates a narrow range of values, while a high Range value indicates a large range of values.

Go to the **Matte** section of Common Node Controls to see how the Position and Range controls work.

Color Correct

Hue

Rotates the hue of the image.

Saturation

Adjusts the saturation of the image. Positive values saturate, negative values desaturate.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Temperature

Sets the color of the image to be either warmer or cooler. Dragging the numeric field to the right makes the image cooler (bluer) and dragging the numeric field to the left makes the image warmer (redder).

Cyan/Magenta

Adds either Cyan or Magenta to the image. Dragging the numeric field to the right makes the image more magenta and dragging the numeric field to the left makes the image more cyan.

Red

Adds or subtracts red from the image.

Green

Adds or subtracts green from the image.

Blue

Adds or subtracts blue from the image.

Flashing

The Flash parameters mix a color into the image through the use of a standard color picker. The default color is white. What in the world is this for? It is a great way to add atmosphere to an element. Flash comes from the film term “flashing”, which describes the optical process of lowering the contrast of an image by flashing it with light.

Flash Amount

Sets the opacity of the Flash Color.

Flash Color

The Flash Color can be set through the use of a standard color picker.

Printer Points

The Red, Green and Blue Exposure are set to a value of 25 which represent no adjustment. Printer “lights” or points set to 25, 25, 25 are considered to be the normal or standard printer setup at most motion picture labs.

Input is Linear

Enable this if your image is in true linear color space. Gamma corrected images should have this parameter disabled by default.

Red Exposure

Adds or subtracts red from the image. As in motion picture printing, higher values subtract and lower values add.

Green Exposure

Adds or subtracts green from the image. As in motion picture printing, higher values subtract and lower values add.

Blue Exposure

Adds or subtracts blue from the image. As in motion picture printing, higher values subtract and lower values add.

Gang

The Red, Blue and Green Exposure values can be ganged together.

Telecine

Hue

Rotates the hue of the image.

Saturation

Adjusts the saturation of the image. Positive values saturate, negative values desaturate.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Pedestal

Adjusts the black level of the image.

Color Gradient

Description

Color Gradient can transform an average sunrise or sunset into something spectacular or convert a dull, washed-out sky to a breathtaking blue. No other filter has done as much to improve landscape photography as the graduated filter. Add color selectively while leaving the rest of the scene unaffected by using a graduated transition for a smooth color blend between the colored portion and the original image. Presets for your favorite Color-Gradient filters are provided as well as the ability to create custom colors.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Color

Color

The Color parameter sets the color of the grad through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Grad

Grad is the transition area that goes from the tinted image to the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Color Infrared

Description

Color Infrared simulates infrared filters used in conjunction with infrared sensitive film or sensors to produce very interesting false-color images with a dreamlike or sometimes lurid appearance.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Magenta

Adjusts the amount of magenta.

Blue

Adjusts the amount of blue.

Hue

Adjusts the hue in any non-blue areas.

Contrast

Adjusts the contrast of the image.

Color Paste

Description

Color Paste takes the red, green, blue, alpha or luminance values of the foreground image and pastes it as a color over the background.

Note: You can change Color Paste's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite.

Controls

Opacity

Sets the opacity of the foreground element.

Color

The Color parameter sets the color of the foreground image through the use of a standard eyedropper or color picker. The default color is white.

Channel

Determines which channel to use as the source for the Color Paste.

Red

Uses the red channel.

Green

Uses the green channel.

Blue

Uses the blue channel.

Alpha

Uses the alpha channel.

Luminance

Uses the average luminance of the RGB channels.

Color Shadow

Description

Creates a high contrast image overlayed with a gradient.

Node Group

Special Effects

Controls

Presets

To select a preset, choose one from the Presets tab.

Threshold

Sets the amount of image detail.

Invert

Changes whether the gradient is in the background or foreground.

Background Color

Sets the color of the background. Select the desired color using the color picker.

Color 1

Sets the color for the top half of the image. Select the desired color using the color picker.

Color 2

Sets the color for the bottom half of the image. Select the desired color using the color picker.

Grad

Grad is the transition area between the two colors. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Color Spot

Description

Tints the image using presets for common photographic filters except for a center spot which retains normal color. The center spot can be moved, sized and the amount of blur can be controlled.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Color

Color

The Color parameter sets the color through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Spot

A spot in the form of a radial gradient is used to control where color is added to the image. Go to the **Spot** section of Common Node Controls to see how the Spot controls work.

Color Suppress

Description

Removes either blue or green from an image. This is usually used to remove the blue or green light that commonly spills onto objects filmed in front of blue or green screens.

Node Group

Key.

Controls

Suppress

Blue

Suppresses blue.

Green

Suppresses green.

Color

Chooses the color to be suppressed and is automatically set based on the Suppress selection.

Note: You can alternatively select the Suppress Color with the eyedropper.

Amount

Suppresses the color chosen from the Suppress pop-up menu. The default value of 100 should be sufficient for most situations.

Range

Increases the range of areas that are color suppressed. If the color you want to suppress is still evident, increase this value.

Edge

When an alpha channel is present, Edge suppresses the color spill of the foreground edge to the color gray. This is very useful for edges that contain a lot of transparency like hair or reflections.

Color To Alpha

Description

Composites each of the RGB channels together and places the result in the alpha. This is useful for working with shapes assigned to different RGB channels in Roto. Connect the Roto > Channels output to the Color to Alpha node and RGB mattes with corresponding alpha are created.

Node Group

Composite.

Colorize Channel

Description

Colorize Channel converts the image to gray scale and then maps the gray values to the selected colors.

Node Group

Tints.

Controls

Channel

Red

Converts the image to gray scale using the red channel.

Green

Converts the image to gray scale using the green channel.

Blue

Converts the image to gray scale using the blue channel.

Alpha

Converts the image to gray scale using the alpha channel.

Luminance

Converts the image to gray scale using the luminance of the image.

Shadows

Enable

Determines whether or not the color contributes to the gradient.

Color

Picks the color that the image will be colorized with. Select the desired color using the color picker.

Position

Determines where the colorization is applied to the image. By default, Shadows are set to 0, which is the shadow areas. A value of 50 would be the midtones, while 100 would be highlights.

Midtones

The Midtones controls are the same as the controls for the Shadows, except by default, the colorization is applied to the midtones of the image.

Highlights

The Highlights controls are the same as the controls for the Shadows, except by default, the colorization is applied to the highlights of the image.

Grad

You can optionally use a gradient that limits where the filter is applied. Grad is the transition area that goes from the colorized image to the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Colorize Gradient

Description

Tints the image according to the image's brightness values.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Opacity

Sets the overall opacity of the tint.

Shadows

Enable

Determines whether or not the color contributes to the gradient.

Color

Picks the color that the image will be tinted with. Select the desired color using the color picker.

Position

Determines where the tint is applied to the image. By default, Shadows are set to 0, which is the shadow areas. A value of 50 would be the midtones, while 100 would be highlights.

Midtones

The Midtones controls are the same as the controls for the Shadows, except by default, the tint is applied to the midtones of the image.

Highlights

The Highlights controls are the same as the controls for the Shadows, except by default, the tint is applied to the highlights of the image.

Grad

You can optionally use a gradient that limits where the filter is applied. Grad is the transition area that goes from the colorized image to the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Composite

Description

Composites a foreground over a background using a matte. Either two or three inputs can be used.

- **Two inputs: Foreground RGBA and Background**
- **Three inputs: Foreground, Background, Matte**

Note: You can change Composite's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Silhouette is a straight, unmatted compositor and its composite nodes expect unpremultiplied images. In addition, it is best practice to unpremultiply before color correcting premultiplied images so as to avoid unexpected results. If you are working with premultiplied images, you have the following options:

- **In the Source parameters, identify the alpha as Premultiplied. This will unpremultiply it.**
- **Unpremultiply the image within the Composite node.**
- **Use a Composite > Unpremultiply node before the premultiplied image hits the Composite node.**

Node Group

Composite.

Controls

Amount

Sets the amount of the foreground.

Matte Input

Chooses which channel from the Matte input to use in the composite.

Red

The red channel is used for the matte in the composite.

Green

The green channel is used for the matte in the composite.

Blue

The blue channel is used for the matte in the composite.

Alpha

The alpha channel is used for the matte in the composite.

Luminance

The average luminance of the RGB channels is used for the matte in the composite.

Unpremulitply

Divides the RGB channels by the alpha channel.

Copy

Description

Copies selected channels from input image 2 to input image 1.

Node Group

Composite.

Controls

Red

Original

Uses the original red channel.

Red

Copies the red channel from input image 2.

Green

Copies the green channel from input image 2.

Blue

Copies the blue channel from input image 2.

Alpha

Copies the alpha channel from input image 2.

Luminance

Copies the average luminance of the RGB channels from input image 2.

Black

Copies black into the red channel.

White

Copies white into the red channel.

Green, Blue and Alpha

The controls for the Green, Blue and Alpha pop-up menus work the same as the Red channel listed above.

Crop

Description

Crops the image to a user defined size.

Node Group

Transform.

Controls

Top

Crops the image from the top down.

Bottom

Crops the image from the bottom up.

Left

Crops the image from left to right.

Right

Crops the image from right to left.

Crop On-Screen Controls

Shortcut	Action
Click and drag a corner	Crops both horizontally and vertically
Click and drag horizontal boundary	Crops vertically
Click and drag vertical boundary	Crops horizontally
Click and drag within bounding box	Moves the crop area

Cross Processing

Description

Cross-processing is a photographic technique where print film (C41) is processed in the set of chemicals usually used to process slide film (E6) or vice versa. The final result yields images with oddly skewed colors and increased contrast and saturation. Different film stocks produce different results, so we have created what we feel is a representative look.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Sets the intensity of the cross process effect.

Mode

Print to Slide

Simulates the effect of print film (C41) being processed in slide (E6) chemicals.

Slide to Print

Simulates the effect of slide film (E6) being processed in print (C41) chemicals.

Day for Night

Description

Day for Night simulates a technique used for shooting exteriors in daylight made to look like they were photographed at night. Typically, it involves underexposing by two to two-and-a-half stops and using a filter to provide a tint, that is often a lavender-blue, as it mimics twilight and appears to emulate the mood of moonlight.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Diffusion

Blur

Sets how much the image is diffused.

Opacity

Sets the amount of diffusion mixed into the original image. The higher the setting, the more the image is blurred.

Moonlight

Color

The Color parameter sets the color of the moonlight through the use of a standard color picker. The default color is blue.

Opacity

Sets the opacity of the moonlight color.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the color application.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Deartifact

Description

Deartifact is handy for cleaning up artifacts caused by DV and HD video footage. In fact, it is useful for cleaning up images that have aliased or jaggy edges.

When activated, a RGB to YUV conversion takes place so that you can blur only the U and V color channels. Since this is where most of the artifacting shows up, this has the effect of cleaning up the ratty edges encountered when keying DV or HD video footage. It is usually best to blur mostly on the horizontal axis.

Note: The Deartifact parameters default to settings that are good for DV footage. If you are working at higher resolutions, you will want to increase the Blur settings.

Node Group

Filter.

Controls

Deartifact

Activates Deartifacting.

Blur-Horizontal

The U and V color channels are blurred by a fast, quality blur along the X-axis.

Blur-Vertical

The U and V color channels are blurred by a fast, quality blur along the Y-axis.

Gang

The horizontal and vertical values can be ganged together.

Deband

Description

Deband removes banding artifacts from an image by smoothing pixels in banded areas while retaining detail.

Node Group

Filter.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Sets the amount of debanding.

Deblock

Description

Blocking artifacts created as a result of high compression factors can be removed with the Deblock filter.

Node Group

Filter.

Controls

There are no controls for the Deblock filter since it automatically finds blocks and removes them.

Deflicker

Description

Removes luminance flickering.

Node Group

Filter.

Controls

Mode

Determines the reference frame that all other frames will be matched to so the flickering can be removed.

Reference Image

The frame of the clip defined by the Set Reference Image button is used as the reference image.

First Frame

The first frame of the clip is used as the reference image.

Amount

Sets the amount of deflickering.

Set Reference Image

Sets the reference image at the frame the Timeline is parked on when this button is pressed.

Defog

Description

Using advanced deweathering algorithms, Defog restores clear day contrasts and colors of a scene taken in bad weather such as fog and mist. It is also successful in removing the effects of optical Fog and Diffusion filters.

Node Group

Filter.

Controls

Presets

To select a preset, choose one from the Presets tab.

Defog

Color

The Color parameter sets the color of the fog to be removed through the use of a standard color picker. The default color is white.

Vanishing Point

A vanishing point along the direction of increasing distance in the image is used to remove fog. By default, the vanishing point is set to the center of the screen. Essentially, the fog is removed in a radial pattern emanating from the vanishing point. So at the default center position, fog is removed in a circular pattern with a greater amount of fog being removed from the center while falling off at the edges. For instance, if your fog moves in the direction of top right to bottom left, set your vanishing point towards the top right corner and the fog removal will be more intense at the upper right and fall off at the bottom left. However, in most cases, the vanishing point can be left in the center of the screen and you will obtain acceptable results.

There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the vanishing point can be adjusted.

Position X

The horizontal position of the vanishing point.

Position Y

The vertical position of the vanishing point.

Defog

Sets the amount of fog to be removed from the scene.

Min Depth

Controls how much fog is removed from the darker areas of the image.

Max Depth

Controls how much fog is removed from the brighter areas of the image.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Defringe

Description

Purple or blue fringing around overexposed areas is a result of sensor overloading in video as well as digital still cameras. DeFringe isolates and removes the various types of color fringing.

Node Group

Filter.

Controls

Presets

To select a preset, choose one from the Presets tab.

Red

Red

Adjusts the saturation of red values in areas defined by the Position and Range controls. Positive values saturate, negative values desaturate.

Position

A matte is generated to isolate red fringing. The areas that are white in the red matte are the areas that will be defringed. Moving the Position numeric field will change the hue that is used for the red matte.

Range

Increases or decreases the range of values considered as red fringing. A low Range value indicates a narrow range of values, while a high Range value indicates a large range of values.

Go to the **Matte** section of Common Node Controls to see how the Position and Range controls work.

Green, Blue, Cyan, Magenta, and Yellow

The Green, Blue, Cyan, Magenta and Yellow groups work in a similar fashion to the Red group.

Degrain

Description

Removes or extracts grain from images. If the grain is removed, edges can be protected. If the grain is extracted, it can be composited back into the image using the Grain Composite node.

Node Group

Filter.

Controls

Amount

Sets the amount of degraining.

Note: You may not see an accurate representation of the grain and noise removal in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Outputs

Output

Outputs the degrained image.

Grain

Outputs only the grain that is removed. Use this output in conjunction with the Grain Composite node.

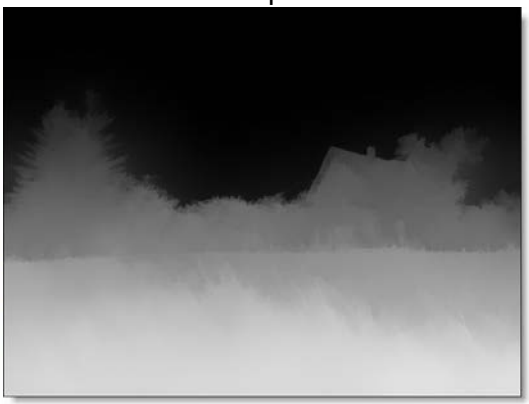
Depth

Description

The Depth node contains a dedicated toolset for creating depth channels.

Before

Depth



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All of the tools from Silhouette's Roto node are included in the Depth node along with additional shape, gradient and depth tools.

Go to the **Depth** tutorials to see how it works.

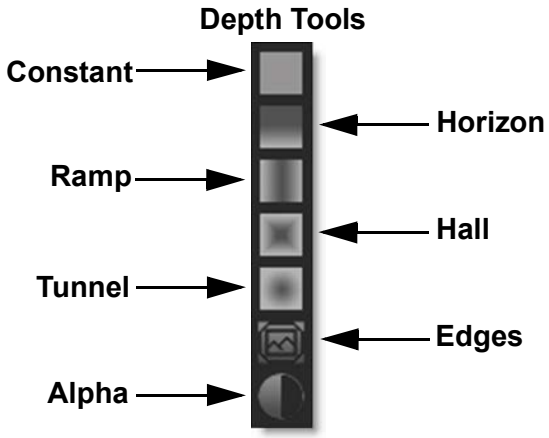
Node Group

Image, Silhouette.

Depth Tools

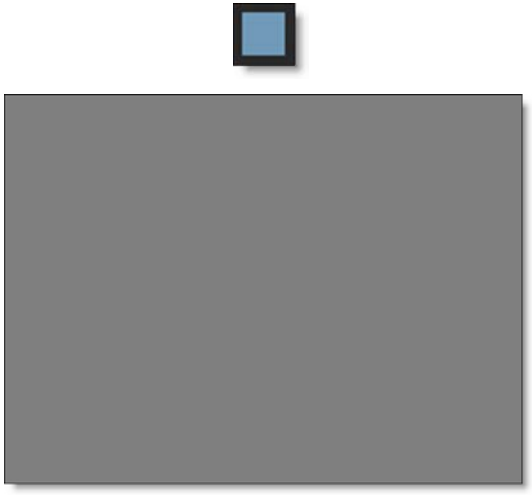
There are a number of tools to create depth maps which include: Constant, Horizon, Ramp, Hall, Tunnel, Edges, and Alpha.

The level of depth corresponds to the shade of gray. White is nearest, black is farthest and 50% gray represents mid depth. Just select the appropriate depth tool and adjust the settings to fit the image. Several tools are provided, for instance, a tunnel module for corridor-like scenes or a horizon tool for landscapes.



Constant

Sets a constant depth for the entire frame. It is useful for setting the depth of objects that are completely flat. After selecting the Constant icon, click on the screen to create the object.



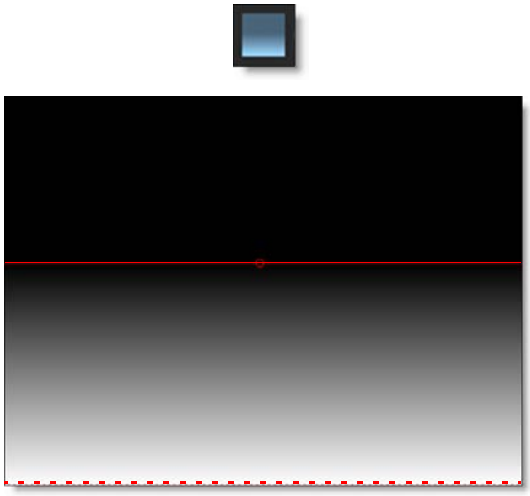
Go to the **Constant** tutorial to see how it works.

Depth

Sets the depth value. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by **Ctrl(Win)/Cmd(Mac)**-vertical dragging on the image in the Viewer.

Horizon

Creates a horizon line. After selecting the Horizon icon, click on the screen to create the object.



Go to the **Horizon** tutorial to see how it works.

Position

Sets the position of the horizon. The position can be set interactively by dragging the center point.

Rotate

Rotates the horizon. The rotation can be set interactively by dragging the solid line.

Size

Sets the size of the horizon. The size can be set interactively by dragging the dashed line.

Near/Far Depth

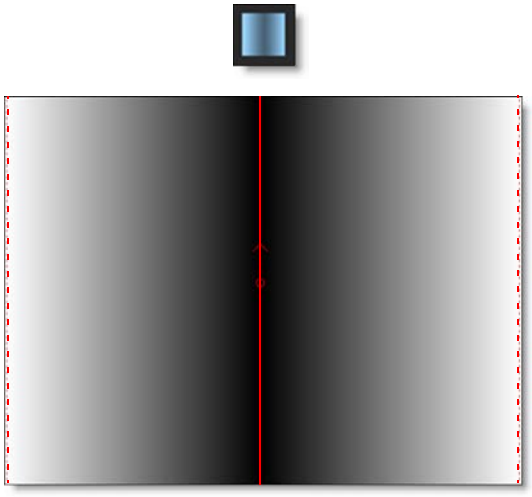
Sets the near and far depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by:

- **Near Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the dashed line.**
- **Far Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the solid line.**

Note: **Ctrl-Shift** dragging modifies all depth values at once.

Ramp

Creates a horizontal or vertical ramp blending out from the center. After selecting the Ramp icon, click on the screen to create the object.



Go to the **Ramp** tutorial to see how it works.

Position

Sets the position of the ramp. The position can be set interactively by dragging the center point.

Rotate

Rotates the ramp. The rotation can be set interactively by dragging the solid line.

Left/Right Size

Sets the left and right size. The size can be set interactively by dragging the dashed lines.

Center/Left/Right Depth

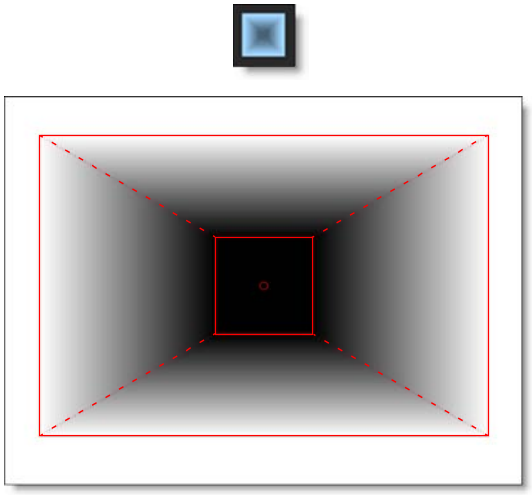
A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by:

- **Center Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the solid line.**
- **Left Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the left dashed line.**
- **Right Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the right dashed line.**

Note: **Ctrl-Shift** dragging modifies all depth values at once.

Hall

Creates a perspective gradient as if you are looking down a hallway. After selecting the Hall icon, click on the screen to create the object.



Go to the **Hall** tutorial to see how it works.

Position

Sets the position of the ramp. The position can be set interactively by dragging the center point.

Rotate

Rotates the hall. The rotation can be set interactively by dragging the corner of one of the squares.

Offset

Offsets the outer square from the center position. The Offset can be set interactively by **Alt**-dragging the center point or outer square.

Inner/Outer Size

Sets the inner and outer size. The size can be set interactively by dragging the inner and outer squares. Use **Shift** while dragging an edge to proportionately size.

Roundness

Rounds the corners of the inner square.

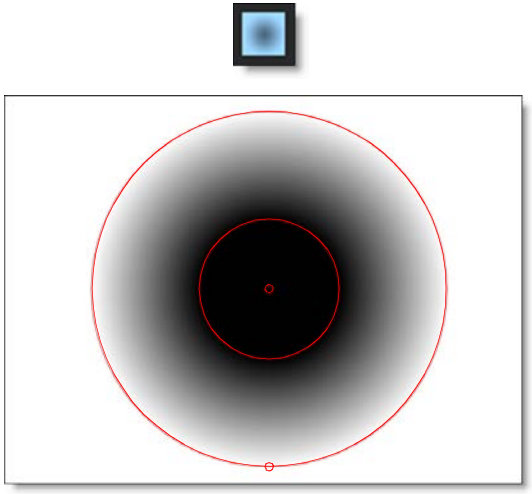
Inner/Outer Depth

Sets the inner and outer depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray).The depth can be set interactively by:

- **Inner Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the inner square.**
- **Outer Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the outer square.**

Tunnel

Creates a circular gradient as if you are looking down a tunnel. After selecting the Tunnel icon, click on the screen to create the object.



Go to the **Tunnel** tutorial to see how it works.

Position

Sets the position of the tunnel. The position can be set interactively by dragging the center point.

Offset

Offsets the outer circle from the center position. The Offset can be set interactively by **Alt**-dragging the center point or outer circle.

Inner/Outer Size

Sets the inner and outer size. The size can be set interactively by dragging the inner and outer circles.

Aspect Ratio

Sets the aspect ratio of the tunnel.The aspect ratio can be set interactively by dragging the point at the bottom of the outer circle.

Inner/Outer Depth

Sets the inner and outer depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by:

- **Inner Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the inner circle.**
- **Outer Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the outer circle.**

Note: **Ctrl-Shift** dragging modifies all depth values at once.

Edges

Runs an edge detection and objects with edges or a lot of structure are placed in front. After selecting the Edges icon, click on the screen to create the object.

Before

Edges

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Go to the **Edges** tutorial to see how it works.

Invert

Inverts the depth channel.

Amount

Sets the edge brightness.

Threshold

Limits the amount of edges that are detected.

Depth

Sets the base depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray).

Alpha

Converts the alpha channel hooked into the Depth node's alpha inputs into a depth map. After selecting the Alpha icon, click on the screen to create the object.

Before

Depth from Alpha

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In the above example, Power Matte was used with open shapes placed far apart which generates an organic looking gradient with edge detail.

Go to the **Alpha** tutorial to see how it works.

Source

Sets the node input source for the Alpha tool. You can choose from Input and Alpha 1-5.

Depth Type

Sets the depth type.

Constant

Sets a constant depth.

Linear

Creates a linear gradient with two depth values.

Radial

Creates a radial depth gradient.

Ramp

Creates a linear gradient with three depth values.

Depth Parameters

Sets the depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by:

Constant

- **Ctrl(Win)/Cmd(Mac)-vertical dragging on the center point.**

Linear

- **Left Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the left dashed line.**
- **Right Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the right dashed line.**

Radial

- **Inner Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the center point.**
- **Outer Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the dashed circle.**

Ramp

- **Center Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the solid line.**
- **Left Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the left dashed line.**
- **Right Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the right dashed line.**

Note: **Ctrl-Shift** dragging modifies all depth values at once.

Position

Sets the position of the gradient. The position can be set interactively by dragging the center point.

Rotate

Sets the angle of the gradient. The angle can be set interactively by dragging the solid line for Linear/Ramp and **Alt**-dragging the point at the bottom of the circle for Radial.

Size

Sets the size of the Radial gradient. The size can be set interactively by dragging the dashed line.

Left/Right Size

Sets the left and right size of Linear and Ramp. The size can be set interactively by dragging the dashed lines. **Shift**-dragging over one of the dashed lines will drag them both.

Aspect Ratio

Sets the aspect ratio of the Radial gradient. The aspect ratio can be set interactively by dragging the point at the bottom of the circle.

Blur

Blurs the depth map.

Wrap

Blurs the depth map inward without completely losing the edge.

Shapes / Layers and Depth

In addition to the same shape/layer parameters in the Roto node, there are a number of shape/layer depth controls in the Depth node.

Shape Depth Parameters

Type

Sets the shape's depth type.

Constant
Sets a constant depth for the entire shape.

Linear
The shape is filled with a linear gradient with two depth values.

Radial
The shape is filled with a radial depth gradient.

Ramp
The shape is filled with a linear gradient with three depth values.

Depth Parameters

Sets the depth. A value of 1 is nearest (white), 0 is farthest (black) and .5 is a mid depth (50% gray). The depth can be set interactively by:

Constant

- **Ctrl(Win)/Cmd(Mac)-vertical dragging on the center point.**

Linear

- **Left Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the left dashed line.**
- **Right Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the right dashed line.**

Radial

- **Inner Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the center point.**
- **Outer Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the dashed circle.**

Ramp

- **Center Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the solid line.**
- **Left Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the left dashed line.**
- **Right Depth: Ctrl(Win)/Cmd(Mac)-vertical dragging on the right dashed line.**

Note: **Ctrl-Shift** dragging modifies all depth values at once.

Position

Sets the position of the gradient. The position can be set interactively by dragging the center point.

Rotate

Sets the angle of the gradient. The angle can be set interactively by dragging the solid line for Linear/Ramp and **Alt**-dragging the point at the bottom of the circle for Radial.

Size

Sets the size of the Radial gradient. The size can be set interactively by dragging the dashed line.

Left/Right Size

Sets the left and right size of Linear and Ramp. The size can be set interactively by dragging the dashed lines. **Shift**-dragging over one of the dashed lines will drag them both.

Aspect Ratio

Sets the aspect ratio of the Radial gradient. The aspect ratio can be set interactively by dragging the point at the bottom of the circle.

Blur

Blurs the shape.

Wrap

Blurs the shape inward without completely losing the edge.

Layer Depth Parameters

Obey Alpha

With Obey Alpha enabled, a depth map is only created within areas of the layer's alpha channel.

Near Depth

Sets the Near Depth for all objects in the layer.

Far Depth

Sets the Far Depth for all objects in the layer.

Common Parameters

All of the editable parameters can be adjusted in the Object Parameters. The parameters listed below are common to many of the objects.

Invert

Inverts the values. The default is off.

Blend Mode

Controls how objects are blended together in the depth map.

Normal

Places the shape/layer over any objects below it.

Note: Normal is only available for shapes and layers.

Min

Looks at the luminance information for each object and selects the value—whichever is darker—as the result. Lighter pixels are replaced while darker pixels do not change.

Max

Looks at the luminance information for each object and selects the value—whichever is brighter—as the result. Darker pixels are replaced while brighter pixels do not change.

Multiply

Produces a result where there is a union of pixels from two objects.

Screen

Looks at each object's luminance information and multiplies the inverse of the two images. This looks kind of like an Add blend mode, but highlights are retained.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. This parameter turns Motion Blur on or off for the selected object. The default is off.

Note: The Motion Blur parameters will not affect a shape unless Motion Blur is also enabled in the Node parameters. See **Motion Blur** in the Roto node for more information.

Outline Color

Sets the color of the object's outline or on-screen controls. Left-clicking the color pot opens a standard color picker while right-clicking on the color pot opens a pop-up color menu with 16 primaries.

Reset All

Resets all parameters to their default state.

Depth Preview

The Depth Preview window displays a 3D view of the depth map and is located in a tab shared with the Sources window. It is very useful for visualizing the depth and placement of objects in 3D space.

Clicking and dragging will move the image around in a perspective view.

Note: OpenGL 3.0 is a required graphics card feature for the Depth Preview window to be available.

Depth Preview Pan/Zoom Shortcuts

Shortcut	Action
Click and drag	Rotates the image a perspective view
Scroll wheel	Zooms the image in and out
Shift-Middle-mouse drag	Zooms the image in and out
Space Bar-Shift-drag	Zooms the image in and out
Space Bar-drag	Pans the image
Middle-mouse drag	Pans the image
Middle-mouse double click	Fits the image in the Viewer

Node Parameters

When the Depth node is being edited in the Trees window, parameters specific to the Depth node can be adjusted in the Node parameters.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. Enables Motion Blur for the Depth node.

Go to the **Motion Blur** tutorial to see how it works.

Near Depth

Sets the Near Depth for all objects in the node.

Far Depth

Sets the Far Depth for all objects in the node.

Render to Alpha

Renders the depth channel to the alpha channel.

Antialias

Controls whether depth shapes are antialiased on their edges.

Node Outputs

Output

Outputs the result of the Depth node.

Objects

Outputs tracked layers for use in node's with Transform inputs.

Depth of Field

Description

Depth of Field can be added to a scene by isolating and blurring only a portion of the image. The amount of blurring is directly proportionate to the luminance of the matte settings, a gradient or an input image.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Depth

Selects the source for the selective blur effect.

Matte

Use a matte for the depth source.

Grad

Use a gradient for the depth source.

Input

Use an image as the depth source. This is useful for 3D programs which render out depth mattes.

Blur

Sets how much the image is blurred.

Grad

Depth of Field can optionally use a gradient that limits where the filter is applied. Grad is the transition area that goes from the blurred portion to the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Matte

A matte can be used to create the depth of field effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Despeckle

Description

The Despeckle filter is used to remove small single pixel defects.

Node Group

Filter.

Detail

Description

Detail presents a new technique for performing selective sharpening, detail enhancement and edge aware smoothing.

Detail presents a new technique for performing selective sharpening, detail enhancement and edge aware smoothing. Our approach decomposes the image into three detail layers: Coarse, medium and fine. Each of the detail layers can be manipulated separately in various ways, for instance, sharpening or smoothing. Add to that sophisticated, but easy to use masking and you have quick isolation of image features for selective filtering.

Node Group

Filter.

Controls

Detail

The image is separated into three detail layers: Coarse, medium and fine. Each of the detail layers can be manipulated separately in various ways, for instance, sharpening or smoothing.

Coarse

Adjusts the Coarse detail layer. Increasing the value sharpens while decreasing the value smooths.

Medium

Adjusts the medium detail layer. Increasing the value sharpens while decreasing the value smooths.

Fine

Adjusts the fine detail layer. Increasing the value sharpens while decreasing the value smooths.

Gang

The Coarse, Medium and Fine values can be ganged together so that they all move simultaneously. This will generate an overall sharpening effect if the numeric fields are increased and an overall smoothing effect if decreased.

Shadows

Adjusts the amount of Detail in the shadow portions of the image.

Midtones

Adjusts the amount of Detail in the midtone portions of the image.

Highlights

Adjusts the amount of Detail in the highlight portions of the image.

Develop

Description

Provides useful developing controls for globally adjusting the color and tonal scale of your images.

Node Group

Color.

Controls

Temperature

Sets the color of the image to be either warmer or cooler. Dragging the numeric field to the right makes the image cooler (bluer) and dragging the numeric field to the left makes image warmer (redder).

Tint

Adds either Green or Magenta to the image. Dragging the numeric field to the right makes the image more magenta and dragging the numeric field to the left makes the image more green.

Exposure

Sets the overall image brightness, with a greater effect in the high values. Adjust the numeric field until the image looks good and the whites are at the right level. Use Recovery to bring highlight values down. Exposure values are in increments equivalent to f-stops. An adjustment of +1.00 is similar to increasing the aperture 1 stop. Similarly, an adjustment of –1.00 is similar to reducing the aperture 1 stop.

Recovery

Reduces the tones of extreme highlights and attempts to recover highlight detail lost because of overexposure.

Fill Light

Lightens shadows to reveal more detail while maintaining blacks. Take care not to over apply the setting and reveal image noise.

Blacks

Specifies which image values map to black. Adjusting this value increases the areas that become black, sometimes creating the impression of increased image contrast. The greatest effect is in the shadows, with much less change in the midtones and highlights.

Brightness

Adjusts image brightness, mainly affecting midtones. Set the overall tonal scale by setting Exposure, Recovery, and Blacks. Then set the overall image brightness. Large brightness adjustments can affect shadow or highlight clipping, so you may want to readjust the Exposure, Recovery, or Blacks after adjusting brightness.

Contrast

Increases or decreases image contrast, mainly affecting midtones. When you increase contrast, the middle-to-dark image areas become darker, and the middle-to-light image areas become lighter. The image tones are inversely affected as you decrease contrast.

Vibrance

Adjusts the saturation so that clipping is minimized as colors approach full saturation, changing the saturation of all lower-saturated colors with less effect on the higher-saturated colors. Vibrance also prevents skin tones from becoming over saturated.

Saturation

Adjusts the saturation of all image colors equally.

Difference Matte

Description

Extracts a matte based on the difference in color values between two images.

Node Group

Key.

Controls

Gain

Sets the gain of the matte.

Offset

Offsets the matte values either darker or lighter.

Diffusion

Description

Diffusion creates atmosphere by reducing contrast while creating a glow around highlights or shadows using an extensive texture library.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Diffusion

Blend

Determines the blend mode to be used to create the diffusion effect.

Add
The diffusion is added to your image.

Screen
The diffusion is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the diffusion.

Blur

Sets the softness of the diffusion.

Color

The Color parameter sets the color of the diffusion through the use of a standard color picker. The default color is white.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Texture

Texture

Selects the texture which will be used to add diffusion to the image.

Blend

Textures can be used as the source of the diffusion as well as combined with a matte using a variety of Blend modes. Go to **Blend Modes** for explanations of the various modes.

I like the Multiply blend mode for combining textures with the matte because it only puts the texture within the areas of the generated matte.

Transform

The texture can be manipulated using a Transform. Go to the **Transform** node to see how it works.

Matte

A matte can be used to create the diffusion effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Displace

Description

Displaces the image by the luminance values of the second input.

Node Group

Filter.

Controls

Amount

Displaces the image by the luminance values of the second input.

Double Fog

Description

The Double Fog filter creates a soft, misty atmosphere over the image by first applying fog using a vanishing point along the direction of increasing distance in the image. Then, a second pass blooms image highlights.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Fog

Color

The Color parameter sets the color of the fog to be added through the use of a standard color picker. The default color is white.

Vanishing Point

A vanishing point along the direction of increasing distance in the image is used to add fog. By default, the vanishing point is set to the center of the screen. Essentially, the fog is added in a radial pattern emanating from the vanishing point. So at the default center position, fog is added in a circular pattern with a greater amount of fog being added in the center while falling off at the edges. For instance, if you would like your fog to move in the direction of top right to bottom left, set your vanishing point towards the top right corner and the fog will be more intense at the upper right and fall off at the bottom left. However, in most cases, the vanishing point can be left in the center of the screen and you will obtain acceptable results.

There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the vanishing point can be adjusted.

Position X

The horizontal position of the vanishing point.

Position Y

The vertical position of the vanishing point.

Note: There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the vanishing point can be adjusted.

Fog

Sets the amount of fog to be added to the scene.

Min Depth

Controls how much fog is added in the darker areas of the image.

Max Depth

Controls how much fog is added in the brighter areas of the image.

Glow

The Glow controls are used to add additional atmosphere and are useful in adding glow to highlights. By default, a wide matte of highlights are glowed in the image and blended with the Screen blend mode. This works well for adding additional fog. To add glow around highlights such as light sources, it is best to set the Blend mode to Add and lower the Matte > Range parameter to limit the areas of glow to only include the light sources.

Blend

Determines the blend mode to be used to create the glow effect.

Add

The glow is added to your image.

Screen

The glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Color

The Color parameter sets the color of the glow through the use of a standard color picker. The default color is white.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Drop Shadow

Drop shadows can be added to an image that has an alpha channel. The opacity, color, blur and transformation of the drop shadow can all be adjusted.

Node Group

Composite.

Controls

Color

The Color parameter sets the color of the drop shadow through the use of a standard eyedropper or color picker. The default color is black.

Opacity

The opacity of the shadow.

Blur

The drop shadow is blurred by a fast, quality blur. Go to the **Blur** node to see how the Blur controls work.

Transform

The drop shadow can be manipulated using a Transform. Go to the **Transform** node to see how it works.

Dual Gradient

Description

Dual Gradient applies two photographic filters to the image which are blended together with a gradient. Presets for your favorite Color Gradient filters are provided as well as the ability to create custom colors.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Color 1

Sets the color for the top half of the image. Select the desired color using the color picker or choose a filter preset.

Presets

Select one of the filters from the pop-up list.

Color

The Color parameter sets the color of the grad through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Color 2

The Color 2 controls are the same as the controls for Color 1 except it is applied to the bottom half of the image.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Grad

Grad is the transition area between the two tints. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Edge Composite

Description

Edge Composite automatically generates an edge matte from an existing alpha channel and allows you to color correct or blur only the edge of the foreground. You can also mix the edge of the foreground with the background. This is very helpful for seamlessly integrating images as well as dealing with aliased mattes.

Node Group

Composite.

Controls

Size

Determines the size of the edge matte.

Color Correct

The edge of the foreground can be color corrected. Go to the **Color Correct** node to see how the Color Correct controls work.

Blur-Horizontal

The edge of the composite is blurred by a fast, quality blur along the X-axis, but only in areas of the edge matte.

Blur-Vertical

The edge of the composite is blurred by a fast, quality blur along the Y-axis, but only in areas of the edge matte.

Gang

The horizontal and vertical values can be ganged together.

Opacity

Mixes the foreground back to the background, but only in areas of the edge matte.

Edge Detect

Description

Edges are generated from the values in the either the RGB or alpha channels.

Node Group

Filter.

Controls

Channels

Choose which channels to perform the edge detect on.

RGB

Performs the edge detect on the RGB channels.

Alpha

Performs the edge detect on the alpha channel.

Brightness

Sets the brightness of the edges.

Blur

Blurs the edges.

Fade Color

Description

Fades an image into a color.

Node Group

Image.

Controls

Amount

Sets the amount of the color.

Color

The color can be set through the use of a standard color picker.

Direction

Forward

The Amount transitions from the input image to the color.

Reverse

The Amount transitions from the color to the input image.

Film Stocks

Description

Film Stocks is a unique filter that simulates 294 different color and black and white still photographic film stocks, motion picture films stocks and historical photographic processes.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Amount

Sets the amount of the selected preset.

Black and White

Red, Green and Blue controls allow you to determine the contribution of each color channel in the black and white conversion.

Enable

Enables the Black and White conversion.

Red

Sets the amount of the red channel that contributes to the black and white conversion.

Green

Sets the amount of the green channel that contributes to the black and white conversion.

Blue

Sets the amount of the blue channel that contributes to the black and white conversion.

Film Response

To mimic the characteristics of a particular film stock, a combination of settings for the RGB channels have been set.

RGB

Controls the RGB film response curve. If you are using a black and white preset, the grayscale film response curve will be adjusted.

Red

Controls the Red film response curve.

Green

Controls the Green film response curve.

Blue

Controls the Blue film response curve.

Color Correct

Color Correct manipulates the Temperature, Cyan/Magenta, Brightness, Contrast, Shadow, Midtone, Highlight, and Saturation values of the image. Go to the **Color Correct** node to see how it works.

Filter

Adds a color filter to the image.

Presets

Select one of the filters from the pop-up list.

Color

Sets the color through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Highlights

Preserves the white areas of the image.

Sharpen

Amount

Determines how much contrast is added at the edges.

Radius

Controls the size of the edges you wish to sharpen.

Threshold

The threshold setting is used to sharpen more pronounced edges, while leaving more subtle edges untouched. Low values sharpen more image areas while higher threshold values sharpen less.

Diffusion

Blend

Determines the blend mode to be used to create the diffusion/glow effect.

Add

The diffusion/glow is added to your image.

Normal

The diffusion is mixed with the original image. In this mode, Amount only shows changes up to a value of 100.

Screen

The diffusion/glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Amount

Sets the amount of diffusion.

Blur

Sets the softness of the image.

Color

The Color parameter sets the color of the diffusion/glow through the use of a standard color picker or eyedropper. The default color is white.

Position

When using the Add and Screen blend modes, Position selects the values used to create the glow effect. A higher Position value uses the brightest image values to create the glow. A lower Position value uses the darkest image values to create the glow.

Range

When using the Add and Screen blend modes, Range controls the range of values to be used for the glow. Once you've selected the "Position", you can then add or subtract the "Range" of values to be used in the glow source. A higher Range value includes more values in the glow source while a lower Range value includes less values.

Vignette

A vignette is a popular photographic effect where the photo gradually fades into a color. Go to the **Vignette** filter to see how it works.

Grain

Grain simulates film grain with control of the size, softness and intensity. In addition, a Film Response parameter controls where you will see grain in the image. Go to the **Grain** filter to see how it works.

Note: You may not see an accurate representation of the grain in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Flip

Description

Flips the image vertically.

Node Group

Transform.

Flop

Description

Flops the image horizontally.

Node Group

Transform.

Fog

Description

The Fog filter creates a soft, misty atmosphere over the image and glows highlights.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Fog

Blend

Determines the blend mode to be used to create the fog effect.

Add
The fog is added to your image.

Screen
The fog is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the fog.

Blur

Sets the softness of the fog.

Color

The Color parameter sets the color of the fog through the use of a standard color picker. The default color is white.

Matte

A matte is used to create the fog effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Fractal Noise

Description

Fractal Noise is a noise texture based on Perlin noise.

Node Group

Image.

Controls

Scale

Scales the noise.

X Bias

Moves the noise horizontally.

Y Bias

Moves the noise vertically.

Lancunarity

Lacunarity defines the gap between the various frequencies that are added together to form the texture. Higher Lacunarity values increase the complexity and detail in the texture. Lower values make the texture smoother with less detail.

Increment

Increment controls the ratio of noise in the texture. Higher values blend the light and dark areas together. Lower values create a more contrasty texture.

Octaves

Octaves controls the number of texture calculation iterations. Fractal textures work by running an algorithm iteratively. The longer it runs, the more detail it creates, but the slower it goes. Increase Octaves to make the texture more detailed. This is good to do if it will be seen up close in the final rendered image.

Amplitude

Scales the final result.

Frost

Description

Frost

Frost glows highlights and reduces contrast while softening facial blemishes and wrinkles.

Black Frost

Black Frost offers all the benefits of the Frost filter in a more subtle form. This filter subtly controls highlights, reduces contrast and provides a harder look than the Frost filter, while suppressing facial blemishes and wrinkles.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Detail

Smoothing

Fine image details, such as facial wrinkles and blemishes, are minimized using edge aware smoothing.

Mist

The Mist controls add a mild glow to image highlights.

Blend

Determines the blend mode to be used to create the mist effect.

Add
The mist is added to your image.

Screen
The mist is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the mist.

Blur

Sets the softness of the mist.

Color

Sets the color of the mist.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the mist effect. Go to the **Matte** section of Common Filter Controls to see how the Matte controls work.

Glow

Description

The Glow filter creates glows around selected areas of the image.

Node Group

Light.

Controls

Presets

To select a preset, choose one from the Presets tab.

Glow

Blend

Determines the blend mode to be used to create the glow effect.

Add
The glow is added to your image.

Screen
The glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Color

The Color parameter sets the color of the glow through the use of a standard color picker. The default color is white.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Glow Darks

Description

Glows and grows the darks areas of the image.

Node Group

Light.

Controls

Presets

To select a preset, choose one from the Presets tab.

Glow

Amount

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Glow Edges

Description

Edge Glow isolates lines and edges in an image and then adds glow only to these areas resulting in a stylized look.

Node Group

Light.

Controls

Presets

To select a preset, choose one from the Presets tab.

Glow

Blend

Determines the blend mode to be used to create the edge glow effect.

Add
The edge glow is added to your image.

Screen
The edge glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the edge glow.

Blur

Sets the softness of the edge glow.

Color

The Color parameter sets the color of the edge glow through the use of a standard color picker. The default color is white.

Edge

An edge matte is created to produce the edge glow effect.

Brightness

Determines the brightness of the edge matte.

Blur

Blurs the edge matte.

Grain

Description

Grain simulates film grain with control of size, intensity and softness. In addition, a Film Response parameter controls where you will see grain in the image. Popular film stock presets are provided as a starting point to adding grain.

Node Group

Filter.

Controls

Presets

To select a preset, choose one from the Presets tab.

Monochrome

When enabled, the grain is monochrome. In this mode, parameters that have no effect are grayed out.

Size

The Size parameter controls the size of the grain. The larger the Size setting, the larger the grain will be.

Note: You may not see an accurate representation of the grain in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Amount

The Amount parameters set the red, green and blue intensities of the grain. Film stocks generally have varying amounts of red, green and blue intensities with the blue intensity generally higher than the rest. If you set the red, green and blue amount to a value of 0, the grain will disappear.

Red Amount

Controls the intensity of the red grain.

Green Amount

Controls the intensity of the green grain.

Blue Amount

Controls the intensity of the blue grain.

Softness

The Softness parameter controls the softness of the grain. Normally, only minor softness adjustments are necessary, usually between a value of 0-1.

Film Response

The Film Response parameter allows the adjustment of where you will see grain in the image. In most cases, film grain is apparent over the entire image except the brightest whites with the black areas being the most affected.

Position

Position defines the portions of the image where grain will be added. A low Position value places grain in the darkest image values, while a high Position value places grain in the brightest areas.

Range

Increases or decreases the area where grain is added to the image based on the Position value. A low Range value indicates a narrow range of values, while a high Range value indicates a large range of values.

Minimum

Sets the minimum level of grain that is always added to the image.

Note: A Position value of 0 and a Range of 80 is typical of standard film, with grain applied to the entire range except the brightest whites with black being the most affected.

Grain Composite

Description

Composites grain onto an image that was previously extracted using the DeGrain node

Node Group

Composite.

Controls

Amount

Controls the amount of grain added to the image.

Grid

Description

Creates a grid of horizontal and vertical lines on top of the input image.

Node Group

Image.

Controls

Amount

Sets the number of squares in the grid.

Size

Determines the size of the grid lines.

Color

Sets the color of the grid through the use of a standard color picker.

Opacity

Controls the opacity of the grid.

Grunge

Description

Adds film dirt, hair, scratches, stains, splotches, gate weave, flicker, vignetting and grain--all to make your pristine image look like damaged film.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab.

Randomize

Randomizes the applied elements.

Dirt

Opacity

The opacity of the dirt.

Amount

The number of pieces of dirt.

Size

The size of the dirt.

Type

Positive

The dirt is black as it is in positive film.

Negative

The dirt is white as it is in negative film.

Hair

Opacity

The opacity of the hair.

Amount

The number of hairs.

Size

The size of the hairs.

Type

Positive

The hair is black as it is in positive film.

Negative

The hair is white as it is in negative film.

Scratches

Opacity

The opacity of the scratches.

Amount

The number of scratches.

Width

The width of the scratches.

Length

Randomly changes the length of the scratches.

Variance

Determines how fast the scratches move from side to side.

Roughness

The roughness of the scratches.

Type

Positive

The scratches are black as they are in positive film.

Negative

The scratches are white as they are in negative film.

Stains

Opacity

The opacity of the stains.

Amount

The number of stains.

Size

The size of the stains.

Type

Positive

The stains are black as they are in positive film.

Negative

The stains are white as they are in negative film.

Splotches

Opacity

The opacity of the splotches.

Amount

The number of splotches.

Size

The size of the splotches.

Type

Positive

The splotches are black as they are in positive film.

Negative

The splotches are white as they are in negative film.

Gate Weave

Amount

The amount of weave.

Speed

The speed of the weave.

Flicker

Amount

The amount of flicker.

Speed

The speed of the flicker.

Vignette

A vignette is a popular photographic effect where the photo gradually fades into a color. Go to the **Vignette** node to see how it works.

Grain

Grain simulates film grain with control of the size, softness and intensity. In addition, a Film Response parameter controls where you will see grain in the image. Go to the **Grain** node to see how it works.

Note: You may not see an accurate representation of the grain in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Harris Shutter

Description

Invented by Robert S. “Bob” Harris of Kodak, the Harris Shutter was originally a strip device with three color filters used for making color photographs with the different primary color layers exposed in separate time intervals in succession. The same frame of film was re-exposed through red, green and blue filters in turn, while keeping the camera steady.

Our digital version of the Harris Shutter uses separate images for the red, green and blue channels. In the case of a time interval between images used for the red, green and blue channels, this will generate a rainbow of color around any object that moves within the frame. Some good candidates for subjects include waterfalls, clouds blowing over a landscape or people walking across a busy street.

Node Group

Special Effects.

Controls

Red / Green / Blue

Source

Sets the source image to be used as the Red, Green and Blue channels. If an image is not assigned using Source, the original image’s color channel will be used.

Offset

Allows you to offset the frames used for the Red, Green and Blue channels.

Amount

Controls how much of the Red, Green or Blue image is contributed to the composite image.

High Contrast

Description

Creates an extreme high contrast image.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Contrast

Sets the amount of contrast to be applied to the scene.

Amount

Sets the mix amount between the original and filtered version.

Holdout Composite

Description

To add practical fire, explosions, smoke or other footage not containing an alpha channel is normally a challenge. A normal Math Composite Add function would cause areas of the background to get brighter. This is bad. Using a key of some type would most likely generate unwanted edge fringing. This is also bad. The Holdout Composite is a two-layer/track effect that effectively composites images such as fire, explosions and smoke. It creates a luminance matte of the foreground and pastes it as black (or other color) over the background. You then use one of the Blend Modes to place the foreground over the "held out background".

