



***SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet)
Advanced Products on Linux Red Hat EL WS 3 and 4***

32 bit versions:

Flame 9.0 – 9.4

Flint 9.0 – 9.4

Smoke 6.5 – 6.9

64 bit versions:

Flame 9.5+ (e.g. Flame 2008)

Flint 9.5+ (e.g. Flint 2008)

Smoke 7.0+ (e.g. Smoke 2008)

30–September–2008

Table of Contents

1 SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet) Advanced Systems on Red Hat Linux.....	1
1.1 Introduction.....	1
1.2 Pre-requisites.....	1
1.3 Downloading the Trailz Raptor.....	2
1.4 Installation.....	2
1.5 Licensing.....	4
1.6 Support.....	5
1.7 Sales.....	5
1.8 Thanks!.....	5
2 SpeedSix.TrailAll (Discreet Trailz Raptor).....	6
3 SpeedSix.TrailAverage (Discreet Trailz Raptor).....	8
4 SpeedSix.TrailDecay (Discreet Trailz Raptor).....	12
5 SpeedSix.TrailLive (Discreet Trailz Raptor).....	14
6 SpeedSix.TrailOver (Discreet Trailz Raptor).....	18
7 SpeedSix.TrailParticle (Discreet Trailz Raptor).....	20
8 SpeedSix.TrailStopMo (Discreet Trailz Raptor).....	27

1 SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet) Advanced Systems on Red Hat Linux

1.1 Introduction

This manual describes the SpeedSix Trailz Raptor for Autodesk (Discreet) "Advanced Systems" on Red Hat Linux. Trailz is a set of seven plugins that generate trails left behind by bright parts of an image in various styles:

- ◆ **TrailAll:** Trail generation as a simple basic composite.
- ◆ **TrailAverage:** Accumulating trails, optionally using motion estimation.
- ◆ **TrailDecay:** Trail generation to fade out the clip. Makes use of the clip's matte.
- ◆ **TrailLive:** Trail generation using optical flow based motion estimation.
- ◆ **TrailOver:** Trails which fade over a controllable length.
- ◆ **TrailParticle:** Forms trails from particles which can then move independently.
- ◆ **TrailStopMo:** Strobe-like trails.

Below we tell you how to install the Trailz Raptor and how to license it.

Please note that the Trailz Raptor is fully functional without a license – a SpeedSix logo will be superimposed on all output frames, however.

1.2 Pre-requisites

Please ensure that your Autodesk (Discreet) software is an appropriate version. The 32 bit version of the Trailz Raptor is intended for use with these 32 bit programs:

- Flint V9.0 – V9.4.
- Flame V9.0 – V9.4.
- Smoke V6.5 – V6.9.

The following Autodesk (Discreet) products are 64 bit programs and need the 64 bit version of the Trailz Raptor:

- Flint V9.5 and higher (e.g. Flint 2009).
- Flame V9.5 and higher (e.g. Flame 2009).
- Smoke V7.0 and higher (e.g. Smoke 2009).
- Inferno V6.5 and higher (e.g. Inferno 2009).

1.3 Downloading the Trailz Raptor

Download the latest version of the Trailz Raptor from:
<ftp://ftp.speedsix.com/Raptors/discreet/Trailz>

You will find separate installation packages for IRIX 32 bit and 64 bit, and Linux 32 bit and 64 bit (four packages in total). There are no Burn packages, as all the Trailz effects are cumulative and cannot be usefully run in Burn. Choose the Linux package you need for compatibility with your Autodesk (Discreet) product.

The package names are of the form:

Trailz{32|64}_V1.2.{release}_linux.tar.gz

E.g.

Trailz64_V1.2.706_linux.tar.gz

1.4 Installation

To install the Trailz Raptor proceed as follows.

1. Obtain the appropriate installer package (see above). You will usually obtain this from the SpeedSix FTP site, but it may occasionally be provided on CD by your reseller.
2. Create a temporary directory in which to unpack the distribution. E.g.

```
your_prompt> mkdir /var/tmp/s6
```

3. Copy the distribution file from its current location to the temporary directory. E.g.

```
your_prompt> cp /somedisk/mydownloads/Trailz64_V1.2.706_linux.tar.gz /var/tmp/s6
```

4. Go to the temporary directory:

```
your_prompt> cd /var/tmp/s6
```

5. Unpack the distribution file (replace 64 with 32 if on a 32 bit system):

```
your_prompt> tar xzvf Trailz64_V1.2.706_linux.tar.gz
```

1 SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet) Advanced Systems on Red Hat Linux

6. Become super-user if you have not already done so:

```
your_prompt> su  
Password: <enter your root password>
```

7. Start the installation procedure (omit -64 in the cd if on a 32 bit system):

```
root_prompt> cd discreet-linux-trailz-raptor-64-1.2-nnn-dist (e.g. nnn=706)  
root_prompt> ./install_s6
```

8. You will be asked if you are ready to read the SpeedSix License Agreement. Respond **y[enter]** or **n[enter]**. Installation will end at this point if you choose **n[enter]**.
9. After reading the SpeedSix License Agreement you will be asked if you accept it or not. Choose **y[enter]** or **n[enter]**. Installation will end at this point if you choose **n[enter]**.
10. Everything needed will then be automatically installed. (There are no options to worry about).
11. Finally, the installer checks if you have a valid license for each box and bundle, and copies an appropriate proxy image. This will appear when browsing for Sparks in proxy mode in your Autodesk application and lets you easily tell which plugins you have licenses for.

1.4.1 After Installation

When the Trailz Raptor has been installed, you will have the following:

- **/usr/discreet/sparks/SpeedSix_V1.2_Raptors** or **SpeedSix_V1.2_Raptors64** is where you will find the new Trailz Raptor Sparks. This is where you should browse to to load a Spark from within the Autodesk software.
- **/usr/local/SpeedSix/Licenses** is where Trailz Raptor license lives. When you get a license file from SpeedSix, it should be copied **unaltered** to this directory. See below for more information.
- **/usr/local/SpeedSix/bin** contains SpeedSix utility programs – mainly for licensing. See below for more information. It also contains an un-install script.
- **/usr/local/SpeedSix/dl/help** contains extensive HTML format help for every plugin. This is accessible via the **Help** button in each Trailz Raptor plugin when running your Autodesk product, or you can browse it "offline" using any Web browser. The master index page is:
/usr/local/SpeedSix/dl/help/raptorsindex1.htm then the **Trailz** link from there.
- Note that "online" help – obtained by pressing a plugin's **Help** button – will be displayed using the default Web browser. The default browser is **firefox** (if that is installed) or

1 SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet) Advanced Systems on Red Hat Linux

mozilla (if there is no **firefox**). You can select another browser by setting the environment variable **S6_HELP_BROWSER** to the executable (or equivalent) of your chosen browser. If you start your Autodesk product from a desktop icon, you may have to set **S6_HELP_BROWSER** by editing the shell script associated with the icon. This is **/usr/discreet/<flame...>/bin/startApplication** where **<flame...>** is the name of the specific Autodesk product you are using.

- **/usr/local/SpeedSix/Docs** contains a PDF format manual for the Trailz Raptor (derived from the HTML help), which you can view with (for example) **xpdf** or print. The manual is located at:
/usr/local/SpeedSix/Docs/Discreet_Linux_Trailz_Raptor_PDFManual.pdf
- **/usr/local/SpeedSix/bin/CHECK_LICENSE_TRAILZ{_LINUX_64}** checks for a license for the Trailz Raptor and creates proxy images that indicate whether a Trailz Raptor plugin is licensed or not when using the proxy image browser to select a plugin in the Autodesk product. After installing new licenses, you can run this to update your proxy images if you wish.

1.5 Licensing

You do not need a license key to run the software for evaluation purposes, but the images it creates will be watermarked.

To remove the watermarks, you will need a SpeedSix license file. This will be provided when you purchase the software.

Your Trailz Raptor license is tied to the MAC address of the **eth0** Ethernet adaptor of your machine. The easiest way of displaying this number in the right format is to use:

```
your_prompt> /usr/local/SpeedSix/bin/ssid
```

after you have installed the Trailz Raptor.

Alternatively, you can use this Linux command:

```
your_prompt> /sbin/ifconfig eth0
```

and send us the **HWaddr: xx:yy:zz:aa:bb:cc** part of the output.

SpeedSix (or your reseller) will send you your license as an email attachment. Proceed as follows:

1. Save the attachment as a file. This *is* the license – ***please keep a copy in a safe place.***
2. Copy the file to the following directory on the machine to be licensed:

```
/usr/local/SpeedSix/Licenses
```

1 SpeedSix Trailz Raptor V1.2 for Autodesk (Discreet) Advanced Systems on Red Hat Linux

Your Trailz Raptor is now licensed and will render without watermarks next time you start the Autodesk application and load a Trailz Raptor plugin.