Note: You can change Holdout Composite's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite.

Controls

Blend

This selects the type of Blend mode to use for the foreground element.

Add

The pixels of the foreground are added to the background.

Screen

The foreground and background are combined using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Lighten

Compares the foreground and background and takes the pixels with the higher value.

Level

Sets the level of the foreground element.

Black Clip

Blacks are made blacker by increasing this value. As the value increases, more values are clipped to black.

Note: Often times the black portion of an image is not entirely black. This becomes an issue if something like fire is shot against a black background. If the black is not entirely black, then these impure black areas will be added to the background image as part of the Holdout Composite causing the final result to have milky blacks. Black Clip will improve these milky blacks and make them darker.

Matte

The Holdout Composite first creates a luminance matte of the foreground and then pastes it as black (or other color) over the background. You can see the extracted matte with the View set to Matte.

Black Clip

Blacks in the matte are made blacker by increasing this value. As the value increases, more values are clipped to black. This is helpful for getting rid of unwanted gray areas in what should be the black part of the matte.

White Clip

Whites in the matte are made whiter by increasing this value. As the value increases, more values are clipped to white. This is helpful for getting rid of unwanted grey areas in what should be the white part of the matte.

Holdout

The Holdout Composite takes the luminance matte of the foreground and pastes it as black (or other color) over the background. You can see the matte pasted onto the background with the View set to Holdout.

Color

The Color parameter sets the color of the Holdout matte through the use of a standard eyedropper or color picker. The default color is black.

Note: There may be times when you want to select a color from the background as the Holdout color. This will appear to give the foreground some atmosphere.

Opacity

The opacity of the color.

Infrared

Description

Infrared simulates infrared filters used in conjunction with infrared sensitive film or sensors to produce very interesting black and white images with glow in highlight areas.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Black and White

Selects the type of black and white filter to be applied to your color image. Go to the **Black and White** section of Common Node Controls to see how the Black and White controls work.

Glow

Blend

Determines the blend mode to be used to create the glow effect.

Add
The glow is added to your image.

Screen
The glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Invert

Description

Inverts the RGB or alpha channels.

Node Group

Color.

Controls

Channels

RGBA

Inverts the RGB channels.

RGB

Inverts the RGB channels.

Alpha

Inverts the alpha channel.

Kelvin

Description

Degrees Kelvin is the standard unit of measure for color temperature which is a way to characterize the spectral properties of a light source. Low color temperature implies warmer (redder) light, while high color temperature implies a colder (bluer) light. Presets for a number of different light sources and conditions are provided in degrees Kelvin.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Color Temperature

The Color Temperature of the image is determined by the difference of the Destination and Source Kelvin parameters. For instance, if your Source Kelvin is 3200 degrees Kelvin and you adjust the Destination Kelvin to 6500 degrees, your image would turn blue. This is the same as using tungsten indoor film meant to be used with lighting balanced for 3200 degrees Kelvin outside in daylight which is 6500 degrees Kelvin.

Destination Kelvin

Sets the destination color temperature of the image in degrees Kelvin.

Source Kelvin

Sets the source color temperature of the image in degrees Kelvin.

Opacity

Sets the opacity of the color temperature adjustment.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the color temperature application.

Grad

Kelvin can optionally use a gradient that limits where the filter is applied. Grad is the transition area between the colored portion and the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Keystone

Description

Rotates the source image around the horizontal and vertical axis for minor corrections.

Node Group

Transform.

Controls

X

Rotates the source image around the vertical axis.

Y

Rotates the source image around the horizontal axis.

Lens Distortion

Description

Lens Distortion corrects for pin-cushioning and barrel distortion of camera lenses. It is also useful for creating the look of a wide angle lens.

Node Group

Warp.

Controls

Distortion

Pulls the corners of the image in or out. Negative values pull the corners of the image outward while positive values pull the corners of the image inward.

Anamorphic Squeeze

Anamorphic Squeeze corrects for the squeeze found in anamorphic motion picture lenses.

Curvature X and Y

Curvature X and Y correct for non-radial, asymmetric distortions found in anamorphic motion picture lenses.

Note: Anamorphic Squeeze and Curvature X and Y only work once the Distortion parameter has been moved.

Center

Determines the center point for the distortion. There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the Center can be adjusted.

Lens Flare

Description

Lens flares are produced by the scattering or flaring of light within a lens when pointed into a bright light. Although an image aberration, lens flares can be added for dramatic effect and are created by combining the following elements: Caustic, Chroma Bands, Chroma Ring, Circle, Circles, Disc, Edge Streak, Ellipse, Fan Rays, Hot Spot, Polygon, Polygons, Radial Streaks, Random Spikes, Ring, Spikes, Spiral Rays, Star, Star Caustic, and Stripe.

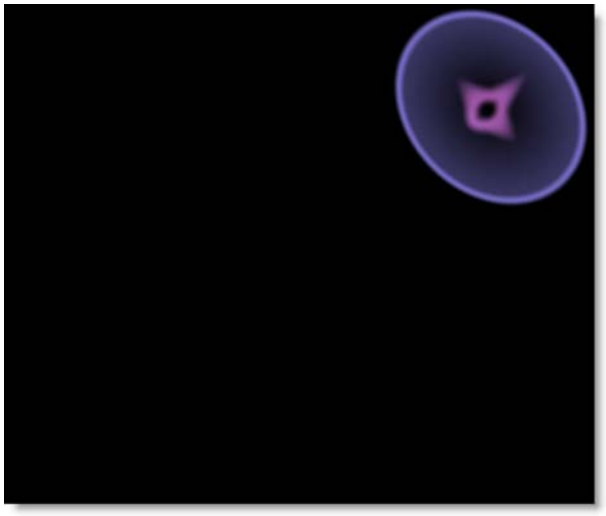
Node Group

Light.

Elements

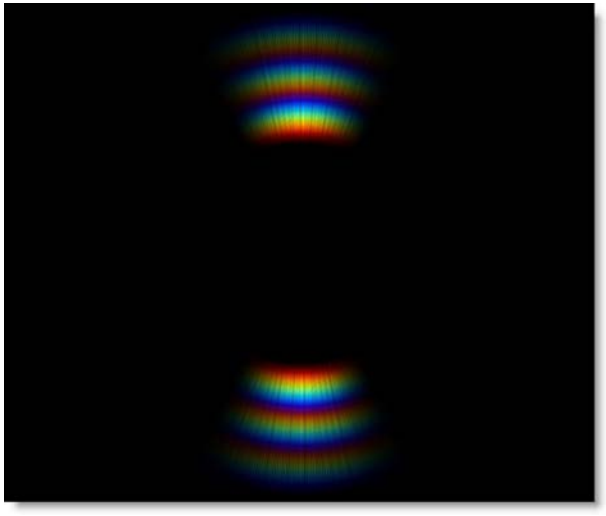
Caustic

Simulates an optical distortion created by the envelope of light rays reflected or refracted by a curved surface.



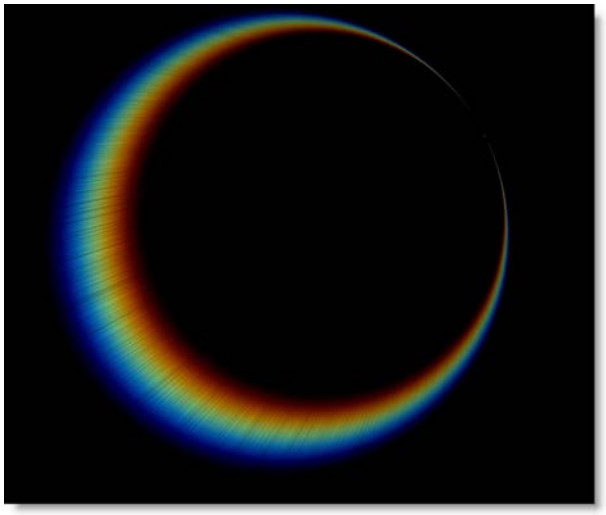
Chroma Bands

Creates rainbow diffraction patterns.



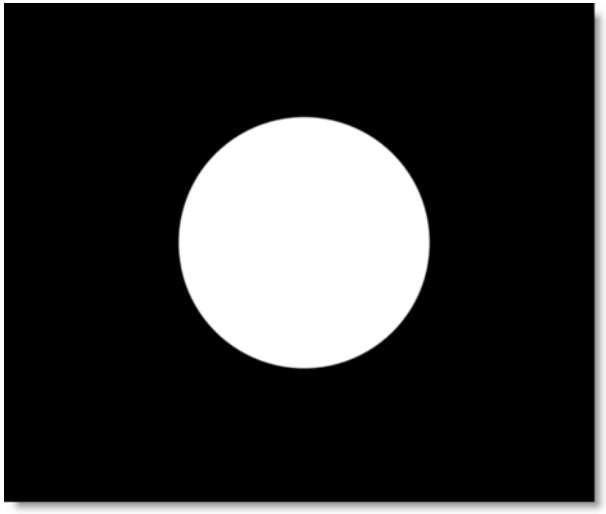
Chroma Ring

Rainbow lines that emanate from the center of the light source.



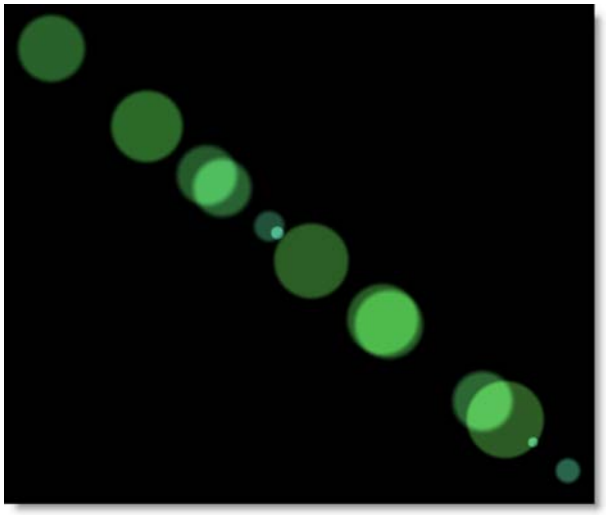
Circle

An individual circle.



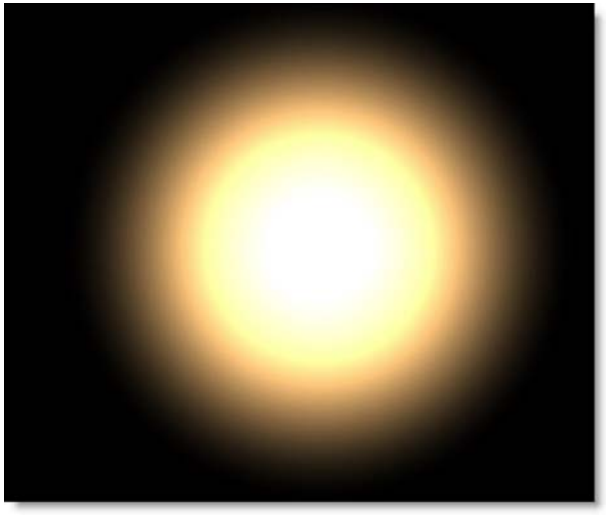
Circles

Creates a specified number of random circles often seen in lens flares.



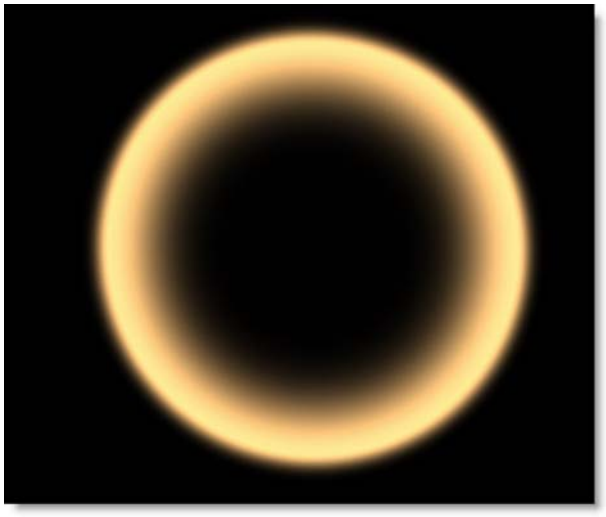
Disc

Generates a circular ramp with individual control of the inner, middle and outer areas.



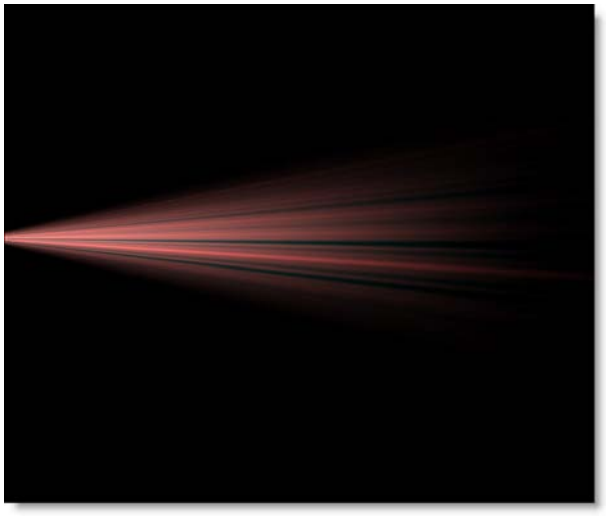
Ellipse

Ellipse is similar to Disc, but elliptical in shape.



Edge Streak

Caused by a light source at the edge of the frame reflecting off of the shiny lens aperture. It only appears when the light source is positioned outside of the frame.

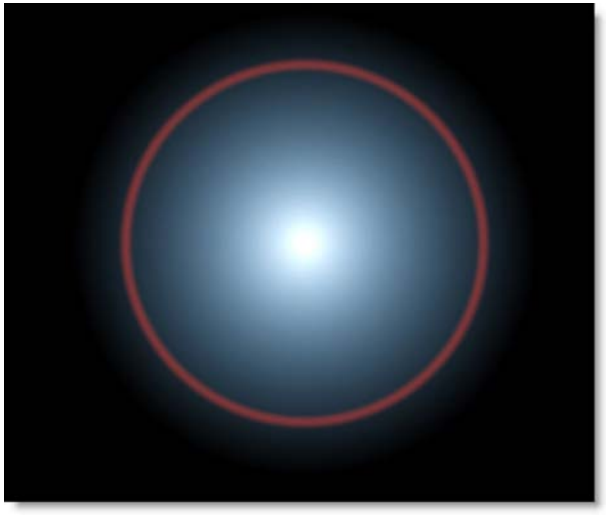


Fan Rays

Generates asymmetric fanned rays.

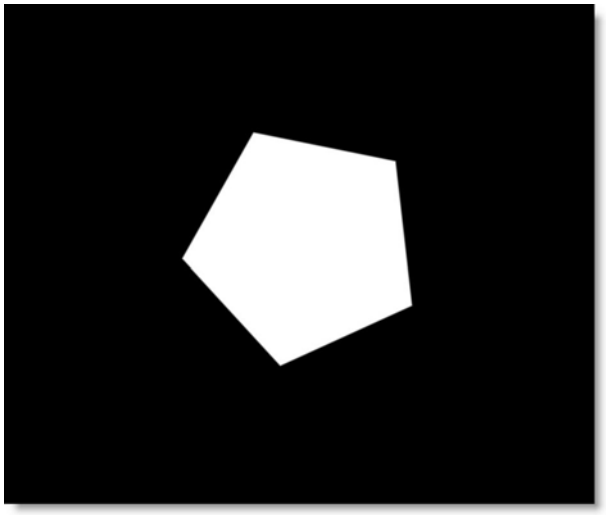
Hot Spot

Utilized in most lens flares, glow ball simulates the circular glow created when a light source interacts with a lens.



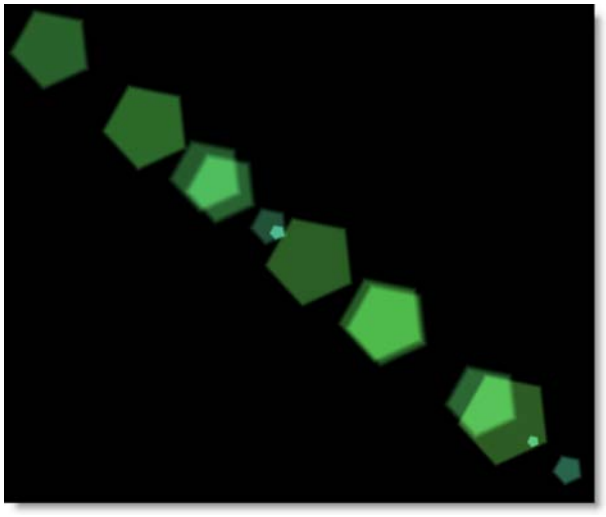
Polygon

An individual polygon.



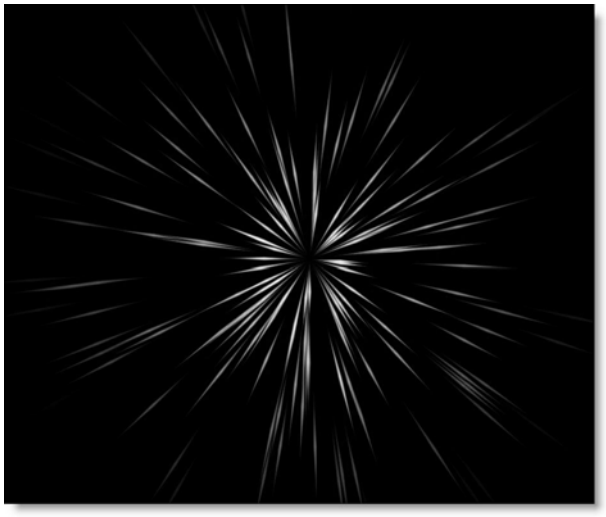
Polygons

Creates a specified number of random polygons. These are reflections caused by light interacting with the lens's polygonal bladed aperture.



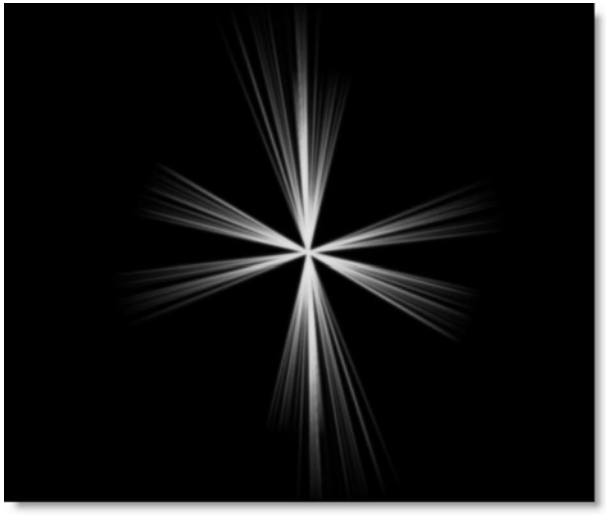
Radial Streaks

Short radial streaks emanating from the center point.



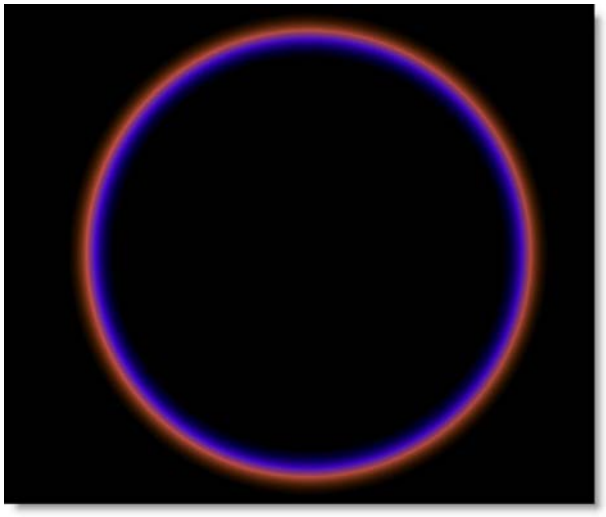
Random Spikes

Generates asymmetric radial rays.



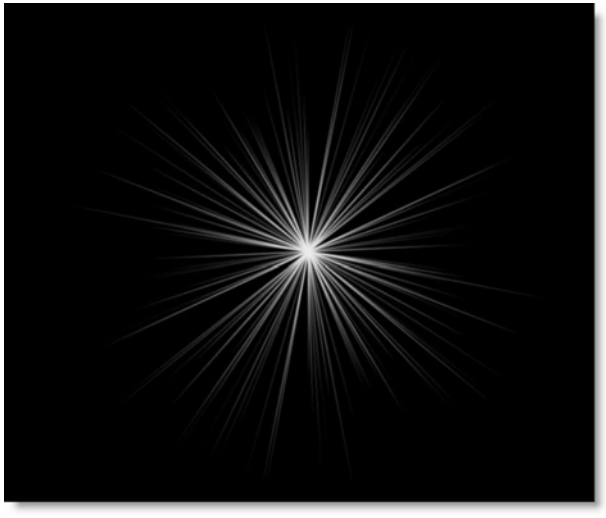
Ring

A rainbow ring that fades as it is moved to the edges of the screen.



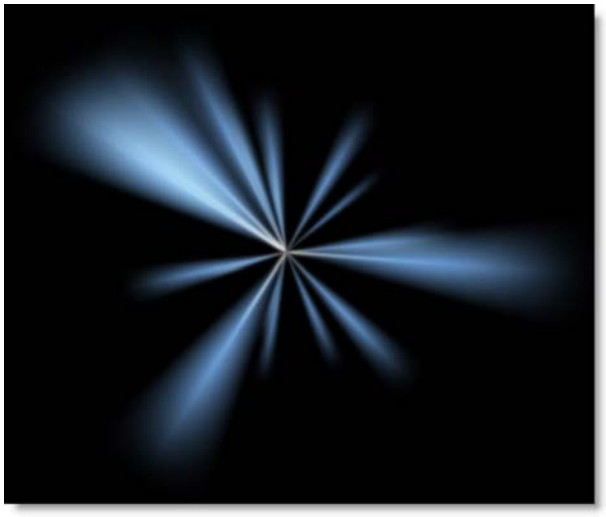
Spikes

Long radial rays emanating from the center point.



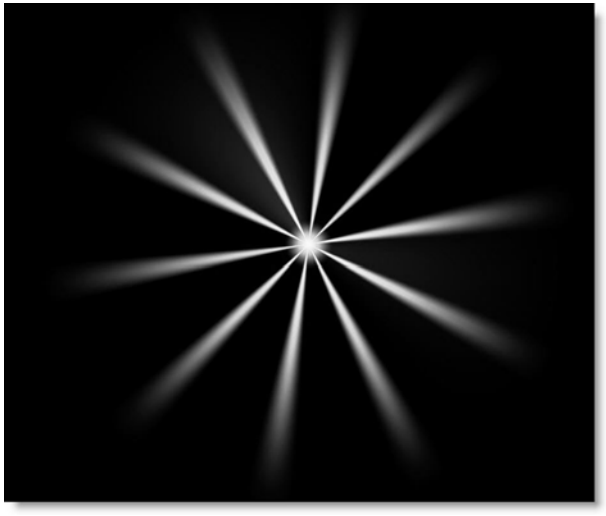
Spiral Rays

Creates spiral rays.



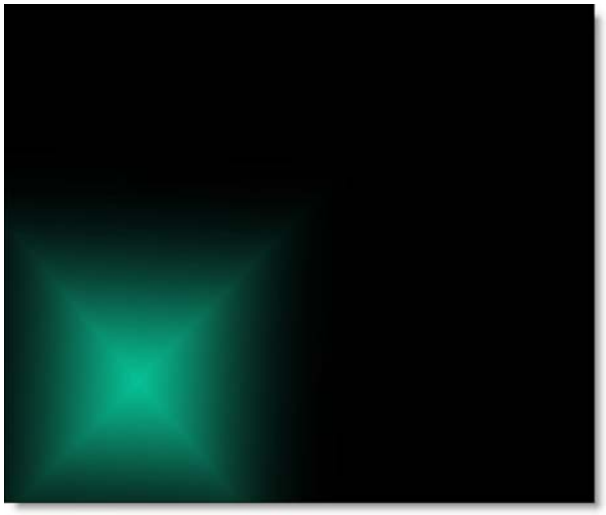
Star

A star pattern is created when light reflects off the intersection of the lens's aperture blades.



Star Caustic

A star shaped caustic created by the envelope of light rays reflected or refracted by a lens's reflective coatings.



Stripe

A tapered stripe that simulates anamorphic lens flares.

Controls - Global

Presets

To select a preset, pick one from the Presets tab.

Edit Flare

Click the Edit Flare button to edit the current preset or to create a custom lens flare. The Flare Editor interface consists of a Viewer, Parameters, Global, Flare (currently used flare elements) and Elements (all available elements).

User Interface

Toolbar

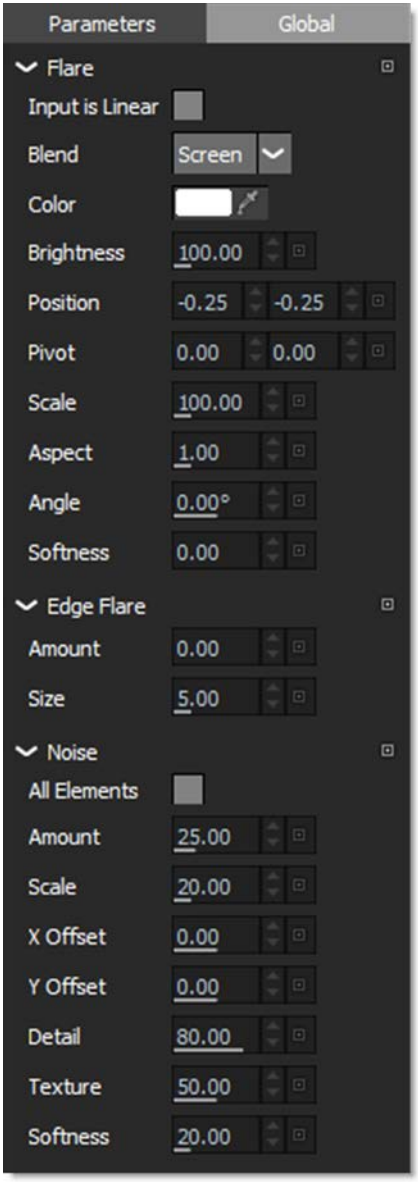
The Toolbar contains Done, Cancel, Reset, and Show Image icons.

Viewer

The Viewer displays the composite of all added flare elements.

Parameters and Global

Parameters and Global share the same window space on the right side of the screen, with Global shown as the default. Either Parameters or Global are selectable in a tab at the top of the window.

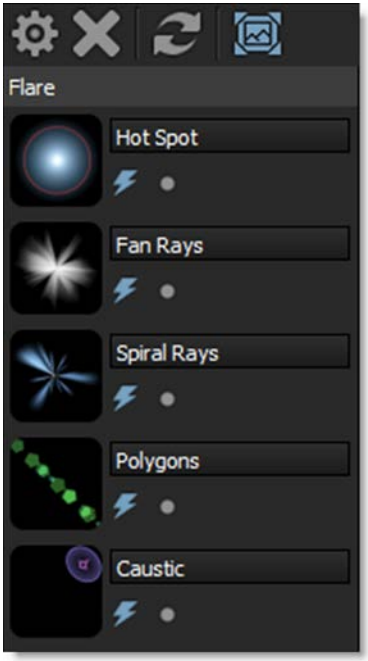


Elements

The Elements window displays lens flare building blocks to be used in the creation of a flare.

Flare

The Flare window displays all elements that make up the current lens flare.



Enable (E)

Enables and disables the element.

Solo (S)

Displays only the soloed element.

Working With Elements

Select Elements

Select elements using the Shift or Ctrl(Win)/Cmd(Mac) keys.

Add Elements

- **Double-click an element in the Elements window and it is added to the end of the stack in the Flare window. If an element is selected in the Flare window prior to the double-click, the new element is added after the selection.**
- **Drag and drop from the Elements window to the Flare window or Viewer. Multiple selected elements can be dragged and dropped simultaneously.**

Delete Elements

Delete selected elements.

- **Press the Delete key.**

or

- **Click the Delete Element icon at the bottom of the Flare window.**

Duplicate Elements

Duplicate selected elements using the Duplicate Element icon at the bottom of the Flare window.

Edit Elements

- **Select an element in the Flare window and it's controls are displayed in the Parameters window.**
- **When multiple elements are selected, the controls for all selected elements are displayed in the Parameters window.**
- **Click and drag the point controls in the viewer to move the flare around.**
- **Ctrl(Win)/Cmd(Mac)-click and drag in the viewer to move the selected elements along the flare line.**

Moving Elements In The Flare Window

Drag the icon of an element to a new position in the stack. Multiple elements can be moved at once.

Rename Elements

Click in the element text box and type to rename it.

Flare

Input is Linear

Enable this if your image is in true linear color space. Gamma corrected images should have this parameter disabled.

Blend

Determines the blend mode used to composite the lens flare.

Add

The lens flare is added to your image.

Screen

The lens flare is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Color

Sets the color.

Brightness

Controls the brightness.

Transform

Selects point trackers and tracked layers from the input Tracker node and match moves the lens flare based on the input tracker data.

Position

Adjusts the origin of the lens flare.

Pivot

Changes the end position of the lens flare.

Scale

Determines the size.

Aspect

Sets the aspect ratio.

Angle

Sets the angle.

Softness

Blurs the lens flare.

Occlusion

The Occlusion parameters allow you to block the lens flare. Using the Occlusion input, the brightness of the lens flare will automatically animate based on the source input channel.

Channel

Determines which channel to use for the occlusion source.

Invert

Inverts the source channels.

Threshold

Controls how much the occlusion source affects the flare.

Flicker

Flickers the lens flare.

Amount

The amount of flicker.

Speed

The speed of the flicker.

Edge Flare

Flares the frame as the lens flare enters or exists the frame.

Amount

Controls the amount of the edge flare.

Size

Sets the size of the edge flare.

Noise

Adds noise to the lens flare elements. Noise can selectively be added to elements based on whether an element's Lens Noise parameter is enabled. Alternatively, you can apply noise to all elements using the parameter below.

All Elements

Applies the noise pattern to all lens flare elements.

Amount

Sets the amount of the noise.

Scale

Determines the size of the noise.

X Offset

Moves the noise horizontally.

Y Offset

Moves the noise vertically.

Detail

Sets the detail of the noise.

Texture

Controls the complexity of the noise.

Randomize

Randomizes the size and position of the noise.

Controls - Elements

Each flare element uses a subset of the parameters below.

Angle

Sets the angle.

Aspect

Sets the aspect ratio.

Blur

Blurs the element.

Brightness

Controls the brightness.

Brightness Variance

Randomizes the brightness between multiple elements.

Center

Determines the center of the Chroma Ring along the flare.

Center Brightness

Sets the brightness of the stripe's center.

Center Offset

Pushes all the Disc edges outwards.

Chroma

Changes the saturation of the Chroma Ring.

Color

Sets the color.

Color Variance

Randomizes the color between multiple elements.

Cycles

Determines the number of Chroma Bands.

Density

Sets the amount of rays.

Edge Fade

Fades the element as it moves towards the edge of the screen.

Element Count

Sets the number of elements.

Hotspot

Sets the size of the Star's center hotspot.

Inside Width

Changes the size of the inner ramp.

Jitter

Randomizes the angle.

Length

Sets the length of the stripe.

Lens Noise

Determines whether the Lens Noise controls affect the enabled element.

Lock To

X Axis

Locks the element to the X axis so it will only move vertically.

Y Axis

Locks the element to the Y axis so it will only move horizontally.

Match Flare Angle

Matches the Circle and Polygon element's angle to the flare angle. This is especially useful when the Aspect parameter has been adjusted.

Middle Width

Adjusts the size of the middle ramp.

Noise

Controls the amount of noise in an element.

Noise Density

The strength of the noise.

Offset

For most elements, Offset determines the element's inner diameter. For Circles and Polygons, it shifts the shapes along the flare axis.

Outside Width

Sets the size of the outer ramp.

Position

Sets the position of the element along the flare.

Position Variance

Randomizes the position between multiple elements along the flare.

Ramp Gamma

Sets the Hot Spot's black point.

Ramp Scale

Changes the Hot Spot's size.

Randomize

Randomizes size and position.

Ring Brightness

Sets the brightness of the Hot Spot's ring.

Ring Size

Changes the size of the Hot Spot's ring.

Ring Softness

Softens the Hot Spot's ring.

Scale

Sets the size.

Sides

Determines the number of sides.

Size Variance

Randomizes the size between multiple elements.

Softness

Blurs the element.

Softness Variance

Randomizes the softness between multiple elements.

Spread

Determines the distribution of an element.

Taper

Tapers the Chroma Band's edges.

Total Scale

Sets the size of all elements.

Vertical Variance

Randomizes the vertical position between multiple elements.

Weight

Polygons and Circles can be weighted to either the beginning or end of the lens flare.

Warp

Enables the warping of the Ellipse and Ring elements as they exit the frame.

Width

Adjusts the width.

X Offset

Offsets the element horizontally.

Y Offset

Offsets the element vertically.

Light Wrap

Description

Light Wrap helps blend the foreground into the background by making the color of the background wrap into the foreground edges without softening the edge.

This is accomplished by placing the background layer into a special matte and then combining it with the foreground. You can look at the Light Wrap element in the View menu.

Note: You can change Light Wrap's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite

Controls

Brightness

Sets the intensity of the Light Wrap.

Wrap

Sets the size of the Light Wrap.

Linear Gradient

Description

Creates a linear top to bottom or left to right gradient.

Node Group

Image.

Controls

Type

Top-to-bottom

The direction of the gradient is from top to bottom.

Bottom-to-top

The direction of the gradient is from bottom to top.

Left-to-right

The direction of the gradient is from left to right.

Right-to-left

The direction of the gradient is from right to left.

Horizontal Strip

The gradient is in the form of a horizontal strip.

Vertical Strip

The gradient is in the form of a vertical strip.

Size

The size of the gradient.

Angle

The angle of the gradient.

On-Screen Controls - Corner Points

There are four points around the four corners of the image. By clicking and dragging any of the four points, the gradient can be adjusted.

Looks

Description

Looks is a unique filter meant to simulate a variety of color and black and white photographic/film looks, diffusion and color grad camera filters, colored tints, film stocks and optical lab processes. By selecting from the available presets, parameters in the various modules are automatically set to achieve a variety of different effects.

Node Group

Special Effects.

Controls

The Looks presets are made up of Color Correct, Diffusion, Color Gradient, Tint, Lab, Grain and Post Color Correct groups. Together, they simulate a variety of photographic and film looks. By selecting from the available presets, parameters in the various groups are automatically set to achieve a variety of different effects.

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Color Correct

Color Correct manipulates the Black and White, Hue, Saturation, Brightness, Contrast, Gamma, Red, Green and Blue values of the image. Go to the **Color Correct** node to see how it works.

Diffusion

Diffusion creates atmosphere by reducing contrast while creating a glow around highlights or shadows. It simulates diffusion and fog filters as well as glows. Go to the Diffusion section of the **Film Stocks** node to see how it works.

Color Gradient

Color Gradient can transform an average sunrise or sunset into something spectacular or convert a dull, washed-out sky to a breathtaking blue. No other filter has done as much to improve landscape photography as the graduated filter. Add color selectively while leaving the rest of the scene unaffected by using a graduated transition for a smooth color blend between the colored portion and the original image. Presets for your favorite Color Gradient filters are provided as well as the ability to create custom colors. Go to the **Color Gradient** node to see how it works.

Tint

Tints the image with a color.

Lab

The Lab group simulates a variety of different optical lab processes including Bleach Bypass, Cross Processing, Flashing and Overexposure. Go to the **Bleach Bypass**, **Cross Processing**, **Flashing** and **Overexpose** nodes to see how they work.

Grain

Grain simulates film grain with individual control of red, green, and blue grain size, softness and intensity. In addition, a Film Response parameter controls where you will see grain in the image. Go to the **Grain** node to see how it works.

Note: You may not see an accurate representation of the grain in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Post Color Correct

Post Color Correct gives you further color correction after all other operations have been processed. This is often helpful as some of the operations affect the brightness, contrast and color of the image. In addition, Temperature controls allow you to make the scene warmer or cooler, and cyan or magenta. Go to the **Color Correct** node to see how it works.

Low Contrast

Description

Low Contrast spreads highlights into darker areas, lowers contrast and keeps bright areas bright.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Contrast

Light Brightness

Sets the intensity of the light that is spread into darker areas.

Light Spread

Sets how far light is spread from bright areas to darker areas.

Shadow Brightness

Adjusts the brightness of the shadow areas.

Matte

A matte is used to create the light spread effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Match

Description

Matches the color of one image to another.

Node Group

Color

Controls

Mode

Determines the frame to color match.

Reference Image

The frame of the source clip defined by the Set Reference Image button is matched.

First Frame

The first frame of the source clip is matched.

Every Frame

Every frame of the source clip is matched.

Brightness

Sets the amount of the brightness match.

Color

Sets the amount of the color match.

Set Reference Image

Matches the source clip at the frame the Timeline is parked on when this button is pressed.

Math Composite

Description

Math Composite combines two clips using one of the Blend modes. You can choose from Add, Subtract, Multiply, Screen, Difference, Darken and Lighten.

Note: You can change Math Composite's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite.

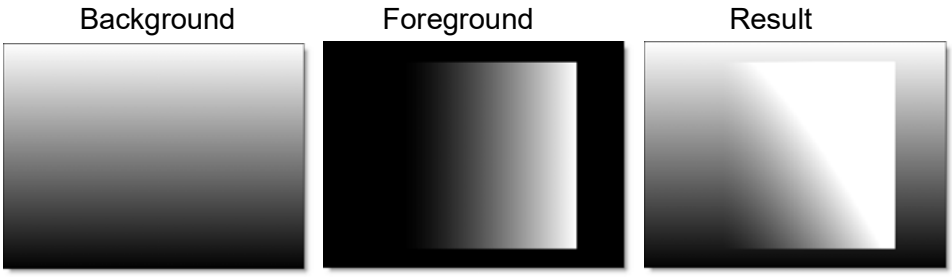
Controls

Blend

Selects the Blend mode that is used to combine the foreground and background.

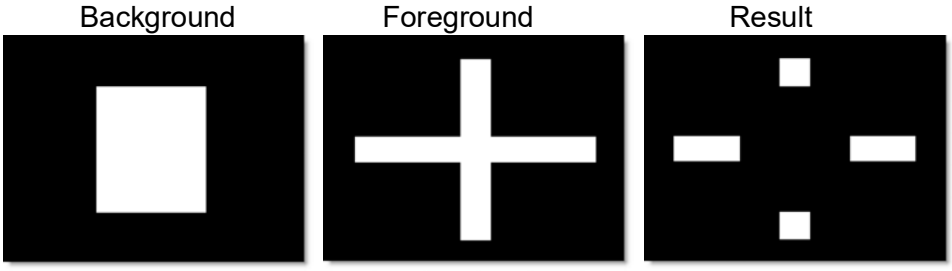
Add

The pixels of one image are added to another image.



Subtract

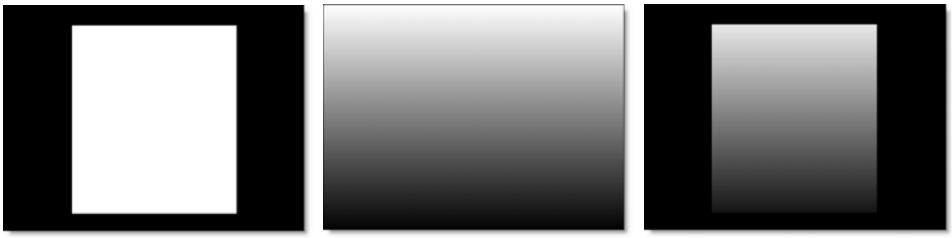
The pixels of one image are subtracted from another image.



Multiply

Produces a result where there is a union of pixels from two images.

Background Foreground Result



Screen

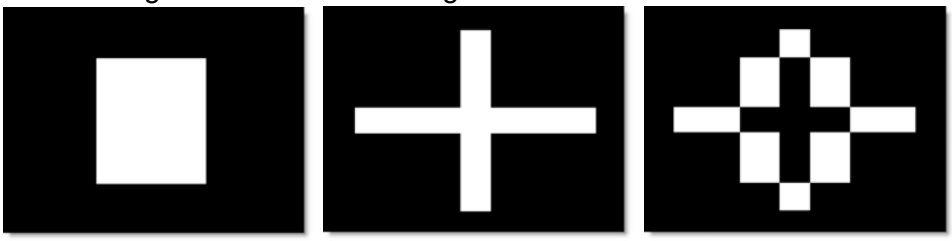
Looks at each images color information and multiplies the inverse of the two images. This looks kind of like the Add blend mode, but highlights are retained.

Background Foreground Result

Difference

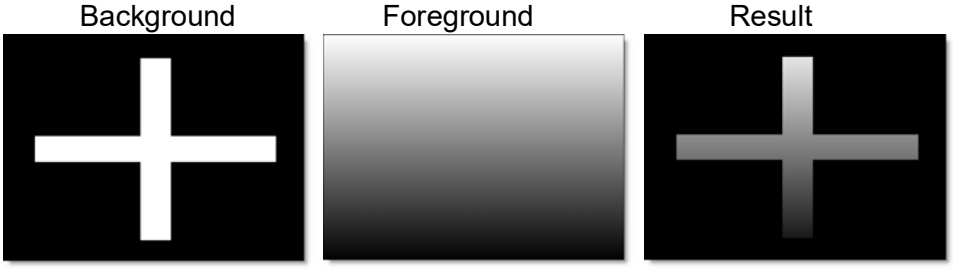
Produces a result where a value exists in each image, but not in both.

Background Foreground Result



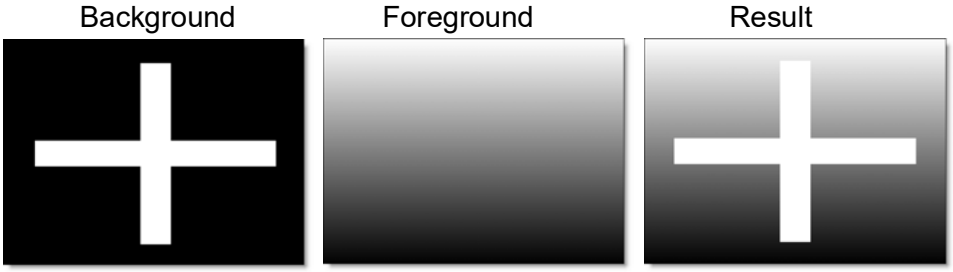
Darken

Compares two images and takes the pixels with the lower value.



Lighten

Compares two images and takes the pixels with the higher value.



Level

Sets the level of the foreground element.

Black Clip

Blacks are made blacker by increasing this value. As the value increases, more values are clipped to black.

Note: Often times the black portion of the image is not entirely black. This becomes an issue if something like fire is shot against a black background. If the black is not entirely black, then these impure black areas will be added to the background image as part of the Math Composite causing the final result to have “milky” blacks. The Black Clip parameter has been added to easily adjust the foreground image’s black level.

Matte Repair

Description

Matte Repair grows, shrinks or blurs a matte. It also is handy for cleaning up impurities in the black or white areas.

Node Group

Key.

Controls

Use

Chooses the channel from the input image to use for the Matte Repair.

Alpha Channel

The alpha channel is used for the Matte Repair.

Red Channel

The red channel is used for the Matte Repair.

Green Channel

The green channel is used for the Matte Repair.

Blue Channel

The blue channel is used for the Matte Repair.

Luminance

The average luminance of the RGB channels is used for the Matte Repair.

Opacity

Sets the opacity of the matte.

Black Clip

Blacks in the matte are made blacker by increasing this value. As the value increases, more values are clipped to black. This is helpful for getting rid of unwanted gray areas in what should be the black part of the matte.

White Clip

Whites in the matte are made whiter by increasing this value. As the value increases, more values are clipped to white. This is helpful for getting rid of unwanted gray areas in what should be the white part of the matte.

Shrink/Grow

Shrinks or grows the matte. Negative values shrink and positive values grow the matte.

Blur

The matte is blurred by a fast, quality blur.

Wrap

Helps blend the foreground into the background by making the background “wrap” into the foreground edges without completely losing the edge. The edge of the foreground starts to become transparent.

Invert

Inverts the matte.

Merge Views

Description

Merges the input images into a combined left, right and depth view.

Node Group

Image.

Mist

Description

Mist

Creates atmosphere by reducing contrast while creating a glow around highlights.

Cool Mist

Same as Mist but combined with a cooling filter.

Warm Mist

Same as Mist but combined with a warming filter. It is useful in outdoor open shade situations where there is excessive blue in the image and when total control over lighting may not be possible.

Black Mist

A more subtle version of Mist, the Black Mist filter creates atmosphere by reducing contrast, but with minimal glow around highlights.

Warm Black Mist

Same as Black Mist but combined with a warming filter.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Mist

The Mist controls add a mild glow to image highlights.

Blend

Determines the blend mode to be used to create the glow effect.

Add

The glow is added to your image.

Screen

The glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Color

Sets the color of the glow.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Mix

Description

Mixes two images together.

Node Group

Composite.

Controls

Amount

Sets the mix level between the two input images.

Direction

Forward

Mixes from input 1 to input 2.

Reverse

Mixes from input 2 to input 1.

Morph

Description

Understanding the concepts of warping and morphing will allow you to get the most out of the Silhouette software. Silhouette's morph node uses a “shape based” approach. Our company's founders include the inventors of this approach for which a Scientific and Technical Achievement Award was given by the Academy of Motion Picture Arts and Sciences.

Warping is a geometric or spatial distortion of an image. A morph is two or more synchronized warps composited together using location specific dissolve criteria specified by the artist.

As the term “shape based” implies, the artist creates shapes using the same tools as the Silhouette Roto node. In general, two shapes are paired together, one being the “source” and the other being the “target.” The exception to this can be an unpaired shape to be used as a “barrier.”

Silhouette warps source shapes to match target shapes (and in a morph, the target shapes simultaneously warp towards source shapes). As shapes warp, the image underneath the shapes (and surrounding areas) warp along as well as if the image were being stretched like a sheet of rubber.

Silhouette's warping technology provides a rich set of controls over the specific effect of the warp. These include the ability to precisely control correspondence between source and target shapes allowing the artist to specify not only that one shape should warp to another, but what part of the source shape to warp to what part of the target shape.

The Silhouette morph node also allows for the precise control over how shapes might fold over other shapes. Folding is a powerful feature which can best be understood by imagining pulling a blanket rather than a sheet of rubber. Snatching a piece of the blanket and pulling it can do one of three things. It can move the area of the blanket ahead of its motion out of the way. It can fold on top of the area in its way. Or, it can fold behind the area in its way.

All of these controls are necessary to create seamless, invisible effects.

Warps

Image warping can take place on a still as well as moving images. Warping can be used to enhance or exaggerate features, adjust sizing of image elements, create talking animals, for example, or other types of image deformation.

Before After

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Go to the **Shape Based Warping** tutorial to see how it works.

Morphs

Image morphing can take place on stills as well as moving image. Morphing has been traditionally used to transform one object or person into another and more recently to seamlessly transform a live action element into a CG (computer generated) object and vice versa.

Start Middle End

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Since shapes are required for warping and morphing, it has its own shape tools similar to those in the Roto node. See the **Roto Node** for more information.

Go to the **Morphing** tutorial to see how it works.

Node Group

Silhouette, Warp.

Node Parameters

When the Morph node is being edited in the Trees window, parameters specific to the Morph can be adjusted in the Node parameters.

Distortion

Controls the amount of deformation for joined shapes.

Transparency

Controls how the A-roll and B-roll images are mixed together.

Precision

Sets the computing precision of the Morph node. There are Draft, Normal and Better choices.

Draft

Draft mode provides a fair representation of your work but has clearly visible defects. It is fast, interactive and very responsive, but is not intended for finished work.

Normal

Assuming you are using a reasonably modern machine, Normal can be used in most interactive situations and is sufficient for finished work.

Better

Better is slower than Normal, though still interactive on modern processors. It can be used for final renders although you should pre-check the final render before submitting it to a render farm.

Note: Image areas immediately below shapes will be the same in all modes. Image areas which are pulled and pushed by nearby shapes will differ between the modes.

Use Input Alpha

Ignores the Transparency value and just warps the input alpha.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. Enables Motion Blur for the Morph node.

Go to the **Motion Blur** tutorial to see how it works.

Parameters set on the Morph node provide the (potentially keyframed) default values for all shapes in the node. To allow shapes to have values different from those of the node, use the Morph Shape parameters.

See the **Inheritable Parameters** section for more information.

Shape Parameters

All of the roto tools contained in the Roto node are available in the Morph node and contain parameters specific to warping and morphing. This includes B-Spline, Bézier or X-Spline shapes as well as point and planar tracking.

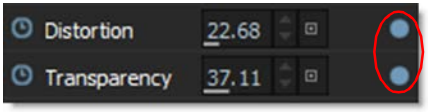
Note: When two shapes are joined, the controls indicated below are taken from the source shape only. Settings from Target shapes are not used.

Outline Color

Sets the color of selected shape's outlines. Shapes created while viewing the A-roll will automatically have a different outline color than those created while viewing the B-roll.

Inheritable Parameters

By default, shapes and layers inherit their Distortion and Transparency from the Morph node settings. To "override" the value at the layer or shape, click the Override icon (dot) to the right of the numeric field and the parameter will override the parent.



Distortion

Controls the amount of deformation for joined shapes.

Transparency

Controls how the A-roll and B-roll images are mixed together.

Barrier Strength

Being shape to shape based, the Silhouette Morph node will always "hit its mark". That is, pixels directly underneath a shape will arrive exactly underneath the shape to which it (the source shape) is joined. This also means that the influence of a warp stops dead at barriers (unjoined shapes).

The Barrier Strength control, available only for unjoined shapes, lets barriers pass through a portion of a warp's influence. At a value of zero, the influence of the barrier shape is almost completely eliminated. At a value of 100 percent, the barrier is at 100 percent strength, and the influence of a warp stops dead. All unjoined shapes default to 100 percent.

Barrier Strength = 0 Barrier Strength = 100

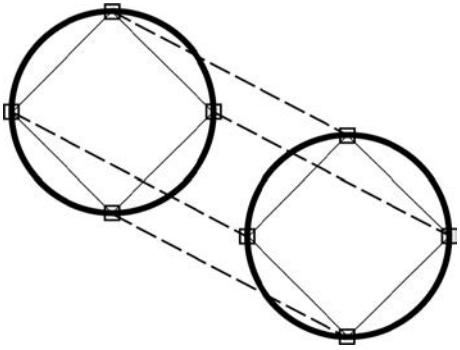
Note: Be careful when using barriers in morphs. Since a barrier is unjoined, it can exist only in one of the warps, not on both. This means there is the potential to see unwanted artifacts since the two sides of the morph are no longer warping in concert.

See the **Barrier Shapes** section for more information.