You may want to run `/usr/local/SpeedSix/bin/CHECK_LICENSE_TRAILZ{_LINUX_64}` to update your proxy images after installing a license.

PLEASE NOTE

Do not edit the license files provided in any way. The licenser searches all the files in the License directory to find valid licenses, so more than one license file can be added to the directory without difficulties arising.

1.6 Support

In the event of any difficulties with the installation or the software please contact support@speedsix.com

1.7 Sales

For sales enquiries contact sales@speedsix.com, or see www.speedsix.com. You will need to contact your reseller or SpeedSix sales to obtain a license.

1.8 Thanks!

Thanks for using SpeedSix software!

2 SpeedSix.TrailAll (Discreet Trailz Raptor)

PURPOSE

Trail generation simply compositing where the matte information controls the length of trail. No motion estimation. A pre-view tool as well as a simple trail.



INPUT CLIPS

- 1: **Input Clip** : Clip to create the trails.
 - 2: **Background** : Background to composite result over.
 - 3: **Matte** : Matte to control trail locations.
-

TrailAll CONTROL PAGE

Restart (Pushbutton)

When changing styles or skipping frames, the true image will not be created. The new output image will be using the frame created from the old settings. Therefore to be sure, click on **Restart** and process a few frames to see the true picture.

Use Matte Clip (Checkbox **Default:** Off)

On: Take the red channel from the Matte clip and use it for the Alpha channel of the Input clip.

Off: Leave well alone.

Matte PreMultiply (Checkbox **Default:** Off)

On: Pre-multiply the Input clip by the Matte clip using the Red channel

Off: Do not pre-multiply.

Composite (Checkbox **Default:** Off)

Optionally composite over background.

Pre Multiplied (Checkbox **Default:** Off)

Are the images pre-multiplied or not?

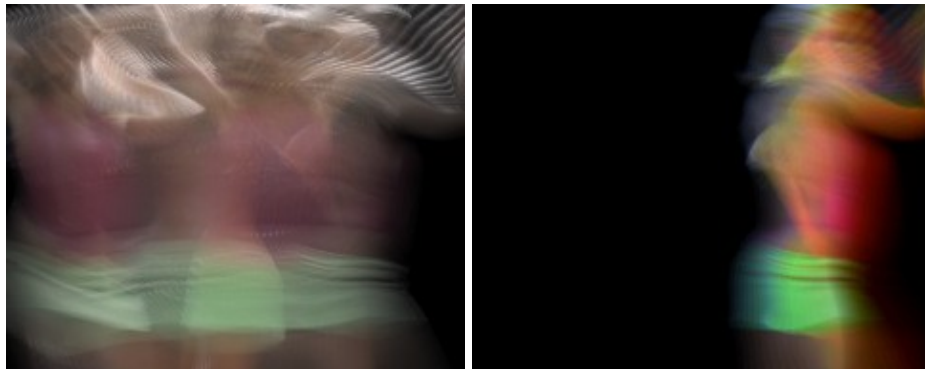
Restart On Process (Checkbox **Default:** Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.

3 SpeedSix.TrailAverage (Discreet Trailz Raptor)

PURPOSE

Trail generation optionally using optical flow based motion estimation and averaging the accumulation. The RGB components can be averaged at different rates.



INPUT CLIPS

- 1: **Input Clip** : Clip to have trails.
 - 2: **Background** : Background to composite result over.
 - 3: **Matte** : Matte of the input clip; use if compositing is desired.
-

TrailAverage CONTROL PAGE

Restart (Pushbutton)

When changing styles or skipping frames, the true image will not be created. Therefore to be sure, click on **Restart** and process a few frames to see the true picture. Many of the controls when switched will automatically do this for you.

With Motion (Checkbox **Default:** Off)

On: Turns on the motion analysis to add motion blur and a smoother result.

Image (List Box **Options:** Full Frame | NTSC Fields | NTSC Fields (Rev) | PAL Fields | PAL Fields (Rev), **Default:** Full Frame)

This specifies whether the images in the input sequence are frame based or fields based. If they are fields based (interlaced), it also specifies the field order (based on the TV system type). Output images will be frame or field based to match the input image type as selected here.