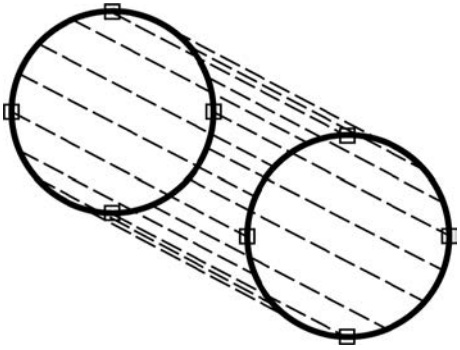
Edge Density

When rendering warps and morphs, Silhouette utilizes an edge density parameter which subdivides the shape between correspondence points. The higher the Edge Density, the closer the shape matches the curve that you originally created. Under normal circumstances, the default value of 100 should be fine.

Shape Precision value = 10



Shape Precision value = 100



If you adjust the Edge Density, don't automatically set it to the highest setting as this is unnecessary and could lead to longer rendering time. Increasing edge density might be needed for shapes whose source or target are physically large relative to image size and have few correspondence points.

For example, if a joined shape stretched from the left to right edges of your image and had a single correspondence point with an edge density of 100, the perimeter of the whole shape would be represented by 100 far apart vertices. You could add a second correspondence point to halve the distance between vertices or you could increase the edge density to accomplish the same result. One method can be preferable to the other, for instance when there is an image feature, it would be logical to join from source to target with an additional correspondence point. If there isn't an image feature, simply increasing edge density means there is potentially less to keyframe.

Shapes whose source and target are physically very small relative to image size can actually benefit from reducing their edge density.

Note: Edge Density determines how closely the perimeter of the rendered shape matches the original B-spline, X-Spline or Bézier shape.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. This parameter turns Motion Blur on or off on a shape by shape basis. The default is off.

Go to the **Motion Blur** tutorial to see how it works.

Generate Alpha

Determines whether or not a shape contributes to the alpha channel. This is on by default.

A/B Shapes

Morph Shapes create themselves in the proper “roll” when viewing A or B. If viewing any other View mode, creating a shape will default to A. The Object List shows the A/B state and clicking the A or B will toggle the shape to the other roll. Viewing A or B will only show A or B shapes, as appropriate. Creating a shape on the B-roll will automatically set the shape color to blue. Also, Select All in A or B will only select A or B shapes, respectively.

Correspondence Tool (C)

Understanding Correspondence Points

Correspondence points are a critical part of achieving superior results in the Morph node. Imagine you have a bendable shower rod. The shape that you bend the shower rod into represents the shapes you use to outline features in your images. Now attach the shower curtain using rings that can slide anywhere along the shower rod. These rings are like correspondence points.

Your image is printed on the shower curtain. The shower rod defines how the border of the image feature gets deformed in combination with how you line up the shower curtain using the sliding rings along the shower rod.

The combination of shape and correspondence point (shower rod and shower curtain rings) makes a warper that is incredibly more precise than a warper without the combination of these features.

Correspondence Points Workflow

Shape correspondences determine how to transform the areas of the image defined by your source and target shapes. This is accomplished by selecting and joining shapes in a particular order.

Joining shapes specifies the direction of a warp. That is, which shape of a pair of joined shapes is considered to be the source and which is the target. When using a morph to transform one person's face into another, it is necessary that you join the shapes from one image to another. For instance, the shapes for the eyes in the source image are joined to the shapes for the eyes in the target image, mouth shapes to mouth shapes, nose shapes to nose shapes--you get the idea. Without the joining process, Silhouette cannot know that shapes relate to each other.

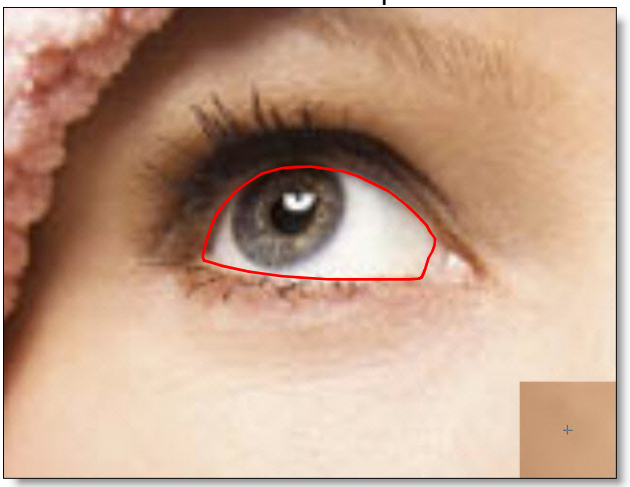
Every joined shape has correspondence points which are only visible when using the Correspondence tool. Since barrier shapes are not joined, they do not show any correspondence points.

When two shapes are joined, correspondence points define how the perimeter of the source shape matches to the perimeter of the target shape.

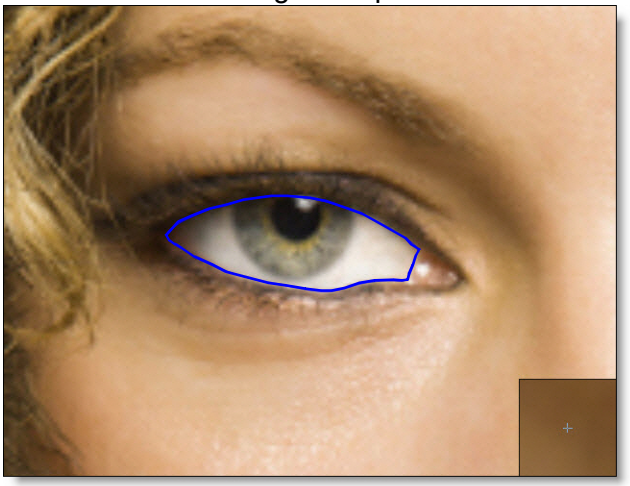
Using Correspondence Points

To illustrate the use of correspondence points, source and target shapes are created on two different images. The source shape is outlined in red and the target shape is outlined in blue.

Source Shape



Target Shape



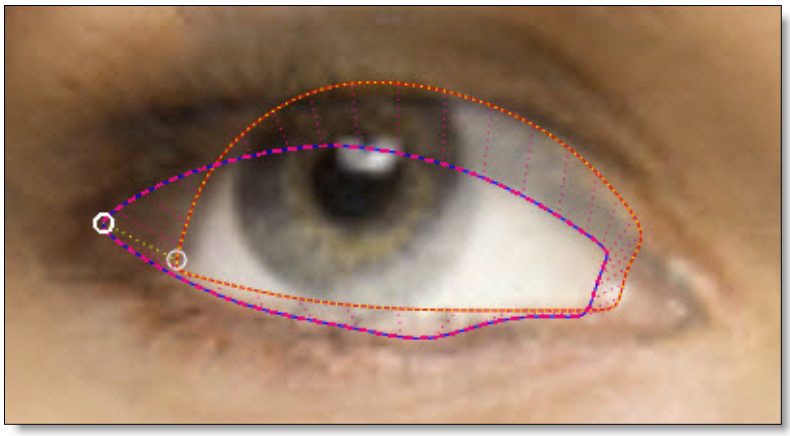
Joining and Unjoining Shapes

Whether you are warping or morphing, you must join together two shapes to cause movement from the source to the target.

Joining Shapes

When you join shapes, a shape correspondence is established in the image areas defined by these shapes. To join shapes, select the Correspondence tool, click the source shape and drag a line to the target shape, and release the mouse button to join the shapes. Circles appear on each shape which indicate the actual correspondence points. The dotted lines which flow around the shapes are lines of correspondence which show how the entire perimeter of the source relates to the entire perimeter of the target.

View > A/B



- **Two A-roll or B-roll shapes can be joined to create a warp.**
- **Join one A-roll shape to one B-roll shape to create a morph.**

Note: Switching to A/B View mode allows you to see both the A-roll and B-roll shapes simultaneously. You can then join shapes from the A-roll to the B-roll and vice-versa.

When joined shapes are selected, a modified bounding box appears around both shapes. The source shape has long dashes in the bounding box, while the target shape's bounding box has short dashes.

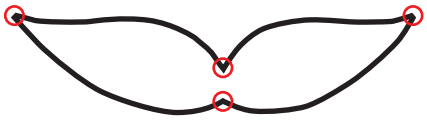
Unjoining Shapes

You can unjoin shapes at any time which allows them to be then joined to other shapes. To unjoin shapes, select the Correspondence tool, select the source or target shape, right-click on the shape and choose Unjoin from the pop-up menu.

Once unjoined, the shape's bounding boxes revert to a solid line indicating that they are unjoined.

Correspondence Point Positioning

When shapes are joined, Silhouette adds a single correspondence point on the shapes. It is best to add and position these points so that logically similar features are connected together. Correspondence points serve as guides that define the location of identifiable areas on a shape.

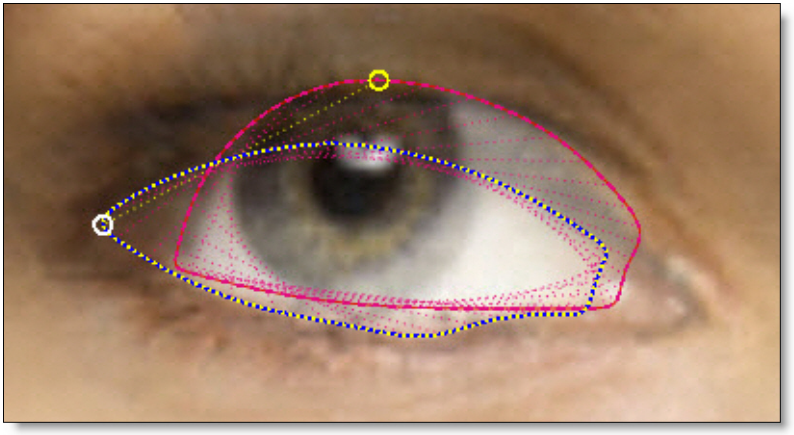


Note: Never assume that correspondence points automatically line up to the control point of a shape. They often have to be lined up to the desired image features.

Poor Correspondence Point Placement

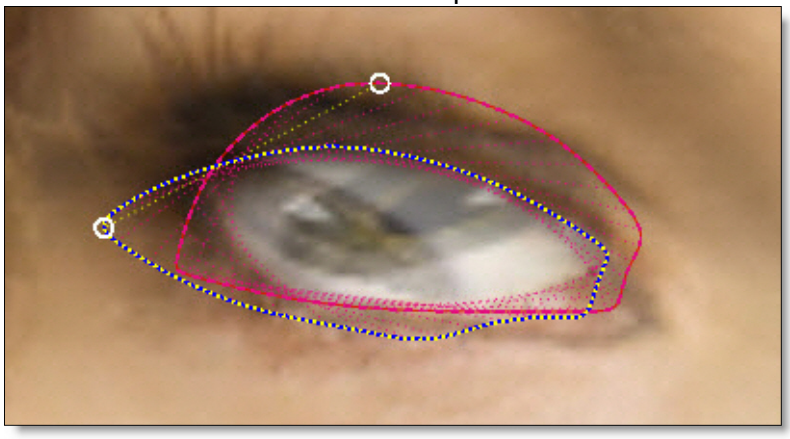
Poorly placed correspondence points results in warping artifacts. You can see the correspondence lines wrap around the outlines of each eye. The correspondence point pair is not specifying a correspondence relationship that is going to produce a good result.

View > A/B



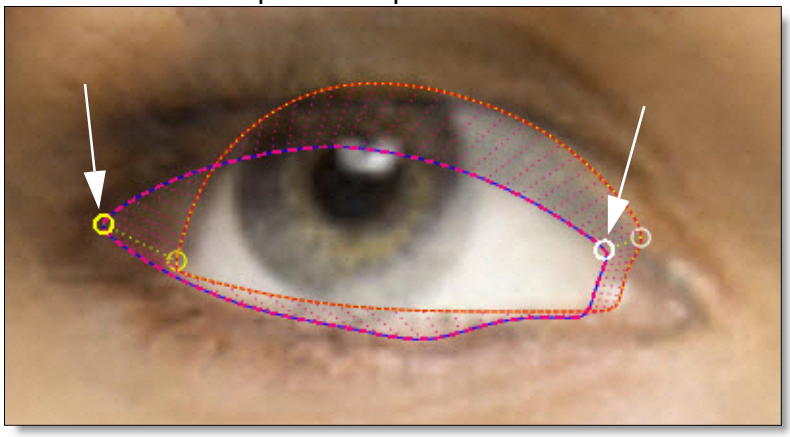
Performing a morph preview with these poorly aligned correspondence points produces a poorly aligned result.

View > Output



As a general rule, for which there are many exceptions, you want to align like features. Multiple correspondence points may be specified as shown below. This precisely pins down the relationship between the shapes exactly where you need finer control.

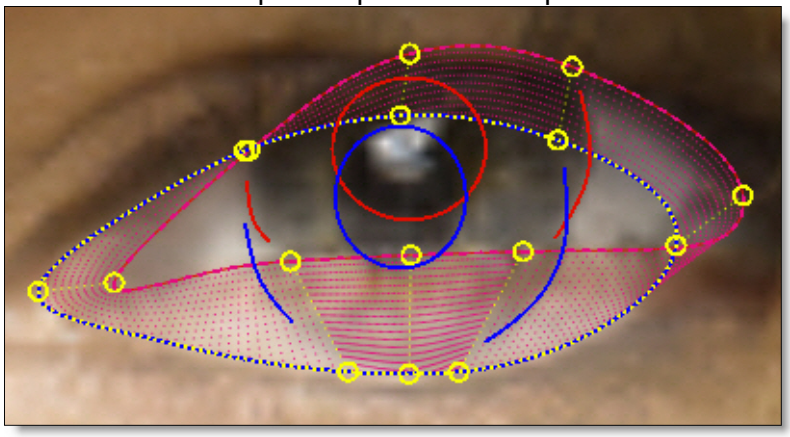
Multiple Correspondence Points



Getting Good Results

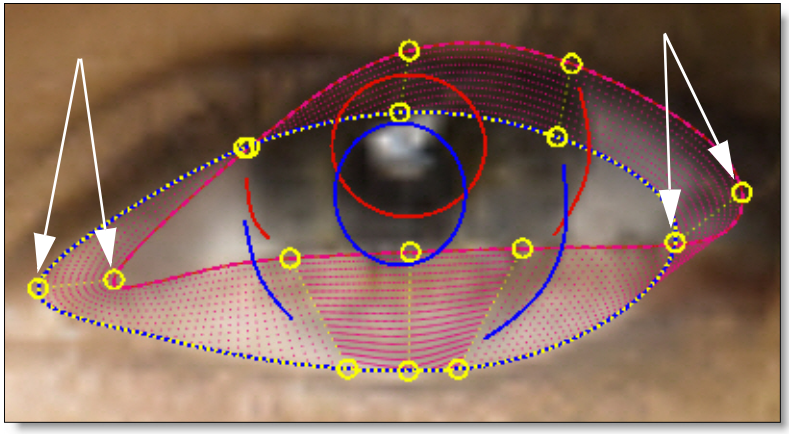
Let's break down a complex use of correspondence points that gives the best possible results. Sophisticated correspondence point placement is especially necessary when there are multiple shapes in a small space, for instance where the eye outline is in close proximity to outlines for the iris and pupil.

Multiple Shapes in Small Space



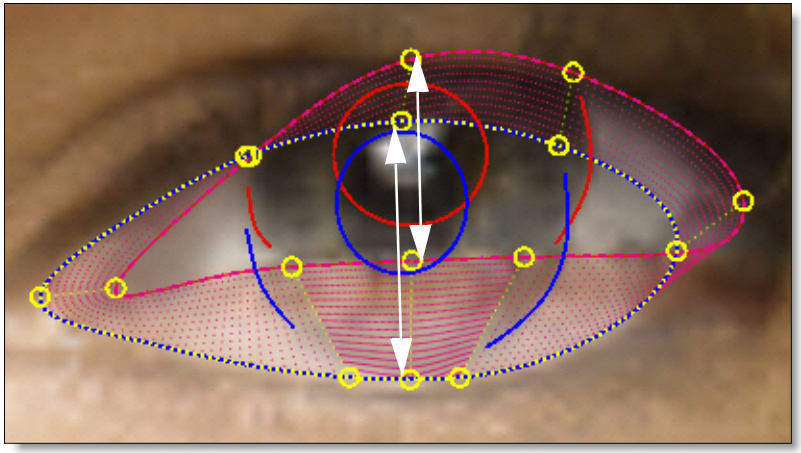
You will note that the eye outline has nine correspondence points!

The choice of these two sets of correspondence points is straight forward. They join the left-most eye points together and the right-most eye points together.

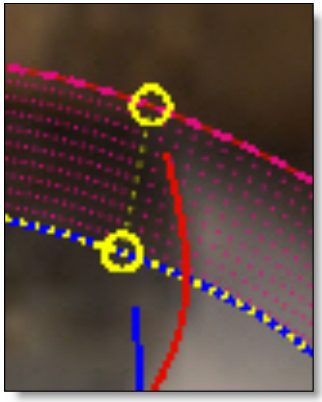


The next example shows how the correspondence points are used to maintain the relationship between source and target features. In this case, correspondence points were placed in such a way as to bisect both pupils.

Even though these correspondence points are not left-most or right-most or even the same distance around each eye surround, they represent logically connected features between the source and target.



The last example shows how the relationship between the outline of each iris is maintained relative to the eye surround. These correspondence points are extremely important. The outline of each iris ends before it touches the eye surround. This is because the position of the iris outline is going to slide relatively against the eye surround. By not overlapping the iris outline and the eye surround, you are giving the image a little room to stretch without folding.



You will be able to visualize where this type of sliding of two shapes against each other may present a problem using the wireframe preview.

Frame 1 Frame 10

The arrows show where on the eye surround shape the iris shape connects. You can see how from frame 1 to frame 10, the place where iris meets the eye surround slides relative to the eye surround (compare to the position of the iris, for example).

Swapping Source and Target Shapes

When shapes are joined in the wrong order, they can be swapped using the Swap Joined option. To swap source and target shapes, select the Correspondence tool, select the source or target shape, right-click on the shape and choose Swap Joined from the pop-up menu.

Reverse Shape Orientation

Reverses the order of all control points on all keyframes. Similar to the Reverse option in the Reshape tool pop-up menu, Reverse Shape Orientation is useful when you are trying to join two shapes where the control points go clockwise in one and counter-clockwise in the other. In this case, the correspondence points would iterate in different directions and the lines would cross each other. Reversing the points of one of the shapes would make them go in the same direction and the correspondence would be correct.

Inserting Correspondence Points

To increase the precision of a complex shape, increase the number of correspondence points. To add a correspondence point, select the Correspondence tool and **Alt**-click on a selected shape.

The edge density at the insertion point is effectively doubled by the addition of a new correspondence point. By dragging the new correspondence point, you move it to the desired location.

Deleting Correspondence Points

Correspondence points can be deleted at any time, but remember that you need a minimum of four correspondence points. To delete a correspondence point, select the Correspondence tool, select the correspondence point and 1) press the **Delete** key or 2) right-click on the correspondence point and select Delete from the pop-up menu.

Note: Correspondence points can only be removed one at a time.

Selecting Correspondence Points

Before a correspondence point can be adjusted, you must first activate the Correspondence tool in the Toolbar and select a joined shape. Correspondence points are colored yellow. Click on a correspondence point to select it.

Adjusting Correspondence Points

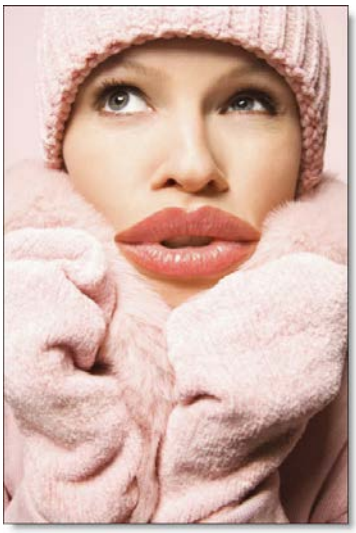
Once selected, correspondence points are moved by simply dragging them to the desired location.

Barrier Shapes

Besides creating shapes to define areas that warp and morph, you can also use shapes as ways of restricting movement beyond certain parts of the image. These shapes are called barriers and tack down an area and keep it stationary relative to the warping caused by other shapes. Any unjoined shape will serve as a barrier.

In the example above, the barrier shape will prevent any movement outside of the shape. Compare the results below.

No Barrier



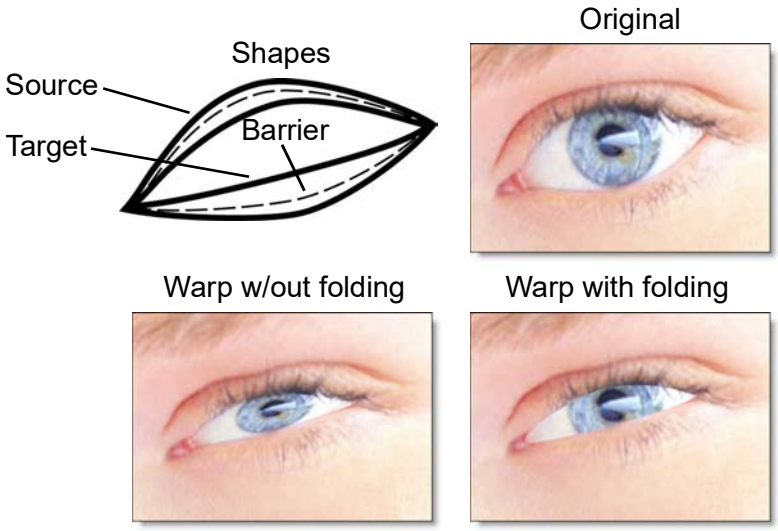
With Barrier

The barrier shape has successfully pinned down the image outside of its boundaries. Notice in the image on the right, the model's lips have clearly extended over her coat and the coat did not move.

Folding

Sometimes the warping of a pair of joined shapes can overtake other shapes (joined or barrier). The overtaking shapes will necessarily fold over or under the shapes they overtake. For instance, you can warp eye lids over a pupil without distorting the pupil, as seen below.

The images below show how folding can affect an image.



The choice of folding over or under is determined by the order of shapes in the Object List. In the above example, the source shape for the eye lid appears above the barrier shape for the pupil in the Object List. Therefore, the eye lid folds over the pupil.

Go to the **Folding** tutorial to see how it works.

Node Outputs

Output

Outputs the result of the morph or warp transformation.

Source Warp

Outputs the source warp.

Target Warp

Outputs the target warp.

Objects

Outputs tracked layers for use in node's with Transform inputs.

Mosaic

Description

Divides the picture up into square tiles.

Node Group

Filter.

Controls

Size

Controls the size of the square tiles. A small size value will create many square tiles.

ND Gradient

Description

The ND or Neutral Density Gradient darkens only a portion of the image using a graduated transition between the darkened portion and the original image. It selectively adjusts brightness without affecting color balance. The most likely use for the ND Gradient would be to balance the difference between the sky and the ground.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

F-Stop

Presets

Select one of the ND Gradient presets from the pop-up list.

Exposure

Darkens the image using F-Stops as the unit of measure.

Preserve Highlights

Preserves the white areas of the image.

Grad

Grad is the transition area between the darkened portion and the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Net

Description

Net

Softens and minimizes facial imperfections while retaining overall image clarity. This is an ideal portrait filter.

Warm Net

Combines all of the benefits of Net with a warming filter.

Node Group

Diffusion.

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Blur

Sets the softness of the image.

Opacity

Sets the amount of diffusion mixed into the original image. The higher the setting, the more the image is blurred.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Night Vision

Description

The Night Vision filter creates the effect of a Night Vision lens--that green, glowy, grainy look.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Black and White

Selects the type of black and white filter to be applied to your color image. Go to the **Black and White** section of Common Node Controls to see how the Black and White controls work.

Tint

Color

Sets the color that the image will be tinted with. The color is preset to a night vision green, but feel free change it by using the color picker.

Opacity

Sets the opacity of the tint color.

Glow

Blend

Determines the blend mode to be used to create the glow effect.

Add

The glow is added to your image.

Screen

The glow is combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the glow.

Blur

Sets the softness of the glow.

Additional Controls

Grain

Grain Size

Controls the size of the grain.

Note: You may not see an accurate representation of the grain in the viewer unless your timeline/composition is set to high quality and the viewer is set to a 1:1 pixel ratio.

Grain Amount

Controls the intensity of the grain.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte is used to create the glow effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Non-Additive Mix

Description

Known as a NAM, the non-additive mix combines two pictures by controlling their luminance level relative to each other as well as a set mix percentage. This popular video switcher effect has been included to satisfy those die-hard online video editors.

Note: You can change Non-Additive Mix's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite.

Controls

Mix

Sets the mix level of the foreground element.

Black Clip

Blacks are made blacker by increasing this value. As the value increases, more values are clipped to black.

Note: Often times the black portion of an image is not entirely black. This becomes an issue if something like fire is shot against a black background. If the black is not entirely black, then these impure black areas will be added to the background image as part of the Non-Additive Mix causing the final result to have "milky" blacks. The Black Clip parameter has been added to easily adjust the foreground image's black level.

Null

Description

The Null node does nothing other than pass the input image through to the next node.

Node Group

Image.

Optical Dissolve

Description

Optical Dissolve uses a power function to simulate an optical film dissolve. You see the bright areas of the B side of the dissolve sooner than the darker areas.

Note: You can change Optical Dissolve's input order with the User Interface > Trees > Input Order preference. By default, FG, BG is selected, but you can change it to BG, FG if you'd like.

Node Group

Composite.

Controls

Opacity

Sets the mix level.

Output / Output Multi-Part

Description

Output

The Output node determines the file format, file name, disk storage location, and channels to be rendered. Every session has at least one Output node.

Output Multi-Part

The Output Multi-Part node is the same as the Output node, but has multiple inputs and renders EXR multi-part files. If there is more than one input, each output part name is appended with the upstream node's name.

The Output Multi-Part node can have multiple additional inputs. **Right-click** on the Output Multi-Part node and select Add Input. **Right-click** on an input port to remove it. You can add as many inputs as you want, but the inputs will get smaller.

Node Group

Image, Silhouette.

Format

The format setting allows you to select from various file formats. We currently can save to the following file formats: Cineon, DPX, IFF, JPG, OpenEXR, PNG, SGI/RGB, TIFF and TARGA.

Note: Format is missing from the Output Multi-Part node since it only renders EXR files.

Options

Adjusts options for the selected file format, the majority of which are compression related.

Automatic Data Window

The Automatic Data Window rendering option looks at the alpha channel and determines the data window from that. Then, it writes only the pixels in the data window to an EXR file. For SXR files, it writes the combined data window between the two views. This greatly speeds up loading these files into a compositing system.

Note: This option is not compatible with the SFX_EXR_USE_DATA_WINDOW environment variable.

Go to the **Automatic Data Window** tutorial to see how it works.

File

Determines the directory and filename of the rendered files.

You can either type in the path and name in the File field or click the Browse icon on the right.

As far as filenaming is concerned, you only have to type in a name as periods, hash marks for padding and file extensions are not required unless you want to manually enter them. Silhouette uses the **Render Preferences** to determine the default suffixes appended to the filename as well as file padding.

If you choose to manually enter the file padding and extension, the filename should have 3 things:

- **The image name (duh).**
- **# for the frame placeholder.**
- **An extension: .exr = exr files, .cin = Cineon files, .tif = Tiff files, etc.**

Therefore, if you enter a name something like test.####.exr,. Silhouette will render out test.0001.exr, test.0002.exr, etc.

Filename Customization

You can add environment variables to the filename using the sfx $(VARNAME) format. Two internal variables are defined for rendering, VIEW and ALPHA. $(ALPHA) expands to _alpha, but only when it is needed for naming external alpha. $(VIEW) expands to L or R, when appropriate.

The default filename expansion, when $(VIEW) and $(ALPHA) are not typed manually (i.e. by default), is this:

$(FILENAME_TYPED_BY_USER)_$(VIEW)$(ALPHA)

If not doing multiple view stereo rendering, it is:

$(FILENAME_TYPED_BY_USER)$(ALPHA)

Remember that $(ALPHA) expands to nothing when not needed.

Note: Make sure you type in the full path and base filename into the Output node File field and then Silhouette will do all the substitutions based on the environment variables.

Metadata

The Metadata field takes whatever you type and adds it to the comments metadata field in EXR files. The format for this field should be a comma-separated list of name=value pairs. For instance, shot=sc125, version=5.

Metadata Notes

- **Metadata contained in EXR files is passed through to the rendered file.**
- **The metadata for the output node is built from the first input of any upstream nodes.**
- **All EXR string, int, and float attributes are passed through.**
- **The Output > Metadata property now gets broken down into distinct metadata attributes instead of going into the EXR comment field.**
- **Silhouette adds the following attributes for each output part: the output node name, the session name, the project name, the project bundle path and the current user.**

Channels

RGB

Renders the RGB color channels.

Alpha

Renders the alpha channel.

Depth

Renders the depth channel.

Views

The Views pop-up menu allows you to control whether you render the Left, Right or both the Left and Right stereo views simultaneously when working in stereo sessions.

Both

Renders both the Left and Right stereo views with a _L and _R appended to the filenames.

Left

Renders only the Left stereo view with a _L appended to the filename.

Right

Renders only the Right stereo view with a _R appended to the filename.

Go to the **Render Preferences** to see how to modify the default suffixes appended to the filename.

Premultiply

Premultiplies the RGB channels by the alpha channel. This option is only valid if Channels > RGB and Alpha are selected.

Crop/Pad

When enabled, the output is cropped/padded to the session size. This becomes relevant when using a ROI (Region of Interest).

Note: Crop/Pad is missing from the Output Multi-Part node since EXR files save the ROI (Region of Interest) as an output EXR data window.

Sample

The Sample field displays all of the files that will be produced by the node.

Overexpose

Description

Overexpose simulates the overexposure that occurs when a film camera is stopped.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Controls the amount of overexposure.

Intensity

Sets the intensity of the overexposure.

Blur

Sets the softness of the overexposure.

Paint

Description

Paint is a high dynamic range, non-destructive, 2D raster based paint system designed from the ground up to handle the demands of feature film and television production. Whether it's image restoration, dustbusting, wire and rig removal or just plain paint, Silhouette provides simple and sensible tools to get the job done.

Black & White, Blemish, Blur, Clone, Color, Color Correct, Drag, Eraser, Grain, Mosaic, Repair and Scatter brushes are available for any task. As you paint, every action you make is recorded as events. These events can be selectively played back on the same frame, different frames, multiple frames and with or without tracking data applied. This makes for a very powerful and versatile Auto Paint feature that provides the flexibility of vector paint with the speed of a raster paint system.

Warning: To store painted frames to disk, you must change frames in the Timebar. The current frame's paint is also saved with a save operation or an autosave.

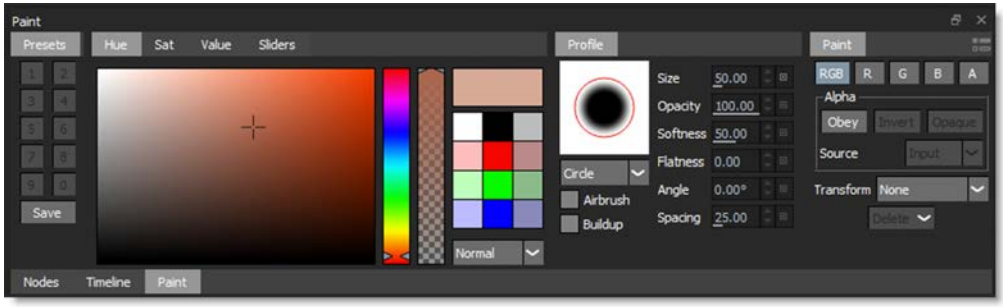
Go to the **Using Paint** tutorial to see how it works.

Node Group

Image, Silhouette.

Paint Tools

When the Paint node is selected, various non-animateable controls appear in a Paint window located at the bottom portion of the screen. Silhouette provides a wide variety of paint tools that are organized into Presets, Brush, Profile and Paint tabs.



Presets

A Presets tab contains 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 and Save buttons on the left side of the Paint window and allows you to save all of the brush parameters as a preset.

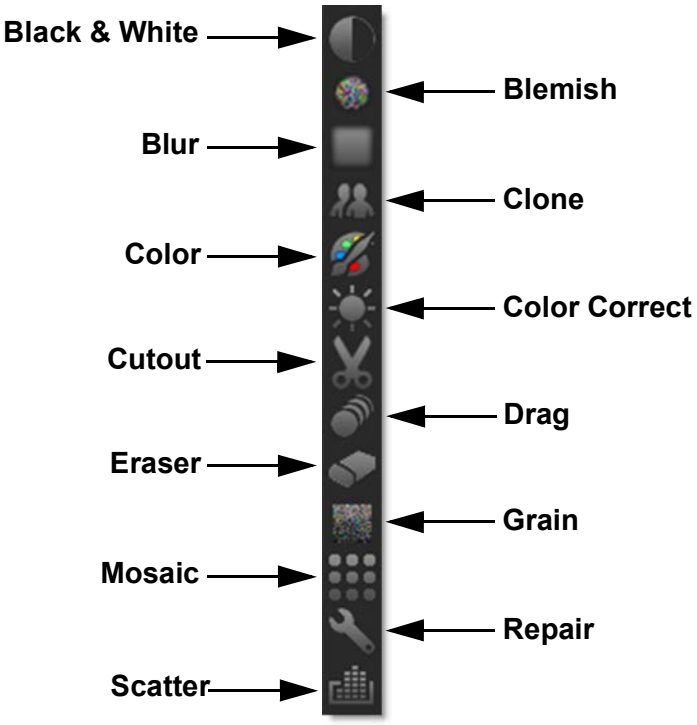
To save a preset, select a brush and adjust its controls, click Save and then choose one of the numbered presets. **Shift**-Save will save to the currently selected preset without having to hit the number too. Once saved, you can use the **Alt**-**0** through **Alt**-**9** keyboard shortcuts to quickly select one of the presets.

Note: Saved presets are highlighted blue. Clicking a blue preset after selecting Save will overwrite it.

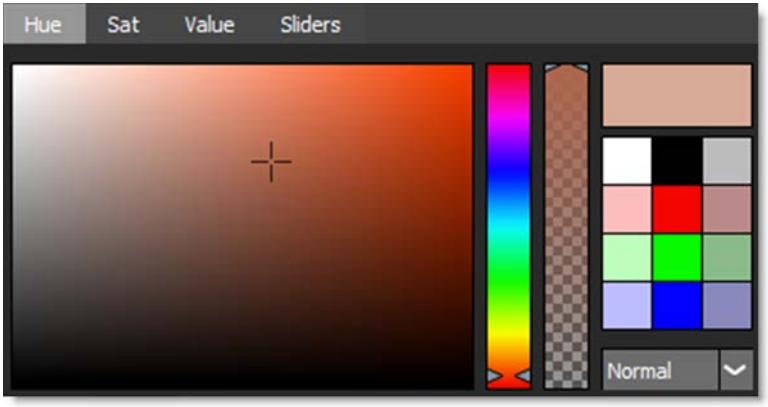
Clear a paint preset by pressing Save, then **Alt**-clicking on the preset.

Brushes

A number of different brushes are selectable from the Paint toolbar to the left of the Viewer.



Once a brush is selected, its controls appear on the left side of the Paint window.



To paint with a mouse, click and drag on the screen. To paint with a pen and tablet, just press and drag.

Drawing Straight Lines

If you press **Alt**, click and then click in a different location, a straight line is drawn. This will work with any brush type. If you keep **Alt** depressed while clicking, you will create interconnected straight lines.

B/W (B)

The Black & White brush converts color images to black and white simulating the look of black and white photographic filters.

Mode

Selects the method by which the color image is converted to a monochrome image.

Luminance
Creates a monochrome image using the brightness of the image.

Average
Creates a monochrome image using the average of the red, green and blue channels.

Red
Simulates a red filter in black and white photography.

Green
Simulates a green filter in black and white photography.

Blue
Simulates a blue filter in black and white photography.

Yellow
Simulates a yellow filter in black and white photography.

Orange
Simulates a orange filter in black and white photography.

Blemish (Shift-B)

The Blemish brush is useful for removing facial blemishes on film originated footage. It combines the Blur and Grain brushes.

Blur (Ctrl-B)

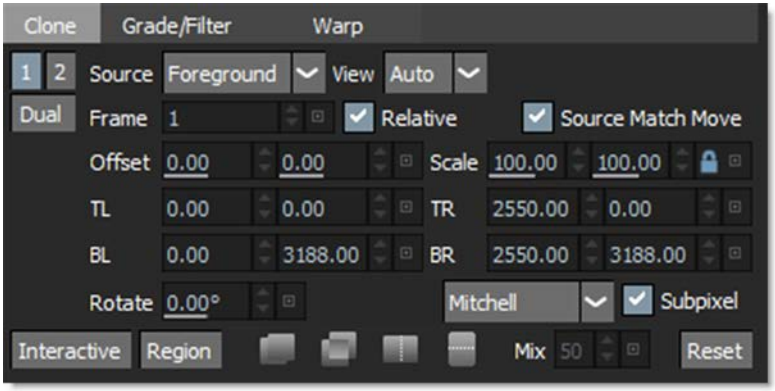
Blurs the image.

Radius

Sets the amount of blur to be applied.

Clone (C)

Paints the image using another part of the image or other image with the ability to grade (color correct), blur, sharpen or warp the clone source.



Go to the **Clone Brush** tutorial to see how it works.

The controls for the Clone brush are split into three tabs: Clone, Grade/Filter and Warp. The Clone tab deals with the selection, timing and transformation of the Clone source. The Grade/Filter tab contains color correction (grade), blur and sharpening parameters. Last, the Warp tab has warp related controls.

Clone

Setting the Clone offset on the same image:

1 **Press and hold down the Shift key and then click, drag and release the mouse and then the Shift key. The first click sets the Clone source and where you drag and release is the Clone target.**

or

2 **Press and hold down the Shift key. Click once to set the Clone source and click once again in a different location to set the Clone target.**

To reset the Clone offset, press Shift and without moving the cursor, click your mouse or tap your pen on the screen once.

Setting the Clone offset on different images:

Oftentimes, you need to align the same feature in two different images of a clip when painting with the Clone brush.

1 **In the Clone controls, select Output, Foreground or Input 1-5 in the Source pop-up menu and then set the Frame parameter to choose which source frame to paint from.**

2 **Press the ‘ key (located to the left of 1 key).**

The Clone source image automatically appears in the Viewer.

3 **Set the Onion-Skin mix to 100.**

4 **Click on the Clone source feature that you want to paint from.**

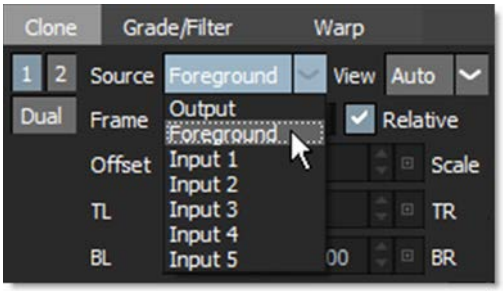
The Clone target image automatically appears in the Viewer.

5 **Click on the Clone target feature that you want to paint on.**

The Clone offset is set.

Source

Picks which image will be used as the Clone source.



Output

Clones from the previously painted areas.

Foreground

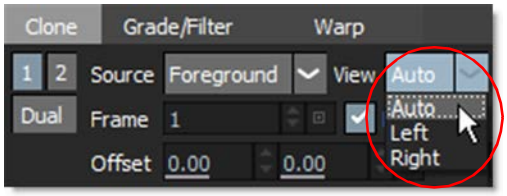
Clones from the foreground image.

Input 1-5

Clones from the clips assigned to the Paint node's Input 1-5 auxiliary inputs.

View

The View pop-up menu, which only appears when using stereo sources, determines which view the Clone source will come from.



Auto

The Clone source is determined by the stereo view mode that has been selected at the top of the Viewer.

For instance, if the Left View is selected above the Viewer, the Clone source comes from the Left View. If the Right View is selected, the Clone source comes from the Right View. If the Left/Right View is selected, the Clone source comes from both the Left and Right Views so you can simultaneously Clone on both views at the same time.

Left
The Clone source comes from the Left View.

Right
The Clone source comes from the Right View.

Frame
Choose which frame number of the Clone source to paint from. By default, the Frame field displays the actual frame number that you are cloning from. Alternatively, a frame offset can be displayed instead. This behavior is controlled with the Paint > Clone > Absolute Frame Numbers preference.

Relative
When the Relative box is checked, the Clone source Frame value remains relative to the current frame. So, if the Frame value is different than the current frame, the offset between the two is maintained.

When Relative is unchecked, the Clone source is painting from a single frame defined by the value entered in the Frame field.

Transform Controls
The Transform Controls allow you to position, scale, rotate, skew and corner-pin the Clone source.

Source Match Move
Source Match Move allows you to apply the selected tracked layer to the Clone source. This is useful for when you have a single frame, clean plate that needs to be tracked to match the motion of the clip you are painting on.

Note: To Match Move the Clone source during event playback, you will need to:
1) Hook a Tracker node or other node that contains trackers into the Paint node's Transform input.
2) Select a point tracker or tracked layer in the Paint tab's Transform pop-up menu.
3) Enable Clone > Source Match Move prior to painting.
For more information on playing back paint strokes, go to the **Auto Paint** tutorial.

Offset
Sets the horizontal and vertical position of the Clone source.

Scale
Sets the horizontal and vertical scale of the Clone source. Typing in negative values will flip or flop the Clone source.

Corner-Pin
- **TL**

Sets the horizontal and vertical position of the top left corner point.

- **TR**

Sets the horizontal and vertical position of the top right corner point.

- **BL**

Sets the horizontal and vertical position of the bottom left corner point.

- **BR**

Sets the horizontal and vertical position of the bottom right corner point.

Rotate
Sets the rotation of the Clone source.

Nudging the Clone Source
The Clone source can be nudged using the Arrow keys. One press of the Arrow key moves the Clone source 1 pixel. Using the **Shift** key in conjunction with the Arrow keys moves the Clone source 10 pixels. **Ctrl** plus the Arrow keys moves the Clone source one tenth of a pixel. These nudge values can be changed in the Preferences menu located in File > Preferences > Nudging on Windows and Linux or Silhouette > Preferences > Nudging on Mac. Holding an Arrow key down slides the Clone source.

Q (Translate), W (Rotate), E (Scale)
Pressing **Q**, **W** or **E** and then clicking and dragging will translate, rotate or scale the Clone source. Pressing **Q**, **W** or **E** a second time deactivates the mode. Also, the position of the cursor when **W** or **E** is pressed sets the anchor point for the rotation or scale operation.

Note: Onion Skin mode is automatically activated once the **Q**, **W** or **E** keys are pressed.

Corner-Pin

When Interactive mode is enabled, you can corner-pin the Clone source by dragging the handles on the corners of the image. Alternatively, you can select and move the corner points without being in Interactive mode by using **Ctrl(Win)/Cmd(Mac)-1**,**2**,**3** or **4** to select the top left, top right, bottom right and bottom left corner points. Then, use the mouse, pen/tablet or **Arrow** keys to move the points. Pressing **Ctrl(Win)/Cmd(Mac)-1**,**2**,**3** or **4** a second time deactivates the mode.

Clone Transform Nudging Keyboard Shortcuts

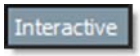
Shortcut	Action
Arrow keys	Moves the Clone source by 1 pixel
Shift-Arrow keys	Moves the Clone source by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves the Clone source by one tenth of a pixel
Hold down **Arrow** keys	Moves the Clone source continuously
Q, **W**, **E** then **Arrow** keys	Translates, Rotates or Scales by 1 pixel
Q, **W**, **E** then **Shift-Arrow** keys	Translates, Rotates or Scales by 10 pixels
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)-Arrow** keys	Translates, Rotates or Scales by 1/10 of a pixel
Ctrl(Win)/Cmd(Mac)-1 then Arrow Keys	Nudges the top left corner point
Ctrl(Win)/Cmd(Mac)-2 then Arrow Keys	Nudges the top right corner point
Ctrl(Win)/Cmd(Mac)-3 then Arrow Keys	Nudges the bottom right corner point
Ctrl(Win)/Cmd(Mac)-4 then Arrow Keys	Nudges the bottom left corner point

Clone Transform Keyboard Shortcuts

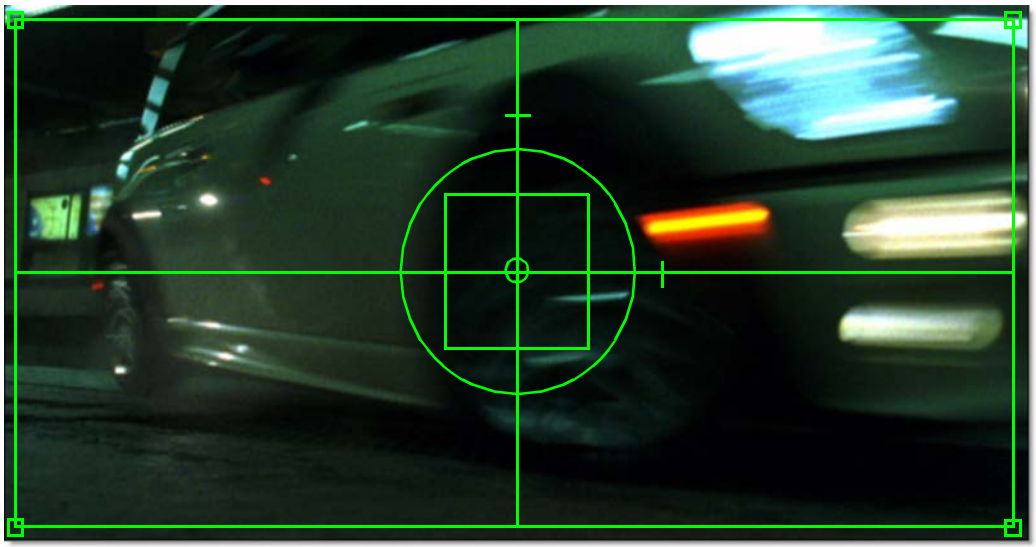
Shortcut	Action
Q	Activates / Deactivates translation of the Clone source
W	Activates / Deactivates rotation of the Clone source
E	Activates / Deactivates scaling of the Clone source
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments
Ctrl(Win)/Cmd(Mac)-W	Rotates without setting the anchor point
Ctrl(Win)/Cmd(Mac)-E	Scales without setting the anchor point
Ctrl(Win)/Cmd(Mac)-1-4	Selects the top left, top right, bottom right and bottom left corner points so they can be moved
. (Period key)	Sets the anchor point

Interactive

Activates the on-screen controls.



Turn off Interactive mode when you want to Paint. When Interactive is selected, you can position, scale, rotate, corner-pin and skew the Clone source using the on-screen controls.

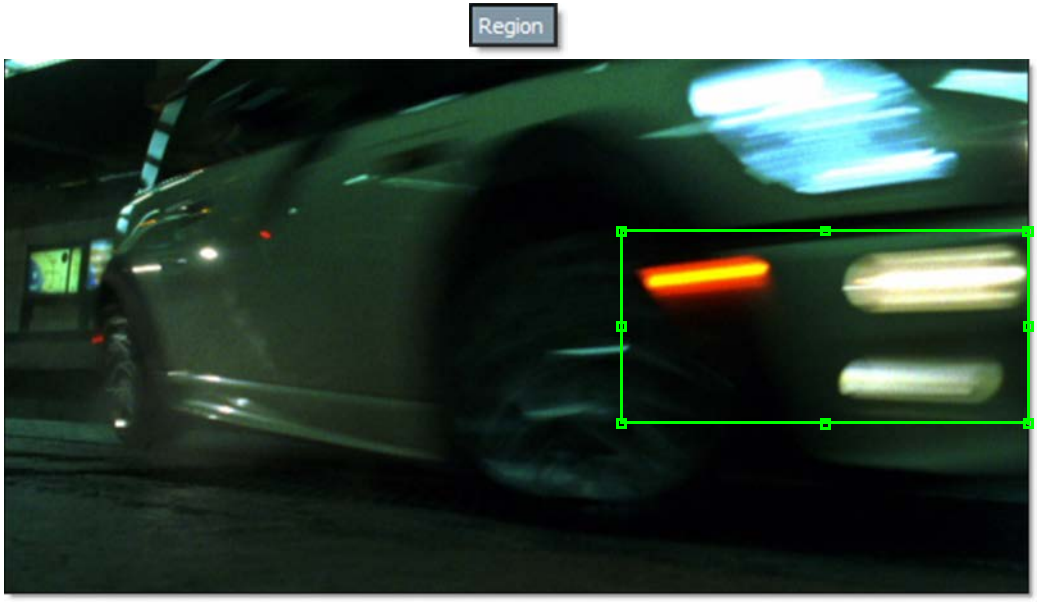


Clone Transform On-Screen Controls

Shortcut	Action
Drag within large center circle	Moves the Clone source
Shift-drag within large center circle	Constrain Clone source movement horizontally or vertically
Drag the center square horizontal and vertical halfway points	Scales the Clone source horizontally or vertically
Drag a center square corner	Proportionally scale the Clone source
Drag large center circle	Rotate the Clone source
Ctrl-drag large center circle	Rotates the Clone source with finer control
Drag handles on corners of image	Corner-pins the Clone source
Drag dash above large circle	Skews the Clone source horizontally
Drag dash to the right of large circle	Skews the Clone source vertically

Region

Changes the position and size of the on-screen control rectangle which allows the effect of the corner-pin to be controlled from a specific area. The center of the new region also becomes the anchor point for scale and rotation.



Using a Region

1. **Press Region.**
2. **Click and drag around an area of interest.**

   A region appears.
3. **Turn on Interactive and adjust the Clone transform.**

   Now, when you adjust the Clone transform, the region is used.

Region Shortcuts

Shortcut	Action
Click and drag	Creates a region
Alt-click and drag	Creates new region when one already exists
Click and drag inside a region	Moves the region
Drag the region handles	Resizes the region
Tap outside a region box without dragging	Resets the region to full screen

Clone Transform On-Screen Controls With Region Set

Shortcut	Action
Drag within region	Moves the Clone source
Shift-drag region	Constrains the Clone source movement horizontally or vertically
Drag edge handle	Scales the Clone source horizontally or vertically
Shift-drag corner or edge handle	Proportionally scale the Clone source
Ctrl(Win)/Cmd(Mac)-drag on corner handle	Rotate the Clone source / Continue holding **Ctrl** to adjust with finer control
Drag on a corner handle	Corner-pins the Clone source
Ctrl(Win)/Cmd(Mac)-drag on edge handle	Skews the Clone source

Filter

Chooses the filtering method when transforming the Clone source. Mitchell is the default.

Triangle

The Triangle filter is not the highest quality, but fine for scaled images.

Quadratic

Quadratic is like triangle, but more blur with fewer artifacts. It offers a good compromise between speed and quality.

Cubic

Cubic is the default filter in Photoshop. It produces better results with continuous tone images, but is slower than Quadratic. If the image contains fine details, the result may be blurrier than desired.

Catmull-Rom

This produces good results with continuous tone images which are scaled down, producing sharp results with fine detailed images.

Gaussian

Gaussian lacks in sharpness, but is good with ringing and aliasing.