Full Frame: Images are not interlaced. This is the case with film and progressive

video formats (and is, of course, the One True and Proper Way).

NTSC Fields: Images are interlaced, with fields in the normal order for the NTSC television standard.

NTSC Field (Rev): Images are interlaced, with fields the other way around from the normal order for the NTSC television standard.

PAL Fields: Images are interlaced, with fields in the normal order for the PAL television standard.

PAL Fields (Rev): Images are interlaced, with fields the other way around from the normal order for the PAL television standard.

Note: "PAL" and NTSC" don't necessarily imply anything about the image resolution in this case.

Plugin Status (Text String)

This gives you information on what the plugin is doing in motion estimation mode, and displays error messages if appropriate. Keep an eye on it as it is very useful to know what is going on especially if you have any problems.

Type (List Box **Options:** Direct | Direct and Save Flows | Only Save Flows | Reuse Flows, **Default:** Direct)

Direct:Calculates the flow fields and draws the trails.

Direct and Save Flows: Calculates the flows, saves them to disk and draws the trails,

Only Save Flows: Calculates the flows and saves them to disk. No trails are drawn,

Reuse Flows: Reads saved flows back from disk and draws the trails.

Note: Currently all the saved flows are put into a fixed location with a fixed name.

Windows:The location is

S6_HOME_DIR\SpeedSix\flow_store\flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is C:\Program Files\SpeedSix

Linux or Irix: The location is

S6_HOME_DIR/SpeedSix/flow_store/flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is /usr/local/SpeedSix

Use Matte Clip (Checkbox **Default:** Off)

On: Take the red channel from the Matte input clip and use it for the matte information of the primary Input clip.

Useful if you wish to composite the result over the background and your input clip has a separate matte clip.

Off: Leave well alone. Any existing matte information will be kept.

Matte PreMultiply (Checkbox **Default:** Off)

On: Pre-multiply the Input clip by the Matte clip using the Red channel

Off: Do not pre-multiply.

Style (List Box **Options:** Straight | Boost, **Default:** Straight)

This selection is available in motion mode.

Straight: The Input clip is used.

Boost: The luminance can be boosted to emphasis the highlights.

Style (List Box **Options:** Straight | Stagger | Boost, **Default:** Straight)

This selection is available in non-motion mode.

Straight: The Input clip is used.

Stagger: Endurance values can be set independantly for the RGB channels, smearing the colours.

Boost: The luminance can be boosted to emphasis the highlights.

Endurance (Number **Min:** 2, **Max:** 1000, **Default:** 50)

How long, in frames, the traily effect should last.

EnduranceRed (Number **Min:** 2, **Max:** 1000, **Default:** 10)

How long, in frames, the traily effect should last for the red channel.

EnduranceGreen (Number **Min:** 2, **Max:** 1000, **Default:** 30)

How long, in frames, the traily effect should last for the green channel.

EnduranceBlue (Number **Min:** 2, **Max:** 1000, **Default:** 50)

How long, in frames the traily effect should last for the blue channel.

Bright Emphasis (Number **Min:** 1.0, **Max:** 100.0, **Default:** 50.0)

Degree to which bright areas are emphasised.

Composite (Checkbox **Default:** Off)

Composite the result over background clip.

Pre Multiplied (Checkbox **Default:** Off)

Is the result image pre-multiplied or not.

DoBlur (Checkbox **Default:** Off)

Use the **Blur** value to soften the trails.

Blurring (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

The amount the image will be softened by defocusing it.

Restart On Process (Checkbox **Default:** Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.

Tuning CONTROL PAGE

Motion Samples (Number **Min:** 4, **Max:** 32, **Default:** 4)

This is the number of samples taken while the shutter is open. The samples are uniformly spaced in time over the shutter open interval, but the motion vectors at each pixel are perturbed randomly to an extent related to the time between samples to reduce potential artefacts due to sampling. (More samples means more computation, hence more time to calculate a result frame).

Flow Resolution (List Box **Options:** Full | Half | Quarter, **Default:** Quarter)

Resolution at which to compute optical flow. The basic algorithm used by TrailAverage System is optical flow. This treats brightness in an image as if it were a sort of fluid (like water), and it tries to see in which direction the brightness has flowed out of each pixel from one input frame to the next. To capture big motions, it does this on a "pyramid" of image resolutions, starting from the very small and refining the estimates up to a fairly high resolution (potentially the full image resolution). The maximum image resolution it will use for this pyramid is called the Flow Resolution.

Note: This not the resolution at which your result images are computed!

Show Vectors (List Box **Options:** None | Forward | Backward | Both, **Default:** None)

None: Motion vectors will not be drawn.

Forward: Draw forward motion vectors (from the earlier image of a pair to the later).

Backward: Draw backward motion vectors (from the later image of a pair to the earlier).

Both: Draw the forward and backward motion vectors.

4 SpeedSix.TrailDecay (Discreet Trailz Raptor)

PURPOSE

The complete clip may gradually fade away depending on the matte information. No motion estimation.



INPUT CLIPS

- 1: **Input Clip** : Clip to have trails.
 - 2: **Matte** : Matte to control trail locations.
-

TrailDecay CONTROL PAGE

Restart (Pushbutton)

When changing styles or skipping frames, the true image will not be created. The new output image will be using the frame created from the old settings. Therefore to be sure, click on **Restart** and process a few frames to see the true picture.

Decay (Number **Min:** 0.0, **Max:** 30.00, **Default:** 20.0)

How long the trailly effect should last.

Pre Multiplied (Checkbox **Default:** Off)

Are the images pre-multiplied or not.

Matte PreMultiply (Checkbox **Default:** Off)

On: pre-multiply the Input clip by the Matte clip using the Red channel

Off: do not pre multiply.

Use Matte Clip (Checkbox **Default:** Off)

On: Take the red channel from the Matte clip and put it in the Alpha channel of the Input clip.

Off: leave well alone.

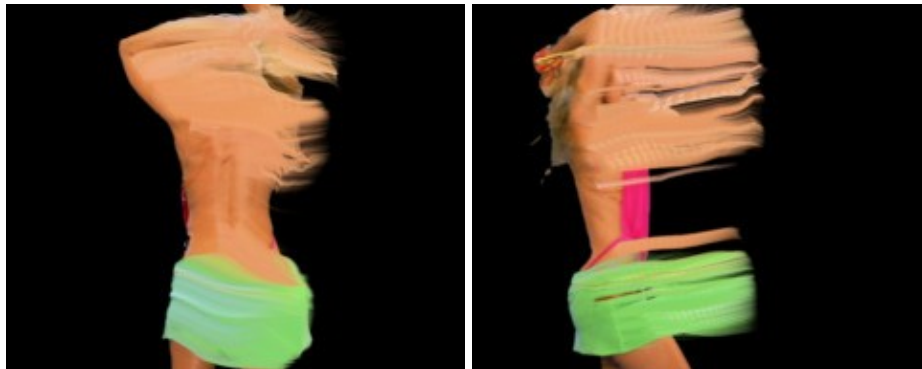
Restart On Process (Checkbox **Default:** Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.

5 SpeedSix.TrailLive (Discreet Trailz Raptor)

PURPOSE

Trail generation using optical flow based motion estimation. Lines are drawn along the motion paths derived.



INPUT CLIPS

1: Input Clip : Clip to have trails. The motion is estimated using this clip and the colour of the trails comes from this clip.

2: Background : Background to optionally composite result over.

3: Matte : Matte to control trail locations. Areas which have a higher luminance value than specified will be considered for trails.

4: Obscure : A clip that can optionally modulate the trails.

TrailLive CONTROL PAGE

Restart ([Pushbutton](#))

When changing styles or skipping frames, the true image will not be created. The new output image will be using the frame created from the old settings. Therefore to be sure, click on **Restart** and process a few frames to see the true picture.

Type ([List Box](#) **Options:** Direct | Direct and Save Flows | Only Save Flows | Reuse Flows | Setup Matte, **Default:** Direct)

Direct: Calculates the flow fields and draws the trails.

Direct and Save Flows: Calculates the flows, saves them to disk and draws the trails,

Only Save Flows: Calculates the flows and saves them to disk. No trails are drawn,

Reuse Flows: Reads saved flows back from disk and draws the trails.

Setup Matte: Play with the luminance of the matte clip to define zones where trails will be drawn.

Note: Currently all the saved flows are put into a fixed location with a fixed name.