Mitchell

A good balance between sharpness and ringing, Mitchell is a good choice when scaling up.

Sinc

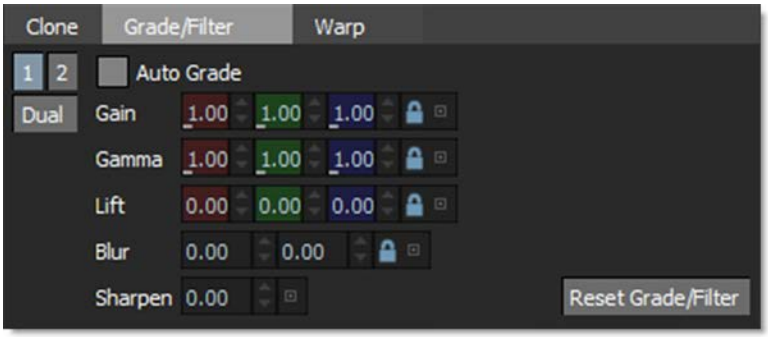
Keeps small details when scaling down with good aliasing.

Subpixel

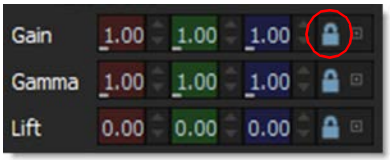
When activated, subpixel positioning is used when moving the Clone source.

Grade/Filter

The Clone source can be color corrected (graded), blurred or sharpened.

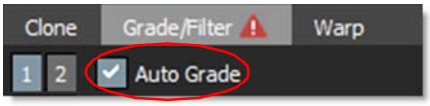


The parameters are ganged together by default. To deactivate Gang, press the Lock icon located to the right of each parameter group.



Auto Grade

Auto Grade automatically grades the clone source to match the location you are painting.



Note: The Gain/Gamma/Lift controls are disabled when using Auto Grade.

Gain

Red

Multiplies red values.

Green

Multiplies green values.

Blue

Multiplies blue values.

Gamma

Red

Adjusts red gamma values.

Green

Adjusts green gamma values.

Blue

Adjusts blue gamma values.

Lift

Red

Adds red values.

Green

Adds green values.

Blue

Adds blue values.

Blur

Blurs the Clone source.

Sharpen

Sharpens the Clone source.

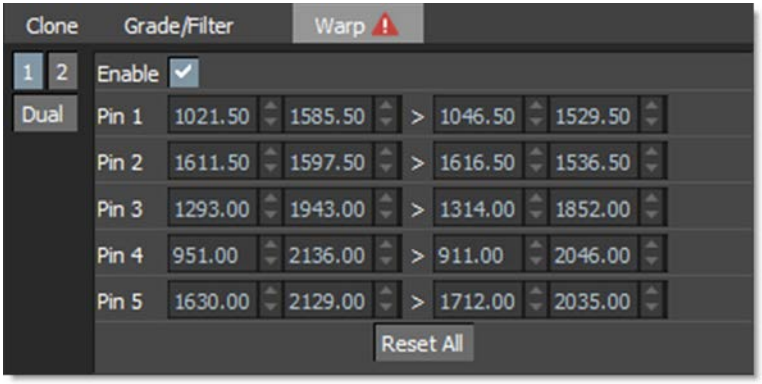
Reset Grade/Filter

Resets all Grade/Filter controls.

Note: Once a Grade/Filter parameter has been adjusted, an exclamation point appears to the right of the tab to indicate that a change was made.

Warp

Warp allows you to warp specific image areas using pins, while leaving other areas untouched. Adjustments can range from subtle nip and tucks to something more obvious like repositioning an arm or leg.



Enable

Enables/disables warping. This is useful to turn the warping effect on and off.

Pin 1 - 20

A total of 20 pins can be added to an image. To create a pin, click-drag on the image. Pins have a source (green circle) and target (red circle). The farther the target is dragged from the source, the more the image warps. Click-releasing on the image sets a tack which constrains the warp.

Pin and Tack Radius

Each pin and tack has a radius which determines its strength. Hover over a pin to display the radius. **Shift**-drag the radius to adjust it.

Transform

Selects point trackers and tracked layers from the input Tracker node and match moves the pins based on the input tracker data.

Note: Once a Warp parameter has been adjusted, an exclamation point appears to the right of the tab to indicate that a change was made.

Clone > Warp Keyboard Shortcuts

Shortcut	Action
Click-drag on image	Creates a pin
Click-release on image	Creates a tack
Click-drag pin (source or target)	Moves the pin (source or target)
Shift-drag pin (source or target)	Moves both pins (source and target)
Ctrl(Win)/Cmd(Mac)-drag pin radius	Adjusts pin radius with all radii displayed
Hover over pin, Shift-drag pin radius	Adjusts pin radius with only selected pin radius displayed
Alt-drag on a tack	Converts a tack to a pin
Right-click > Remove Pin	Deletes the pin
Right-click > Make Tack	Converts a pin to a tack

Clone Alignment Options

Four Clone alignment options will aid you in positioning the Clone source. They are: Onion Skin, Align, Vertical Split and Horizontal Split.

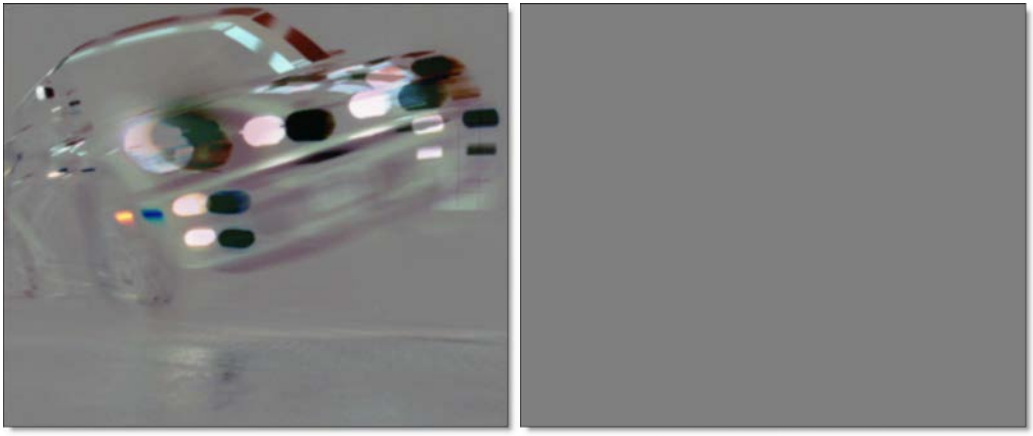
Onion Skin

Onion Skin does a mix, as defined by the Mix value, between the Clone source and target. A value of 100 displays the Clone source while a value of 0 displays the Clone target. It is useful when aligning elements and painting with the Clone brush. In addition to the icon, pressing the **Caps Lock** key toggles Onion Skin mode on and off.

Align

Align inverts the clone source and mixes it with the foreground, creating an embossed effect when similar images are not aligned. When perfectly aligned, the Viewer appears gray or black depending on the state of the Paint > Clone > Alignment Type preference.

Not Aligned **Aligned**



Vertical Split

Compares the Clone source and target using a Vertical Split. Move your cursor into the image area over the split line and when the cursor changes to a double-arrow, click and drag to move the split line. The split line may not be obvious, so white triangles on the edges of the Viewer will help you find it.

The split is handy when using the Transform, Grade/Filter and Warp controls to match the Clone source to the target.

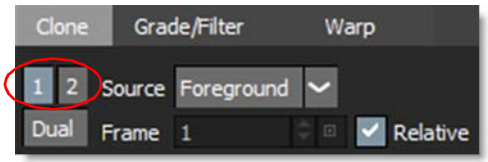
Horizontal Split

Compares the Clone source and target using a Horizontal Split. Move your cursor into the image area over the split line and when the cursor changes to a double-arrow, click and drag to move the split line. The split line may not be obvious, so white triangles on the edges of the Viewer will help you find it.

The split is handy when using the Transform, Grade/Filter and Warp controls to match the Clone source to the target.

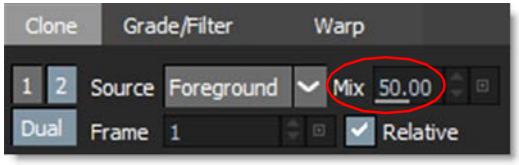
Dual Clone

Dual Cloning allows you to paint from two different frames simultaneously, using separate Transform, Grade/Filter and Warp settings. To Dual Clone, create two Clone presets using the 1 and 2 button presets on the left side of the Clone tab.



To save a preset, click on one of the numbered presets and adjust the Clone controls. This includes the Clone source, Frame Offset, Transform, Grade/Filter, and Warp settings. Once you have different settings for the two presets, press the Dual button to enable both presets simultaneously.

When you do so, a Mix control appears to the right of the Clone controls. Mix sets the relative opacity of the two Clone sources.



When you paint, both Clone presets will contribute to the painted result.

Note: You can use the **Shift-Alt-1** and **Shift-Alt-2** keyboard shortcuts to quickly select one of the Clone presets.

Reset

Resets all Clone brush transform controls.

Color (Shift-C)

Paints the image with the current color.

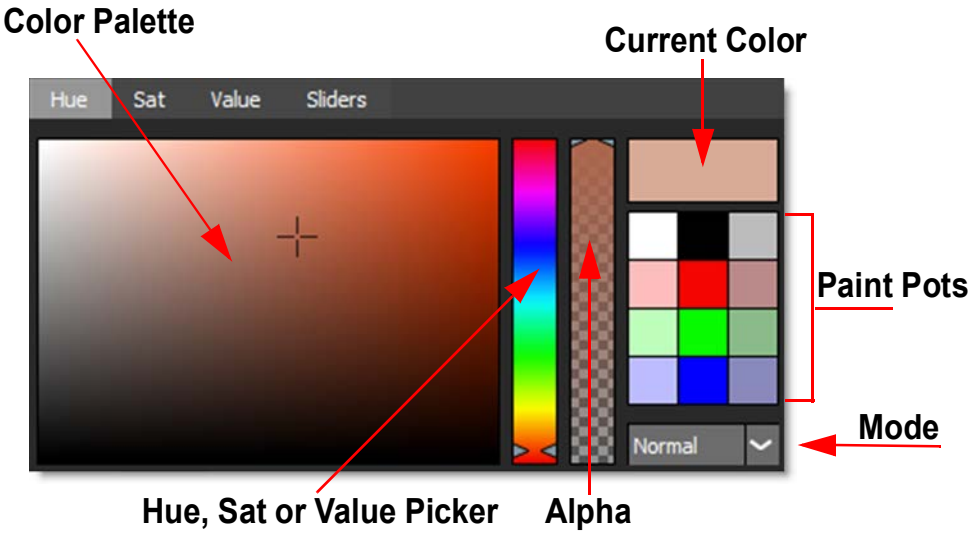
Picking Colors from the Screen

Colors can be picked off of the screen using a couple of different techniques.

1. **Hover over an area in the Viewer and press the . (period key). The area inside the brush diameter is sampled and averaged when choosing the color.**
2. **Right-click picks a color from a single pixel.**
3. **Right-click-drag and drawing a box averages the colors within it.**

Color Palette

Colors can be selected using the Color Palette.



The Hue, Sat, Value and Sliders tabs provide you with four different methods for selecting a color.

Hue

The hue is selected from the hue picker while the saturation and value are chosen from the large square color palette.

Sat
The saturation is selected from the saturation picker while the hue and value are chosen from the large square color palette.

Value
The value is selected from the value picker while the hue and saturation are chosen from the large square color palette.

Sliders
Use the Red, Green, Blue, Hue, Sat, Value and Alpha sliders to set a color.

Hue, Sat or Value Picker
Depending on which tab is selected in the Color Palette, the vertical color bar to the right of the Color Palette controls the hue, saturation or value of the selected color.

Alpha
The second vertical color bar slider to the right of the Color Palette controls the level of the painted alpha when Paint > A (alpha) is selected. An alpha value of 0 paints black, a value of 100 paints white, while a value in between paints a level of gray.

Current Color
Displays the currently selected color.

Mode
Selects how color is applied to the image.

Normal
The Current Color is added to the image.

Tint
The Current Color is used to tint the image by replacing hue and saturation.

Hue
The Current Color is used to tint the image by only replacing hue.

Luminance
Replaces the luminance of the image while leaving hue and saturation unaffected.

Lighten

Pixels darker than the paint color are replaced, and pixels lighter than the paint color do not change.

Darken

Pixels lighter than the paint color are replaced, and pixels darker than the paint color do not change.

Paint Pots

Favorite colors can be stored in the paint pots by dragging and dropping from the Current Color. Click on one of the paint pots to make it the current color.

Color Correct (Alt-C)

The image is painted using color adjustments.

Hue

Rotates the hue.

Saturation

Adjusts saturation. Positive values saturate, negative values desaturate.

Brightness

Adjusts brightness. Positive values brighten, negative values darken.

Contrast

Adjusts contrast. Positive values increase contrast, negative values decrease contrast.

Center

Adjusts the contrast curve to weigh it more towards shadows or highlights. A lower value means a brighter range.

Gamma

Adjusts gamma. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values darken the midtones, negative values lighten the midtones.

Red

Adds or subtracts red.

Green

Adds or subtracts green.

Blue

Adds or subtracts blue.

Cutout (Alt-Shift-C)

Cuts out a portion of the image based on a rectangular selection, taking into account alpha if it exists, and paints using the cutout.

If one is not defined, you can click-drag to create a source region. When a source region already exists, press **Shift** to display it and then optionally drag to create a new one. The source region can be reset by **Shift**-clicking or right-clicking without dragging.

Cutout Keyboard Shortcuts

Shortcut	Action
Click-drag	Creates a source region when none exists
Shift-drag or Right-click-drag	Creates a new source region
Shift	Displays source region
Shift-click or Right-click	Resets source region
Ctrl(Win)/Cmd(Mac)-drag boundary	Scales the cutout
Ctrl(Win)/Cmd(Mac)-Shift-drag boundary	Rotates the cutout

Type

RGBA

Creates a cutout based on the RGBA channels.

RGB

Creates a cutout based on the RGB channels.

Scale

Scales the cutout.

Rotation

Rotates the cutout.

Drag (D)

Smudge or smear an area of the image. When the brush first starts, it makes a copy of the area under the brush, then on subsequent samples it stamps that area down in the new location with a blend.

Mix

Mix is the initial blend amount of the smudged area.

Decay

Determines how much of the Mix to use on the next stamp and reduces the Mix percentage with each sample.

The defaults are Mix = 50% and Decay = 90%. So, the first stamp will be a 50/50 mix of the brush start sample and the new sample, then the next will be 50% * 90% of it, etc. until it eventually fades away entirely.

Eraser (Shift-E)

Erases previously painted brush strokes.

Grain (G)

Paints grain onto the image.

Size

Sets the size of the grain.

Red Size
Controls the size of the red grain.

Green Size
Controls the size of the green grain.

Blue Size
Controls the size of the blue grain.

Amount

Sets the intensity of the grain.

Red Amount
Controls the intensity of the red grain.

Green Amount
Controls the intensity of the green grain.

Blue Amount
Controls the intensity of the blue grain.

Softness

Sets the softness of the grain.

Red Softness
Controls the softness of the red grain.

Green Softness
Controls the softness of the green grain.

Blue Softness
Controls the softness of the blue grain.

Monochrome

When enabled, the grain is monochrome. In this mode, parameters that have no effect are grayed out.

Mosaic (M)

Divides the picture up into square tiles.

Size

Controls the size of the square tiles. A small size value will create many square tiles.

Repair (R)

Paints the image with the color level sampled at the beginning of each stroke.

Scatter (S)

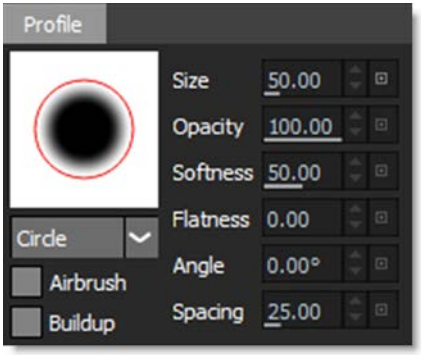
Scatters pixels in a random fashion.

Radius

Sets the amount of scattering.

Profile

You can customize your brush settings in the Profile tab.



Profile

A circle or square brush can be selected from the pop-up menu.

Circle

The brush profile is set to a circle.

Square

The brush profile is set to a square.

Airbrush

When on, brush samples are generated at 30 samples/sec as long as the mouse button or pen is held down.

Buildup

Allows the opacity to accumulate so it doesn't get clamped by the Opacity parameter value.

Size

Sets the size of the brush. The brush can also be resized in the Viewer with the bracket keys, **[** and **]**, or by holding **Ctrl(Win)/Cmd(Mac)** and dragging the brush outline.

Opacity

Sets the opacity or transparency of the brush.

Softness

Sets the brush softness. The brush softness can be changed in the Viewer by holding **Ctrl(Win)/Cmd(Mac)-Shift** and dragging the brush outline.

Flatness

Sets the flatness of the brush.

Angle

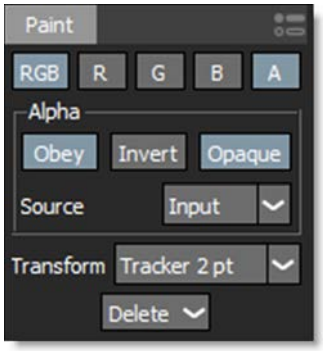
Sets the angle of the brush.

Spacing

Sets the brush spacing.

Paint

The Paint tab contains controls that affect how paint is applied to the image.



RGB

The selected brush paints on the RGB channels.

R

The selected brush paints on the red channel.

G

The selected brush paints on the green channel.

B

The selected brush paints on the blue channel.

A

The selected brush paints on the alpha channel.

Alpha

Obey

When enabled, the intensity of the alpha channel controls how much the image will be affected by a particular paint operation. At any given pixel in the image, the more transparent the value in the alpha channel, the more transparent the application of the paint operation.

Invert

Inverts the alpha channel used for the Obey operation.

Opaque

Enabled once the **A** button is turned on, the Opaque control ensures that a solid paint stroke is created when painting into the alpha channel. When Opaque is off, the brush will also affect the alpha channel. So, it's possible to blur and drag the alpha channel, for instance.

Source

Selects which input source to use when Obey is enabled.

Input, Input 1-5

Uses the input alpha from upstream nodes as the obey alpha source. For instance, you can use the Roto node to control where you paint in the RGB channels.

Output

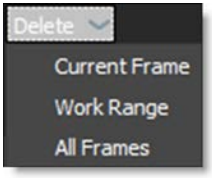
Uses the Paint node's output alpha as the obey alpha source. This option is handy for painting temporary alpha to control where you paint in the RGB channels.

Transform

Selects point trackers and tracked layers from the input Tracker node, or other nodes that contain trackers, for use in match moving paint strokes or the clone source during event playback.

Delete

Delete all paint strokes and restores the original unpainted frames.



Current Frame

Sets the range to the current frame.

Work Range

Sets the range to the in and out points in the Timebar.

All Frames

Sets the range to the entire frame range.

Paint Preferences

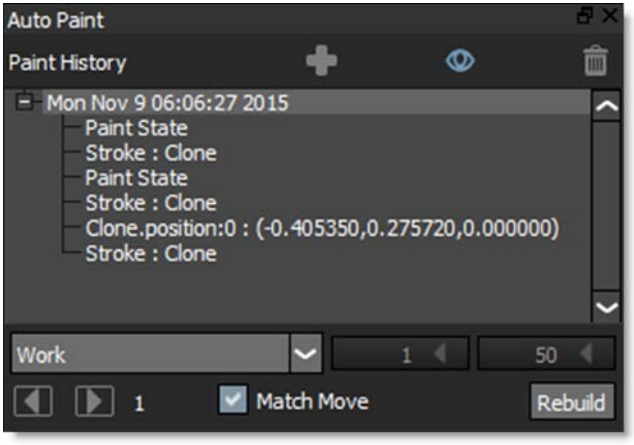
Seldom adjusted Paint controls can be accessed by clicking the Paint Preferences icon.

Auto Paint

Auto Paint is a highly unique automated paint feature that records all paint activity with tight integration of both point and planar trackers. Paint strokes can be match moved or stabilized giving Silhouette the speed of raster paint with the repeatability of vector paint. The beauty of the system lies in the automatic recording of the paint strokes and brush settings. Individual paint strokes can be selected and repeated over many frames, as well as deleted. If the original footage changes, the entire paint history can be used to rebuild the painted shot automatically. Go to the **Auto Paint** tutorial to see how it works.

Paint History

The Paint History contains all of the “events” for the current session. Events are things like paint strokes, brush profile changes, brush parameter changes, other paint states, etc. A selection of events essentially becomes a macro and can be played back over a range of frames.



Groups are created each time painting is started on a frame and are recorded with the current time stamp. So the first time you begin painting on frame 1, for instance, a renameable “event group” containing a current time stamp is created. Then, events are created for the current paint state: channels/flags, brush, brush profile, and brush parameters. And finally, a new stroke event is created for the new stroke. After the first stroke, state changes are stored in their own events (ie. brush size, opacity, etc).

Add Group

Manually adds a paint event group. Manually creating groups is useful for organizing your painted strokes so that they can easily be identified at a later time.

Note: Normally, one paint group is created while painting on a frame. If you leave the frame and come back to it later, another group will be created automatically.

Show Strokes

When you make a selection in the Paint History, the strokes are highlighted green in the Viewer when Show Strokes is enabled--the default.

Delete

Press the **Delete** icon to delete selected events.

Groups and Events

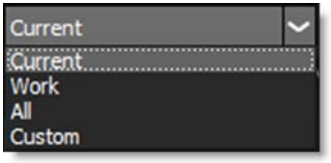
- **A date and time stamp is an automatically created group that contains the events for frame 1. Later, if you leave and come back to frame 1, there will be a new group created with a new time stamp. This will keep track of what changes were made and when.**
- **Groups can be renamed by double-clicking, typing a new name and hitting Enter.**
- **The first time you do something on a frame, events that snapshot the current paint state are recorded. This is so that if you need to rebuild the frame, everything that is needed is in the Paint History for each frame.**

- **Groups that have + icons indicate you can expand them to see their contents.**

Event Playback

Frame Range

Defines the frame range for Event Playback and Rebuild operations.



Current

Sets the range to the current frame.

Work

Sets the range to the in and out points in the Timebar.

All

Sets the range to the entire frame range.

Custom

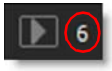
Sets a custom range as defined by the numeric entry fields. To quickly set custom in/out points, press the arrows in the numeric fields to enter the currently parked frame.

Play Selected Events Forward/Backward

Plays selected events in the Paint History either forward or backward.

In the Paint History window, select the paint event group or a sub set of the paint events you want to play back. You will see the strokes highlight green in the Viewer. Then, select the desired frame range and press either the Play Selected Events Forward or Backward icon.

The number to the right of the Play Selected Events icons represents the number of selected items in the Paint History.



If a layer with tracking data applied is selected and Match Move is enabled, the selected strokes will be match moved when played back.

Note: To Match Move the Clone source during playback, you will need to select the layer and enable Clone > Match Move prior to painting.

Match Move

Match Move allows you to apply the selected tracked layer while playing back paint events.

Duplicate

Duplicates strokes from one view to another for the current frame. If a layer with a stereo offset is selected prior to duplicating, the stereo offset is taken into account when duplicating the strokes.

Note: Duplicate only appears when in a stereo project.

Rebuild

Rebuilds the paint events for all frames defined in the Frame Range in the order in which they were painted. This is useful if you replace your footage with a different color correction than the original and want the result of painting with the Clone brush to match the new footage.

Stereo Paint

In general, painting on stereo images is the same as painting with mono images. The stereo view mode determines whether you are painting on the Left View, Right View or both the Left and Right Views at the same time.

In the Timebar, red markers are displayed for painted frames in the Left View, blue markers for the Right View and green markers for frames painted in both the Left and Right View.

Go to the **Stereo Paint** tutorial to see how it works.

Paint Brush Shortcuts

Shortcut	Action
B	Selects the Black and White brush
Shift-B	Selects the Blemish brush
Ctrl-B	Selects the Blur brush
C	Selects the Clone brush
Shift-C	Selects the Color brush
Alt-C	Selects the Color Correct brush
Alt-Shift-C	Selects the Cutout brush
Shift-E	Selects the Eraser brush
D	Selects the Drag brush
G	Selects the Grain brush
M	Selects the Mosaic brush
R	Selects the Repair brush
S	Selects the Scatter brush

Paint Settings Shortcuts

Shortcut	Action
Ctrl(Win)/Cmd(Mac)-drag left/right	Sizes the brush
[and **]**	Sizes the brush
Ctrl(Win)/Cmd(Mac)-Shift-drag	Sets the brush softness
Shift-click-drag with Clone brush	Sets the Clone offset
Shift-click-click with Clone brush	Sets the Clone offset
Shift-click or tap	Resets the Clone offset
Shift-Alt-1 and **Shift-Alt-2**	Selects the Dual Clone brush setups
Shift+Ctrl+1	Toggle Dual Clone mode on/off
‘ (located to the left of **1** key)	Displays the Clone source and then the Clone target so that you can click on each to set the Clone offset
Caps Lock	Toggles Onion Skin mode on and off
. (period key)	Picks colors off of the screen
Right-click	Picks a color off of the screen from a single pixel
Right-click-drag	Picks a color off of the screen by drawing a box and averages the colors within it
Alt-click-click	Draws a straight line

Node Outputs

Output

Outputs the result of the paint node.

Paint Only

Outputs only the painted portions of the frame along with an automatically generated alpha channel (where the brush painted). This will allow you to seamlessly composite the painted areas in a Composite node without having to do a difference matte.

Pastel

Description

Converts the image into pastel artwork.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Adjusts the amount of the pastel effect.

Detail

Adjusts the detail. If the value is increased, you will see more detail while decreasing the value will have an overall smoothing effect.

Pencil

Description

Pencil converts your image to a pencil sketch.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Sets the intensity of the pencil effect.

Color

The Color parameter sets the color of the pencil effect through the use of a standard color picker.

Background

Mixes in the original image.

Photographic

Description

The most complete line of Kodak® filters for photographic uses is available in the form of gelatin films and are known as Wratten® Gelatin filters. Our Photographic filter is a digital equivalent of the Wratten set and were created using the spectral transmission curves for each optical filter. The Color Conversion, Light Balancing and Color Compensating preset groups are subsets of the Photographic filters.

Photographic

Digital versions of the complete line of Kodak® Wratten® Gelatin filters.

Color Conversion

Color Conversion filters correct for significant differences in color temperature between your light source and recording media.

Light Balancing

Light Balancing filters correct for minor differences in color temperature between your light source and recording media.

Color Compensating

Color Compensating filters control color by attenuating specific parts of the spectrum. They can be used to make changes in color balance or compensate for deficiencies in the image's spectral quality.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Color

Color

The Color parameter sets the color of the filter through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Grad

These filters can optionally use a gradient that limits where the filter is applied. Grad is the transition area between the colored portion and the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Pin Warp

Description

Pin Warp allows you to warp specific image areas using pins, while leaving other areas untouched. Adjustments can range from subtle nip and tucks to something more obvious like repositioning an arm or leg.

Before

After

Photo by Tim Easley on Unsplash

Go to the **Pin Based Warping** tutorial to see how it works.

Node Group

Warp.

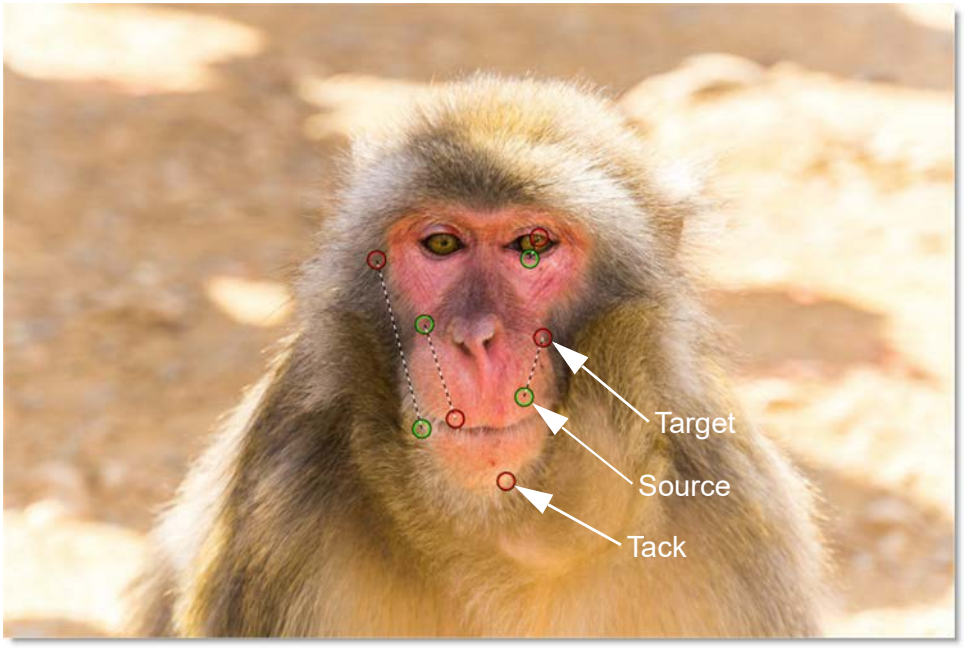
Controls

Transform

Selects point trackers and tracked layers from the input Tracker node and match moves the pins based on the input tracker data.

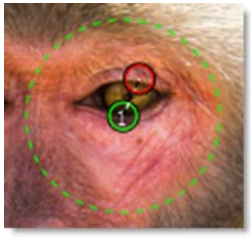
Pin 1 - 20

A total of 20 pins can be added to an image. To create a pin, click-drag on the image. Pins have a source (green circle) and target (red circle). The farther the target is dragged from the source, the more the image warps. Click-releasing on the image sets a tack which constrains the warp.



Pin and Tack Radius

Each pin and tack has a radius which determines its strength. Hover over a pin to display the radius. **Shift**-drag the radius to adjust it.



Pin Warp Keyboard Shortcuts

Shortcut	Action
Click-drag on image	Creates a pin
Click-release on image	Creates a tack
Click-drag pin source or target	Moves the pin source or target
Shift-drag pin source or target	Moves both the pin source and target
Ctrl(Win)/Cmd(Mac)-drag pin radius	Adjusts pin radius with all radii displayed
Hover over pin, Shift-drag pin radius	Adjusts pin radius with only selected pin radius displayed
Alt-drag on a tack	Converts a tack to a pin
Right-click > Remove Pin	Deletes the pin
Right-click > Make Tack	Converts a pin to a tack

Polarizer

Description

Polarizer

The greatest use of polarizing filters is to achieve a darkened, deep blue sky. Our digital version of the Polarizer is designed to do just that. Through the use of a matte and an adjustable gradient, the color of the sky can be adjusted.

Warm Polarizer

Combines the benefits of the Polarizer with a warming filter making it ideal for portraits and scenics.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Sky

Color Correct controls are provided to adjust the sky.

Hue

Rotates the hue of the sky.

Saturation

Adjusts the saturation of the sky. Positive values saturate, negative values desaturate.

Brightness

Adjusts the brightness of the sky. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the sky. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the sky. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Red

Adds or subtracts red from the sky.

Green

Adds or subtracts green from the sky.

Blue

Adds or subtracts blue from the sky.

Temperature

Sets the color temperature of the sky. Dragging the numeric field to the right makes the sky cooler (bluer) and dragging the numeric field to the left makes the sky warmer (redder).

Temperature

Applies a warming filter to the image. Go to the **Temperature** section of Common Node Controls to see how the Temperature controls work.

Grad

The Polarizer can optionally use a gradient that limits where the filter is applied. For instance, if the polarization is affecting areas other than the sky, enable the Grad and adjust it to limit the areas of polarization. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Matte

Hue

The Polarizer isolates the sky using a matte based on a blue hue. Use the Hue eyedropper to select the exact color of the sky if you are not seeing enough polarization.

Range

Increases or decreases the range of values in the hue matte. A low Range value indicates a narrow range of values. A high Range value indicates a large range of values included in the matte.

Blur

Sets the softness of the matte by using a quality blur.

Go to the **Matte** parameters to see how they work.

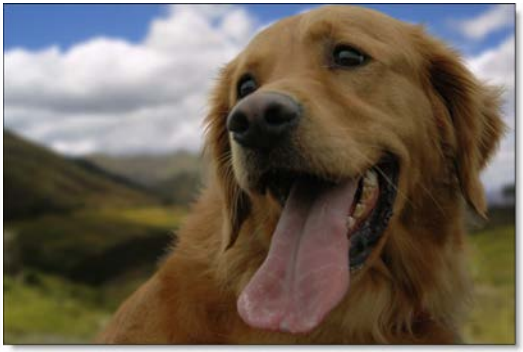
Power Matte

Description

Power Matte is an easy to use interactive image matting tool capable of extracting almost any object in an image--even if you are dealing with fine hair detail, smoke, or reflections.

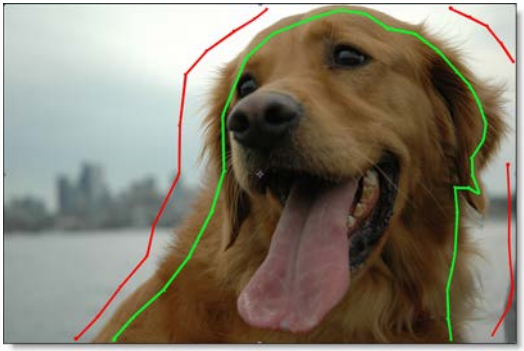
Before

After



Matte

Shapes



To work this magic, Power Matte iteratively estimates the transparency value for every pixel in the image, based on a small sample of foreground (what you want to cut out) and background (what you want to get rid of) pixels marked by defining simple shapes on the image. Results show that compared with previous approaches, our method is more efficient and requires minimal effort to extract high quality mattes for foregrounds with significant semi-transparent regions. In addition, the foreground edge colors can be estimated in the semi-transparent areas to create a seamless composite.

Go to the **Power Matte** tutorial to see how it works.

Since shapes are required for Power Matte, it has its own shape tools similar to those in the Roto node. See the **Roto Node** for more information.

Node Group

Key, Silhouette.

Matte Creation

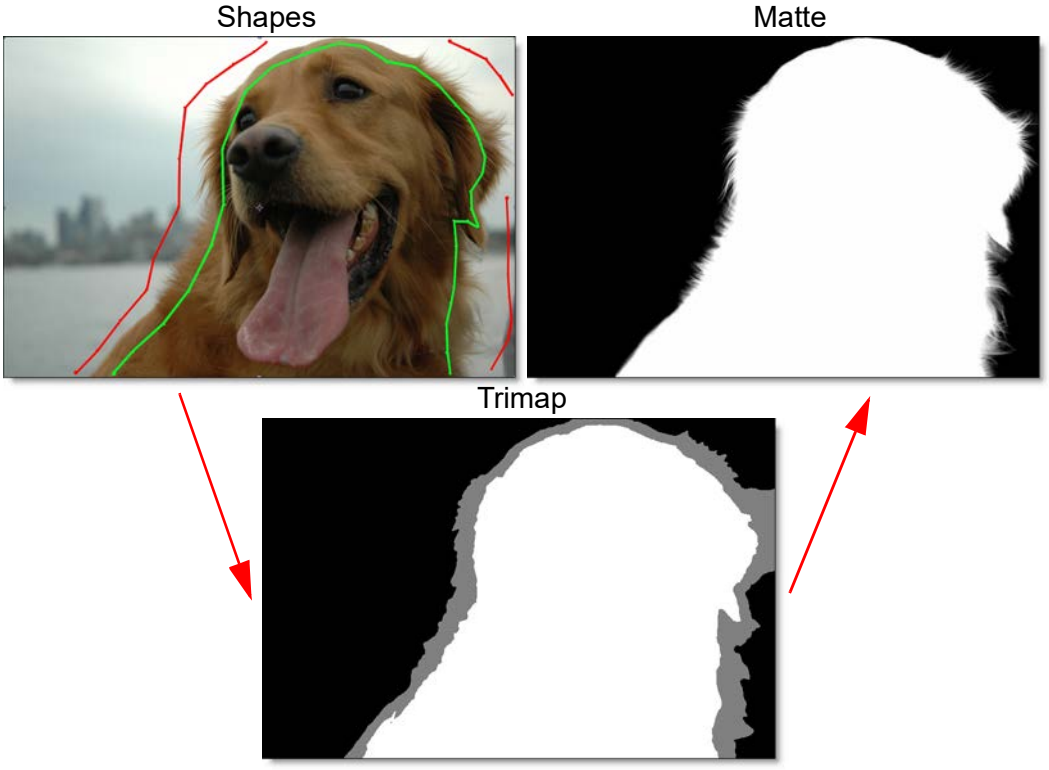
Power Matte uses open or closed shapes to define the object you would like to isolate or extract. The shapes can be loose--they don't need to follow exactly around the edges. Areas not defined by shapes are considered unknown areas and are automatically computed by Power Matte.

Trimaps

Power Matte creates mattes by using a trimap--a pre-segmented image consisting of three regions of foreground (what you want to cut out), background (what you want to get rid of) and unknown. Partial opacity values are then computed only for pixels inside the unknown region. Two trimap methods can be used: Open Shape or Closed Shape. When creating mattes, start with the Open Shape Method and move on to the Closed Shape Method if the results are not satisfying.

Open Shape Method

Power Matte only requires a few open shapes to define foreground and background areas of the image when using the Open Shape Method. Areas not defined by shapes are considered unknown areas with partial opacity values being computed between the areas marked by foreground and background shapes.



Using the shapes, Power Matte generates an intermediate matte result called a Trimap. White signifies solid foreground, black is complete background and gray is unknown area where Power Matte will compute partial opacity.

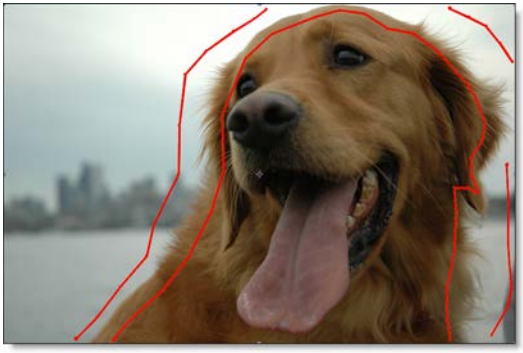
The Open Shape Method requires little user input, but when color ambiguity exists between the foreground and background, the Closed Shape Method may create a more accurate matte. In addition, the Open Shape Method will also take slightly longer to render as it requires an extra calculation step.

Open Shape Method Tips & Tricks

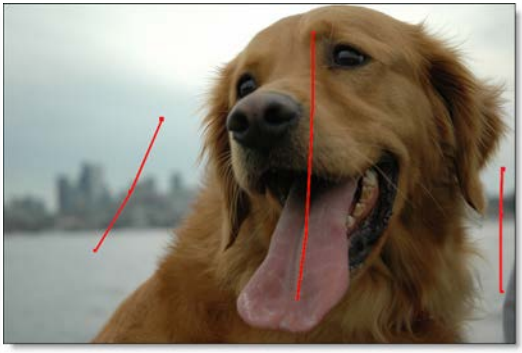
- **Make sure you draw enough foreground (what you want to cut out) and background (what you want to get rid of) shapes. A good technique is to draw an open inner shape within the object you are extracting and an outer, open shape outside the object.**
- **The shapes should be near the boundary of the object, but not right up against the edge.**
- **If the foreground or background has varying colors, the shapes should cover these colors.**
- **When viewing the matte, if you see gray areas in the foreground object that should be completely white, make additional foreground shapes in those areas. If you see gray matte areas in the background that should be completely black, make additional background shapes.**
- **The general rule is to not put different foreground and background shapes too close together unless you need to.**

Warning: If you only provide a few sparse shapes, the Open Shape Method will take longer to process with a less accurate result than the Closed Shape Method.

Good Shape Example

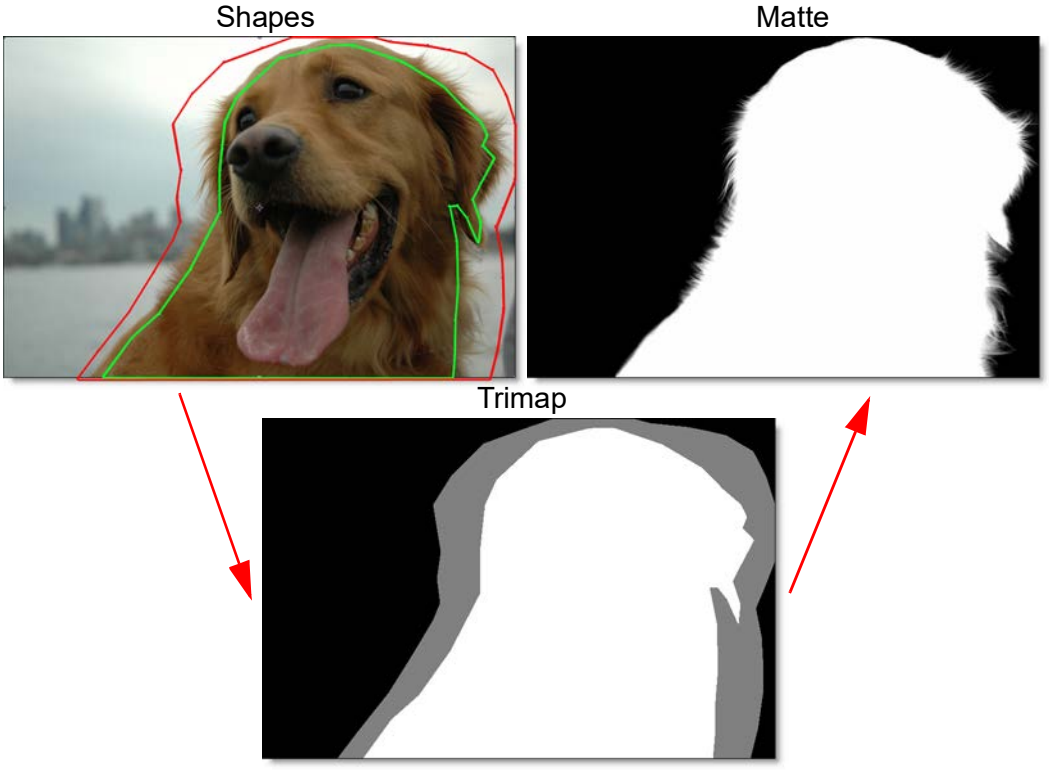


Bad Shape Example



Closed Shape Method

The Closed Shape Method uses closed shapes to mark definite foreground and background areas of the image. Any unmarked areas are considered unknown and partial opacity values are then computed for the pixels inside the unknown region. So, make sure that any hair detail, transparent or blurry portions fall within the unknown areas.



Closed Shape trimaps process slightly faster than Open Shape trimaps and can result in extracting a more accurate matte, most notably when color ambiguity exists between the foreground and background. However, they can be tedious to create and tend to fail for images with large portions of semi-transparent foreground where the trimap is difficult to create manually. The Closed Shape method does not handle a foreground object with background holes in it, and therefore the Open Shape method would be a better choice when extracting an object with holes

Closed Shape Method Tips & Tricks

- **First, define foreground areas by drawing a closed shape around the inside edges of the foreground (what you want to cut out).**
- **Next, define background areas (what you want to get rid of) by drawing a closed shape around the background areas.**
- **If your foreground object is completely surrounded by background, a quick way to define the background area is to first draw a closed shape around the outside of the foreground and then invert the shape in the Object Parameters.**
- **Ideally, the unknown region, the regions not defined with foreground or background shapes, should only cover transparent pixels whose actual values are not completely foreground or background. In other words, the unknown region should include hair detail, transparent or blurry portions of the image.**

Note: Large foreground objects take longer to process than small ones.

Shape Parameters

Type

Foreground

Assigns the shape to be used as foreground (what you want to cut out).

Background

Assigns the shape to be used as background (what you want to get rid of).

Filled

Determines whether or not the shape is filled.

Invert

Inverts a filled shape. This option is only available if Filled is enabled.

Node Parameters

When the Power Matte node is being edited in the Trees window, parameters specific to Power Matte node can be adjusted in the Node parameters.

Source Alpha

Controls how the incoming alpha channel is blended with the Power Matte alpha channel.

Ignore

The incoming alpha channel is not used.

Add

Adds the incoming alpha channel to the Power Matte alpha channel.

Subtract

Subtracts the incoming alpha channel from the Power Matte alpha channel.

Multiply

Produces a result where there is a union of pixels from the incoming alpha channel and Power Matte alpha channel.

Difference

Produces a result where a value exists in the incoming alpha channel and Power Matte alpha channel, but not in both.

Color Estimation

Estimates the color of the foreground in unknown and semi-transparent areas. Color Estimation is off by default and when activated, prevents fringing to create a seamless composite. When disabled, a foreground object with transparent edges against a bright or dark background will have bright or dark edges in the composite.

Off

On

Note: Color Estimation can cause color flickering in edge areas of partial opacity if your shape position is not constant from frame to frame or if your source footage is grainy. Disable Color Estimation if you see flickering in the edge areas after a preview or rendering.

Sensitivity

Sets the sensitivity of the Unknown areas. The higher the value, the more details are brought out.

Deartifact

Blurry artifacts can be generated while attempting to extract objects that have drop shadows, similar colors to the background or out of focus edges. Deartifact can be used to limit these artifacts.

Accuracy

The accuracy of the generated matte can be increased with this control. When foreground and background shapes are close together, setting the Accuracy to Higher or Full will result in a more accurate matte.

Note: It is best to work with Power Matte at the Accuracy setting that you will be rendering at.

Normal

Normal will work for most images and will render faster than the other settings.

Higher

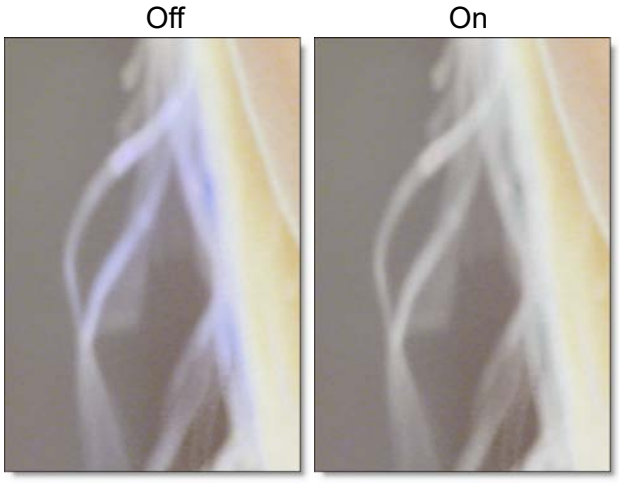
Higher results in better accuracy than the Normal setting, but not quite as good as Full.

Full

Full will result in the most accurate matte, but will take longer to render.

Color Suppression

When a foreground object has been photographed against a solid blue or green backdrop, the blue or green color can have a tendency to spill onto the foreground object. When extracting an object photographed against one of these colors, you may find it necessary to remove the blue or green spill. This is a process called Color Suppression.



Type

Selects whether blue or green is suppressed from the foreground image.

Foreground

Suppresses color spill in the foreground.The default value of 100 should be sufficient for most situations.

Range

Increases the range of areas that are color suppressed. If color spill is still evident, increase this value.

Edge

Suppresses the color spill of the unknown edge areas to the color gray. This is useful for edges that contain a lot of neutral transparency like glass reflections.

Reset All

Resets all parameters to their default state.

Node Outputs

Output

Outputs the foreground input and generated matte.

Composite

Outputs a composite of the foreground over the background based on the generated matte.

Trimap

Outputs the generated trimap.

Premultiply

Description

Multiplies the RGB channels by the alpha channel.

Node Group

Composite.

Rack Focus

Description

Rack Focus replicates a true camera defocus by introducing lens Bokeh effects. Bokeh is the Japanese term that describes the quality of out-of-focus points of light. In defocused areas, each point of light becomes a shape--either a circle or a polygon. The shape grows in size as the amount of defocusing is increased.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Blur

The image is blurred by using a quality blur.

Aperture

Blend

Determines the blend mode to be used when adding Bokeh.

Add

Bokeh's are added to your image.

Screen

The Bokeh are combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Brightens the Bokeh.

Facets

Set the number of Bokeh facets when the Curvature parameter is set to 0.

Curvature

Controls the curvature of the Bokeh. When set to 100, the Bokeh are completely round. Set to a value of 0 to see a polygonal shape.

Angle

Rotates the Bokeh.

Color

Sets the Bokeh color.

Blur

Sets the softness of the Bokeh. This can be useful when using high threshold values.

Matte

A matte is used to create the Bokeh effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Radial Gradient

Description

Creates a radial gradient.

Node Group

Image.

Controls

Aspect

The aspect ratio of the spot.

Radius

The un-blurred radius of the spot.

Falloff Radius

The blurred edge of the spot.

Aspect

The aspect ratio of the spot.

Falloff

Moves the falloff towards the spot centerpoint.

Invert

Inverts the spot.

Radial Tint

Description

Tints the image using multi-color, radially graduated filters.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Tint Mode

Selects how color is applied to the image.

Normal

Tints the image while retaining highlights.

Tint

The image is tinted by replacing hue and saturation.

Hue

The image is tinted by only replacing hue.

Lighten

Pixels darker than the color are replaced, and pixels lighter than the color do not change.

Darken

Pixels lighter than the color are replaced, and pixels darker than the color do not change.

Color 1

Sets the color for the top left quadrant of the image.

Color

Sets the color through the use of a standard color picker.

Opacity

Sets the opacity of the color.

Color 2

The Color 2 controls are the same as the controls for Color 1 except it is applied to the top right quadrant of the image.

Color 3

The Color 3 controls are the same as the controls for Color 1 except it is applied to the bottom right quadrant of the image.

Color 4

The Color 4controls are the same as the controls for Color 1 except it is applied to the bottom left quadrant of the image.

Radial Grad

Sets the position, rotation and aspect ratio of the radial gradient.

Position

There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the grad can be adjusted.

Position X

The horizontal position of the grad.

Position Y

The vertical position of the grad.

Size

The size of the grad.

Rotation

The rotation of the grad.

Aspect

The aspect ratio of the grad.

Highlights

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Spot

A spot in the form of a radial gradient can optionally be used to control where color is added to the image. Go to the **Spot** section of Common Node Controls to see how the Spot controls work.

Rays

Description

Create stunning and realistic light ray effects quickly and easily. Known as volumetric lighting in computer graphics or crepuscular rays in atmospheric optics, this dramatic effect adds polish and style. Since the rays are only added to highlight areas, they have the effect of passing through objects and add a third dimensional quality. Add shafts of light streaming through clouds, rays filtering through a forest canopy, beams of light on a foggy night or rays shooting out from text. Rays adds a striking and dramatic quality to any image.

Node Group

Light.

Controls

Rays

Length

Sets the ray length.

Threshold

Controls the amount of rays based on a brightness threshold. Fewer rays with more definition are generated at higher threshold values.

Position

Move the point control in the center of the screen to change the source point from which the rays will emanate.

Color

Brightness

Sets the brightness of the rays.

Color

Sets the color of the rays.

Shimmer

Randomizes the rays.

Amount

Sets the amount of shimmering.

Phase

Sets the randomness of the shimmering.

Opacity

Rays

Sets the opacity of the rays.

Source

Sets the opacity of your image.

Reflector

Description

One of the oldest and still most popular means of lighting an exterior set is by taking a reflective surface and redirecting sunlight or artificial light exactly where it is needed. Unfortunately, it is nearly impossible for actors to keep their eyes open when looking into a reflector, resulting in squinting eyes. Our silver and gold reflectors allow you to add white or gold light into shadow areas without the squinting.

Node Group

Light.

Controls

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Brightness

Sets the intensity of the reflector.

Color

The Color parameter sets the color of the reflector through the use of a standard color picker. The default color is gold for Gold Reflector and white for Silver Reflector.

Position

Selects the shadow values that will be adjusted.

Range

Controls the range of shadow values that will be adjusted.

Go to the **Matte** section of Common Node Controls to see how the Position and Range controls work.

ReLight

Description

Using ReLight, an image can be relit by with either a directional or point light. The result looks natural even though the relighting is done without computing any scene geometry.

Node Group

Light.

Controls

Type

Parallel

A directional light source.

Point

A point light where the light either emanates from or fades into a vanishing point. Move the point control in the center of the screen to change the Point light location.

Strength

Sets the strength of the light.

Angle

Used in conjunction with Parallel, Angle sets the direction of the light source.

Invert

Used in conjunction with Point, Invert determines whether the light source emanates from or fades into a vanishing point.

Resize

Description

Changes the size of the image.

Node Group

Transform.

Controls

Size

X Axis

The horizontal size of the image.

Y Axis

The vertical size of the image.

Gang

The X Axis and Y Axis values can be ganged together.

Filter

Chooses the filtering method when transforming the image. Mitchell is the default.

Triangle

The Triangle filter is not the highest quality, but fine for scaled images.

Quadratic

Quadratic is like triangle, but more blur with fewer artifacts. It offers a good compromise between speed and quality.

Cubic

Cubic is the default filter in Photoshop. It produces better results with continuous tone images, but is slower than Quadratic. If the image contains fine details, the result may be blurrier than desired.

Catmull-Rom

This produces good results with continuous tone images which are scaled down, producing sharp results with fine detailed images.

Gaussian

Gaussian lacks in sharpness, but is good with ringing and aliasing.

Mitchell

A good balance between sharpness and ringing, Mitchell is a good choice when scaling up.

Sinc

Keeps small details when scaling down with good aliasing.

Retime

Description

Expands or contracts the timing of a selected range of frames.

Node Group

Time.

Controls

You can enter values in any of the parameters below to set a new timing.

Start Frame

Selects the first frame to be used.

End Frame

Selects the end frame to be used.

Duration

Shows the retimed duration in frames.

Speed

Shows the retimed duration as a percentage. A value of 50 slows down by 50%, a value of 100 does nothing, and a value of 200 is twice as fast.

Strobe

Strobe creates a stuttering effect. The frame is frozen for the amount of frames specified in the Strobe parameter and then displays a new frame in sequence.

Blend

Determines how frames are blended together when new frames are created to produce a longer clip.

None

Frames are not blended.

Average

Frames are mixed together when the clip is slowed down.

Reverse

Description

Reverses the clip.

Node Group

Time.

Roto

Description

Rotoscoping or “Roto” for short has become a generic term for drawing shapes to extract, isolate or affect a portion of an image. It is tedious work, but it’s one of the most important parts of the visual effects process. Within the Roto node, there are all the tools needed to make quick work of any roto job.

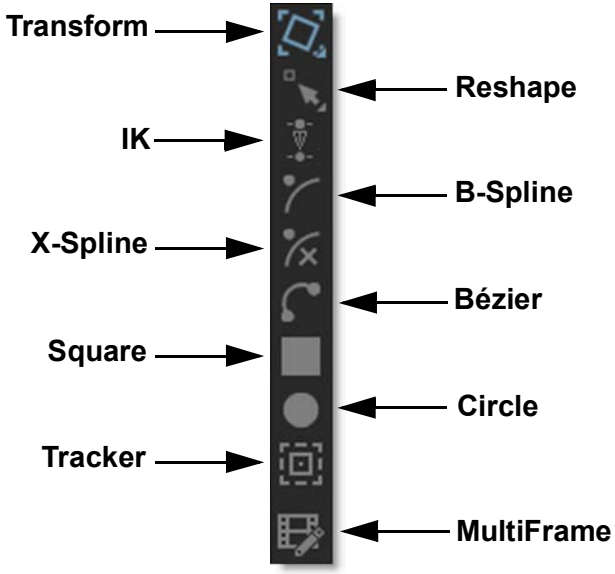
Go to the **Roto** tutorials to see how it works.

Node Group

Image, Silhouette.

Toolbar

When the Roto node is selected, a number of different tools are selectable from the Toolbar to the left of the Viewer.



Toolbar Keyboard Shortcuts

Shortcut	Action
T	Selects Transform Shape Mode
TT	Selects Transform Points Mode
R	Selects Reshape Normal Mode
RR	Selects Reshape Magnet Mode
Y	Selects IK (Inverse Kinematics)
B	Selects B-Spline
S	Selects X-Spline
Shift-B	Selects Bézier
Shift-S	Selects Square
Shift-C	Selects Circle
Shift-F	Selects Feather
Shift-T	Selects Tracker
M	Selects MultiFrame

Stereo Shape Creation

When in the Left or Right View of a stereo project, adding a shape creates it in either the Left or Right View. In the Left/Right View, a shape is created in both the Left and Right Views.

Go to the **Stereo Roto** tutorial to see how stereo rotoscoping works.

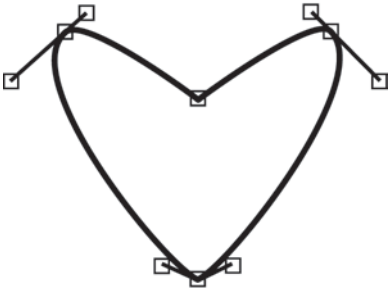
Bézier (Shift-B)

Creates a new Bézier spline.

Go to the **Bézier** tutorial to see how it works.

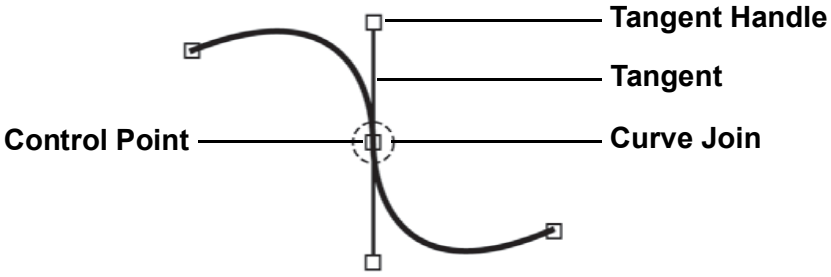
To draw a Bézier spline, click on the image to place the first control point and drag the cursor while keeping the mouse pressed to extend the control point's tangents. Click on the screen to add more control points and when finished adding points, click the first control point that you added to close the shape.

To create an open shape, add points and press the **Esc** key or switch to a different tool to finish the shape. Then in the Reshape tool, select the open shape, adjust the Stroke Width to set its thickness and choose either a flat or round Cap Style in the Object Parameters.



Originally developed by Pierre Bézier in the 1970's for CAD/CAM operations, Bézier splines became the foundation of the entire Adobe drawing model. If you're a user of Adobe products, you've probably used Bézier's. Bézier splines are defined by control points and tangents. The position of the two tangent handles control the amount of a point's curvature.

A shape is created by drawing a Bézier curve path. This path contains control points and tangents that define the form of the curve.

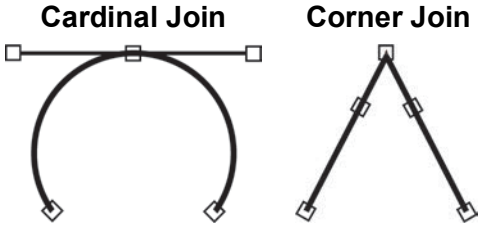


Control Points

Control points are locations on the curve that determine its shape. When a control point is selected, two tangents extend from the control point. These tangents guide the shape of the curve.

Joins

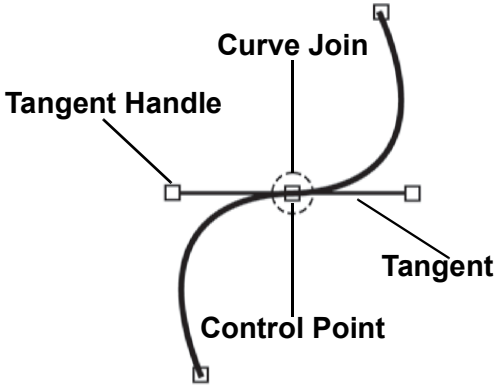
The area of the curve at the control point is called the curve join.



Joins can either be corner or cardinal (smooth) joins. When control point tangents are positioned in opposite directions, the join is cardinal. In contrast, corner joins have their tangents positioned at an angle to each other.

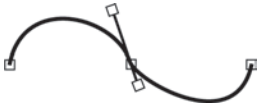
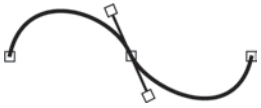
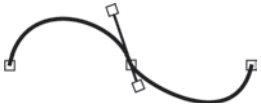
Adjusting Bézier Curves

The length and direction of a control point's tangents direct the curve through that control point.



Control points have two tangents that can extend from it. The path of the curve through the control point is determined by the length and orientation of the tangents. When you drag one tangent's handle, the adjacent tangent moves as well. Using keyboard shortcuts while dragging allows you to control how the curve passes through a control point.

Bézier Keyboard Shortcuts

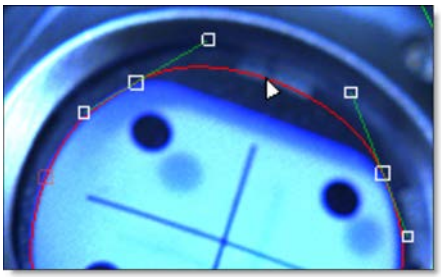
Shortcut	Action	Curve
No key needed	Adjust the length of one tangent while retaining a fixed angle between two tangents	
Ctrl(Win)/Cmd(Mac)	Adjust both tangents simultaneously while retaining a fixed angle between two tangents	
Alt	Adjusts only one tangent to create corners	
Shift	Adjusts only the length of one tangent (similar to the “No key needed” shortcut)	
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner	
Ctrl(Win)/Cmd(Mac)-Alt-2	Sets the point tension to Cardinal	

Extending Short Tangents

Sometimes a control point’s tangents are so close together that trying to modify the tangent results in movement of the control point. If this is the case, you can force the tangents to move without affecting the control point by pressing the **Alt** key while dragging the tangent. Only the tangent will move, leaving the control point unaffected.

Moving Curve Segments

Normally, you move control points to adjust the form of a shape, but you can also move the portion of the curve between control points. To move a curve segment, deselect all control points by clicking somewhere off the shape and then **Ctrl(Win)/Cmd(Mac)**-drag a curve segment between control points.



Once you start dragging, the **Ctrl(Win)/Cmd(Mac)** key can be released.

Note: The surrounding tangents remain smooth, but if you want to keep adjacent tangents from moving, hold down the **Alt** key while dragging.

B-Spline (B)

Creates a new B-Spline shape.

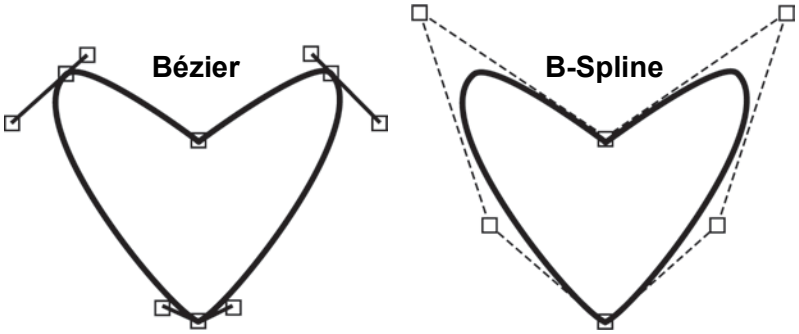
Go to the **B-Spline** tutorial to see how it works.

To create a B-Spline, click on the screen to create a control point and add as many points as you like. When you are finished adding points, click the first control point that you added to close the shape.

To create an open shape, add points and press the **Esc** key or switch to a different tool to finish the shape. Then in the Reshape tool, select the open shape, adjust the Stroke Width to set its thickness and choose either a flat or round Cap Style in the Object Parameters.

In contrast to Béziers, B-Splines don't use tangents and are created by only using control points. The position of the points, their tension settings as well as their proximity to each other determine the curvature of the shape. B-Splines are somewhat similar to NURBS (non-uniform rational B-Splines) that are used in many 3D modeling packages.

The images below show how the same shape can be created with either Béziers or B-Splines.



Because the two spline types of have significant strengths and differences, artists are religiously loyal to one or the other. B-Splines create natural curves but are terribly inefficient at defining square corners and require more points to define than a similar Bézier shape. On the other hand, Béziers can easily create corners and use fewer points, but can have an unnatural curved path caused by overly malleable “split” handles. Depending upon your expertise, you may find Bézier splines are more appropriate for square and angular shapes while B-Splines will work better for objects with a lot of curves like a person’s face. Just to upset the status quo, there is a new kid on the block called X-Splines which is explained in the next section. This spline type brings together the best of both B-Splines and Béziers.

Adjusting B-Splines

In contrast to Béziers, B-Splines don’t use tangents and are created by only using control points and are simple to adjust. The position of the points, their weight settings as well as their proximity to each other determine the curvature of the shape. The weight (amount of pull on a point) decides how sharp or smooth it is. Silhouette employs variable weight intensities on a point by point basis. The weight can be adjusted by hovering over a point and **Alt**-dragging to the right to create a corner point or **Alt**-dragging to the left to create a smooth point. Alternatively, you can **Alt**-click on one of the selected points to cycle through the preset weight settings.

Note: Do not use extreme, variable weight adjustments if you are planning on converting the B-Spline to a Bézier Spline.

B-Spline Keyboard Shortcuts

Shortcut	Action
Alt-drag control point right	Creates a corner point
Alt-drag control point left	Creates a smooth point
Alt-clicking control point	Cycles through the preset weight settings of the point
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner
Ctrl(Win)/Cmd(Mac)-Alt-3	Sets the point tension to B-Spline

Note: The **Alt**-click and pop-up menu preset weight settings for Corner and B-Spline can't be animated.

X-Spline (S)

Creates a new X-Spline shape.

Go to the **X-Spline** tutorial to see how it works.

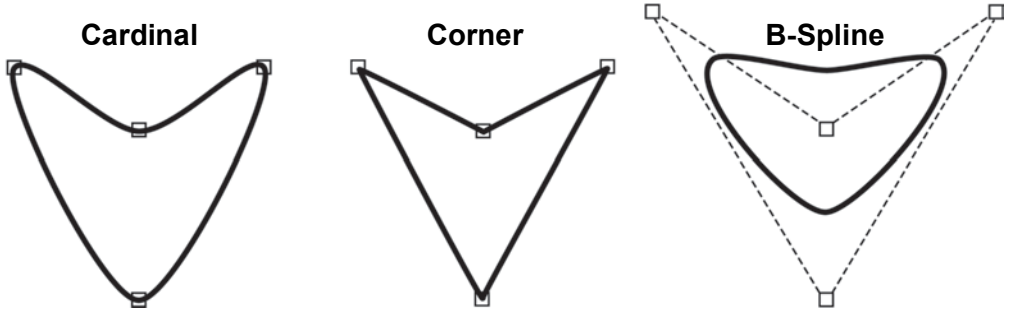
To create a X-Spline, click on the screen to create a control point and add as many points as you like. When you are finished adding points, click the first control point that you added to close the shape.

To create an open shape, add points and press the **Esc** key or switch to a different tool to finish the shape. Then in the Reshape tool, select the open shape, adjust the Stroke Width to set its thickness and choose either a flat or round Cap Style in the Object Parameters.

A X-Spline is an intuitive and easily editable spline format whereby its points can be of three different types: Cardinal, Corner or B-Spline.

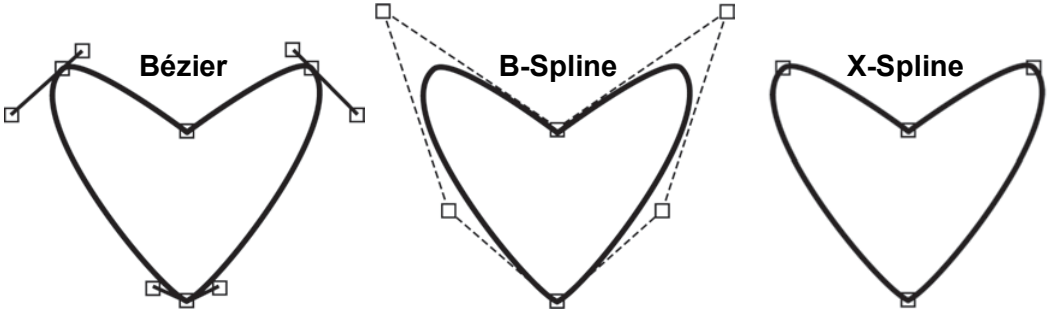
- **Cardinal creates a path that passes smoothly through each point.**
- **Corner makes a path that consists of angular corner points.**
- **B-Spline creates a smooth path that is determined by the surrounding points.**

Look at how the same set of points can yield entirely different shapes based on the point type setting.



The point type can be changed at anytime as well as animated from one type to another. You'll find that the beauty of X-Splines is that the shape's points can be a mix of Cardinal, Corner or B-Splines.

The images below show how the same shape can be created with either Bézier splines, B-Splines or X-Splines.



Adjusting X-Splines

X-Splines are created by using control points and then adjusting their weight to coincide with one of the point types: Cardinal, Corner or B-Spline. The point type can even be somewhere in between one point type and another. The weight can be adjusted by hovering over a selected point and **Alt**-dragging to the right. The weight of the point goes from Cardinal to Corner to B-Spline. Alternatively, you can **Alt**-click to cycle through the different point types.

X-Spline Keyboard Shortcuts

Shortcut	Action
Alt-drag control point right	Adjusts the weight of the point from Cardinal to Corner to B-Spline
Alt-drag control point left	When the weight is set to B-Spline, it adjusts the weight of the point from B-Spline to Corner to Cardinal
Alt-clicking control point	Cycles through preset weight settings of the point
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner
Ctrl(Win)/Cmd(Mac)-Alt-2	Sets the point tension to Cardinal
Ctrl(Win)/Cmd(Mac)-Alt-3	Sets the point tension to B-Spline

Square (Shift-S)

Creates a square or rectangular spline.

To create a Square, click and drag in the shape of a square and release the mouse.

Go to the **Square** tutorial to see how it works.

Circle (Shift-C)

Creates a circular spline.

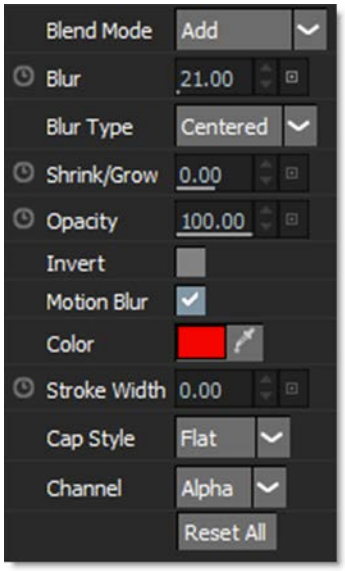
To create a Circle, click and drag in the shape of a circle and release the mouse.

Go to the **Circle** tutorial to see how it works.

Shape and Layer Parameters

Shape Parameters

All of the editable parameters of a shape can be adjusted in the Object Parameters. When a shape is selected, you will see the parameters listed below.



Blend Mode

Controls how objects are blended together.

Add

Adds the object to other objects.

Subtract

Subtracts the object from other objects.

Multiply

Produces a result where there is a union of pixels from two objects.

Difference

Produces a result where a value exists in each object, but not in both.

Max

Looks at the luminance information for each object and selects the value—whichever is brighter—as the result. Darker pixels are replaced while brighter pixels do not change.

Inside

Places the object inside the alpha generated by the objects below it.

Blur

Sets the blur level of the selected shape or shapes. The Blur range is from 0-100 and defaults to 0.

Blur Type

Determines the type of blur.

- **Centered**

The blur is centered on the edge of the shape, equally blurring inward and outward.

- **Inner**

The shape is blurred inward from the edge of the shape.

- **Outer**

The shape is blurred outward from the edge of the shape.

Shrink/Grow

Shrinks or grows the shape's alpha channel. Negative values shrink and positive values grow.

Opacity

Sets the opacity of the selected shape. The opacity range is from 0-100 and defaults to 100. The interpolation type is set to Hold by default making it easy to turn shapes on and off at particular frames.

Note: You can change the Opacity interpolation type from Hold to Linear at any time. To do so, select the shape's Opacity keyframes in the Timeline, right-click and select Interpolation > Linear.

Invert

Inverts the shape values. The default is off.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. This parameter turns motion blur on or off for the selected shape or shapes. The default is off. To affect a shape, Motion Blur also needs to be enabled in the Node window. See the **Motion Blur** section of the Roto Node parameters for more information.

Note: Normally, motion blur is calculated going forward, so if there is no shape motion beyond the end of a clip, there won't be motion blur on the last frame. To work around this, add an extra frame or two to the end of the work range in the Timebar and move the shape's last keyframe to be outside of the session range.

Color

Sets the color of the shape outline. Left-clicking the color pot opens a standard color picker while right-clicking on the color pot opens a pop-up color menu with 16 primaries.

When the Roto node's Color > Enable parameter is on, this sets the color of the filled shape.

Stroke Width

Sets the thickness of an open shape. When used on a closed shape, an outline is created.

Cap Style

Sets the end cap style for open shapes. You can choose from Flat or Round styles.

Channel

Determines what channel the shape is rendered into. You can set each shape to Red, Green, Blue, or Alpha. To visualize the results prior to rendering, use View > Channels in conjunction with the **Alt-R**, **G**, **B** and **A** shortcut keys. When ready, render shapes into the assigned channels with the Actions > Render Shapes to Channels action.

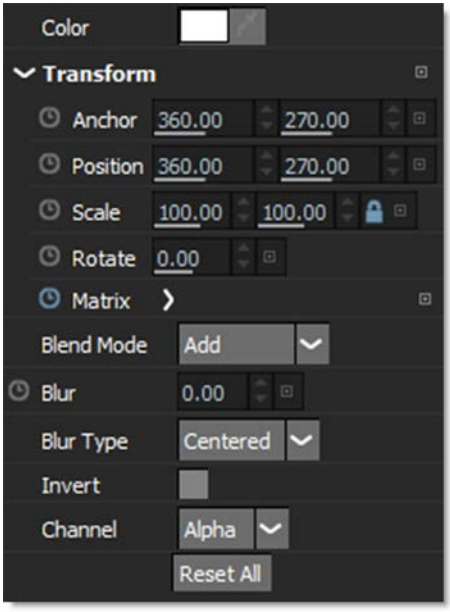
Go to the **Rendering Shapes to Channels** tutorial to see how it works.

Reset All

Resets all parameters to their default state.

Layer Parameters

Layers are used to organize shapes, but more importantly they are used to contain the motion information from trackers. All of the editable parameters of a layer can be adjusted in the Object Parameters. When a layer is selected, you will see the parameters listed below. The Transform, Stereo Offset, Blend Mode, Blur and Invert state of a layer can be adjusted.



Note: When in the Left or Right View of a stereo project, adding a layer creates it in either the Left or Right View. In the Left/Right View, a layer is created in both the Left and Right Views.

Transform

The Position, Scale, Rotation and Anchor Point can be adjusted and animated.

Anchor

Sets the anchor point for the layer transformation. Scaling and rotation operations center around the anchor point.

Position
Sets the horizontal and vertical position of the layer.

Scale
Sets the horizontal and vertical scale of the layer. Typing in a negative value will flip or flop the shapes in the layer.

Rotate
Sets the rotation of the layer.

Matrix
When tracking data is applied to a layer, the Matrix parameter is used to store the tracker keyframes.

Stereo Offset
Stereo Offset, which only shows up when using stereo sources, is used to align the offset between Left and Right Views of stereo clips and is set to animate by default. This value is automatically set when using the Viewer's Stereo Align mode's on-screen control.

Blend Mode
Controls how layers are blended together. See the **Blend Mode** section for more information.

Blur
Sets the blur level of all shapes within the layer. The Blur range is from 0-100 and defaults to 0.

Blur Type
Determines the type of blur.

- **Centered**

All shapes in the layer are blurred equally inward and outward centered on the edge of the shapes.

- **Inner**

All shapes in the layer are blurred inward from the edge of the shapes.

- **Outer**

All shapes in the layer are blurred outward from the edge of the shapes.

Invert

Inverts all shapes within the layer. The default is off.

Channel

Determines which channel the shapes in the layer are rendered into. You can set a layer to Red, Green, Blue, or Alpha. To visualize the results prior to rendering, use View > Channels in conjunction with the **Alt-R**, **G**, **B** and **A** shortcut keys. When ready to render into the assigned channels, use the Actions > Render Shapes to Channels action.

Note: This overrides the Shape > Channel setting, except when set to Alpha, in which case the shape's Channel setting is obeyed instead.

Go to the **Rendering Shapes to Channels** tutorial to see how it works.

Reset All

Resets all parameters to their default state.

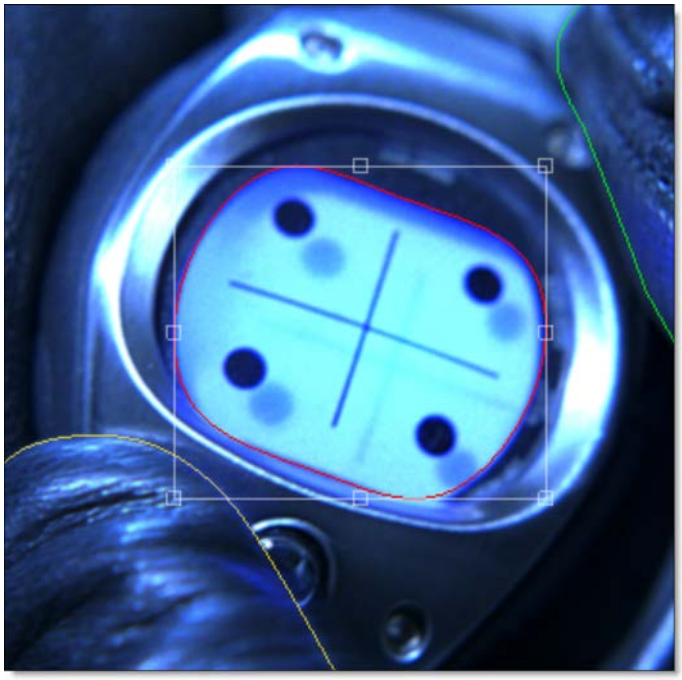
Transform

Once you draw a shape, there are various ways to modify it. As the object that you are attempting to Roto changes over time, you will need to adjust the shape so that it exactly matches the object. While the Transform tool affects an entire shape or a group of shapes, you can use Reshape to modify individual points on a shape. See **Reshape** for more information.

Go to the **Transform** tutorial to see how it works.

Transform - Shape Mode (T)

Transform Shape Mode allows you to position, move, scale, rotate, shear or corner-pin a shape or selection of shapes using the on-screen controls. To enter this mode, press either Transform in the Toolbar or the **T** key once. Then, select a shape and use the on-screen controls to modify it.



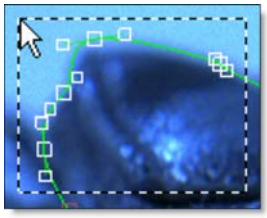
Transform On-Screen Controls

Shortcut	Action
Drag shape	Moves the shape
Shift-drag shape	Constrain shape movement horizontally or vertically
Drag bounding box corner or edge handle	Scales a shape
Shift-drag bounding box corner or edge handle	Proportionally scale a shape
Ctrl(Win)/Cmd(Mac)-drag on a bounding box corner handle	Rotate a shape
Alt-drag on a bounding box corner handle	Corner-pin a shape
Alt-Shift-drag on a bounding box corner handle	Constrains the corner-pin movement to one axis
Ctrl(Win)/Cmd(Mac)-drag on a bounding box edge handle	Shear a shape
. (period key)	Turns the Anchor Point on or off
Drag on Anchor Point	Moves the Anchor Point
Shift-. (period key)	Moves the Anchor Point to the mouse location
Q	Activates / Deactivates translation of selected shapes or layers
W	Activates / Deactivates rotation of selected shapes or layers
E	Activates / Deactivates scaling of selected shapes or layers
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments
Ctrl-W	Rotates without setting the anchor point
Ctrl-E	Scales without setting the anchor point

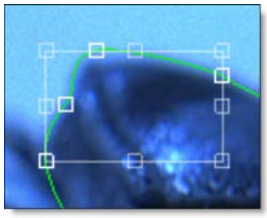
If there are any selected layers while in the Transform tool, pressing **Q**, **W** or **E** and then clicking and dragging will translate, rotate or scale the selected layers. If there are no selected layers, you must select a shape or group of shapes before clicking and dragging. Also, the position of the cursor when **W** or **E** is pressed sets the anchor point for the rotation or scale operation.

Transform - Points Mode (TT)

Transform Points Mode allows you to position, move, scale, rotate, shear or corner-pin a selection of points using the on-screen controls. To utilize this mode, use Reshape to first select some points



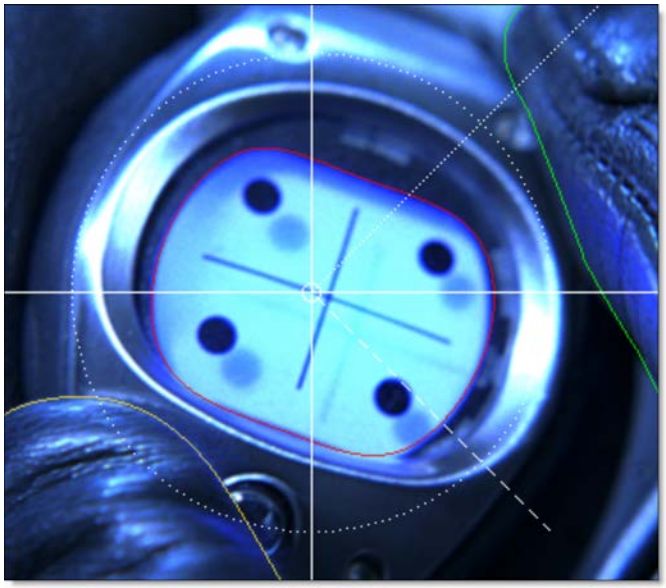
and then press either Transform twice in the Toolbar or the **T** key twice.



Instead of a bounding box with on-screen controls around the shape, the bounding box is around the selected points.

Transform - Layers

When a layer is selected and the Transform tool is active, you can position, scale and rotate the layer using the on-screen controls.



Layer Transform On-Screen Controls.

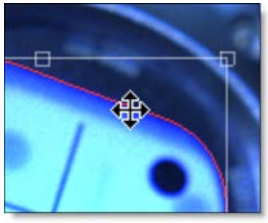
Shortcut	Action
Drag within large center circle	Moves the layer
Shift-drag within large center circle	Constrain layer movement horizontally or vertically
Drag the horizontal and vertical lines	Scales the layer horizontally or vertically
Drag the upper diagonal line	Proportionally scale the layer
Drag the lower diagonal line	Rotate the layer
Ctrl(Win)/Cmd(Mac)-drag the lower diagonal line	Rotates the layer with finer control
Drag small center circle	Moves the Anchor point
Q	Activates / Deactivates translation of selected layers
W	Activates / Deactivates rotation of selected layers
E	Activates / Deactivates scaling of selected layers
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments

You can also use the arrow keys to nudge the layer. See **Nudging** for more information.

Moving Shapes

Selected shapes are moved using one of three methods:

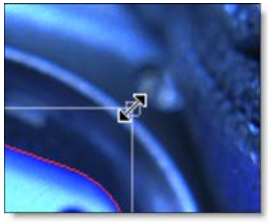
1. **Drag on the outline of a shape.**
2. **Nudge the shapes using the arrow keys. See Nudging for more information.**
3. **Press the Q key to activate translation mode and click and drag to move the selected shapes. You must press the Q key a second time to deactivate translation mode.**



In either case, you can constrain movement along an axis by pressing the **Shift** key while dragging the outline of a shape. The movement is constrained by the first direction (horizontal or vertical) that you drag in.

Scaling Shapes

Scaling changes the size of the shapes. Selected shapes are scaled using one of two methods: 1) Drag any of the points on the shape bounding box or 2) Press the **E** key to activate scaling mode and click and drag to scale the selected shapes. You must press the **E** key a second time to deactivate scaling mode.

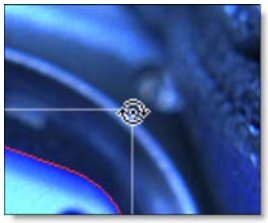


Note: The position of the cursor when **E** is pressed sets the anchor point for the scaling.

To proportionately scale, hold down the **Shift** key when resizing.

Rotating Shapes

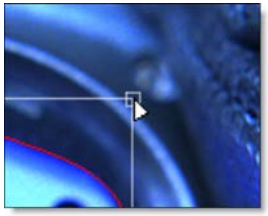
Rotating changes the angle of the shapes. Selected shapes are rotated using one of two methods: 1) **Ctrl(Win)/Cmd(Mac)**-drag on a shape bounding box corner handle or 2) Press the **W** key to activate rotation mode and click and drag to rotate the selected shapes. You must press the **W** key a second time to deactivate rotation mode.



Note: The position of the cursor when **W** is pressed sets the anchor point for the rotation.

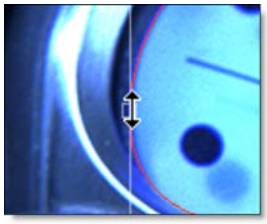
Corner-Pinning Shapes

The corner points of a shape's bounding box can be corner-pinned. For instance, you could fit the corners of a shape into the corners of a billboard. **Alt**-drag the corners of the shape's bounding box to corner-pin the shape.



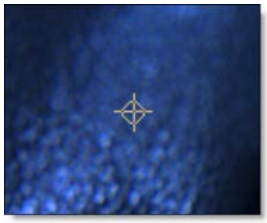
Shearing Shapes

Shapes can be sheared resulting in the shape being skewed horizontally or vertically. To shear a shape, **Ctrl(Win)/Cmd(Mac)**-drag on the midpoints of a shape bounding box on either the horizontal or vertical axis.



Anchor Point

A shape rotates around its center point, but scales from the opposite handle. Moving the anchor point changes the center of rotation and scaling when using the on-screen controls. To position the Anchor Point, press the . (period key) and the Anchor Point is displayed on the screen. Then, click and drag the Anchor Point to the desired location.



Now, when you rotate or scale the shape, notice how the shape rotates and scales around the Anchor Point.

Note: If more than one shape is selected, they will both rotate and scale around the Anchor Point.

Cutting, Copying and Pasting Shapes

Shapes can be cut(**Ctrl(Win)/Cmd(Mac)-X**), copied(**Ctrl(Win)/Cmd(Mac)-C**) and pasted(**Ctrl(Win)/Cmd(Mac)-V**).

Deleting Shapes

A shape or selection of shapes can be easily deleted using none other than the **Delete** key.

Selecting Shapes

Shape Selection Keyboard Shortcuts

Shortcut	Action
Click on a shape	Selects the shape
Shift-click a shape or drag select multiple shapes	Selects multiple shapes
Ctrl(Win)/Cmd(Mac)-click on a shape	Toggles the shape selection
Click anywhere off the shape	Deselects all shapes
Shift-click color pot in the Object List	Selects shapes of same color

Stereo Shape Selection

- When in the Left/Right View, selecting a shape also selects its linked shape.
- While in the Left/Right View, in the Transform and Reshape tools, changing the selection state of a stereo linked shape will do the same to the linked shape.
- It is possible to only select one of the two linked objects:
  1. In the Left/Right View by using the Object List.
  2. In the Transform tool by Alt-clicking a shape.
  3. In the Reshape tool by Alt-clicking an unselected shape.
- An Alert icon appears over the Left or Right View icons if there is a selected shape in the other view.

Reshape

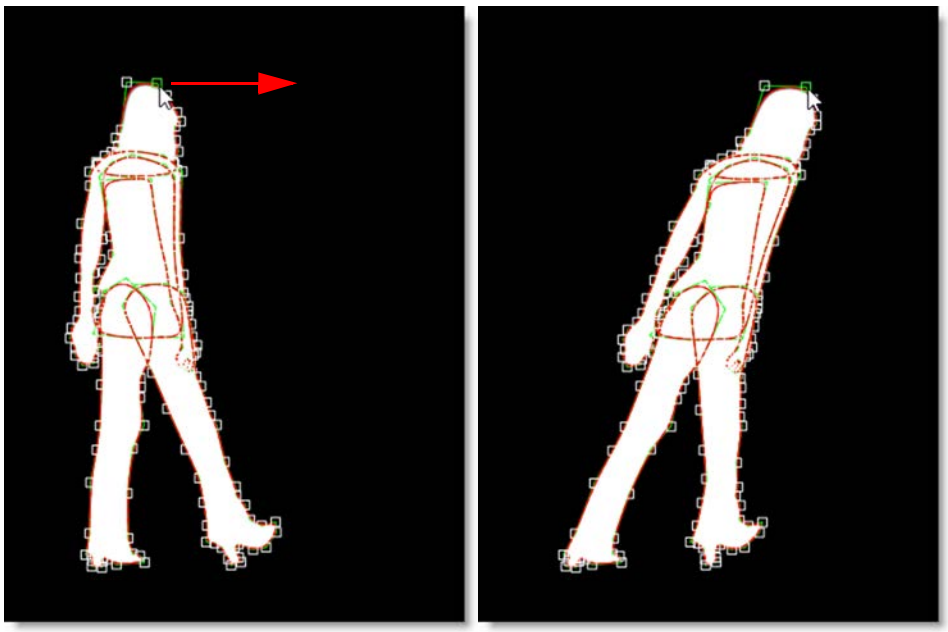
Reshape modifies shapes by adjusting their control points and tangents. In this mode, the shape's control points and tangents are visible. You must first select a control point before it can be modified.

Reshape - Normal Mode (R)

Selected points all move the same amount.

Reshape - Magnetic Mode (RR)

Points near the cursor move more than points farther away.



While in Magnetic mode with multiple selected control points, you can **Shift-Alt** click in the Viewer, not on any control points or shapes, and that becomes the magnetic pull position instead of using a point.

Note: If you prefer, use the Shape > Default Reshape Tool preference to set Magnetic mode as the default mode.

The following table lists the methods for selecting and deselecting points.

Control Point Selection Keyboard Shortcuts

Shortcut	Action
Click on a control point. If the control point is part of a Bézier curve, its tangents appear	Selects the control point
Shift-click the control points or drag select multiple control points	Selects multiple control points
Ctrl(Win)/Cmd(Mac)-Alt-I	Inverts the point selection
Alt-Shift-A	Selects all control points
Alt-Ctrl-A	Deselects all control points
Ctrl(Win)/Cmd(Mac)-click on a control point	Toggles the point selection
Click anywhere off the shape	Deselects all control points

Note: When in the Left/Right View of a stereo project, changing point selection on one shape will match the point selection on the linked shape.

Go to the **Reshape** tutorial to see how it works.

Adding Control Points

Adding control points assists in tracing more detailed images. To add a control point, **Alt**-click on the selected shape. Don't click on an existing control point because it will move it instead.

Note: In a stereo project, adding points is only allowed when in the Left/Right View when both shapes are selected.

Deleting Control Points

You can delete control points in one of two ways. Select the control point and press the **Delete** key or right-click on the control point and select Delete from the Reshape pop-up menu.

Note: In a stereo project, deleting points is only allowed when in the Left/Right View when both shapes are selected and when both shapes have the same selected control points.

Moving Control Points

Control points are easily moved. Just select one or more control points and drag one of the selected points to a new location. You can also use the arrow keys to nudge the points. See **Nudging** for more information.

Numbering Points

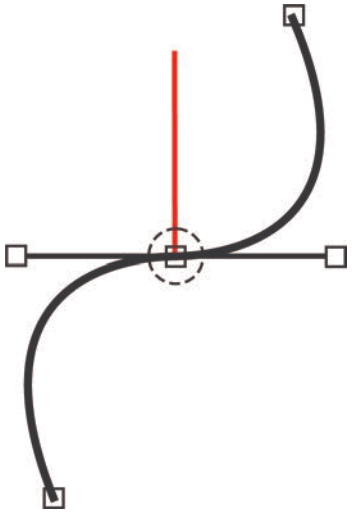
All points or a selection of points can be numbered. To number one point or a selection of points, right-click on a selected control point and select Tag. To see all points numbered, go to File > Preferences > Shape on Windows and Linux or Silhouette > Preferences > Shape on Mac and set the Number Points preference to All.

Feather

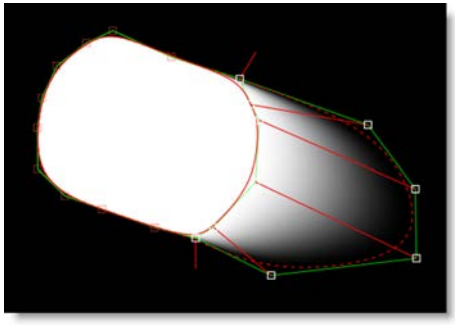
A shape's points can be feathered to create variable edged blurs on a point by point basis.

Closed Shapes

In the Reshape tool, selected points display a red, outward feather handle. Dragging this handle outward will pull the feather out.



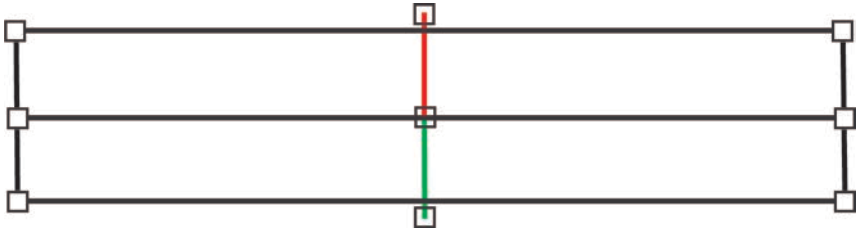
After the initial drag, the outer feather point can be dragged around independently.



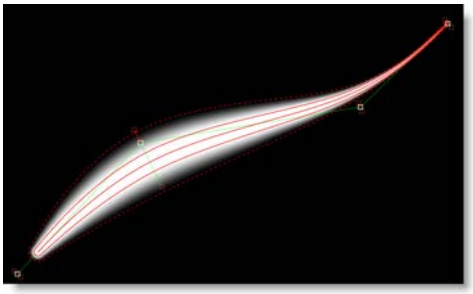
The display of the feather handles can be hidden using **Shift-F**.

Open Shapes

In the Reshape tool, select an open shape, adjust the Stroke Width to set its thickness and choose either a flat or round Cap Style in the Parameters window. Once you've done this, additional per-point feather handles appear--a red one for the Stroke Width and a green one for the Feather.



Just drag on the handles to make adjustments.

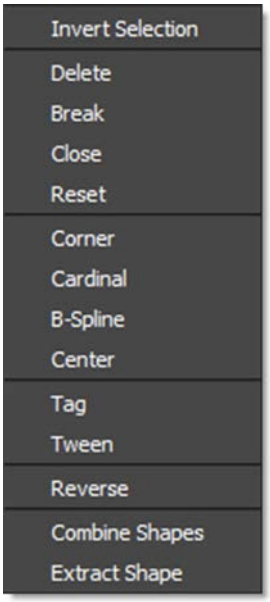


Multiple selected points can be dragged simultaneously and by a proportionate amount. To move the shape and feather points simultaneously, press **Shift** while moving the shape point.

Go to the **Feather** tutorial to see how it works.

Shape Pop-up Menu

Right-click over a control point to open the Reshape pop-up menu and select one of the options. The options will change depending on the type of shape that is selected.



To modify multiple selected points simultaneously, do not right-click on one of the selected points. Right-click on an open area of the Viewer instead.

Invert Selection

Inverts control point selection state.

Delete

Deletes the selected control point.

Break

Breaks the shape at the selected control point.

Close

Closes an open shape.

Reset

Resets the attributes of the selected control point.

Bézier Options

Linear
Both tangents are adjusted to one quarter the distance and in the direction of their adjoining control points.

Corner
Creates a corner point.

Cardinal
Creates a smooth point where the curve passes smoothly through it.

B-Spline Options

Corner
Creates a corner point.

B-Spline
Creates a smooth point that is determined by the surrounding points.

X-Spline Options

Corner
Creates a corner point.

Cardinal
Creates a smooth point where the curve passes smoothly through it.

B-Spline
Creates a smooth point that is determined by the surrounding points.

Center

Centers the control point between its adjoining control points.

Tag

Tags control points for point numbering. For point numbers to be displayed, the Shape > Number Points preference must be set to Tagged.

Tween

Takes the point and “re-tweens” it using the surrounding keyframes, and puts them where they would be if you hadn't moved them on that frame. Useful for simulating an “unkey” of selected points (the shape remains keyed of course).

Reverse

Reverses the order of all control points on all keyframes. Useful for warping and morphing, Reverse is used when you are trying to join two shapes where the control points go clockwise in one and counter-clockwise in the other. In this case, the correspondence points would iterate in different directions and the lines would cross each other. Reversing the points of one of the shapes would make them go in the same direction and the correspondence would be correct.

Combine Shapes

Copies selected points from a source shape between the selected points of a target shape.

Combining Shapes

- **Select the points from a source shape to be copied into a target shape.**
- **Ctrl(Win)-Cmd(Mac)-click the target shape in the Object List.**
- **Select two adjacent selected points in the target shape.**
- **Right-click and choose Combine Shapes.**

Extract Shape

Extracts the selected points of a shape into a new closed shape.

Breaking Shapes

In the Reshape tool, closed shapes can be opened using the Break option from the control point pop-up menu. To break a shape, select a point and right-click on it to open the pop-up menu. Choose Break and the shape opens at the selected control point.

Note: Feather information will be removed once you break a shape.

Closing and Extending Shapes

Shapes can be closed or extended with just a few mouse clicks. It is necessary to use the Reshape tool to perform the following actions.

Closing Open Shapes

Select one of the control points at the end of the shape and **Alt**-click on the other end point to close the shape.

Extending Shapes

Select a control point at either end of the shape and **Alt**-click somewhere off the shape.

Joining Open Shapes

In the Reshape tool, open shapes can be joined together. To join open shapes, select one of the end points of the source shape by clicking on it. Next, make sure both shapes are selected in the Object window. Finally, **Alt**-click on one of the end points of the target shape. The two shapes are now joined together as one.

Note: The target shape inherits the attributes of the source shape.

Converting B-Splines or X-Splines to Bézier Splines

You may convert your B-Splines or X-Splines to Bézier splines at any time. To convert a B-Spline to a Bézier spline, select a B-Spline or X-Spline and choose the Edit > Spline > Convert to Bézier menu item.

Once you select Convert to Bézier, a couple of things happen. The visibility of the B-Spline or X-Spline is toggled to off. A new Bézier spline is created and is named the same as the B-Spline or X-Spline but has an * at the end of the name.

Note: The Bézier conversion of B-Splines that use extreme, variable weight adjustments will not exactly match the original B-Spline. Do not use extreme, variable weight adjustments if you are planning on converting the B-Spline to a Bézier.

Nudging

Shapes, control points and layers can be nudged using the Arrow keys. One press of the Arrow key moves 1 pixel. Using the **Shift** key in conjunction with the Arrow keys moves 10 pixels. **Ctrl** plus the Arrow keys moves one tenth of a pixel. These nudge values can be changed in the Preferences menu located in File > Preferences > Nudging on Windows and Linux or Silhouette > Preferences > Nudging on Mac. Holding the Arrow keys down moves the selection continuously.

Nudging Keyboard Shortcuts

Shortcut	Action
Arrow keys	Moves by 1 pixel
Shift-Arrow keys	Moves by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves by one tenth of a pixel
Hold down **Arrow** keys	Moves continuously
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**-drag	Translates, Rotates or Scales in finer increments
Q, **W**, **E** then **Arrow** keys	Translates, Rotates or Scales by 1 pixel
Q, **W**, **E** then **Shift-Arrow** keys	Translates, Rotates or Scales by 10 pixels
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)-Arrow** keys	Translates, Rotates or Scales by 1/10 of a pixel

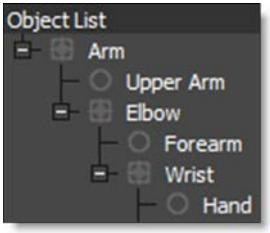
Note: Nudging of the layer transform is only available if one layer is selected, and no shapes are selected. This is to avoid confusion in case nested layers or objects in them are also selected.

IK-Inverse Kinematics (Y)

In computer graphics, inverse kinematics (IK) is a technique that provides automatic movement of objects. It allows elements of an object to be linked, such as the parts of an arm or leg, and causes them to move in a prescribed, realistic manner. IK simplifies the process of rotoscoping jointed, segmented figures by making the motion of each part related to the motion of the linked parts. That way, you simply have to animate the starting and ending joints, and the ones in between will adjust themselves and create more natural looking movement.

Go to the **IK** tutorial to see how it works.

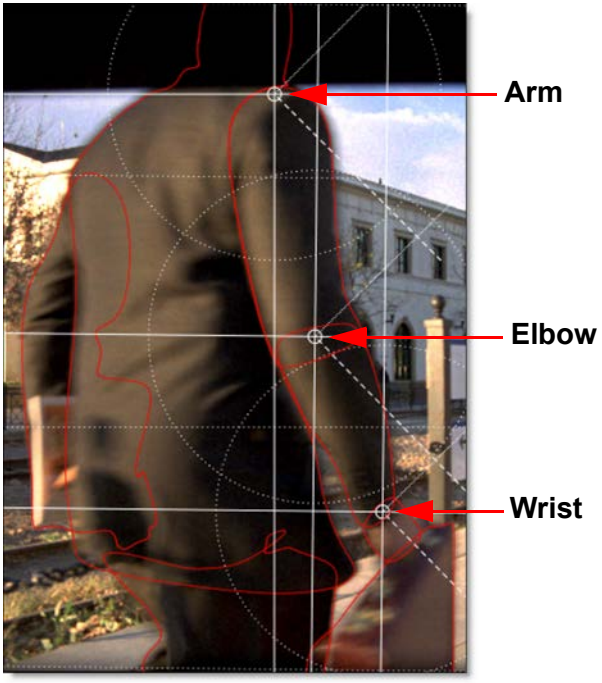
Silhouette implements IK within its existing infrastructure by using layers to model joints with one or more shapes in each layer to represent the pieces of the object. To do an arm, you would have this layout:



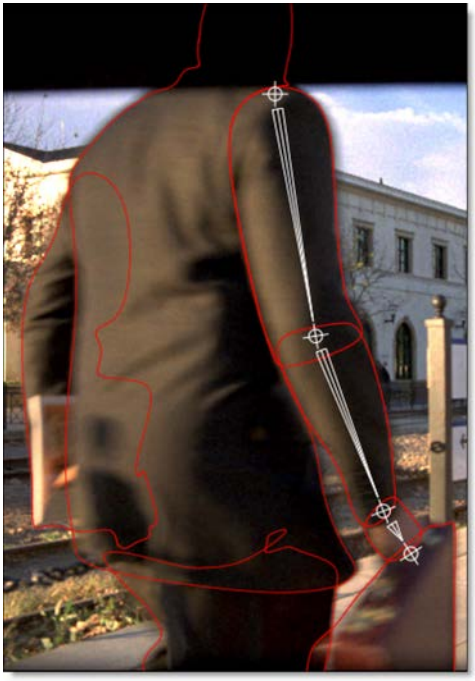
Arm, Elbow and Wrist are layers while Upper Arm, Forearm and Hand are shapes located in the appropriate layer.

Once the layers and shapes have been setup, the joints need to be placed by positioning the Anchor Point of each layer using the Transform tool.

Joints



With the IK tool selected, select the shapes and an IK chain is built on the fly that flows up the shape's layer tree to the top-most layer. Each layer's Anchor Point becomes a joint in the IK chain. The "bones" are just the connections between the layer anchors.



Click-drag a bone or shape to rotate the shape around the parent's anchor point. Click-dragging a joint uses IK to rotate all joints up the chain. **Alt**-click-drag a joint to move the joint while attempting to keep other joints in place.

When animated, keyframes are automatically set for each layer's rotation parameter. However, you can explicitly set the layer rotation keyframes by right-clicking on a selected bone and choosing Add Key.

Note: To quickly jump between the Reshape, Transform, and IK tools while editing a shape, use the shortcut keys: **R** for Reshape, **T** for Transform and **Y** for IK. **R**, **T** and **Y** are very convenient since they are right next to each other.

IK Editing

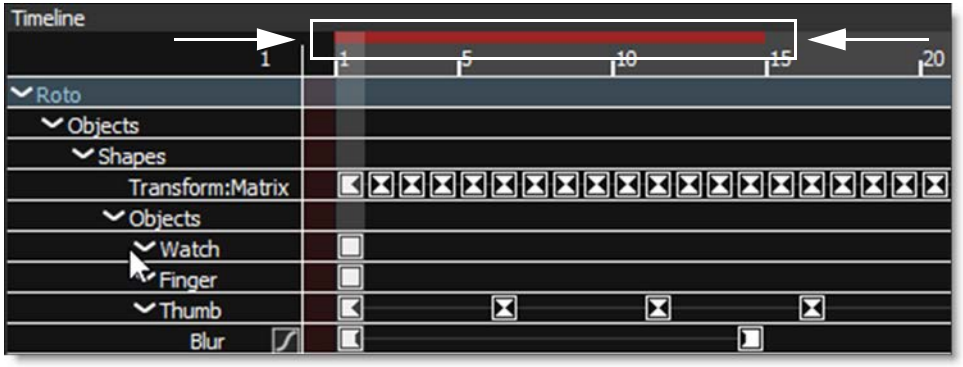
Action	Result
Click-drag bone or shape	Rotates the shape around the parent's anchor point
Click-drag joint	Uses IK to rotate all joints up the chain
Alt-click-drag joint	Moves the joint but tries to keep other joints in place
Right-click bone-Add Key	Sets keyframes for the selected bones

MultiFrame (M)

Normally, adjusting a shape or points on a shape are keyframed only on that particular frame. When MultiFrame is activated, it modifies the Transform and Reshape tools to allow you to make adjustments across all previously set keyframes or a selection of keyframes. A red outline is drawn around the Viewer to let you know that MultiFrame is active.

To use MultiFrame, select it in the Toolbar. Then, drag the red ends of the MultiFrame range bar at the top of the Timeline to limit the keyframes affected by MultiFrame.

Note: The MultiFrame range is displayed in the status bar while it is being edited.



The Transform or Reshape tools will now only affect keyframes within the MultiFrame selection.

Go to the **MultiFrame** tutorial to see how it works.

Note: When using MultiFrame, attempts to edit a shape outside the MultiFrame work range will be ignored. If you try to, for example, transform a shape and nothing happens, check to see if the MultiFrame range is active at that particular point in time.

Tracker

Tracking is a technique that involves analyzing the motion of an image over time. In Silhouette, images can be tracked using an automatic image tracking system called Planar Tracking or Point Tracking which utilizes either one, two or four track points. Silhouette includes two Planar Trackers: Silhouette's Planar Tracker and Imagineer's mocha Planar Tracker.

Go to the **Tracker** node to see how it works.

Shape Import and Export

Importing Shapes

Silhouette, Commotion, Elastic Reality and Shake 4.x SSF shapes can all be imported into Silhouette using the File > Import > Shapes menu.

Go to the **Import** tutorial to see how it works.

Exporting Shapes

Silhouette, Fusion, gMask (Combustion, Flint, Flame, Inferno), Nuke and Shake 4.x SSF shapes can all be exported using the File > Export > Shapes menu.

Go to the **Export** tutorial to see how it works.

After Effects

Importing Silhouette Shapes into After Effects

The Silhouette Shape Import/Export Plug-in for After Effects is required to convert Silhouette Shapes into After Effects masks. When importing Silhouette Shapes, the following shape parameters transfer into After Effects: opacity, blur, shape color, shape name, invert and locked states, transfer mode and per-shape motion blur state.

Go to the After Effects section of the **Import** tutorial to see how it works.

Exporting After Effects Masks to Silhouette Shapes

The Silhouette Shape Import/Export Plug-in for After Effects is required to convert After Effects masks to Silhouette Shapes. When exporting After Effects masks, the following shape parameters transfer into Silhouette: opacity, blur, shape color, shape name, invert and locked states, transfer mode and per-shape motion blur state.

Go to the After Effects section of the **Export** tutorial to see how it works.

Notes

1 **When importing and exporting Silhouette Shapes using the Silhouette Shape Import/Export Plug-in for After Effects, the general rule is that the After Effects composition size must match the Silhouette session size for shapes to import and export properly. However, as long as the ratio of the sizes between the After Effects composition and the Silhouette session match, you can successfully import and export shapes between them. For instance, you could import or export shapes from a 2000x1000 Silhouette session to a 1000x500 After Effects composition with no problems, as long as the pixel aspects were the same.**

2 **When After Effects has the Preserve Constant Vertex Count in the General Preferences dialog deactivated, it is possible for a differing number of control points to occur on different keyframes. These type of shapes can't be imported into Silhouette.**

Commotion

Importing Shapes

When importing Commotion shapes into Silhouette, the following shape parameters transfer into Silhouette: shape visibility, shape locked state, shape motion blur on/off state. If the shape is invisible in Commotion, it will start out invisible in Silhouette, so it might not look like it was imported unless you have the Object List open.

Note: You can't import Commotion B-Splines made with just 3 points.

Nuke

Exporting Shapes

There are three Nuke shape export options--Nuke 5 Shapes, Nuke 6.2+ Shapes and Nuke 9+ Shapes.

Nuke 5 Shapes

Nuke 5 Shapes (for Nuke 5.1v3 and above), Silhouette shapes and their blend modes are exported. Silhouette will also export Hold and Linear key frames for Opacity. When exported, tracker and shape data are baked together.

Nuke 6.2+ Shapes

Nuke 6.2+ Shapes will export the shape opacity, blend mode, invert, motion blur, outline color, shape blur (inner and outer blur only) as well as the layer and node blur and motion blur.

Nuke 9+ Shapes

Nuke 9+ Shapes and above will export open/closed shapes, the shape feather, opacity, blend mode, invert, motion blur, outline color, fill color, shape blur (inner and outer blur only), and visibility. The layer's blur, visibility and motion blur are also exported in addition to the node blur. You can optionally fully bake shape and transform data, convert opacity to Nuke Lifetime, and export the Silhouette project name as determined by the **Nuke 9+ Shapes preferences**.

Notes

1. **X-Splines and B-Splines are converted to Bezier's in Nuke.**
2. **Only Blurs set to Inside and Outside will transfer to Nuke.**
3. **Blend Modes**
   - **Multiply is not supported as Nuke and Silhouette's notion of Multiply are different.**
   - **Inside is not supported as Nuke has no equivalent.**
4. **Layer blend modes are not implemented as Nuke does not support them.**
5. **Nested transformations are exported fully baked because Nuke does not actually nest transformations in its layers. If a layer contains only shapes or only layers, nested transforms are exported. This is the preferred case. If a layer contains layers and shapes, transforms are baked into the shape transform--not the shape points.**

Shake

Import

Shake 4.x shapes are imported into Silhouette, but attributes such as feathering, color and opacity are ignored.

Export

Silhouette will export the shape name, locked/unlocked state, opacity, visibility, motion blur on/off, shutter angle, and shutter phase. In addition, subtractive shapes import into Shake as black in the RGB channels with a white alpha channel.

Node Parameters

When the Roto node is being edited in the Trees window, parameters specific to the Roto node, such as Motion Blur, can be adjusted in the Node parameters.

Alpha

Invert

Inverts the alpha channel.

Blur

Blurs the alpha Channel. The blur range is from 0-100 and defaults to 0.

Color

Renders shapes as outlines or filled with color in the RGB output. The color is set using the Shape > Color parameter.

Enable

Activates the color parameters.

Outline Size

Sets the thickness of the shape outline.

Fill Opacity

Sets the opacity of the color fill. You can also change the opacity of each shape separately using the Shape > Opacity control.

Motion Blur

Motion blur is the directional blurring of rapidly moving shapes. Enables Motion Blur for the Roto node.

Go to the **Motion Blur** tutorial to see how it works.

Enable

Turns Motion Blur on or off. The default is off. Leave this turned off for faster interaction while editing shapes.

Note: The Motion Blur parameters will not affect shapes unless you first activate Motion Blur for each shape in the Object Parameters. See the **Motion Blur** section in the Shape Parameters for more information.

Shutter Angle

Determines how long the camera shutter stays open when a picture is taken--higher values create more motion blur. The range of the Shutter Angle is 0-720 and defaults to 180. Measured in degrees, it simulates the exposure of a rotating camera shutter. The shutter angle uses the footage frame rate to determine the simulated exposure. For example, a shutter angle of 180 degrees (50% of 360 degrees) for 24fps footage creates an effective exposure of 1/48 of a second. Typing 1 degree applies almost no motion blur, and typing 720 degrees applies a high degree of motion blur.

Shutter Phase

Offsets the point in time, either forward or reverse, when the shutter opens. The range of the Shutter Phase is -360 to 360 and defaults to -90.

Motion Samples

Renders intermediate frames equal to the Motion Samples value and accumulates them, one over the other, on a single frame. The higher the number, the smoother the motion. The Motion Samples range is from 1-256 and defaults to 16.

Note: Normally, motion blur is calculated going forward, so if there is no shape motion beyond the end of a clip, there won't be motion blur on the last frame. To work around this, add an extra frame or two to the end of the work range in the Timebar and move the shape's last keyframe to be outside of the session range.

Antialias

Controls whether roto shapes are antialiased on their edges.

Node Outputs

Output

Outputs the foreground input and generated matte.

Composite

Outputs a composite of the foreground over the background based on the generated matte.

Channels

Renders shapes to different channels of an RGBA image as defined by the Shape > Channel parameter.

Objects

Outputs tracked layers for use in node's with Transform inputs.

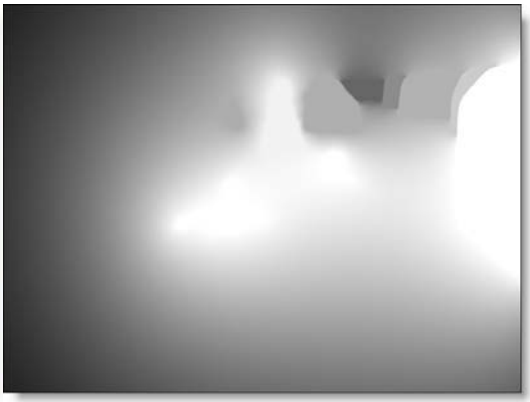
Roto Blend

Description

Smoothly blends the opacity of shapes together which can then be further manipulated in the Depth node.

Before

After



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Since shapes are required for the Roto Blend node, it has its own shape tools similar to those in the Roto node. See the **Roto Node** for more information.

Go to the **Roto Blend** tutorial to see how it works.

Node Group

Image, Silhouette.

Node Parameters

When the Roto Blend node is being edited in the Trees window, parameters specific to the Roto Blend node can be adjusted in the Node parameters.

Precision

Sets the computing precision of the Roto Blend node. There are Draft, Normal and Better choices.

Draft

Draft mode provides a fair representation of your work but has clearly visible defects. It is fast, interactive and very responsive, but is not intended for finished work.

Normal

Assuming you are using a reasonably modern machine, Normal can be used in most interactive situations and is sufficient for finished work.

Better

Better is slower than Normal, though still interactive on modern processors. It can be used for final renders although you should pre-check the final render before submitting it to a render farm.

Shape Parameters

Most of the roto tools contained in the Roto node are available in the Roto Blend node as well as parameters specific to shape blending. This includes B-Spline, Bézier or X-Spline shapes in addition to point and planar tracking.

Opacity

Controls the opacity of shapes.

Color

Sets the color of shape outlines.

Scatter

Description

Scatters pixels in a random fashion.

Node Group

Filter.

Controls

Radius

Sets the amount of scattering.

Scratch

Description

Removes vertical scratches by averaging in the surrounding pixels. Uses the second input's alpha to define the scratch area, or alternatively, the alpha of a single RGBA input.

Node Group

Filter.

Controls

Width

Controls the width of the Scratch filter.

Opacity

Sets the opacity of the Scratch filter.

Screen Smoother

Description

Smooths out unevenly lit blue and green screens. By default, darker screen areas are brightened.

When working with poorly lit blue and green screens, it is useful to apply the Screen Smoother prior to using zMatte. This will result in a better key.

Node Group

Key.

Controls

Color Correct

The Color Correct parameters allow you to adjust the color of the blue or green screen based on an extracted matte.

Hue

Rotates the hue of the blue or green screen.

Saturation

Adjusts the saturation of the blue or green screen. Positive values saturate, negative values desaturate.

Brightness

Adjusts the luminance of the blue or green screen. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the blue or green screen. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the blue or green screen. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values darken the image, negative values lighten the image.

Red

Adds or subtracts red from the blue or green screen.

Green

Adds or subtracts green from the blue or green screen.

Blue

Adds or subtracts blue from the blue or green screen.

Matte

Extract On

Extract On selects the type of matte extraction.

Blue Screen

Choose blue screen if you have a blue screen.

Green Screen

Choose green screen if you have a green screen.

Position

The Position value pinpoints the blue or green screen values to be used in the matte. White values in the matte are the areas that will be adjusted by the color correction.

Range

Increases or decreases the range of values in the matte. A high Range value indicates a large range of values included in the matte.

Blur-Horizontal

The matte is blurred by a fast, quality blur along the X-axis resulting in a smoother, more even color correction.

Blur-Vertical

The matte is blurred by a fast, quality blur along the Y-axis resulting in a smoother, more even color correction.

Gang

The horizontal and vertical values can be ganged together.

Selective Color Correct

Description

Colors can be selectively isolated through the use of a matte and adjusted using hue, saturation, brightness, gamma, contrast, temperature, cyan/magenta, red, green, and blue controls.

Node Group

Color.

Color Correct

Certain parts of the image are isolated by the creation of a matte. Whatever is shown as white in the matte can be adjusted by the color controls below.

Hue

Rotates the hue of the image.

Saturation

Adjusts the saturation of the image. Positive values saturate, negative values desaturate.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Temperature

Sets the color of the image to be either warmer or cooler. Dragging the numeric field to the right makes the image cooler (bluer) and dragging the numeric field to the left makes the image warmer (redder).

Cyan/Magenta

Adds either Cyan or Magenta to the image. Dragging the numeric field to the right makes the image more magenta and dragging the numeric field to the left makes the image more cyan.

Red

Adds or subtracts red from the image.

Green

Adds or subtracts green from the image.

Blue

Adds or subtracts blue from the image.

Matte

A matte is created to isolate areas to be color corrected. Using advanced image slicing algorithms, mattes are created using luminance, hue, saturation, average, red, green, blue, cyan, magenta, and yellow values.

Extract On

Extract On selects the type of matte. Select whichever type isolates the desired values.

A matte is created based on one of the following:

Luminance

A matte is created based on the luminance of the image.

Hue

A matte is created based on the hue of the image. When adjusting the Position parameter, you are selecting different hues.

Saturation

A matte is created based on the saturation of the image.

Average

A matte is created based on the average of the image's RGB values.

Red

A matte is created based on the image's red values.

Green

A matte is created based on the image's green values.

Blue

A matte is created based on the image's blue values.

Cyan

A matte is created based on the image's cyan values.

Magenta

A matte is created based on the image's magenta values.

Yellow

A matte is created based on the image's yellow values.

Position

The Position value pinpoints the color values to be used in the matte. For a luminance matte, a Position value of 100 would make a white matte of the highlights and a value of 0 would make a white matte of the shadows. In the flower image below, look at how the matte varies for different Position values in a red extraction. When the Position is at a value of 100, the red flowers are shown as white in the matte.

When the Position is moved to 50, the red flowers turn black.

Range

Increases or decreases the range of values in the matte. A low Range value indicates a narrow range of values. A high Range value indicates a large range of values included in the matte.

Black Clip

Blacks in the matte are made blacker by increasing this value. As the value increases, more values are clipped to black. This is helpful for getting rid of unwanted gray areas in what should be the black part of the matte.

White Clip

Whites in the matte are made whiter by increasing this value. As the value increases, more values are clipped to white. This is helpful for getting rid of unwanted gray areas in what should be the white part of the matte.

Shrink/Grow

Shrinks or grows the matte. Negative values shrink and positive values grow the matte.

Blur

Blurs the matte.

Invert

- **Off**

Does nothing to the matte.

- **On**

Inverts the luminance values of the matte.

Shadows/Highlights

Description

Shadows/Highlights lowers contrast evenly throughout the image by brightening shadow areas and darkening highlights. It is useful for correcting dark foreground subjects due to strong backlighting as well as highlights that are slightly washed out.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Shadows

Shadows

Raises the brightness of the shadows.

Position

Selects the shadow values to be adjusted.

Range

Controls the range of values to be used for the shadows. A higher Range value considers more values as shadows.

Highlights

Highlights

Lowers the brightness of the highlights.

Position

Selects the highlight values to be adjusted.

Range

Controls the range of values to be used for the highlights. A higher Range value considers more values as highlights.

Go to the **Matte** section of Common Node Controls to see how the Position and Range controls work.

Sharpen

Description

Enhances the sharpness or focus by selectively increasing the contrast between adjacent pixels along edges in an image.

Node Group

Filter.

Controls

Presets

To select a preset, pick one from the Presets tab.

Amount

Determines how much contrast is added at the edges.

Radius

Controls the size of the edges you wish to sharpen.

Threshold

The threshold setting is used to sharpen more pronounced edges, while leaving more subtle edges untouched. Low values sharpen more image areas while higher threshold values sharpen less.

Silk

Description

Black Silk

Gives a silky-smooth look to textured surfaces, suppresses facial blemishes and wrinkles, while maintaining a clear, focused image. Creates a diffused image that doesn't look like it's been shot through a filter.

Gold Silk

Offers all the benefits of the Black Silk filter, but also infuses special warmth by adding a soft, golden tint to shadows.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab. If you would like to view presets from a different category, use the pop-up menu at the top left of the Presets tab.

Detail

Smoothing

Fine image details, such as facial wrinkles and blemishes, are minimized using edge aware smoothing.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Matte

A matte can be used to limit the smoothing effect. Wherever there is white in the matte is where the smoothing will occur. Go to the **Matte** parameters to see how they work.

Slap Comp

Description

Renders the alpha channel overlayed on the image as a color with opacity. This is especially useful for rendering Roto node shapes as a color over an image.

Node Group

Composite.

Controls

Color

The color can be set through the use of a standard color picker.

Opacity

Sets the amount of color.

Invert

Inverts the alpha channel.

Source Nodes

Description

When media is imported into Silhouette, it becomes a Source node and is displayed in the Source window. Once a Source node is placed in the Trees window, the following parameters become available.

Alpha

Silhouette is a straight, unmatted compositor and its composite nodes expect unpremultiplied images. In addition, it is best practice to unpremultiply before color correcting premultiplied images so as to avoid unexpected results.

Type

Straight - Unmatted

Select this option if your source is Straight-Unmatted.

Premultiplied

Select this option if your source is Premultiplied. This will unpremultiply it.

Fill

None

No fill operation is performed.

Opaque

Makes the alpha channel opaque.

Transparent

Makes the alpha channel transparent.

Stream

The Stream parameters are where you identify which clips are used for the Left and Right Views when working with stereo images. The stereo tools in Silhouette only show up in the user interface when using a stereo EXR file, when left and right clips have been assigned in the Stream > Left and Right parameters, or when left and right clips are connected to the Merge Views node.

Note: Non-stereo sources only use the Left view.

Left

Sets which clip is used for the Left View.

Right

Sets which clip is used for the Right View.

Note: Stereo EXR files which contain both the Left and Right Views within one file are automatically connected to the Left and Right views.

Depth

Sets which clip is used for the Depth map.

Time Shift

Shifts the source node in time.

Extend Duration

When enabled, the last frame of the clip will repeat if the session duration is longer.

Center

Centers the image when using a session that is smaller or larger than the source.

- **When the file's Display Window is the same as the DOD, Center is enabled by default.**
- **When a file has overscan built in, Center is off by default.**

Split Field

Description

Split Field splits the image with a line that can be positioned, rotated and blurred. On one side of the line, the image is blurred and on the other, it is in focus.

Node Group

Diffusion.

Controls

Presets

To select a preset, choose one from the Presets tab.

Blur

Sets the softness of the split portion of the image.

Split

The Split controls manipulate the position, rotation and blur of the split line.

Position

There is an on-screen control in the center of the image. By clicking and dragging the on-screen control, the position of the split line can be adjusted.

Position X
The horizontal position of the split line.

Position Y
The vertical position of the split line.

Rotate

Rotates the split line.

Blur

Blurs the split line using a quality blur.

Split Tone

Description

Shadows, midtones and highlights can be individually tinted with the Split tone filter.

Node Group

Tints.

Controls

Shadows

Opacity

Set the opacity of the tint color.

Color

The Color parameter sets the color of the shadow tint through the use of a standard color picker.

Position

Selects the shadow values to be adjusted.

Range

Controls the range of values to be used for the shadows. A higher Range value considers more values as shadows.

Midtones

Opacity

Set the opacity of the tint color.

Color

The Color parameter sets the color of the midtone tint through the use of a standard color picker.

Position

Selects the midtone values to be adjusted.

Range

Controls the range of values to be used for the midtones. A higher Range value considers more values as midtones.

Highlights

Opacity

Set the opacity of the tint color.

Color

The Color parameter sets the color of the highlight tint through the use of a standard color picker.

Position

Selects the highlight values to be adjusted.

Range

Controls the range of values to be used for the highlights. A higher Range value considers more values as highlights.

Go to the **Matte** section of Common Node Controls to see how the Position and Range controls work.

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the tinting.

Split Views

Description

Splits a combined left, right and depth clip into separate views.

Node Group

Image.

Streaks

Description

The Streaks node creates horizontal or vertical streaks around highlights in the image.

Node Group

Light.

Controls

Presets

To select a preset, choose one from the Presets tab.

Streaks

Blend

Determines the blend mode to be used to create the streak effect.

Add
The streaks are added to your image.

Screen
The streaks are combined with the image using a Screen blend mode. This looks kind of like the Add blend mode, but highlights are retained.

Brightness

Sets the intensity of the streaks.

Streaks

Horizontal Streaks
Creates horizontal streaks.

Vertical Streaks
Creates vertical streaks.

Color

The Color parameter sets the color of the streaks through the use of a standard color picker. The default color is white.

Matte

A matte is used to create the streak effect. Go to the **Matte** section of Common Node Controls to see how the Matte controls work.

Sunset

Description

Sunset applies three photographic filters to the image which are blended together with a gradient. Presets for your favorite Color Gradient filters are provided as well as the ability to create custom colors.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Color 1

Sets the color for the top third of the image. Select the desired color using the color picker or choose a filter preset.

Presets

Select one of the filters from the pop-up list.

Color

The Color parameter sets the color of the grad through the use of a standard color picker.

Opacity

Sets the opacity of the color filter.

Color 2

The Color 2 controls are the same as the controls for Color 1 except it is applied to the middle third of the image.

Color 3

The Color 3 controls are the same as the controls for Color 1 except it is applied to the bottom third of the image.

Highlights

Preserve Highlights

Preserves the white areas of the image.

Exposure Compensation

Exposure Compensation adds back the brightness loss as a result of the filter application.

Grad

Grad is the combination of the three blended tints. Its direction, corners and size can be adjusted.Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Swap Channels

Description

Swap Channels lets you shuffle channels.

Node Group

Composite.

Controls

Red

Red

Uses the red channel.

Green

Uses the green channel.

Blue

Uses the blue channel.

Alpha

Uses the alpha channel.

Luminance

Uses the average luminance of the RGB channels.

Black

Copies black into the red channel.

White

Copies white into the red channel.

Green, Blue and Alpha

The controls for the Green, Blue and Alpha pop-up menus work the same as the Red channel listed above.

Switch Matte

Description

Similar to the Copy node, but is dedicated to copying a channel from input image 2 to the alpha channel of input image 1.

Node Group

Composite.

Controls

Source

Red

Copies the red channel from input image 2.

Green

Copies the green channel from input image 2.

Blue

Copies the blue channel from input image 2.

Alpha

Copies the alpha channel from input image 2.

Luminance

Uses the average luminance of the RGB channels from input image 2.

Black

Copies black into the red channel.

White

Copies white into the red channel.

Texture

Description

Applies textures to an image for a stylized look.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Amount

Sets the amount of texture applied to the image.

Complexity

Generates a more detailed, repetitive texture.

Randomize

Randomizes the texture.

Transform

The texture can be manipulated using a Transform. Go to the **Transform** node to see how it works.

Three Strip / Two Strip

Three Strip

Known and celebrated for it ultra-realistic, saturated levels of color, the Technicolor® Three Strip process was commonly used for musicals, costume pictures and animated films. It was created by photographing three black and white strips of film each passing through red, green and blue filters on the camera lens and then recombining them in the printing process. Our Three Strip filter was created under the direction of Academy Award Winning Visual Effects Supervisor Rob Legato.

Two Strip

The Technicolor® Two Strip process was the first stab at producing color motion pictures and consisted of simultaneously photographing two black and white images using red and green filters. This look creates an odd but pleasing hand-painted look where faces appear normal and green takes on a blue-green quality, while the sky and all things blue appear cyan. Our Two Strip filter was created under the direction of Academy Award Winning Visual Effects Supervisor Rob Legato.

Node Group

Film Lab.

Controls

Presets

To select a preset, choose one from the Presets tab.

Opacity

Sets the intensity of the of the effect.

Strips

Red Intensity

Intensifies red values in the image.

Red Smooth

Blurs the red matte that is used to isolate the red values. Use this control to smooth out any noise that may appear if the Red Intensity is turned up to a high value.

Green Intensity

Intensifies green values in the image.

Green Smooth

Blurs the green matte that is used to isolate the green values. Use this control to smooth out any noise that may appear if the Green Intensity is turned up to a high value.

Blue Intensity

Intensifies blue values in the image when using the Three Strip filter, but darkens image areas that were blue in the source image when using the Two Strip filter.

Blue Smooth

Blurs the blue matte that is used to isolate the blue values. Use this control to smooth out any noise that may appear if the Blue Intensity is turned up to a high value.

Color Correct

Go to the **Color Correct** node to see how the Color Correct controls work.

Time Blur

Description

Time Blur mixes frames together to create interesting motion effects. This node is also useful for smoothing out film grain and video noise which can cause problems when pulling a key or generating a matte.

Node Group

Time.

Controls

Frames

Sets the amount of frames to be blended.

Frame Window

Determines the positioning of the frame averaging window.

Past

The frame averaging window uses past frames.

Centered

Centers the frame averaging window around the current frame.

Future

The frame averaging window uses future frames.

Tint

Description

Tints the entire image with a selected color using a variety of colorization modes.

Node Group

Tints.

Controls

Presets

To select a preset, choose one from the Presets tab.

Black and White

Enable

Converts the image to Black and White.

Filter

The Filter pop-up selects the type of black and white filter to be applied to your color image. Go to the **Black and White** section of Common Node Controls to see how the Black and White controls work.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Tint

Color

Sets the color that the image will be colorized with. Select the desired color using the color picker.

Opacity

Sets the opacity of the color.

Mode

Selects how color is applied to the image.

Normal

Tints the image while retaining highlights.

Tint

The image is tinted by replacing hue and saturation.

Hue

The image is tinted by only replacing hue.

Lighten

Pixels darker than the color are replaced, and pixels lighter than the color do not change.

Darken

Pixels lighter than the color are replaced, and pixels darker than the color do not change.

Grad

Tint can optionally use a gradient that limits where the filter is applied. Grad is the transition area that goes from the tinted image to the original image. Its direction, corners and size can be adjusted. Go to the **Grad** section of Common Node Controls to see how the Grad controls work.

Tone Adjust

Description

Tone Adjust approximates the appearance of high dynamic range images by adjusting the tonal values. Specifically, detail is recovered from the darker portions of the images and can optionally be denoised.

Node Group

Color.

Controls

Amount

Lightens shadows to reveal more detail. Take care not to over apply this setting and reveal image noise.

DeNoise

Removes film grain and noise in the shadow areas.

Position

Selects the shadow values to be adjusted.

Range

Controls the range of values to be used for the shadows. A higher Range value considers more values as shadows.

Tracker

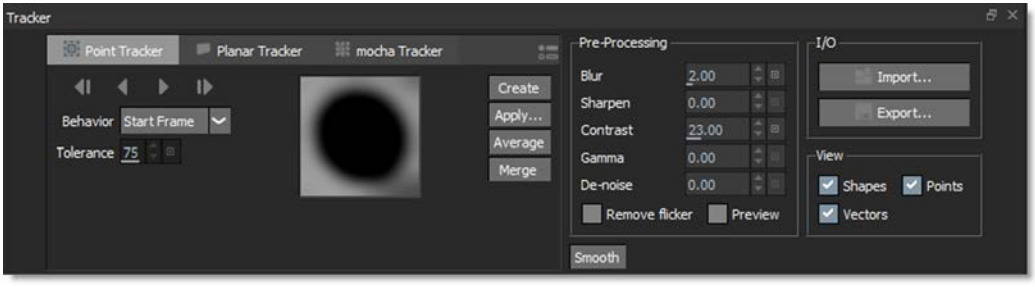
Description

Tracking is a technique that involves analyzing the motion of an image over time. Images can be tracked using an automatic image tracking system called planar tracking using either Silhouette's Planar Tracker or Imagineer's mocha Planar Tracker. In addition, you can use a Point Tracker which utilizes either one, two or four track points. One point tracking obtains horizontal and vertical movement. Two point tracking analyzes scaling and rotation in addition to horizontal and vertical movement. Lastly, four point tracking evaluates and applies perspective movement using a corner-pin transformation.

However the tracking data is obtained, it can then be applied in one of two ways: match moving or stabilization. Match moving applies the motion of the trackers to an object so that it follows the motion of the clip. Stabilization inverts the tracking data so that the clip appears to be stable.

Selecting the Tracker (**Shift-T**) displays various tracking features and controls.

When the Tracker is selected, various non-animateable controls appear in a Tracker window located at the bottom portion of the screen. You have the choice of using either the Point Tracker, Planar Tracker or mocha Tracker.



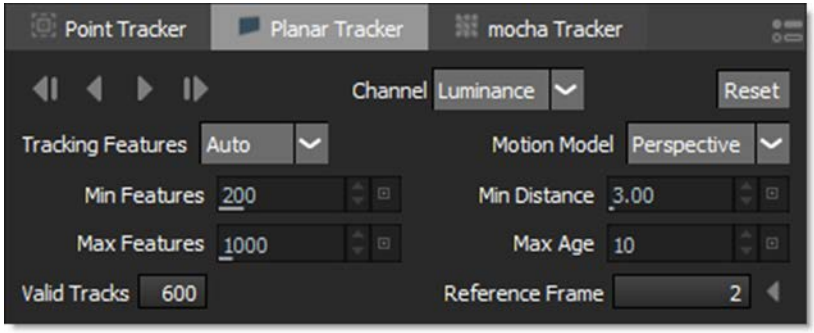
Node Group

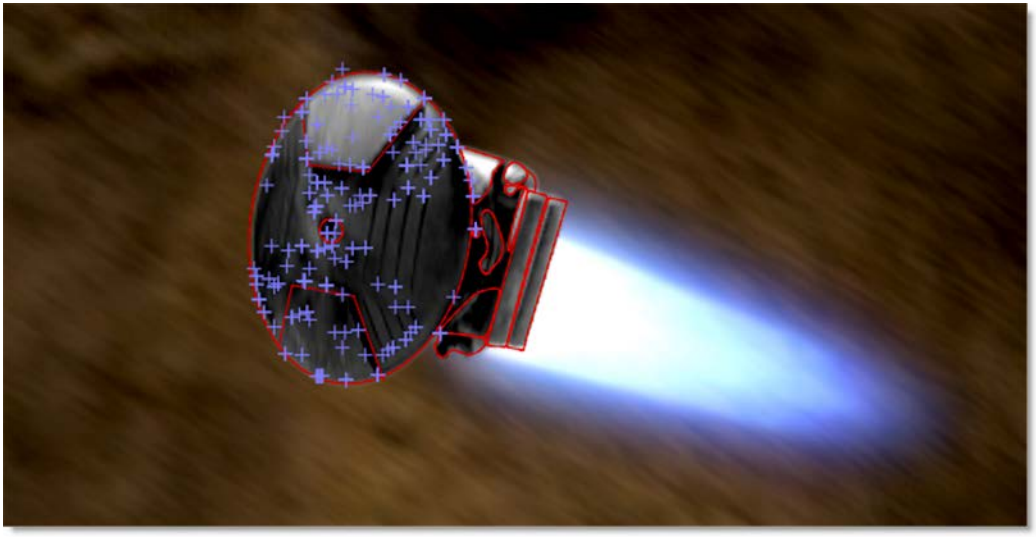
Transform.

Note: The Tracker is available as a separate node, but is also built into the Depth, Morph and Roto nodes. When the Objects output of these nodes are plugged into another node's Transform input, the Tracker's point trackers and transformed layers are available for use by selecting one of them in the input node's Transform pop-up menu.

Planar Tracker

Silhouette's Planar Tracker tracks several points (corners, edges and ridges) on the image while automatically handling partial occlusions of the tracked object, producing excellent results even with textureless objects.





The key to getting the most out of the Planar Tracker and mocha Planar Tracker is to learn to find planes of movement in your shot which coincide with the object that you want to track. Sometimes it will be obvious--other times you may have to break your object into different planes of movement. For instance, if you were tracking a tabletop, you would want to draw the spline to avoid a flower arrangement in the center of the table, since it is not on the same plane and will make your track less accurate.

Both the Planar Tracker and mocha Planar Tracker require that you create a layer in the Object List and have at least one shape within it to drive the tracker. The shape should surround the object you are tracking, but it does not have to be exact and it is best to leave a little extra room around it. In addition, you can use more than one shape as long as they are on the same geometric plane.

In some cases, there are parts of an image that can interfere with the effectiveness of the Planar Trackers. To handle this, you can create an exclusion zone in the area you are tracking. For instance, a computer screen with strong reflections could cause the track to jump. To exclude an area while tracking, create a subtractive shape or layer above the layer to be tracked. Then, just select both the layer to be tracked as well as the subtractive object prior to tracking.

Go to the **Planar Trackers** tutorial to see how it works.

Tracker Direction

The Tracker Direction buttons are used to track backwards and forwards and are enabled when a layer has been selected.

Note: In a Stereo project, the Tracker Direction buttons are grayed out in the Left/Right View. You must be in either the Left or Right View to track. In the Morph node, the Tracker Direction buttons are grayed out in View Output. You must be in either View A or View B to track.

Track Backward One Frame

Tracks backward one frame at a time.

Track Backward

Tracks backward to the beginning of the Timebar.

Track Forward

Tracks forward to the end of the Timebar.

Track Forward One Frame

Tracks forward one frame at a time.

As you track, the tracker's transform data is automatically applied to the selected layer.

Note: When a layer is selected prior to tracking, the per-shape blend mode, invert state, on/off state and opacity are all obeyed. This allows you to use multiple shapes while tracking.

Channel

Determines which image channel the tracker uses to analyze the image.

Luminance

The tracker analyzes the luminance or brightness of the image.

Red

The tracker analyzes the image's red channel.

Green

The tracker analyzes the image's green channel.

Blue

The tracker analyzes the image's blue channel.

Reset

Resets the tracking points.

Tracking Features

Auto

Tracks corners, edges and ridges and automatically selects the best result.

Corners

Tracks corners, crosses or points.

Edges

Tracks edges of a solid object.

Ridges

Tracks lines appearing as a strips or bands.

Motion Model

Perspective

Tracks perspective changes. Good for large shapes.

Affine

Tracks translation, rotation, scale, and skew. Good for medium shapes.

Translation

Tracks the XY offset. Good for small shapes.

Min Features

The minimum number of trackers to generate.

Max Features

The maximum number of trackers to generate.

Min Dist

The minimum distance between trackers.

Max Age

The maximum number of frames a specific tracker will live until it is removed and a new tracker is generated.

Note: If you have really good tracks, you can increase the Max Age to cover the entire sequence and the trackers will live for the entire time and will result in a smoother transform. However, this value has to remain low to handle automatic occlusion handling.

Valid Tracks

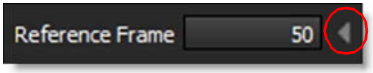
The number next to Valid Tracks is a running total of the number of trackers that are viable as the tracker progresses.

Reference Frame

Displays the reference frame number. The reference frame is the frame you first started tracking on and it locks in the picked set of track points at that frame.

Jump to Reference Frame

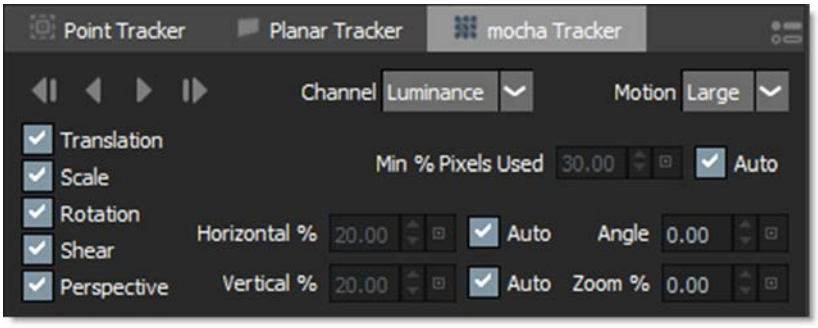
When clicked, the Timebar is positioned at the reference frame.



mocha Planar Tracker

Imagineer's Planar Tracker technology provides 2D transformation data by tracking planes rather than points.

Go to the **Planar Trackers** tutorial to see how it works.



Note: mocha Planar tracking data can not be exported as external trackers.

As with Silhouette's Planar Tracker, the mocha Planar Tracker requires that you create a layer in the Object List and have at least one shape within it to drive the tracker. The shape should surround the object you are tracking, but it does not have to be exact and it is best to leave a little extra room around it. In addition, you can use more than one shape as long as they are on the same geometric plane.

Tracker Direction

The Tracker Direction buttons are used to track backwards and forwards and are enabled when a layer has been selected.

Note: In a Stereo project, the Tracker Direction buttons are grayed out in the Left/Right View. You must be in either the Left or Right View to track. In the Morph node, the Tracker Direction buttons are grayed out in View Output. You must be in either View A or View B to track.

Track Backward One Frame

Tracks backward one frame at a time.

Track Backward

Tracks backward to the beginning of the Timebar.

Track Forward

Tracks forward to the end of the Timebar.

Track Forward One Frame

Tracks forward one frame at a time.

As you track, the tracker's transform data is automatically applied to the selected layer.

Note: When a layer is selected prior to tracking, the per-shape blend mode, invert state, on/off state and opacity are all obeyed. This allows you to use multiple shapes while tracking.

Channel

Determines which image channel the tracker uses to analyze the image.

Luminance

The tracker analyzes the luminance or brightness of the image.

Red

The tracker analyzes the image's red channel.

Green

The tracker analyzes the image's green channel.

Blue

The tracker analyzes the image's blue channel.

Min % Pixels Used

Min % is one of the most important parameters to look at for tracking. By default, the minimum percentage of pixels used is dynamic. When you draw a shape, the mocha Planar Tracker tries to determine the optimal amount of pixels to look for in order to speed up tracking. If you draw a very large shape, the percentage will be low. If you draw a small shape, the percentage will be high.

In many cases, the cause of a drifting or slipping track is a low percentage of pixels. If you want a more solid and accurate track, try setting the Min % Pixels Used value to a higher amount. Keep in mind, however, that a larger percentage of pixels can mean a slower track.

Min % Pixels Used is set to Auto by default.

Motion

These Motion parameters control what motion you are looking for when you track.

Translation

The position of the object.

Scale

Whether the object gets larger or smaller.

Rotation

The angle of rotation of the object.

Shear

How the object is skewing relative to the camera.

Perspective

How the object is moving in perspective relative to the camera.

The main difference between shear and perspective is the relative motion. Shear is defined as the object warping in only two corners, whereas perspective is most often needed where the object is rotating away from the viewer significantly in space.

As an example, if someone is walking towards you, their torso would be showing shear as it rotates slightly back and forth from your point of view.

The front of a truck turning a corner in front of you would be showing significant perspective change.

Large Motion

This is the default. It searches for motion and optimizes the track as it goes. Small Motion is also applied when you choose Large Motion.

Small Motion

Small Motion only optimizes. You would use Small Motion if there were very subtle changes in the movement of the object you are tracking.

Search Area

The Search Area defines ranges for the tracker to search within.

Horizontal/Vertical

Determines the distance in pixels within the footage to search for the next object position. This is set to Auto by default.

Angle

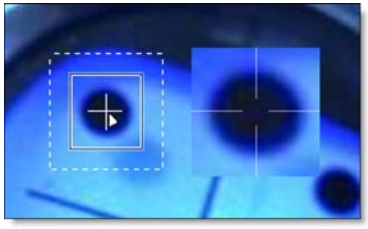
If you have a fast rotating object, like a wheel, you can set an angle of rotation to help the tracker to lock onto the detail correctly. The tracker will handle a small amount of rotation, less than 10º per frame, with Angle set to zero.

Zoom %

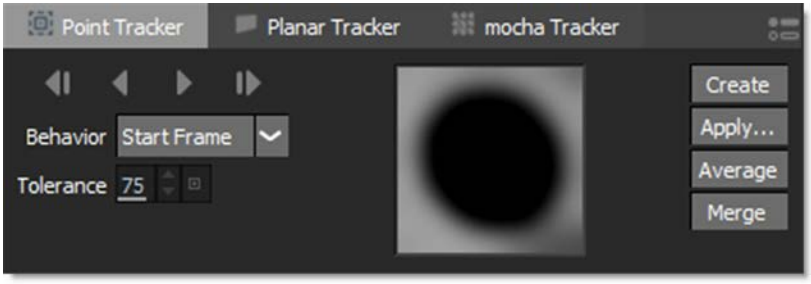
If you have a fast zoom, you can add a percentage value here to help the tracker. Again, the tracker will still handle a small amount of zoom with this set to zero.

Point Tracker

The Point Tracker uses trackers which are placed on distinguishable image features.

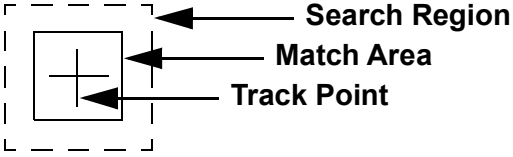


Go to the **Point Tracker** tutorial to see how it works.



Tracker Components

Each tracker has a Match Area, Search Region, and Track Point.



Match Area

The inner box is the Match Area. It defines a pattern that will be searched for from frame to frame. It's a good idea to choose a region with good contrast and detail. Corners with sharp contrast are usually good areas to track as movement can easily be detected in any direction. The Match Area can be scaled to the desired size.

Search Region

The outer, dashed box is the Search Region, which should be the maximum amount your tracking point will move between frames. The larger the size, the slower the processing. The trick is to make the Search Region as small as possible, yet still large enough to cover the area the tracker will move from frame to frame. The Search Region can be sized in the same fashion as the Match Area.

Track Point

The center cross is the track point. It represents the position of the motion track. Normally, the Track Point is at the center of the tracker, but can be offset if the Match Area becomes obscured.

Tracker Direction

The tracker can track both forward and backward one frame at a time or for the entire duration. The controls are enabled once a tracker has been selected.

Note: In a Stereo project, the Tracker Direction buttons are grayed out in the Left/Right View. You must be in either the Left or Right View to track. In the Morph node, the Tracker Direction buttons are grayed out in View Output. You must be in either View A or View B to track.

Track Backward One Frame

Tracks backward one frame at a time.

Track Backward

Tracks backward to the beginning of the Timebar.

Track Forward

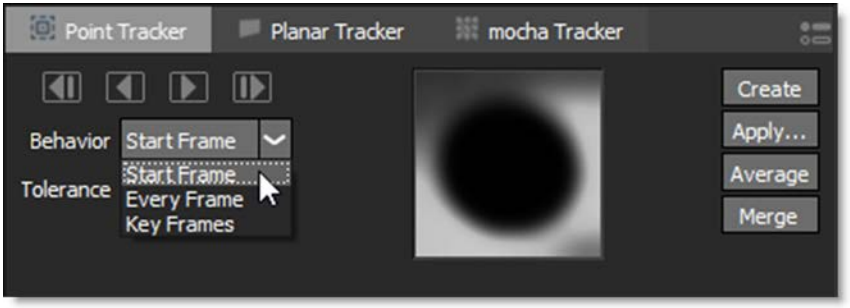
Tracks forward to the end of the Timebar.

Track Forward One Frame

Tracks forward one frame at a time.

Behavior

Behavior decides what frame should be used as the reference to check the accuracy of the Match Area. By default, the reference is the first frame at which you started the track.



Start Frame

At each frame, the Match Area is compared to the first frame at which you started tracking. If you stop tracking halfway through your clip, and start up again at a later frame, the later frame will be used as the reference.

Every Frame

The Match Area is compared to the previous frame. This method will cause inherent drift in your track, but is useful for clips that have drastic changes in perspective and scale.

Key Frames

For difficult shots, it is helpful to pre-set keyframes for the tracker at various points in the clip. The Match Area will use these keyframes as a reference while tracking.

Tolerance

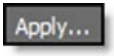
Describes the level of accuracy between the Match Area that the Tracker is searching for and the area it actually finds when searching from frame to frame. A prefect match would be a value of 100. If the error that is calculated is below the Tolerance value, no keyframe will be set on that particular frame. The Tolerance is preset to a value of 75.

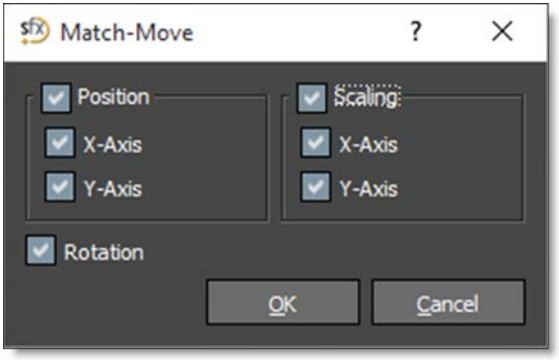
Create

Clicking on the Create button places a new tracker in the center of the screen. You can also add a new tracker at any time by **Alt**-clicking the image when the Tracker is activated.

Apply

Selecting the Apply button opens the Match Move window where you determine how the tracking data will be applied to a selected layer.





When OK is clicked, the tracking data is transferred to the Transform > Matrix parameter of the selected layer.

Note: The Apply button is only available when trackers and a layer are selected.

Go to the **Applying Trackers** tutorial to see how it works.

Position

Applies X/Y position data to the layer.

Scaling

Applies X/Y scaling data to the layer. Requires two trackers.

Rotation

Applies rotation data to the layer. Requires two trackers.

Average

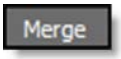
Averages multiple tracks into a new destination track. A common technique is to track forwards from the first frame to the last, and then create a second track, tracking backwards from the last frame to the first. These two trackers are then averaged together to derive a more accurate track.

To average trackers, select more than one tracker and click the Average button. A new averaged tracker is created.

Go to the **Averaging Trackers** tutorial to see how it works.

Merge

If you have multiple trackers that cover different frame ranges, they can be merged into one tracker, automatically compensating for the different offsets.



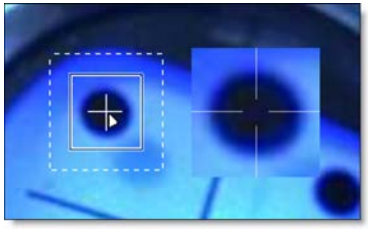
Ideally, the trackers should overlap in time by at least one keyframe.

Go to the **Merging Trackers** tutorial to see how it works.

Tracker Parameters

Most tracker parameters are interactively set while moving the tracker in the Viewer. When a point tracker is selected, its parameters are displayed in the Object Parameters.

Magnify Window



A magnified version of the Match Area is displayed to aid in the placement of a tracker. It is activated when you click the Create button or when you move an existing tracker. The magnified area is displayed in the color space selected from the Mode pop-up menu.

Position

Sets the position of the Track Point. This parameter is automatically set when using the on-screen tracker controls.

Nudging Trackers

Trackers can be nudged using the Arrow keys. One press of the Arrow key moves the tracker 1 pixel. Using the **Shift** key in conjunction with the Arrow keys moves the tracker 10 pixels. **Ctrl** plus the Arrow keys moves the tracker one tenth of a pixel. These nudge values can be changed in the Preferences menu located in File > Preferences > Nudging on Windows and Linux or Silhouette > Preferences > Nudging on Mac. Holding the Arrow keys down slides the tracker.

Tracker Nudging Keyboard Shortcuts

Shortcut	Action
Arrow keys	Moves the tracker by 1 pixel
Shift-Arrow keys	Moves the tracker by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves the tracker by one tenth of a pixel
Hold down **Arrow** keys	Moves the tracker continuously

Channel

Determines which image channel the tracker uses to analyze the image.

RGB

The tracker analyzes the red, green and blue channels of the image.

Luminance

The tracker analyzes the luminance or brightness of the image.

Red

The tracker analyzes the image's red channel.

Green

The tracker analyzes the image's green channel.

Blue

The tracker analyzes the image's blue channel.

Match Offset

Offsets the Match Area from the tracker. This parameter is automatically set when using the on-screen tracker controls.

Search Offset

Offsets the Search Region from the tracker. This parameter is automatically set when using the on-screen tracker controls.

Match Size

Sets the size of the Match Area. This parameter is automatically set when using the on-screen tracker controls.

Search Size

Sets the size of the Search Region. This parameter is automatically set when using the on-screen tracker controls.

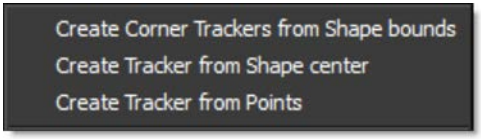
Path Color

Sets the color of the tracker's path. Left-clicking the color pot opens a standard color picker while right-clicking on the color pot opens a pop-up color menu with 16 primaries.

Tracker Pop-Up Menu

Point Tracker

With the Tracker tool enabled, right-click over a shape or a selected control point to open the Tracker pop-up menu.



Trackers can be created based on a shape's points, the center point of a shape or the shape's bounding box. Trackers created in this manner are a concatenation of the shape and layer transformation data. So, why do this? Because, it is a handy way of creating trackers with all of this combined data for use in other programs.

Create Corner Trackers from Shape Bounds

Creates four trackers around the four corners of the shape bounding box.

Create Tracker from Shape Center

Creates one tracker in the center of the shape.

Create Tracker from Points

Creates trackers from selected points.

Planar Tracker

Create Point Tracker

Planar Tracker track points can be converted to point trackers which can then be treated like any other point tracker; they can be merged, smoothed, averaged, and applied to layers. Right-click on a planar track point, choose Create Point Tracker and a new point tracker is created.

Pre-Processing

Images that contain film grain or video noise, lack contrast or sharpness as well as images that have flicker can be tracked more accurately by applying certain filters during the tracking process. Filters such as Blur, Sharpen, Contrast, Gamma, De-Noise and Remove Flicker will increase tracker accuracy for problematic images.

Blur

Applies a blur to the image features.

Sharpen

Sharpens image features.

Contrast

Increases contrast.

Gamma

Increases brightness by leaving the white and black points the same and only modifies the values in-between.

De-Noise

Applies a de-noise algorithm to smooth out noise while retaining detail.

Remove Flicker

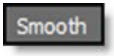
Corrects image flicker or brightness variation over time, which has a habit of interfering with tracker accuracy.

Preview

Shows the effect of the Pre-Processing parameters on the entire image in the Viewer.

Smooth

Smooths out inaccuracies in the tracking data.



To smooth, select a point tracker or planar tracked layer and click the Smooth button. Adjust the slider when it pops-up and adjust it to the desired level of smoothing.

Go to the **Smoothing Point Trackers** or the **Smoothing Planar Tracked Layers** tutorials to see how it works.

I/0

Importing and exporting tracking data takes place in the I/0 section of the Tracker tab.

Import

After Effects Corner-Pin, Nuke, Shake or Simple Format formatted trackers can be imported into Silhouette. If you would like to import trackers from non-supported applications, simply export a Silhouette tracker in Simple Format to see how it should be formatted.

Go to the **Importing Tracking Data** tutorial to see how it works.

Export

Trackers can be exported to the After Effects, Autodesk, Nuke and Shake tracker formats. In addition, the tracking data applied to a layer, either by the Point Tracker or Planar Tracker, can be exported as a four point corner-pin track.

To create trackers for export that are a concatenation of the shape and layer transformation data, see the **Tracker Pop-Up Menu** section for more information.

Go to the **Exporting Tracking Data** tutorial to see how it works.

View

Shapes, points or tracker vectors can be toggled on or off.

Shapes

Toggles the display of shapes in the Viewer.

Points

Toggles the display of Planar Tracker track points in the Viewer.

Vectors

Toggles the display of tracking vectors in the Viewer. This option is not available for use with the Planar Tracker.

Preferences

Seldom adjusted tracker controls can be accessed by clicking the Tracker Preferences icon.

See the **Tracker Preferences** for information on their use.

Using the Tracker's Transform Data

However the tracking data is obtained, it ultimately needs to be applied to a layer. The Tracker node then outputs the point trackers and tracked layers for use in other nodes. For instance, the Transform and Paint nodes have transform inputs as do other nodes that contain point controls. When the Objects output of a Tracker node is plugged into another node's Transform input, the Tracker's point trackers and transformed layers are available for use by selecting one of them in the node's Transform pop-up menu.

Note: Other nodes that contain trackers, like Depth, Morph and Roto, also have an Objects output that can be plugged into another node's Transform input.

Go to the **Match Move or Stabilize Images** tutorial to see how it works

Transform

Description

Transform your image using Position, Scale, Rotation, Corner-Pin, Shear and Crop controls. Match Move and Stabilization can also be applied to the image when a Tracker node is plugged into the node's transform input.

Node Group

Transform.

Controls

Transform

Transform

Selects point trackers and tracked layers from the input Tracker node.

Mode

Match Move

Match moves the image based on the input tracker data.

Stabilize

Stabilizes the image based on the input tracker data.

Crop

Top

Crops the image from the top down.

Bottom

Crops the image from the bottom up.

Left

Crops the image from left to right.

Right

Crops the image from right to left.

Corner-Pin

The image can be corner pinned by adjusting the Corner-Pin values as well as dragging the four points on the corners of the screen.

Upper-Left

Controls the X and Y position of the Upper Left Point.

Upper-Right

Controls the X and Y position of the Upper Right Point.

Lower-Right

Controls the X and Y position of the Lower Right Point.

Lower-Left

Controls the X and Y position of the Lower Left Point.

There are four points around the four corners of the image. By clicking and dragging any of the four points, the image can be adjusted.

Position

X Axis

The horizontal pSosition of the image.

Y Axis

The vertical position of the image.

Scale

X Axis

The horizontal scale of the image.

Y Axis

The vertical scale of the image.

Gang

The X Axis and Y Axis values can be ganged together.

Rotate

In addition to the standard position and scale controls, the image can be rotated. Positive values rotate clockwise and negative values rotate counter-clockwise.

Shear

X Axis

Skews the image left and right.

Y Axis

Skews the image up and down.

Gang

The X Axis and Y Axis values can be ganged together.

Anchor

X Axis

Defines the point on the X axis where the image will be positioned, rotated, scaled or sheared.

Y Axis

Defines the point on the Y axis where the image will be positioned, rotated, scaled or sheared.

Gang

The X Axis and Y Axis values can be ganged together.

Filter

Chooses the filtering method when transforming the image. Mitchell is the default.

Triangle

The Triangle filter is not the highest quality, but fine for scaled images.

Quadratic

Quadratic is like triangle, but more blur with fewer artifacts. It offers a good compromise between speed and quality.

Cubic

Cubic is the default filter in Photoshop. It produces better results with continuous tone images, but is slower than Quadratic. If the image contains fine details, the result may be blurrier than desired.

Catmull-Rom

This produces good results with continuous tone images which are scaled down, producing sharp results with fine detailed images.

Gaussian

Gaussian lacks in sharpness, but is good with ringing and aliasing.

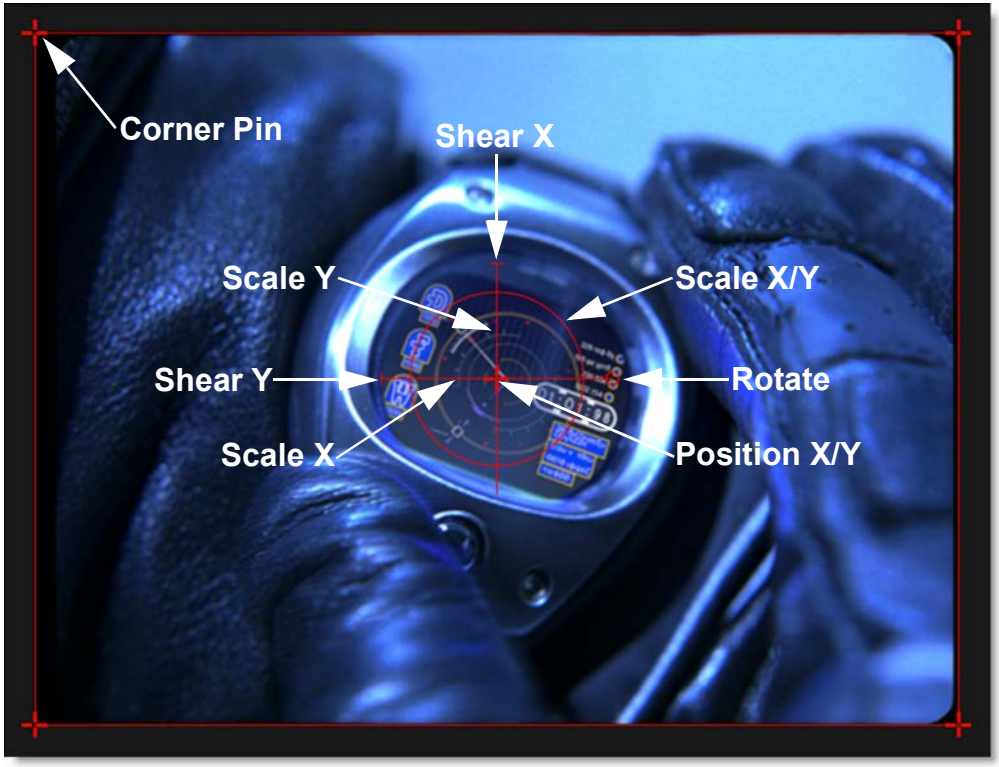
Mitchell

A good balance between sharpness and ringing, Mitchell is a good choice when scaling up.

Sinc

Keeps small details when scaling down with good aliasing.

Transform On-Screen Controls



Shortcut	Action
Drag small center cross	Moves the image's X/Y Position
Drag on the large cross's horizontal and vertical lines	Scales the image horizontally or vertically
Drag large center circle	Proportionally scales the image
Drag small circle at 3 o'clock position	Rotates the image
Drag crosses on corners of image	Corner-pins the image
Drag bars at 9 and 12 o'clock positions	Shears the image
Alt-click-drag	Moves the anchor point to a different area of the image

Motion Blur

Enable

Turns Motion Blur on or off. The default is off.

Shutter Angle

Determines how long the camera shutter stays open when a picture is taken--higher values create more motion blur. The range of the Shutter Angle is 0-720 and defaults to 180. Measured in degrees, it simulates the exposure of a rotating camera shutter. The shutter angle uses the footage frame rate to determine the simulated exposure. For example, a shutter angle of 180 degrees (50% of 360 degrees) for 24fps footage creates an effective exposure of 1/48 of a second. Typing 1 degree applies almost no motion blur, and typing 720 degrees applies a high degree of motion blur.

Shutter Phase

Offsets the point in time, either forward or reverse, when the shutter opens. The range of the Shutter Phase is -360 to 360 and defaults to -90.

Motion Samples

Renders intermediate frames equal to the Motion Samples value and accumulates them, one over the other, on a single frame. The higher the number, the smoother the motion. The Motion Samples range is from 1-256 and defaults to 16.

Note: Normally, motion blur is calculated going forward, so if there is no motion beyond the end of a clip, there won't be motion blur on the last frame. To work around this, add an extra frame or two to the end of the work range in the Timebar and move the last transform keyframes to be outside of the session range.

Turb Distort

Description

Distorts the image by pulling it in a random manner.

Node Group

Warp.

Controls

Scale

Sets the size of the distortion.

Stretch

Stretches the distortion horizontally.

Angle

Rotates the distortion.

Amount

Sets the amount of distortion.

Speed

Automatically animates the distortion by multiplying it with Silhouette's frame number. So, if you set speed to 100, it uses the frame number as the time value directly. A speed of 200 makes it animate twice as fast, etc.

Time

Shifts the distortion animation by shifting it in time.

Unpremultiply

Description

Divides the RGB channels by the alpha channel.

Node Group

Composite.

Vignette

Description

A vignette, or soft fade, is a popular photographic effect where the photo gradually fades into the background, usually in a circular or rectangular shape. The vignette can be any color as well as thrown out of focus.

Node Group

Color.

Controls

Presets

To select a preset, choose one from the Presets tab.

Vignette

Color

The Color parameter sets the color of the vignette through the use of a standard color picker. The default color is black.

Opacity

Sets the opacity of the colored vignette. For defocused vignettes, you may want to turn down the Opacity so you can see the defocused effect.

Blur

Sets the softness of the image in the area of the vignette.

Shape

Roundness

Sets the roundness of the vignette. The vignette can either be circular or square or anywhere in between.

Size

Sets the size of the vignette.

Aspect Ratio

Changes the aspect ratio of the vignette. A value of -100 would be wider, and 100 would be taller.

Rotation

Rotates the vignette.

Distortion

Distorts the edge of the vignette.

Distortion Size

Sets the size of the distortion.

Randomize

Randomizes the distortion.

Softness

The Softness parameters control the softness of the vignette edge.

X-Ray

Description

Simulates the look of X-Ray images.

Node Group

Special Effects.

Controls

Presets

To select a preset, choose one from the Presets tab.

Black and White

Filter

The Filter pop-up selects the type of black and white filter to be applied to your color image. Go to the **Black and White** section of Common Node Controls to see how the Black and White controls work.

Brightness

Adjusts the brightness of the image. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the image. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the image. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values lighten the midtones, negative values darken the midtones.

Color

Opacity

Sets the opacity of the color.

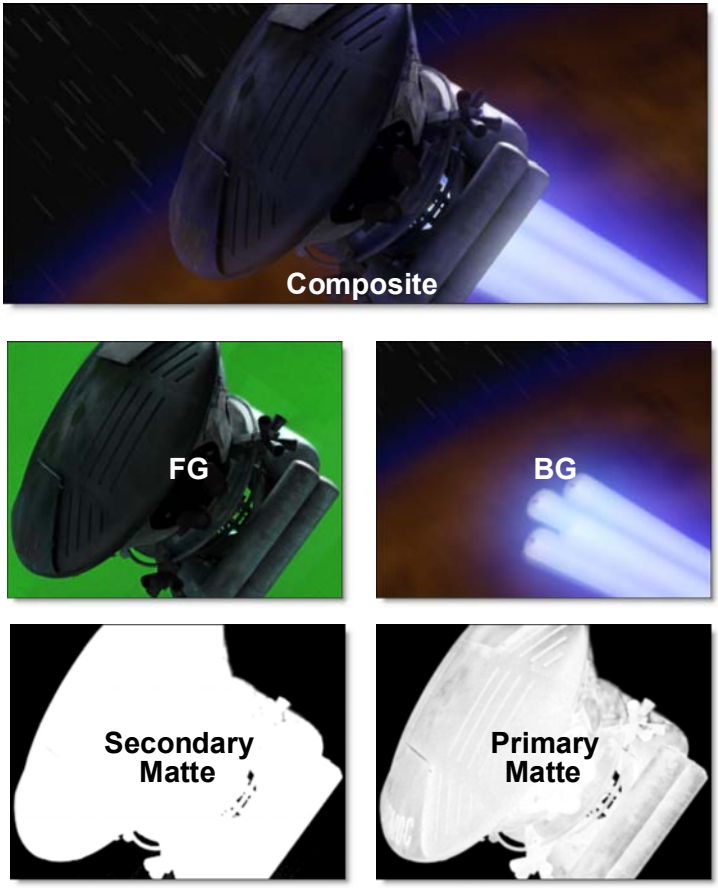
Color

The Color parameter sets the color of the x-ray through the use of a standard color picker and defaults to blue.

zMatte

Description

Using proprietary matte extraction techniques, zMatte quickly and simply creates mattes with minimal parameters even if you are dealing with fine hair detail, smoke, or reflections. It is easy to use, yet provides the needed tools when faced with good, bad, or ugly shots--tools such as multiple matte creation, automatic spill suppression, sophisticated matte and edge manipulation, and color correction.



Go to the **zMatte** tutorial to see how it works.

Node Group

Key, Silhouette.

Deartifact

The Deartifact parameters are handy for cleaning up artifacts caused by DV and HD video footage. In fact, they are useful for cleaning up foregrounds that have aliased or jaggy edges.

Deartifact off **Deartifact on**

When activated, a RGB to YUV conversion takes place so that you can blur only the U and V color channels. Since this is where most of the artifacting shows up, this has the effect of cleaning up the ratty edges encountered when keying DV or HD video footage. It is usually best to blur mostly on the horizontal axis.

Note: The Deartifact parameters default to settings that are good for DV footage. If you are working at higher resolutions, you will want to increase the blur settings.

Enable

Activates Deartifacting.

Horizontal Blur

Prior to pulling the matte, the U and V color channels are blurred by a fast, quality blur along the X-axis.

Vertical Blur

Prior to pulling the matte, the U and V color channels are blurred by a fast, quality blur along the Y-axis.

Gang

The horizontal and vertical values can be ganged together.

Primary Matte

zMatte can utilize up to two mattes in the creation of the final composite. If only one matte is needed, you would use the Primary Matte. When adjusting the Primary Matte, you should select Primary Matte in the View pop-up menu so you can see what you are doing.

Note: Keep in mind when creating your matte that wherever you see black in the matte, you will see background in the final composite. Wherever you see white in the matte, you will see foreground in the final composite--foreground being anything that is extracted from the blue or green screen.

Extract On

Extract On selects the type of matte extraction. Select whichever type isolates the desired values. A matte is extracted based on one of the following:

Blue Screen

Choose blue screen if you have a blue screen.

Green Screen

Choose green screen if you have a green screen.

Luminance

A matte is extracted based on the luminance of the image.

Hue

A matte is extracted based on the hue of the image. When adjusting the Position parameter, you are selecting different hues.

Saturation

A matte is extracted based on the saturation of the image.

Average

A matte is extracted based on the average of the image's RGB values.

Red

A matte is extracted based on the image's red values.

Green

A matte is extracted based on the image's green values.

Blue

A matte is extracted based on the image's blue values.

Alpha

A matte is extracted based on the image's alpha values.

Cyan

A matte is extracted based on the image's cyan values.

Magenta

A matte is extracted based on the image's magenta values.

Yellow

A matte is extracted based on the image's yellow values.

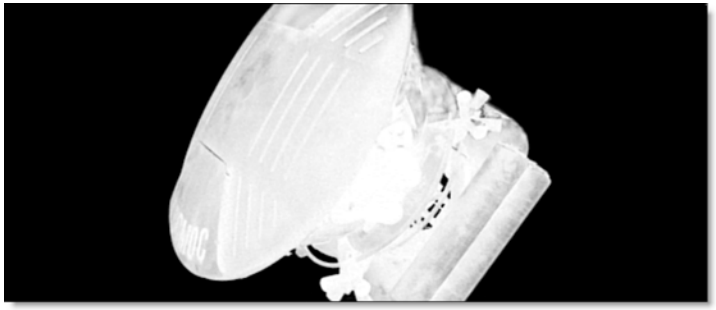
Background/Foreground

When using the Extract On > Blue Screen or Green Screen settings, Background and Foreground are used while all other matte extraction methods use Position and Range.

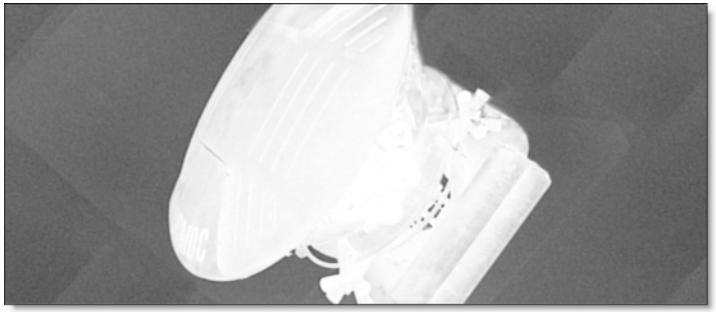
Background

Sets the background value. The lower the value, the harder or blacker the matte will become.

Background = 40



Background = 80

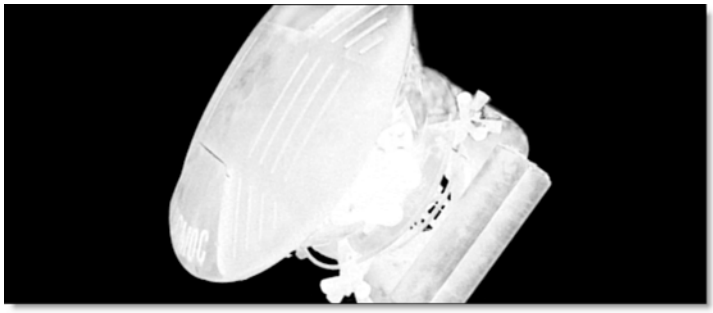


It is best to set the Background value as high as possible, while at the same time making sure that the background is completely black.

Foreground

Sets the foreground value. The higher the value, the harder or whiter the matte will become.

Foreground = 0



Foreground = 17

It is best to set the Foreground value as low as possible, while at the same time making sure that the foreground is completely white for any areas that should be opaque in the final composite.

Position and Range

When using matte extraction methods other than the Extract On > Blue Screen or Green Screen settings, Position and Range are used instead of Foreground and Background.

Position

The Position value pinpoints the values to be used in the matte. For a Luminance extraction, a Position value of 100 would make a white matte of the highlights and a value of 0 would make a white matte of the shadows.

Range

Increases or decreases the range of values in the matte. A low Range value indicates a narrow range of values. A high Range value indicates a large range of values included in the matte.

Black Clip

Blacks in the matte are made blacker by increasing this value. As the value increases, more values are clipped to black. This is helpful for getting rid of unwanted gray areas in what should be the black part of the matte.

White Clip

Whites in the matte are made whiter by increasing this value. As the value increases, more values are clipped to white. This is helpful for getting rid of unwanted gray areas in what should be the white part of the matte.

Shrink/Grow

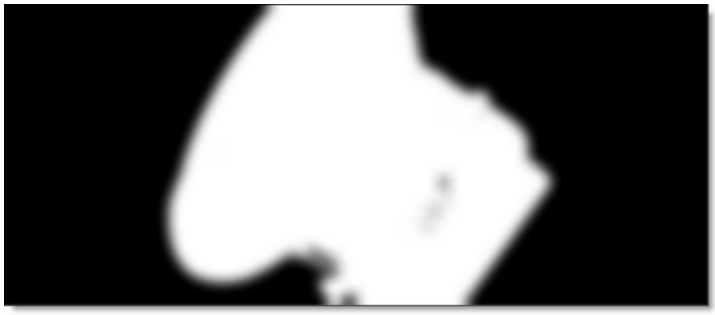
Shrinks or grows the matte. Negative values shrink and positive values grow the matte.

Shrink/Grow = -5

Blur

The matte is blurred by a fast, quality blur.

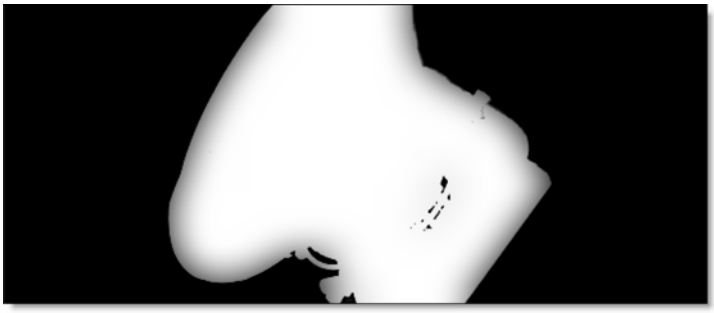
Blur = 10



Wrap

Helps blend the foreground into the background by making the background “wrap” into the foreground edges without completely losing the edge. The edge of the foreground starts to become transparent.

Wrap = 30



Secondary Matte

Sometimes two mattes are needed to create a good key. zMatte allows you to create two different mattes and combine them with various Blend modes.

With the exception of those listed below, the remaining parameters for the Secondary Matte are the same as the Primary Matte: Extract On, Background, Foreground, Position, Range, Shrink/Grow, Blur, and Wrap.

Enable

Activates the Secondary Matte.

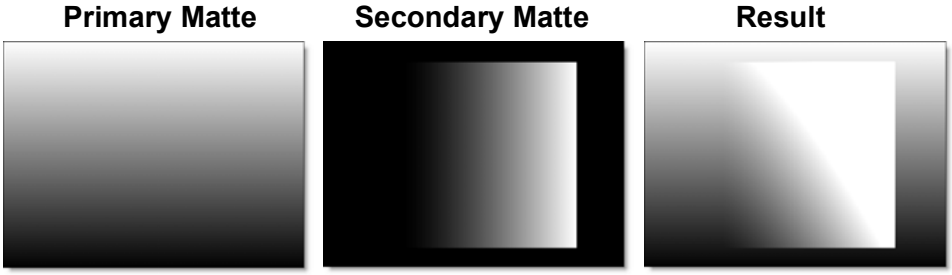
Note: You must first enable the Secondary Matte before it can be seen in the View pop-up menu.

Blend

Once a blend mode is selected, the Secondary Matte is combined with the Primary Matte.

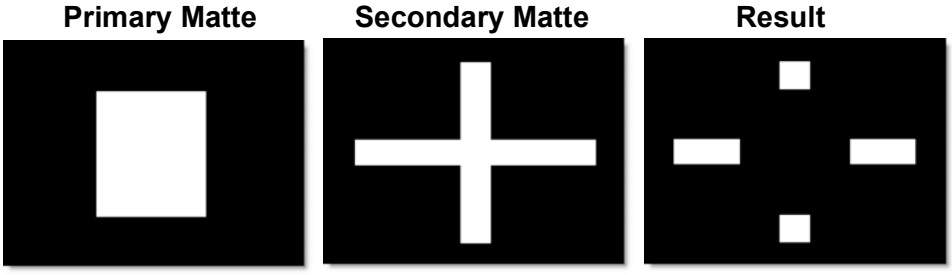
Add

The Secondary Matte is added to the Primary Matte.



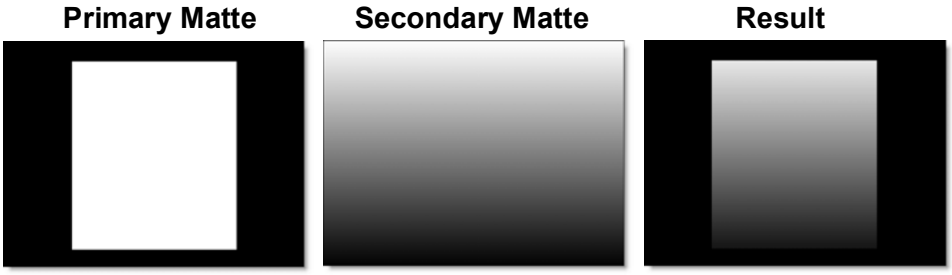
Subtract

The Secondary Matte is subtracted from the Primary Matte.



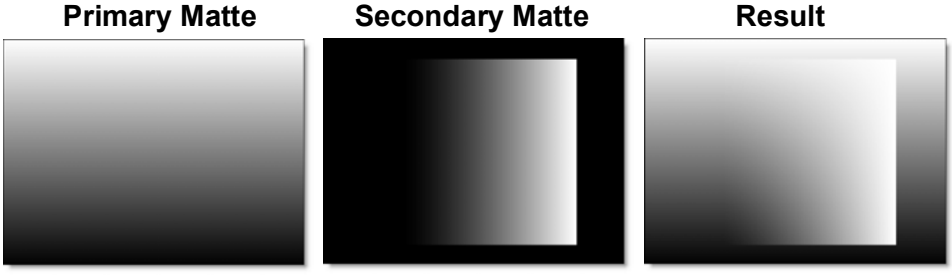
Multiply

Produces a result where there is a union of the Primary and Secondary Mattes.



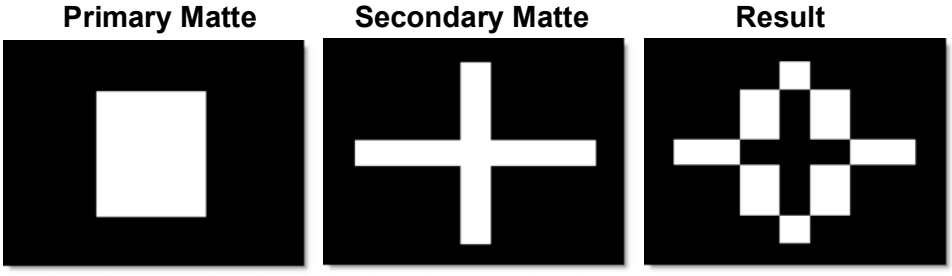
Screen

This looks kind of like the Add blend mode, but highlights are retained as opposed to being burnt out.



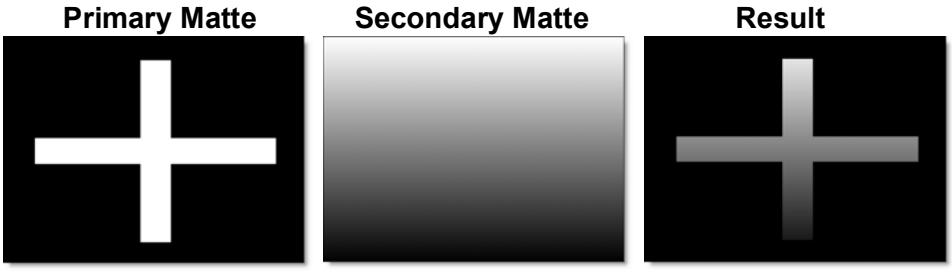
Difference

Produces a result where a value exists in the Primary and Secondary Mattes, but not in both.



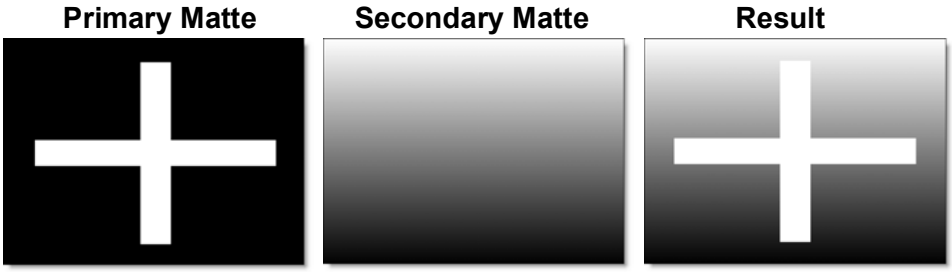
Darken

Compares the two mattes and takes pixels with the lower value.



Lighten

Compares the two mattes and takes pixels with the higher value.



Amount

Sets the opacity of the Secondary Matte.

Holdout Matte

A Holdout Matte defines foreground areas that should not be keyed out. The input can come from an existing source channel or a node like Roto, and the result is combined with the output matte.

Channel

Determines which channel to use as the Holdout Matte source.

Red

Uses the red channel.

Green

Uses the green channel.

Blue

Uses the blue channel.

Alpha

Uses the alpha channel.

Luminance

Uses the average luminance of the RGB channels.

Blend

Sets the blend mode for combining the Holdout Matte with the Primary Matte. See the **Blend Mode** options for more information.

Amount

Sets the opacity of the Holdout Matte.

Garbage Matte

A Garbage Matte defines background areas that should be keyed out. The input can come from an existing source channel or a node like Roto, and the result is combined with the output matte.

Channel

Determines which channel to use as the Garbage Matte source.

Red

Uses the red channel.

Green

Uses the green channel.

Blue

Uses the blue channel.

Alpha

Uses the alpha channel.

Luminance

Uses the average luminance of the RGB channels.

Blend

Sets the blend mode for combining the Garbage Matte with the Primary Matte. See the **Blend Mode** options for more information.

Amount

Sets the opacity of the Garbage Matte.

Color Suppress

Removes either blue or green spill from the foreground object.

Note: Color Suppress is only available when using Extract On > Blue or Green Screen in the Primary Matte.

Enable

Activates color suppression.

Foreground

Suppresses color spill in the foreground.The default value of 100 should be sufficient for most situations.

Foreground = 0

Foreground = 100

Range

Increases the range of areas that are color suppressed. If color spill is still evident, increase this value.

Edge

Suppresses the color spill of the foreground edge to the color gray. This is very useful for edges that contain a lot of transparency like hair or reflections.

Color Correct

The Color Correct parameters allow you to adjust the foreground image so that it matches your background.

Hue

Rotates the hue of the foreground.

Saturation

Adjusts the saturation of the foreground. Positive values saturate, negative values desaturate.

Brightness

Adjusts the luminance of the foreground. Positive values brighten, negative values darken.

Contrast

Adjusts the contrast of the foreground. Positive values increase contrast, negative values decrease contrast.

Gamma

Adjusts the gamma of the foreground. The gamma adjustment leaves the white and black points the same and only modifies the values in-between. Positive values brighten the image, negative values darken the image.

Temperature

Adjusts the color of the foreground to be either warmer or cooler. Dragging the numeric field to the right makes the foreground cooler (bluer) and dragging the numeric field to the left makes the foreground warmer (redder).

Cyan/Magenta

Adds either Cyan or Magenta to the foreground. Dragging the numeric field to the right makes the foreground more magenta and dragging the numeric field to the left makes the foreground more cyan.

Red

Adds or subtracts red from the foreground.

Green

Adds or subtracts green from the foreground.

Blue

Adds or subtracts blue from the foreground.

Flash Amount

Sets the opacity of the Flash Color.

The Flash parameters mix a color into the foreground image through the use of a standard eyedropper or color picker. The default color is white. What in the world is this for? It is a great way to add atmosphere to an element. Flash comes from the film term "flashing", which describes the optical process of lowering the contrast of an image by flashing it with light. In terms of a composite, you would pick a color off of the background image and selectively add that color into the foreground image. This has the effect of making the foreground element look as if it is receding into the distance.

Flash Color

Sets the opacity of the Flash Color.

Eyedropper

The eyedropper allows you to pick colors directly off of the screen.

Color Picker

Colors can be selected using a standard color picker.

Light Wrap

Helps blend the foreground into the background by making the color of the background “wrap” into the foreground edges without completely losing the edge.

No Light Wrap

With Light Wrap

Light Wrap Source

This is accomplished by placing the background layer into a special matte and then combining it with the foreground. You can look at the Light Wrap element in the View menu.

Brightness

Sets the brightness of the Light Wrap.

Wrap

Sets the size of the Light Wrap.

Edge

The Edge parameters allow you to color correct or blur only the edge of the foreground. You can also mix the edge of the foreground with the background. Before using the Edge tools, it is a good idea to take a look at your Edge Matte in the View Menu so that you can see what your edge actually looks like.

Edge = 1

Size

Determines the size of the edge matte.

Color Correct

The edge of the key can be color corrected. See the **Color Correct** controls for parameter descriptions.

Blur-Horizontal

The edge of the foreground is blurred by a fast, quality blur along the X-axis, but only in areas of the edge matte.

Blur-Vertical

The edge of the foreground is blurred by a fast, quality blur along the Y-axis, but only in areas of the edge matte.

Gang

The horizontal and vertical values can be ganged together.

Opacity

Mixes the foreground back to the background, but only in areas of the edge matte.

Transform

The keyed foreground/matte can be manipulated using a Transform. Go to the **Transform** node to see how it works.

Node Outputs

Output

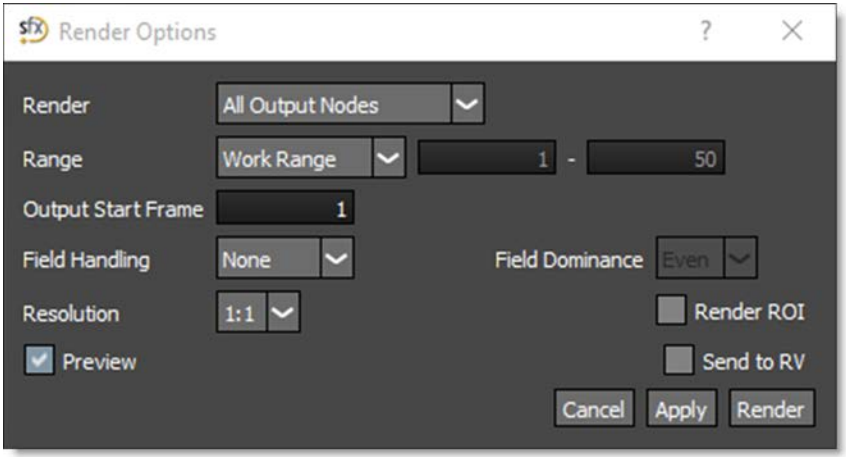
Outputs the foreground input and generated matte. Use this option if you plan to do further work on the RGB and alpha channels downstream from zMatte.

Composite

Outputs a composite of the foreground over the background based on the generated matte.

RENDER

When you have you completed your work in Silhouette, you will want to render the final result. Rendering takes place in the Render Options window and is accessed by selecting Session > Render Session.



Go to the **Rendering** tutorial to see how it works.

Additional rendering options are available in the Actions menu such as: Render Active Node, Render Layer's Shapes in Folders, Render Layers to Separate Files, Render Shapes to Channels, and Render Shapes to Separate Files. See the **Actions** section for more information.

Render Options

Render

All Output Nodes

Renders all output nodes.

Selected Output Nodes

Renders the current output node.

Output nodes determine the file format, file name, disk storage location, and channels to be rendered. The Output nodes should be edited to your specification before rendering.

Range

Range determines which frames will be rendered. The numeric entry fields to the right of the range pop-up display the frame range to be rendered, but can also be used to enter a specific frame range if Custom has been selected.

All

Renders the entire frame range.

Work Range

Renders the frame range in and out points in the Timebar.

Current Frame

Renders the current frame.

Custom

Renders a custom frame range as defined by the numeric entry fields.

Output Start Frame

The rendered frames will start with this number.

Field Handling

Enables field rendering.

None

No field processing takes place.

Deinterlace

Deinterlaces the video frame into two separate fields.

3:2 AA

Adds 3:2 Pulldown based on the AA frame being the first frame.

3:2 BB

Adds 3:2 Pulldown based on the BB frame being the first frame.

3:2 BC

Adds 3:2 Pulldown based on the BC frame being the first frame.

3:2 CD

Adds 3:2 Pulldown based on the CD frame being the first frame.

3:2 DD

Adds 3:2 Pulldown based on the DD frame being the first frame.

Field Dominance

Select either Even or Odd field dominance depending on whether you are working with NTSC or PAL images.

Even

Use for NTSC images.

Odd

Use for PAL images.

Premultiply

Premultiplies the RGB channels by the alpha channel. This option is only available if both Color and Alpha are enabled.

Resolution

Lowers the image resolution for faster rendering.

1:1

1:1 keeps the image quality at full resolution.

1:2

1:2 lowers the image resolution by 1/2.

1:3

1:3 lowers the image resolution by 1/3.

1:4

1:4 lowers the image resolution by 1/4.

Render ROI (Region of Interest)

Determines whether the ROI or the session size is rendered. Enable to render the ROI.

Note: Render ROI only appears when ROI is enabled.

When rendering EXR files:

- **The ROI becomes the data window and the session becomes the display window.**
- **The ROI window is rendered along with the ROI window's coordinates. This will allow you to automatically composite the ROI window into its proper location. For all other file formats, the ROI window is padded out to the session size.**

Preview

Opens a Preview window that displays each rendered image as well as render statistics. With the Preview window open, press the **R**, **G**, **B**, and **A** (alpha) keys to toggle viewing of the respective channels or **C** to view the RGB channels.

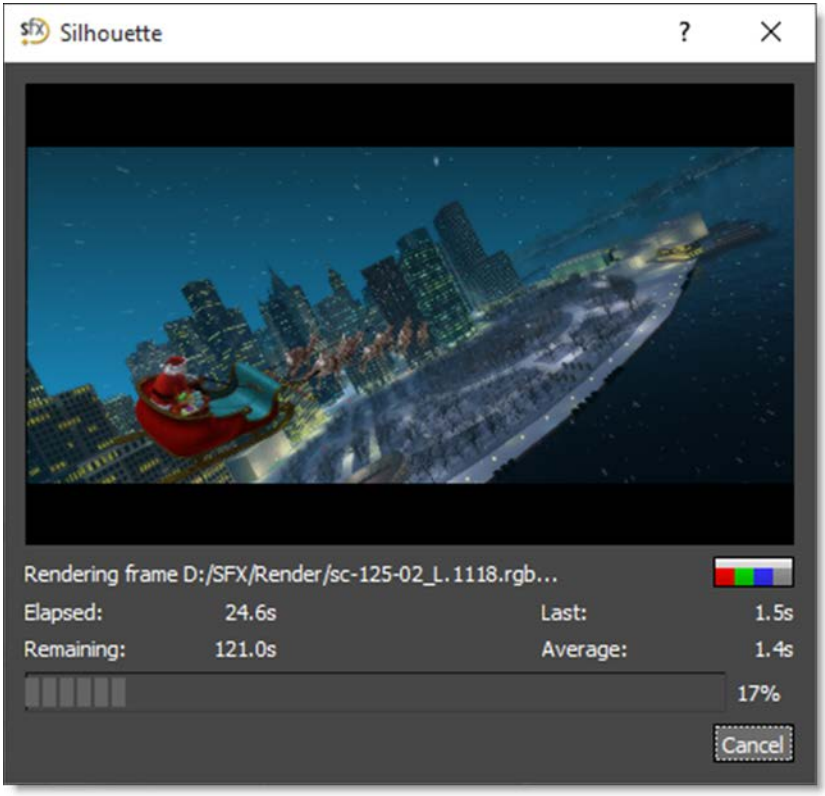


Table 1: Render > Preview Shortcuts

Shortcut	Action
R	Displays the Red channel
G	Displays the Green channel
B	Displays the Blue channel
A	Displays the Alpha channel
D	Displays the Depth channel
C	Displays the RGB channels

Send to RV

If enabled, after rendering, the clip is loaded into Tweak Software's RV playback tool--if installed. The "Send to RV" option appears when the RV > Command preference is set.

Render

Renders using the current settings.

Apply

Saves the current settings and closes the Render Options window without rendering.

Cancel

Closes the Render Options window.

COMMAND-LINE

Silhouette on the command-line allows you to execute projects with a variety of commands to control the rendering process. Further customization is accomplished via scripting as much of the Silhouette object model is exposed to the Python scripting language.

Go to the **Command-Line** tutorial to see how it works.

General Options

Command-line options are of the form: **–option value**, where **value** may be optional. Required arguments are in pointy brackets (**< >**) and optional arguments are in brackets (**[ ]**). If the value must be from a list of possible values, the available values are separated by **|**.

The basic form of the sfxcmd argument is: **sfxcmd <projectname> [options]**

where **options** are from the list below. By default, the project is rendered using the settings in the project unless changed by command-line options. Rendering can be disabled with the **–render 0** option (see below). Certain options, such as format conversion, will implicitly disable rendering as well.

-action <actionName>

Run the specified Action after the project is loaded, where actionName is an action class name for one of the actions found in Silhouette/resources/scripts/actions. When **–action** is used, rendering is implicitly disabled, unless the **–render 1** option is also used. Any rendering done by the action itself is not disabled.

-info[project|session|node|outputs]

Print information about the overall project, the active session, active node or active session rendering information. Enabling this option loads the info.py script in the Silhouette scripts directory, and calls the appropriate function to dump basic information. This file can be modified by the user to alter how the information is presented. If just **–info** is used, the default is to display project information. Multiple options can be supplied, separated by commas, to print

multiple types of information. For instance, **–info session,outputs** will print session and rendering information. When **–info** is used, rendering is implicitly disabled, unless the **–render 1** option is also used.

The information displayed by **–info** can be customized by editing the info.py Python script located in Silhouette/resources/scripts.

-log

Enable log messages. For example, use **–log** to display module load messages and other non-critical informational messages.

-node <name>

Target the specified node in the active session for output. By default, the first Output node is used. When specifying a particular node, the node label must be used and not the node type (i.e. RotoNode), because there may be more than one. To print a list of nodes in the active session, use the **–info session** option.

-no_launcher

Prevents the launcher from appearing when Silhouette starts up without a project.

-no_modules

Modules are prevented from loading.

-no_splash

Prevents the splash screen from appearing when Silhouette starts up.

-open_project

Opens the project browser on launch.

-options <options file>

Load the options file and treat each line of the file as a command-line option. For instance, instead of writing this:

sfxcmd project.sfx –log –info project

You can write this:

sfxcmd project.sfx –options options.txt

Where options.txt contains:

–log

–info project

Note: Lines that start with # in the options file will be ignored, so you can use # to add comments.

-render <0|1>

Rendering can be disabled by using **–render 0**. Use this if you only want to print information about the project or run a script that does other things with the project. Rendering is enabled by default if a project is specified.

Note that when **–info** or **–action** are used, **–render 0** is implicitly set unless the **–render 1** option is also set.

-script <scriptfile>

Run the specified Python script after the project is loaded. The script has access to the active project, session, and node, as specified by the **–session** and **–node** options. Scripts can walk the object model, manipulate the object state such as visibility, and print information, limited only by the Silhouette scripting API.

-session <name>

Make the specified session active in the project. This is only useful if the project contains more than one session. To print a list of sessions in the project, use the **–info** option.

-version

Print the sfxcmd version.

Rendering options

-write <0|1>

Disable frame writing by using **–write 0**. This is useful for doing test runs to verify that options are set properly.

-range <all|work|start#-end#x#>

Specifies the range of frames to render. A specific range is set by passing two numbers. A step factor can be introduced by using x# after the range. Some examples are:

- **–range 1-10** renders frames 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
- **–range 1-10x2** renders frames 1, 3, 5, 7, and 9.
- **–range 3** renders frame 3.

Multiple **–**range arguments can be used to specify multiple ranges, for instance **–range 1-50x1 –range 51-60x2 –range 60-100x3**. You can also use commas to separate ranges in a single **–**range option.

Frames are in the range of the session, and do not necessarily start at 1. If your session starts at frame 4000, to render the first 50 frames of the session, use **–range 4000-4049**.

-f

Same as **–**range.

-step <number>

Specifies the number to add to get to the next frame. The default is 1. Note that **–**step will override whatever step factor is used in **–**range or **–**f.

-start <number>

Use **–start** to override the starting frame number of the output frames. For example, if your session starts at 4000 and you want to render 50 frames, but you want the generated frame files to start at 1, use **–range 4000-4049 –start 1**.

-depth <8|float16|float32>

Sets the render depth.

-roi <0|1>

Determines whether the region set in the ROI (Region of Interest) is used.

-resolution <full|half|third|quarter>

Override the output resolution to full resolution, half resolution, third resolution, quarter resolution.

Note: Half resolution is width/2*height/2, third resolution is width/3*height/3, and quarter resolution is width/4*height/4.

-fields <none|interlace|aa|bb|bc|cd|dd>

Sets the field handling to one of the supported options. The two letter options assume 3:2 handling.

-dominance <even|odd>

Sets the field dominance when field handling is enabled.

-nogui

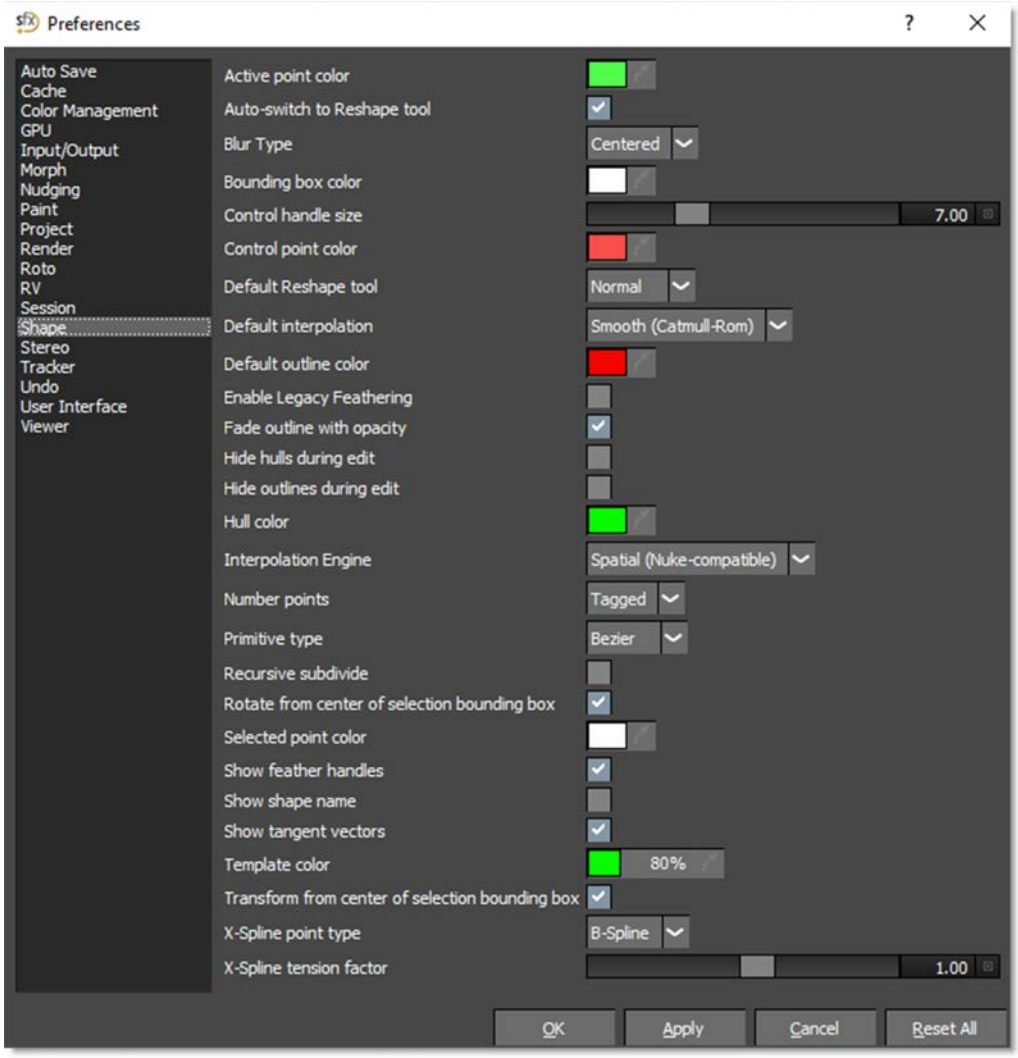
For Linux systems without X-Windows installed, **–nogui** allows Silhouette to not use X-Windows. However, scripts that do drawing, for example Slate, will not work.

-threads

You can override the number of multi-processing threads Silhouette uses with **–threads <n>**.

APPENDIX A - PREFERENCES

Preferences allow you to customize default settings and can be accessed by selecting File > Preferences on Windows and Linux or Silhouette > Preferences on Macintosh.



Autosave

Interval (minutes)

Sets the default time for autosaving the project. Set interval to 0 to disable autosave.

Maximum # of Backups

Controls how many backup files are created. Each time a project is saved, a copy is stored in the project folder.

Cache

% Total Physical RAM

Sets the amount of RAM to be used for playback. The default is 50% and the range is 10-90%.

Note: A program restart is needed to enable % Total Physical RAM changes.

Preload Frames

Controls how many source frames are preloaded into the cache.

Purge Cache on Project Load

When selected, the cache is purged when a Project is loaded.

Color Management

Cineon/DPX Working Colorspace

Controls whether or not Cineon and DPX images are converted to scene linear.

Linear

Converts the Cineon/DPX images to scene linear.

Log

Cineon/DPX images are kept in log space.

Note: After changing this preference, you must restart Silhouette for changes to take effect as the value is cached.

Warning: It is not a good idea to change this preference in the middle of a paint session, since when in Linear mode, it physically alters the pixels on import/export.

OCIO Configuration

This preference is a path to a global configuration file to use. The default is “$(OCIO)”. Silhouette will initially look for $SFX_OCIO and will use that first. Otherwise, it will use whatever the configuration preference is set to and finally it will check for $OCIO. If it still can't find a configuration, it will fall back to the embedded configuration in the resources/ocio folder.

GPU

The GPU preference determines whether or not GPU acceleration is enabled.

Auto

Automatically chooses either GPU or CPU acceleration based on your graphics card.

GPU

Forces GPU acceleration on. If your graphics card is not capable of GPU acceleration, this setting will have no effect.

CPU

Forces CPU acceleration on.

Note: The GPU preference doesn't actually change until there is a frame or processing update.

Input/Output

EXR

Use Data Window as Display Window

Silhouette automatically loads an EXR file's Display Window. You can override this behavior by enabling Use Data Window. Reloading the project or media is required for this preference to be enabled.

Silhouette Shapes

The Silhouette Shapes export format was changed in 5.0 so that settings normally stored in the Silhouette node can be accessed.

Export Format

5.0+

Exports Silhouette shapes in the 5.0 format.

4.5-

Exports Silhouette shapes in the 4.5 and below format.

Nuke 6.2+ Shapes

Connect Nodes When Embedding Layers Into Nodes

Connects layers together in Nuke using Merge nodes. However, if you set a layer in Silhouette to Subtract for example, you will have to manually adjust the corresponding Merge node in Nuke to Minus.

Note: Connecting of nodes with Merge nodes in Nuke is only supported in the layer based export modes: "Embed each layer in its own node" and "Embed each layer in its own node fully baked".

Convert Opacity to Lifetime Preference

If checked, a Nuke lifetime is enabled ending at either the work range end or the first transition to zero Opacity. The start of the lifetime is either the work range start, if the starting value was 100% opacity, or the frame on which it went from zero to 100% opacity.

Note: 1) Only the first on to off Opacity range is converted to lifetime. 2) If the opacity is ever a fractional value other than 0 or 100 before the lifetime end, the lifetime feature is disabled. 3) At least one keyframe is required, otherwise Nuke sets zero Opacity.

Node Handling

Embed All Shapes In One Node

All selected shapes are exported into one Nuke Roto node.

Embed Each Shape In Its Own Node

Selected shapes are exported into separate, unconnected Nuke Roto nodes.

Embed Each Layer In Its Own Node

Shapes are exported into their respective layers as separate, unconnected Nuke Roto nodes. Shapes not located in a layer will be combined into a Nuke node called Roto. If a layer has blur or invert settings applied to it, blur and invert nodes will be created in Nuke and connected to the layer's node.

Silhouette may break shapes in a single layer into more than one Nuke Roto node if these shapes are interrupted by a Silhouette sub-layer. This is intentional so that the correct depth order can be maintained. For example, if the Silhouette Roto node contained Shape 1, Shape 2, Layer 1, Shape 3: The "Embed each layer in its own node" mode will break Shape 3 into its own Nuke Roto node so that the user has the option of ordering the contents of Layer 1 in between Shape 1, Shape 2 and Shape 3.

Embed Each Layer In Its Own Node Fully Baked

Shape control points are fully baked on every frame of the work range. While this creates larger files, it works around a known Nuke motion blur problem.

Nuke 9+ Shapes

Convert Opacity to Lifetime Preference

If checked, a Nuke lifetime is enabled ending at either the work range end or the first transition to zero Opacity. The start of the lifetime is either the work range start, if the starting value was 100% opacity, or the frame on which it went from zero to 100% opacity.

Copy Alpha to RGBA

Copies the alpha channel into the RGBA channels in the exported file.

Export Project Name

The Silhouette project name is exported and displayed in the Nuke node name.

File Size

Smaller (Hexadecimal)

Writes the export out in hexadecimal format resulting in a smaller file size.

Larger (Human Readable)

Writes the export out in human readable format resulting in a larger file size.

Fully Baked

Shape and transform data are baked together.

Outline Width Multiplier

Nuke does not accurately import the width of open shapes, but we automatically account for this. If needed, use this multiplier to fine tune the width of open shapes when exported.

Morph

Correspondence Lines

Sets the number of phantom lines between correspondence points. This is useful for visualizing how the various parts of the shapes are warping.

Correspondence Lines Color

Sets the correspondence lines' color.

Correspondence Point Color

Sets the correspondence points' color.

Correspondence Point Size

Sets the size of correspondence points.

Default Target Color

Sets the default color of target shapes.

Nudging

Distance (pixels)

Sets how many pixels an object moves when the **Arrow** keys are used.

Extended (Shift) Distance (pixels)

Sets how many pixels an object moves when the **Arrow** keys are used in conjunction with the **Shift** key.

Precise (Ctrl/Cmd) Distance (pixels)

Sets how many fractional pixels an object moves when the **Arrow** keys are used in conjunction with the **Ctrl(Win)/Cmd(Mac)** key.

Paint

Brush Outline Color

Sets the color of the brush outline.

Crosshair Cursor

Controls the display of the cursor crosshair while painting.

Off

The cursor crosshair is not displayed.

On

The cursor crosshair is always displayed.

On/Off

The cursor crosshair disappears while painting a stroke, but is visible otherwise.

Hide Brush Outline While Painting

Hides the brush outline while painting.

Pressure Threshold

Controls how hard the pen has to be pressed before opacity kicks in. The preference is from 0-1. When the threshold has been reached, the calculated pressure is scaled into the new range from threshold to 1.

Use Tablet Pressure

Turn tablet pressure sensitivity on or off.

Clone

Absolute Frame Numbers

When activated (the default), displays the actual frame number in the Clone > Frame field. When turned off, it uses the old Silhouette v2.3 behavior where an offset in relation to the current frame was shown instead of the actual frame.

Alignment Type

Black

When in Align mode, the Viewer appears black when the Clone source and destination are perfectly aligned.

Gray

When in Align mode, the Viewer appears gray when the Clone source and destination are perfectly aligned.

Allow Adjustments to Auto Grade

Allows the other grade controls to be used in conjunction with Auto Grade. With this preference off, turning on Auto Grade will reset the other grade controls to their defaults and disable them.

Default Filter

Sets the default filter for new paint nodes.

Default Source

Sets the clone source default.

Incremental Clone Offset

Controls whether the Clone offset starts at last offset or at click location.

Overlay Color

Sets the color of the Clone transform on-screen controls.

Show Offset

Forces the Clone Offset connecting line to always be displayed.

Source Outline Color

Sets the color of the Clone brush outline.

Source Outline Color (Secondary)

Sets the color of the secondary Clone brush outline. This is the color of the second Clone source activated by using Dual in the Clone presets.

Use Legacy Overlay Controls

Enables the Silhouette v6 and below Clone transform on-screen controls.

History

Lock Selection

If paint strokes are selected in the Paint History, they become un-selected when you change frames. If you enable Lock Selection, the strokes stay selected when changing frames.

Project

Compress Project Data

Compress project data to save space.

Save Usage Analytics With Project

Saves a limited set of data analytics in the project file.

- **All users who saved the project and how long they had it open.**
- **Creation date and usage time for each project, session, and node.**

Render

Filename

Sets the default suffixes that are appended to the Filename in the Render Options menu.

Alpha Suffix

Sets the default alpha suffix to _alpha.

Depth Suffix

Sets the default depth suffix to _depth.

Format

You can now override the output filename structure. The format for the output name is now defined by the Format preference.

The default is: $(NAME)$(SUFFIX)$(VIEW)$(PREFIX)$(FRAME).$(EXT) which matches the previous format.

- **NAME substitutes the Filename field in Render Options**
- **SUFFIX substitutes the _alpha, _depth, or _paint suffix when saving External Alpha, or Depth**
- **VIEW substitutes the _L/_R suffix when saving a left/right view**
- **PREFIX substitutes the Prefix field in Render Options**
- **FRAME substitutes the frame number with padding**
- **EXT substitutes the output module default extension**

Note: This Format preference is currently system wide and cannot be used on a per session basis.

Left View Suffix

Sets the default Left View suffix to _L.

Paint Suffix

Sets the default Paint suffix to _paint.

Right View Suffix

Sets the default Right View suffix to _R.

Roto

Composite Color

Sets the default color background when viewing Color Comp in the Roto node.

RV

Command

Enter the path to Tweak Software RV's "rvpush" command. For instance, depending on your OS and the RV version number, you would enter:

- **Macintosh: /Applications/RV64.app/Contents/MacOS/rvpush**
- **Windows: C:\Program Files\Tweak\RV-4.0.12-64\bin\rvpush.exe**
- **Linux: /opt/rv/rv.bin/rvpush**

Note: On Linux, rv can be installed anywhere. The above example is based on rv being installed in /opt/rv.

When a path is entered, a "Send to RV" option appears at the bottom right of the Render window. If that is enabled, after rendering, the rendered clip will be sent to the RV playback software--if installed.

Session

Default Type

Determines the default session type.

Composite

No nodes are added by default. The session is ready for you to add whatever nodes you like.

Roto

Automatically adds a Roto node when creating a session.

Paint

Automatically adds a Paint node when creating a session.

Shape

Active Point Color

Sets the default color of the active point (the point that the cursor is hovering over) through the use of a standard color picker.

Auto Switch to Reshape Tool

After closing a new shape, you will switch to the Reshape tool automatically.

Blur Type

Sets the default blur type: Center, Inner, Outer.

Bounding Box Color

Sets the default color of shape bounding boxes through the use of a standard color picker.

Control Handle Size

Sets the size of control point handles.

Control Point Color

Sets the default color of control points through the use of a standard color picker.

Copy Alpha to RGBA

Copies the alpha channel to the RGBA channels.

Default Interpolation

Sets the default keyframe interpolation type.

Hold

There is no interpolation and abrupt switches in value occur at keyframes.

Linear

When values change, a straight line with sharp, abrupt angles from one keyframe to the next is drawn.

Ease In

Eases in to the selected keyframe.

Ease Out

Eases out of the selected keyframe.

Ease In/Out

Eases in and out of a selected keyframe.

Smooth (Catmull-Rom)

Smooth (Catmull-Rom) creates a smooth curve between keyframes.

Default Outline Color

Sets the default color of the shape outline through the use of a standard color picker.

Default Reshape Tool

Sets the default mode for the Reshape tool.

Normal

Selected points all move the same amount.

Magnetic

Points near the cursor move more than points farther away.

Enable Legacy Feathering

Enables the Silhouette v5 and below Feather tool. Once enabled, the Feather tool appears in the user interface.

Go to **Appendix E - Legacy Feather** to see how it works.

Fade Outline with Opacity

Draws unselected/inactive shape outlines using the shape opacity value. The **V** key toggles this preference so that you can easily see any shapes that are at 0% opacity.

Hide Hulls During Edit

When activated, tangents/hulls hide when editing.

Hide Outlines During Edit

When activated, the shape outline is hidden when editing.

Hull Color

Sets the default color of the hull (lines that connect tangents) through the use of a standard color picker.

Number Points

None

Control points are not numbered.

Tagged

Only control points that have been tagged using the Reshape tool > control point pop-up menu are numbered.

All

All control points are numbered.

Interpolation Engine

Temporal

Enables all interpolation types except for Smooth (Catmull-Rom).

Spatial (Nuke-compatible)

Interpolation types are limited to Smooth (Catmull-Rom), Hold and Extrapolate. This ensures that shapes using Smooth (Catmull-Rom) interpolation in Silhouette exactly match the result in Nuke when exported.

Primitive Type

Sets what shape type is used when circles and squares are created.

Bézier

Bézier shapes are used for circle and square creation.

B-Spline

B-Splines are used for circle and square creation.

X-Spline

X-Splines are used for circle and square creation.

Recursive Subdivide

Drastically improves the curvature of shapes and reduces artifacts when using feathering. You can return to the previous behavior of v4.0.4 and below which used a fixed-step iterator by turning this preference off, if for some reason it causes shape artifacts.

Rotate from Center of Selection Bounding Box

Controls whether the automatic anchor point is set to the center of the collective bounding box or to the opposite handle.

Selected Point Color

Sets the default color of selected points through the use of a standard color picker.

Show Feather Handles

Displays feather handles on shape points. **Shift-F** toggles this setting.

Show Shape Name

Displays the shape name in the center of the shape.

Show Tangent Vectors

Turns Bézier tangents on or off. Turns B-Spline and X-Spline hull drawing on or off.

Template Color

Sets the color and opacity of unselected shapes. This Viewer Template feature is enabled by using **Shift-W**.

Transform from Center of Selection Bounding Box

Controls whether the automatic anchor point is set to the center of the collective bounding box or to the opposite handle.

X-Spline Point Type

Controls the default weighting of X-Spline points when they are created.

B-Spline

X-Spline points have B-Spline weighting.

Cardinal

X-Spline points have Cardinal weighting.

Corner

X-Spline points have Corner weighting.

X-Spline Tension Factor

This is a weight from -10 to 10 that is multiplied by the mouse delta when manipulating the X-Spline point tension. You can reverse the sense of the weight by making this value negative. Also, you can boost the amount the tension is adjusted based on mouse movement by making the value larger, for example closer to -10 or 10.

Stereo

Enable NVIDIA 3D Vision Preview Support

When enabled, the 3D Preview window supports NVIDIA 3D Vision glasses. After enabling this preference, the 3D Preview window will open full screen.

Note: This works even on non-Quadro cards as long as the 3D Preview window is full screen.

Tracker

Create Point Trackers in Root

When enabled, point trackers are placed in the root of the Object list, rather than the selected layer.

Default Path Color

Sets the default color of the tracker path.

Default Point Track Tolerance

Sets the default tracker tolerance. Describes the level of accuracy between the Match Area that the Tracker is searching for and the area it actually finds when searching from frame to frame.

Point Tracking Behavior

Sets the default tracker behavior. Behavior decides what frame should be used as the reference to check the accuracy of the Match Area.

Show Path Points

Displays tracker points along the path of the track.

mocha

Drift Compensation

Enables mocha's Drift Compensation feature where surrounding frames are used to decrease tracker drift.

Use GPU If Available

Enables GPU acceleration if a compatible graphics card is found.

Planar Tracker

Drift Compensation

Enables Silhouette's Drift Compensation feature where surrounding frames are used to decrease tracker drift.

Undo

Max Undo Events

Sets the maximum number of undos.

User Interface

Allow Nested Docks

Allows all nested docks to be moved at the same time. Disabling this preference moves individual docks only.

Automatically Raise Dock Preference

Added a User Interface > Automatically Raise Dock Views On Selection Change preference. For instance, when the Paint node is selected, relevant tabs like the Paint History automatically appear.

Check for New Versions

Checks for new versions and displays an alert on startup.

Colored Timeline Tracks

Colors the timeline tracks the same as the Roto node's shape colors.

Invert Mouse Wheel in Editors

Inverts the numerical direction when adjusting sliders with the mouse wheel.

Show Sources Last in Node List

When enabled (the default), Source nodes are displayed last in the Node List.

Show Object Properties on Selection

When you select an item in the Object List, the controls for that item are automatically shown in the Parameters window. If you select an item in the Node List, the controls for that item are automatically shown in the Node window. This behavior can be disabled with this preference.

Show What's New After Installing A New Version

On startup, if this is the first time launching a new version of Silhouette, it will open the What's New. It will only do this once.

Trees

Connections

Curved

Displays node connections as curved lines.

Straight

Displays node connections as straight lines.

Input Order

BG, FG

The input order of composite nodes is background and then foreground.

FG, BG

The input order of composite nodes is foreground and then background.

Note: If there are existing nodes in the Trees window, you will need to reload the session for this to take effect.

Layout

Horizontal

The node input and output are configured on the sides of the node to accommodate horizontal trees.

Vertical

The node input and output are configured on the top and bottom of the node to accommodate horizontal trees.

Viewer

Alpha Overlay Color

Sets the color of the alpha overlay.

Anaglyph Mode

Sets the anaglyph mode when using the Anaglyph Preview in the Viewer. Anaglyphs do not portray saturated colors very well and due to color leaking between left and right images results in discomfort caused by retinal-rivalry. Four anaglyph modes are provided to choose from with Optimized set as the default.

Color

Preserves most of the color but causes retinal rivalry.

Gray

Creates a lighter image than a true anaglyph but results in more ghosting. No color is preserved.

Half-Color

Preserves less of the color but reduces the retinal rivalry

Optimized

Discards all of the red component from the original images and replaces it with a manufactured red channel derived from the green and blue components. The advantages are almost no retinal rivalry.

Anchor Color

Sets the color of the Transform tool anchor point.

Anti-Alias Overlay Controls

Anti-aliases lines and overlay controls.

Auto-Show Overlay

If Overlay is turned off, Auto-Show Overlay automatically turns Overlay back on when clicking in the Viewer.

Background Color

Sets the border color in the Viewer.

Display ROI Outline

Displays the ROI outline.

Handle Mode

Controls how handles are drawn.

Blend

Uses a normal blend mode to display layer and shape handles.

XOR

Uses an XOR blend mode to display layer and shape handles.

Layer Transform Color

Sets the color of the layer's on-screen controls.

Line Width

Sets the thickness of overlay lines.

Mask Fill Color

Color

Sets the color of the mask.

Opacity

Set the opacity of the Mask Fill Color by clicking on the percentage field (to the right of the color picker) and typing in a new number.

Mask Outline Color

Color

Sets the color of the mask outline.

Opacity

Set the opacity of the Mask Outline Color by clicking on the percentage field (to the right of the color picker) and typing in a new number.

Picking Tolerance

Sets the radius of the threshold for picking points.

Premultiply Background Color

Sets the background color for premultiplied display modes.

Stereo Alignment Type

Selects either Gray or Black for the Stereo Alignment.

Template Mode

Turns template mode on or off. See **Template Color** for more information.

Zoom Factor

Controls the **I**/**O** zoom factor keyboard shortcuts. Default is 2. Range is 1.05 > 2.0.

Zoom Filter

Linear

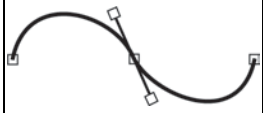
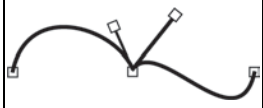
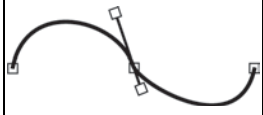
Interpolates pixels when zoomed into the image. This results in a smoother, but softer image.

Nearest

Replicates pixels when zoomed into the image. This results in a sharper, but chunkier image.

APPENDIX B - KEYBOARD SHORTCUTS

Bézier Splines

Shortcut	Action	Curve
No key needed	Adjust the length of one tangent while retaining a fixed angle between two tangents	
Ctrl(Win)/Cmd(Mac)	Adjust both tangents simultaneously while retaining a fixed angle between two tangents	
Alt	Adjusts only one tangent to create corners	
Shift	Adjusts only the length of one tangent (similar to the “No key needed” shortcut)	
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner	
Ctrl(Win)/Cmd(Mac)-Alt-2	Sets the point tension to Cardinal	

B-Spline Shapes

Shortcut	Action
Alt-drag control point right	Creates a corner point
Alt-drag control point left	Creates a smooth point
Alt-clicking control point	Cycles through the preset weight settings of the point
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner
Ctrl(Win)/Cmd(Mac)-Alt-3	Sets the point tension to B-Spline

Crop On-Screen Controls

Shortcut	Action
Click and drag a corner	Crops both horizontally and vertically
Click and drag horizontal boundary	Crops vertically
Click and drag vertical boundary	Crops horizontally
Click and drag within bounding box	Moves the crop area

Curve Editor

Shortcut	Action
Alt-click on curve	Inserts a point on the curve
Click-drag curve point	Moves the curve point
+ or **=**	Zooms the Curve Editor in
-	Zooms the Curve Editor out
Space Bar-drag	Pans the Curve Editor
Hover cursor over curve	Displays the current curve value
Right-click curve point	Opens Curve pop-up menu

Cut / Copy / Paste

Shortcut	Action
Ctrl(Win)/Cmd(Mac)-X	Cuts an object
Ctrl(Win)/Cmd(Mac)-C	Copies an object
Ctrl(Win)/Cmd(Mac)-V	Pastes an object

Depth Preview Pan/Zoom

Shortcut	Action
Click and drag	Rotates the image a perspective view
Scroll wheel	Zooms the image in and out
Shift-Middle-mouse drag	Zooms the image in and out
Space Bar-Shift-drag	Zooms the image in and out
Space Bar-drag	Pans the image
Middle-mouse drag	Pans the image
Middle-mouse double click	Fits the image in the Viewer

IK (Inverse Kinematics) Tool

Action	Result
Click-drag bone or shape	Rotates the shape around the parent's anchor point
Click-drag joint	Uses IK to rotate all joints up the chain
Alt-click-drag joint	Moves the joint but tries to keep other joints in place
Right-click bone-Add Key	Sets keyframes for the selected bones

Layer Transform On-Screen Controls

Shortcut	Action
Drag within large center circle	Moves the layer
Shift-drag within large center circle	Constrain layer movement horizontally or vertically
Drag the horizontal and vertical lines	Scales the layer horizontally or vertically
Drag the upper diagonal line	Proportionally scale the layer
Drag the lower diagonal line	Rotate the layer
Ctrl(Win)/Cmd(Mac)-drag the lower diagonal line	Rotates the layer with finer control
Drag small center circle	Moves the Anchor point
Q	Activates / Deactivates translation of selected layers
W	Activates / Deactivates rotation of selected layers
E	Activates / Deactivates scaling of selected layers
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments

Nodes Window

Shortcut	Action
Enter with mouse in Nodes Window	Enters search mode
Esc with mouse in Nodes Window	Exits search mode

Nudging

Shortcut	Action
Arrow keys	Moves by 1 pixel
Shift-Arrow keys	Moves by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves by one tenth of a pixel
Hold down **Arrow** keys	Moves continuously
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)-**drag	Translates, Rotates or Scales in finer increments
Q, **W**, **E** then **Arrow** keys	Translates, Rotates or Scales by 1 pixel
Q, **W**, **E** then **Shift-Arrow** keys	Translates, Rotates or Scales by 10 pixels
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)-Arrow** keys	Translates, Rotates or Scales by 1/10 of a pixel

Object List

Shortcut	Action
Click on an object	Selects the object
Shift-click an object	Adds an object to the current selection
Ctrl(Win)/Cmd(Mac)-click on an object	Toggles the object selection
Shift-click color pot	Selects shapes of same color
Alt-click the Visibility icon	Solos an object
Alt-Ctrl-click the Visibility icon	Forces the visibility of all objects to the on position
Shift-click the +/- icon	Expands or collapses all nested layers inside that layer
Double-click an object	Selects the object so it can be renamed

Paint > Brushes

Shortcut	Action
B	Selects the Black and White brush
Shift-B	Selects the Blemish brush
Ctrl-B	Selects the Blur brush
C	Selects the Clone brush
Shift-C	Selects the Color brush
Alt-C	Selects the Color Correct brush
Alt-Shift-C	Selects the Cutout brush
Shift-E	Selects the Eraser brush
D	Selects the Drag brush
G	Selects the Grain brush
M	Selects the Mosaic brush
R	Selects the Repair brush
S	Selects the Scatter brush

Paint > Clone > Region

Shortcut	Action
Click and drag	Creates a region
Alt-click and drag	Creates new region when one already exists
Click and drag inside a region	Moves the region
Drag the region handles	Resizes the region
Tap outside a region box without dragging	Resets the region to full screen

Paint > Clone Transform Keyboard Shortcuts

Shortcut	Action
Q	Activates / Deactivates translation of the Clone source
W	Activates / Deactivates rotation of the Clone source
E	Activates / Deactivates scaling of the Clone source
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments
Ctrl(Win)/Cmd(Mac)-W	Rotates without setting the anchor point
Ctrl(Win)/Cmd(Mac)-E	Scales without setting the anchor point
Ctrl(Win)/Cmd(Mac)-1-4	Selects the top left, top right, bottom right and bottom left corner points so they can be moved
. (Period key)	Sets the anchor point

Paint > Clone Transform Nudging

Shortcut	Action
Arrow keys	Moves the Clone source by 1 pixel
Shift-Arrow keys	Moves the Clone source by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves the Clone source by one tenth of a pixel
Hold down **Arrow** keys	Moves the Clone source continuously
Q, **W**, **E** then **Arrow** keys	Translates, Rotates or Scales by 1 pixel
Q, **W**, **E** then **Shift-Arrow** keys	Translates, Rotates or Scales by 10 pixels
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)-Arrow** keys	Translates, Rotates or Scales by 1/10 of a pixel
Ctrl(Win)/Cmd(Mac)-1 then Arrow Keys	Nudges the top left corner point
Ctrl(Win)/Cmd(Mac)-2 then Arrow Keys	Nudges the top right corner point
Ctrl(Win)/Cmd(Mac)-3 then Arrow Keys	Nudges the bottom right corner point
Ctrl(Win)/Cmd(Mac)-4 then Arrow Keys	Nudges the bottom left corner point

Paint > Clone Transform On-Screen Controls

Shortcut	Action
Drag within large center circle	Moves the Clone source
Shift-drag within large center circle	Constrain Clone source movement horizontally or vertically
Drag the center square horizontal and vertical halfway points	Scales the Clone source horizontally or vertically
Drag a center square corner	Proportionally scale the Clone source
Drag large center circle	Rotate the Clone source
Ctrl-drag large center circle	Rotates the Clone source with finer control
Drag handles on corners of image	Corner-pins the Clone source
Drag dash above large circle	Skews the Clone source horizontally
Drag dash to the right of large circle	Skews the Clone source vertically

Paint > Clone Transform On-Screen Controls With Region Set

Shortcut	Action
Drag within region	Moves the Clone source
Shift-drag region	Constrains the Clone source movement horizontally or vertically
Drag edge handle	Scales the Clone source horizontally or vertically
Shift-drag corner or edge handle	Proportionally scale the Clone source
Ctrl(Win)/Cmd(Mac)-drag on corner handle	Rotate the Clone source / Continue holding **Ctrl** to adjust with finer control
Drag on a corner handle	Corner-pins the Clone source
Ctrl(Win)/Cmd(Mac)-drag on edge handle	Skews the Clone source

Paint > Cutout Brush

Shortcut	Action
Click-drag	Creates a source region when none exists
Shift-drag or Right-click-drag	Creates a new source region
Shift	Displays source region
Shift-click or Right-click	Resets source region
Ctrl(Win)/Cmd(Mac)-drag boundary	Scales the cutout
Ctrl(Win)/Cmd(Mac)-Shift-drag boundary	Rotates the cutout

Paint Settings

Shortcut	Action
Ctrl(Win)/Cmd(Mac)-drag left/right	Sizes the brush
[and **]**	Sizes the brush
Ctrl(Win)/Cmd(Mac)-Shift-drag	Sets the brush softness
Shift-click-drag with Clone brush	Sets the Clone offset
Shift-click-click with Clone brush	Sets the Clone offset
Shift-click or tap	Resets the Clone offset
Shift-Alt-1 and **Shift-Alt-2**	Selects the Dual Clone brush setups
Shift+Ctrl+1	Toggle Dual Clone mode on/off
‘ (located to the left of 1 key)	Displays the Clone source and then the Clone target so that you can click on each to set the Clone offset
Caps Lock	Toggles Onion Skin mode on and off
. (period key)	Picks colors off of the screen
Right-click	Picks a color off of the screen from a single pixel
Right-click-drag	Picks a color off of the screen by drawing a box and averages the colors within it
Alt-click-click	Draws a straight line

Pin Warp

Shortcut	Action
Click-drag on image	Creates a pin
Click-release on image	Creates a tack
Click-drag pin (source or target)	Moves the pin (source or target)
Shift-drag pin (source or target)	Moves both pins (source and target)
Ctrl(Win)/Cmd(Mac)-drag pin radius	Adjusts pin radius with all radii displayed
Hover over pin, Shift-drag pin radius	Adjusts pin radius with only selected pin radius displayed
Alt-drag on a tack	Converts a tack to a pin
Right-click > Remove Pin	Deletes the pin
Right-click > Make Tack	Converts a pin to a tack

Playback Controls

Shortcut	Action
Z	Step backward 1 frame
Shift-Z	Moves to the previous keyframe
X	Step forward 1 frame
Shift-X	Moves to the next keyframe
J	Plays backward
K	Stops or starts playback
L	Plays the forward
Space Bar	Stops playback
Home	Moves to the first frame
End	Moves to the last frame
Click and drag in the shuttle area	Shuttles through the clip
Shift-Alt-click and drag a keyframe marker	Moves the keyframe in time

Render > Preview

Shortcut	Action
R	Displays the Red channel
G	Displays the Green channel
B	Displays the Blue channel
A	Displays the Alpha channel
D	Displays the Depth channel
C	Displays the RGB channels

ROI

Shortcut	Action
Initial click-drag bounding box	Sets the ROI
Click-drag bounding box points	Scales the ROI
Click-drag bounding box	Positions the ROI
Ctrl-Shift-drag	Draws a new ROI

Roto Tools

Shortcut	Action
T	Selects Transform Shape Mode
TT	Selects Transform Points Mode
R	Selects Reshape Normal Mode
RR	Selects Reshape Magnet Mode
Y	Selects IK (Inverse Kinematics)
B	Selects B-Spline
S	Selects X-Spline
Shift-B	Selects Bézier
Shift-S	Selects Square
Shift-C	Selects Circle
Shift-F	Selects Feather
Shift-T	Selects Tracker
M	Selects MultiFrame

Roto - Transform Tool

Shortcut	Action
Drag shape	Moves the shape
Shift-drag shape	Constrain shape movement horizontally or vertically
Drag bounding box corner or edge handle	Scales a shape
Shift-drag bounding box corner or edge handle	Proportionally scale a shape
Ctrl(Win)/Cmd(Mac)-drag on a bounding box corner handle	Rotate a shape
Alt-drag on a bounding box corner handle	Corner-pin a shape
Alt-Shift-drag on a bounding box corner handle	Constrains the corner-pin movement to one axis
Ctrl(Win)/Cmd(Mac)-drag on a bounding box edge handle	Shear a shape
. (period key)	Turns the Anchor Point on or off
Drag on Anchor Point	Moves the Anchor Point
Shift-. (period key)	Moves the Anchor Point to the mouse location
Q	Activates / Deactivates translation of selected shapes or layers
W	Activates / Deactivates rotation of selected shapes or layers
E	Activates / Deactivates scaling of selected shapes or layers
Q, **W**, **E** then **Ctrl(Win)/Cmd(Mac)**	Translates, Rotates or Scales in finer increments
Ctrl-W	Rotates without setting the anchor point
Ctrl-E	Scales without setting the anchor point

Selecting / Deselecting Control Points

Shortcut	Action
Click on a control point. If the control point is part of a Bézier curve, its tangents appear	Selects the control point
Shift-click the control points or drag select multiple control points	Selects multiple control points
Ctrl(Win)/Cmd(Mac)-Alt-I	Inverts the point selection
Alt-Shift-A	Selects all control points
Alt-Ctrl-A	Deselects all control points
Ctrl(Win)/Cmd(Mac)-click on a control point	Toggles the point selection
Click anywhere off the shape	Deselects all control points

Selecting / Deselecting Shapes

Shortcut	Action
Click on a shape	Selects the shape
Shift-click a shape or drag select multiple shapes	Selects multiple shapes
Ctrl(Win)/Cmd(Mac)-click on a shape	Toggles the shape selection
Click anywhere off the shape	Deselects all shapes
Shift-click color pot in the Object List	Selects shapes of same color

Sequence Editor

Shortcut	Action
Scroll wheel	Zooms the Sequence Editor in and out
Shift-Scroll Wheel or Middle-mouse drag	Zooms the Sequence Editor in and out 10x faster
Space Bar-drag	Pans the Sequence Editor
Middle-mouse drag	Pans the Sequence Editor
I	Sets a Mark IN point
O	Sets a Mark OUT point
Shift-Drag/Drop Selected Clips	Copies the selected clips
Alt-Drag/Drop Selected Clips	Replaces the destination clip or marked region
Delete	Deletes the selection

Stereo Align

Shortcut	Action
Shift-Alt and click	Automatically sets the Stereo Offset horizontally
Ctrl-Shift-Alt and click	Automatically sets the Stereo Offset horizontally and vertically
Click and drag in Viewer	Moves the Stereo Offset horizontally
Ctrl-drag in Viewer	Moves the Stereo Offset horizontally in finer increments
Shift-click and drag in Viewer	Moves the Stereo Offset horizontally and vertically
Alt-click in Viewer	Resets the Stereo Offset
Arrow keys	Moves the Stereo Offset by 1 pixel
Shift-Arrow keys	Moves the Stereo Offset by 10 pixels
Ctrl(Win)/Cmd(Mac)-Arrow keys	Moves the Stereo Offset by one tenth of a pixel
Hold down **Arrow** keys	Moves the Stereo Offset continuously

Stereo View

Shortcut	Action
Shift-1	Selects the Left View
Shift-2	Selects the Right View
Shift-3	Selects the Left/Right View
Shift-4	Selects Stereo Align
Shift-5	Anaglyph Preview
Shift-6	3D Preview
D	Displays the depth map

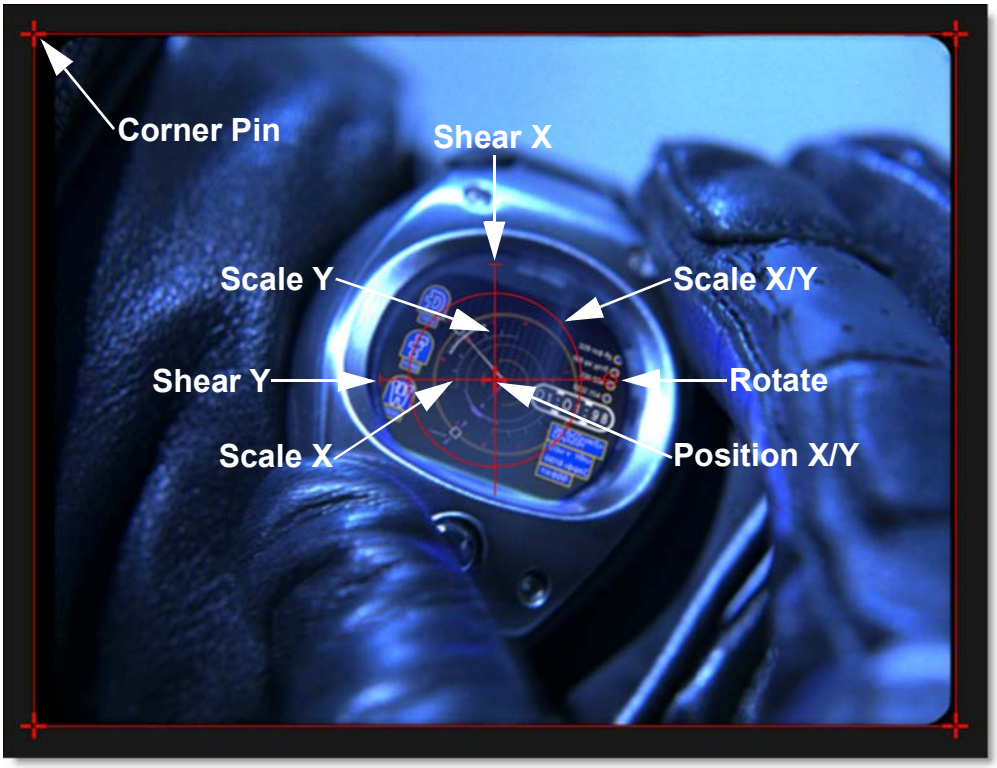
Timeline

Shortcut	Action
Scroll wheel	Zooms the Timeline in and out
Shift-Middle-mouse drag	Zooms the Timeline in and out
Space Bar-drag	Pans the Timeline
Middle-mouse drag	Pans the Timeline
Single-click keyframe	Selects one keyframe
Ctrl(Win)/Cmd(Mac)-click keyframe	Toggle the keyframe selection
Shift-click keyframes	Selects a range of keyframes
Alt-click	Inserts a keyframe
Right-click keyframe	Opens Timeline pop-up menu
Click-drag keyframe	Moves the keyframe
Ctrl-drag the ends of work range bar	Changes the start and end of the work range
Ctrl-drag the work range bar	Slides the work range forward and back
Click top left corner of the Timeline	Centers the timeline on the current frame

Tracker

Shortcut	Action
Alt-click in Viewer	Creates a new tracker

Transform On-Screen Controls



Shortcut	Action
Drag small center cross	Moves the image's X/Y Position
Drag on the large cross's horizontal and vertical lines	Scales the image horizontally or vertically
Drag large center circle	Proportionally scales the image
Drag small circle at 3 o'clock position	Rotates the image
Drag crosses on corners of image	Corner-pins the image
Drag bars at 9 and 12 o'clock positions	Shears the image
Alt-click-drag	Moves the anchor point to a different area of the image

Viewer

Shortcut	Action
F1	The composite workspace is displayed
F2	The Viewer is displayed full screen
F3	The Viewer and Timeline are displayed
F4	The Viewer and Trees window are displayed
F5	The dual monitor workspace is displayed
0	Toggles the display of overlays which are lines, shapes or objects
1-7 (Number Keys)	Switches the Viewer > View menu
~	Cycles through the update modes
A	Cycles the display between the full color image, the alpha channel superimposed over the image, and the alpha channel by itself
Shift-A	Toggles the View to Output, superimposes the alpha channel over the image and deactivates the Overlay
Alt-R/G/B/A	Toggles the red, green, blue and alpha channels on and off
Alt-O	Toggles the Roto node's view mode to Output and displays the alpha. Pressing **Alt-O** again returns the Viewer to its previous state.
Shift-Ctrl-R	Toggles the Viewer rotation mode on/off
Shift-R	Toggles the Viewer rotation editing mode on/off

Viewer Pan/Zoom

Shortcut	Action
Middle-mouse drag	Pans the image
Space Bar-drag	Pans the image
+ or **=**	Zooms the image in
-	Zooms the image out
Shift-Middle-mouse drag	Zooms the image in and out
Scroll wheel	Zooms the image in and out
Space Bar-Shift-drag up and down	Zooms the image in and out
F	Fits the image in the Viewer
H or Middle-mouse double click	Centers the image in the Viewer at 100%
Ctrl(Win)/Cmd(Mac)-F	Centers selected object in the Viewer
‘	Opens a context menu over pen/mouse location

X-Spline Shapes

Shortcut	Action
Alt-drag control point right	Adjusts the weight of the point from Cardinal to Corner to B-Spline
Alt-drag control point left	When the weight is set to B-Spline, it adjusts the weight of the point from B-Spline to Corner to Cardinal
Alt-clicking control point	Cycles through preset weight settings of the point
Ctrl(Win)/Cmd(Mac)-Alt-1	Sets the point tension to Corner
Ctrl(Win)/Cmd(Mac)-Alt-2	Sets the point tension to Cardinal
Ctrl(Win)/Cmd(Mac)-Alt-3	Sets the point tension to B-Spline

APPENDIX C - SESSION FORMATS

A number of preset formats can be selected from the Session Format pop-up menu. When one of the options is selected, the session fields are preset with the appropriate data.

Film Full Aperture (4K: 4096x3112)

Uses the following presets.

Width: 4096

Height: 3112

Pixel Aspect: 1

Frame Rate: 24

Film Full Aperture (4K: 4096x3072)

Uses the following presets.

Width: 4096

Height: 3072

Pixel Aspect: 1

Frame Rate: 24

Film Full Aperture (2k: 2048x1556)

Uses the following presets.

Width: 2048

Height: 1556

Pixel Aspect: 1

Frame Rate: 24

Film Full Aperture (2k: 2048x1536)

Uses the following presets.

Width: 2048

Height: 1536

Pixel Aspect: 1

Frame Rate: 24

Film Cinemascope Full (3656x2664)

Uses the following presets.

Width: 3656

Height: 2664

Pixel Aspect: 2

Frame Rate: 24

Film Cinemascope Half (1828x1556)

Uses the following presets.

Width: 1828

Height: 1556

Pixel Aspect: 2

Frame Rate: 24

Film Academy (1828x1332)

Uses the following presets.

Width: 1828

Height: 1332

Pixel Aspect: 1

Frame Rate: 24

HDTV 24p (1920x1080)

Uses the following presets.

Width: 1920

Height: 1080

Pixel Aspect: 1

Frame Rate: 24

HDTV 1080i, 1920x1080

Uses the following presets.

Width: 1920

Height: 1080

Pixel Aspect: 1

Frame Rate: 30

HDTV 1080, Anamorphic 1280x1080

Uses the following presets.

Width: 1280

Height: 1080

Pixel Aspect: 1.5

Frame Rate: 24

HDTV 720p, 1280x720

Uses the following presets.

Width: 1280

Height: 720

Pixel Aspect: 1

Frame Rate: 60

NTSC, 640x480

Uses the following presets.

Width: 640

Height: 480

Pixel Aspect: 1

Frame Rate: 29.97

NTSC, 648x486

Uses the following presets.

Width: 648

Height: 486

Pixel Aspect: 1

Frame Rate: 29.97

NTSC DV, 720x480

Uses the following presets.

Width: 720

Height: 480

Pixel Aspect: .9

Frame Rate: 29.97

NTSC DV Widescreen (720x480)

Uses the following presets.

Width: 720

Height: 480

Pixel Aspect: 1.2

Frame Rate: 29.97

NTSC D1 (720x486)

Uses the following presets.

Width: 720

Height: 486

Pixel Aspect: .9

Frame Rate: 29.97

NTSC D1 Square Pixels (720x540)

Uses the following presets.

Width: 720

Height: 540

Pixel Aspect: 1

Frame Rate: 29.97

PAL D1/DV (720x576)

Uses the following presets.

Width: 720

Height: 576

Pixel Aspect: 1.07

Frame Rate: 25

PAL D1/DV Square Pixels (768x576)

Uses the following presets.

Width: 768

Height: 576

Pixel Aspect: 1

Frame Rate: 25

PAL D1/DV Widescreen (720x576)

Uses the following presets.

Width: 720

Height: 576

Pixel Aspect: 1.42

Frame Rate: 25

APPENDIX D - ENVIRONMENT VARIABLES

Environment Variables

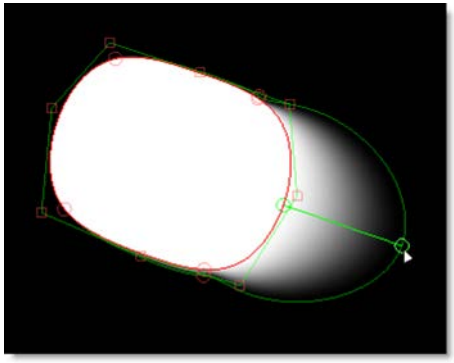
Environment variables can be used to customize certain aspects of Silhouette. See the **Customization Guide** for more information and a full list of environment variables and their descriptions.

APPENDIX E - LEGACY FEATHER

Silhouette v6 and later use a new method for feathering that is compatible with other host programs like Nuke. However, the feathering method used in Silhouette v5 and below can still be used by enabling the Shape > Enable Legacy Feathering preference. Once enabled, the Feather tool appears in the Toolbar as it did in Silhouette v5 and below.

Feather creates variable edged blurs on a point by point basis.

The Feather points can be placed either inside or outside the shape.



To use Feather, select it from the Toolbar and **Alt**-click on a selected shape and drag. Additional feather points are added by **Alt**-clicking on the original curve and dragging. Feather points are edited by clicking and dragging on one of the points.

Note: Feather points can only be added when the Feather tool is activated, but can be edited and manipulated using Reshape.

Feather Keyboard Shortcuts

Shortcut	Action
Alt-drag on shape	Adds and pulls out a feather point
Click-drag a feather point	Changes the length and position of the feather point
Shift-drag a feather point	Constrains the length of the point
Delete key	Deletes the selected feather points
Right-click over point > Select All	Selects all feather points
Right-click over point > Reset	Sets the selected feather points' offset to 0

APPENDIX F - VIDEO FIELDS

When working with footage that contains video fields, you have the option of either deinterlacing or removing 3:2 Pulldown. What are video fields and 3:2 Pulldown, you ask? Well, a review of the mechanics of video frames and fields is in order, so listen up.

The resolution of video images is 525 lines for NTSC and 625 lines for PAL. NTSC video runs at 30 frames per second and PAL at 25 frames per second. Each video frame is made of two separate subframes called fields. Each of these fields is an individual snapshot in time. By using fields, the Viewer sees twice as many frames and smoother motion. Even though the fields represent different points in time, they occupy the same video frame. This is achieved through a process called interlacing.

Here comes the fun part. Interlacing weaves together the two fields by starting at the top of the image and taking one line from field 1 (the odd field) and another line from field 2 (the even field) until all 525 or 625 lines are interlaced together. Temporally, the fields always occur in the following order: field 1 and then field 2. Spatially, the ordering is different for NTSC and PAL. For NTSC, the spatial field order starts with field 2, or the even field. For PAL, it is the exact opposite with field 1, or the odd field, being the first spatial field.

Therefore, the interlace process produces two fields of half-height for every broadcast frame. When a television displays these images, it quickly shows the first field only, and then the second field only, and then proceeds to the next frame. Each field sacrifices vertical resolution for the benefit of temporal quality.

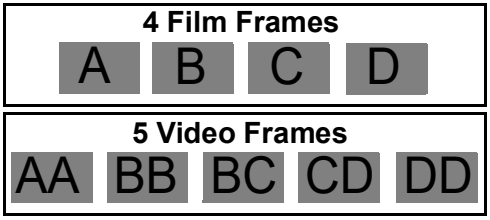
Deinterlacing

When deinterlacing is enabled, it strips out the two fields from each other, placing field 1 at frame 1, and field 2 at frame 1.5. Each field is then copied and moved into the empty spatial place of the removed field. This ensures that all spatial effects are properly handled when rendering fields. This strategy is clever because it doubles the number of frames you have, but keeps the frames within the same duration.

3:2 Pullup / Pulldown

What in the world does 3:2 Pullup / Pulldown mean? This is a technique to temporally convert (resolution not being considered here) film footage to video footage and back again. Given that film uses solid frames and video uses interlaced fields, and that film runs at 24 fps and NTSC runs at 30 fps, you split the film footage into fields and double up 2 out of 5 frames to increase your frames to fill the 30 fps. Pullup is the conversion of film footage from 30fps to 24fps while Pulldown is the conversion of 24fps film footage to 30fps.

Let's use the classic diagram:



We see that the third and fourth video frames have field blending in them to stretch time out. It's therefore called 3:2 because you have three solid frames and two mixed frames.

3:2 Pullup

We can fully reconstruct our original four film frames by extracting the field data from the five video frames. Here comes the odd bit. When you receive your footage, it has probably been edited, so it is not necessarily the case that frames three and four are the mixed frames because all of the clips have been shifted around in the edit. We therefore need to figure out what the first frame is before we attempt to remove the extra fields. To do this, you would go to the first five frames in the clip. If the first frame to have field blending is frame three, you know your first frame should be set to AA. If the first frame to have field blending is frame two, then you know your first frame is BB. You would then set your 3:2 parameter accordingly. If your first frames are a solid color and you can't figure it out, you have to jump to a time range of frames that display the blending and start guessing what the first frame is until the fields go away. Very scientific, isn’t it?

Use the 3:2 setting in the chart below that corresponds to your first frame with field blending.

3:2 Pullup Frame Guide

First frame with field blending	3:2 Setting
1	BC if followed by a blended frame / CD if followed by a solid frame
2	BB
3	AA
4	DD

Appendix G - Blend Modes

Blend modes are used to combine images in a variety of different ways.

Normal

Edits each pixel to make it the result color. This is the default mode. Changing the opacity results in a mix between two layers.

Darken

Looks at the color information in each channel and selects the base or blend color—whichever is darker—as the result color. Pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change.

Multiply

Looks at the color information in each channel and multiplies the base color by the blend color. The result color is always a darker color. Multiplying any color with black produces black. Multiplying any color with white leaves the color unchanged.

Color Burn

Looks at the color information in each channel and darkens the base color to reflect the blend color by increasing the contrast between the two. Blending with white produces no change.

Linear Burn

Looks at the color information in each channel and darkens the base color to reflect the blend color by decreasing the brightness. Blending with white produces no change.

Darker Color

Compares the total of all channel values for the blend and base color and displays the lower value color. Darker Color does not produce a third color, which can result from the Darken blend, because it chooses the lowest channel values from both the base and the blend color to create the result color.

Lighten

Looks at the color information in each channel and selects the base or blend color—whichever is lighter—as the result color. Pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change.

Add

The pixels of one image are added to another image

Screen

Looks at each images color information and multiplies the inverse of the two images. This looks kind of like the Add blend mode, but highlights are retained.

Color Dodge

Looks at the color information in each channel and brightens the base color to reflect the blend color by decreasing contrast between the two. Blending with black produces no change.

Linear Dodge (Add)

Looks at the color information in each channel and brightens the base color to reflect the blend color by increasing the brightness. Blending with black produces no change.

Lighter Color

Compares the total of all channel values for the blend and base color and displays the higher value color. Lighter Color does not produce a third color, which can result from the Lighten blend, because it chooses the highest channel values from both the base and blend color to create the result color.

Overlay

Multiplies or screens the colors, depending on the base color. Patterns or colors overlay the existing pixels while preserving the highlights and shadows of the base color. The base color is not replaced, but mixed with the blend color to reflect the lightness or darkness of the original color.

Soft Light

Darkens or lightens the colors, depending on the blend color. The effect is similar to shining a diffused spotlight on the image. If the blend color (light source) is lighter than 50% gray, the image is lightened as if it were dodged. If the blend color is darker than 50% gray, the image is darkened as if it were burned in.

Hard Light

Multiplies or screens the colors, depending on the blend color. The effect is similar to shining a harsh spotlight on the image. If the blend color (light source) is lighter than 50% gray, the image is lightened, as if it were screened. This is useful for adding highlights to an image. If the blend color is darker than 50% gray, the image is darkened, as if it were multiplied. This is useful for adding shadows to an image.

Vivid Light

Burns or dodges the colors by increasing or decreasing the contrast, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by decreasing the contrast. If the blend color is darker than 50% gray, the image is darkened by increasing the contrast.

Linear Light

Burns or dodges the colors by decreasing or increasing the brightness, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by increasing the brightness. If the blend color is darker than 50% gray, the image is darkened by decreasing the brightness.

Pin Light

Replaces the colors, depending on the blend color. If the blend color (light source) is lighter than 50% gray, pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change. If the blend color is darker than 50% gray, pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change. This is useful for adding special effects to an image.

Difference

Looks at the color information in each channel and subtracts either the blend color from the base color or the base color from the blend color, depending on which has the greater brightness value. Blending with white inverts the base color values; blending with black produces no change.

Exclusion

Creates an effect similar to but lower in contrast than the Difference mode. Blending with white inverts the base color values. Blending with black produces no change.

Subtract

Looks at the color information in each channel and subtracts the blend color from the base color. In 8 and 16-bit images, any resulting negative values are clipped to zero.

Hue

Creates a result color with the luminance and saturation of the base color and the hue of the blend color.

Saturation

Creates a result color with the luminance and hue of the base color and the saturation of the blend color.

Color

Creates a result color with the luminance of the base color and the hue and saturation of the blend color. This preserves the gray levels in the image and is useful for coloring monochrome images and for tinting color images.