Windows: The location is

S6_HOME_DIR\SpeedSix\flow_store\flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is C:\Program files\SpeedSix

Linux or Irix: The location is

S6_HOME_DIR/SpeedSix/flow_store/flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is /usr/local/SpeedSix

Image (List Box **Options:** Full Frame | NTSC Fields | NTSC Fields (Rev) | PAL Fields | PAL Fields (Rev), **Default:** Full Frame)

This specifies whether the images in the input sequence are frame based or fields based. If they are fields based (interlaced), it also specifies the field order (based on the TV system type). Output images will be frame or field based to match the input image type as selected here.

Full Frame: Images are not interlaced. This is the case with film and progressive video formats (and is, of course, the One True and Proper Way).

NTSC Fields: Images are interlaced, with fields in the normal order for the NTSC television standard.

NTSC Field (Rev): Images are interlaced, with fields the other way around from the normal order for the NTSC television standard.

PAL Fields: Images are interlaced, with fields in the normal order for the PAL television standard.

PAL Fields (Rev): Images are interlaced, with fields the other way around from the normal order for the PAL television standard.

Note: "PAL" and NTSC" don't necessarily imply anything about the image resolution in this case.

Luminance Low (Number **Min:** 0.0, **Max:** 1.0, **Default:** 0.8)

Only area in the **Matte** clip with a luminance value greater than the chosen amount will be considered for trails.

Luminance High (Number **Min:** 0.0, **Max:** 1.0, **Default:** 1.0)

Only area in the **Matte** clip with a luminance value lower than the chosen amount will be considered for trails.

Brightness (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

Tweak the luminance value to be used to encompass the area to create trails.

Plugin Status (Text String)

This gives you information on what the plugin is doing, and displays error messages if appropriate. Keep an eye on it as it is very useful to know what is going on especially if you have any problems.

Transparency (Number **Min:** 0.0, **Max:** 100.0, **Default:** 50.0)

Transparency factor to control the density of the trails. Lower values give thinner trails.

Fade Rate (Number **Min:** 0.1, **Max:** 10.0, **Default:** 1.0)

Rate at which the trails fade out.

Shutter (Number **Min:** 2, **Max:** 100, **Default:** 10)

How many frames the "shutter" is open for. The higher the value the longer the trails.

Step Over (Number **Min:** 1, **Max:** 20, **Default:** 1)

When testing the result using a value greater than 1 speeds up the processing. The image is stepped over by the chosen amount only drawing the trails found at the stepped locations.

Use Blur (Checkbox **Default:** Off)

Use the **Blur** value to soften the trails.

Obscure (Checkbox **Default:** Off)

Use the Obscure clip to modulate the trails.

Composite (Checkbox **Default:** Off)

The trails can be directly composited over a chosen background or output onto black.

Blur (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

Blur the trails created to soften them as desired.

Obscurity (Number **Min:** -1.0, **Max:** 1.0, **Default:** 0.0)

The amount the trails are obscured. Positive values: White is opaque and Black transparent. Negative values: White is transparent and Black is opaque

Restart On Process (Checkbox **Default:** Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.



***Tuning* CONTROL PAGE**

Flow Resolution (List Box **Options:** Full | Half | Quarter, **Default:** Quarter)

Resolution at which to compute optical flow. The basic algorithm used by TrailLive System is optical flow. This treats brightness in an image as it it were a sort of fluid (like water), and it tries to see in which direction the brightness has flowed out of each pixel from one input frame to the next. To capture big motions, it does this on a "pyramid" of image resolutions, starting from the very small and refining the estimates up to a fairly high resolution (potentially the full image resolution). The maximum image resolution it will use for this pyramid is called the Flow Resolution. Note: This not the resolution at which your result images are computed!

Show Vectors (List Box **Options:** None | Forward | Backward | Both, **Default:** None)

None: Motion vectors will not be drawn.

Forward: Draw forward motion vectors (from the earlier image of a pair to the later).

Backward: Draw backward motion vectors (from the later image of a pair to the earlier).

Both: Draw the forward and backward motion vectors.

6 SpeedSix.TrailOver (Discreet Trailz Raptor)

PURPOSE

This is the basic way of multiple compositing which lets you specify exactly how many frames the trail will last for. There is no motion estimation.



INPUT CLIPS

- 1: **Input Clip** : Clip to have trails.
 - 2: **Background** : Background to composite result over.
 - 3: **Matte** : Matte to use in compositing.
-

TrailOver CONTROL PAGE

Endurance (Number **Min:** 2, **Max:** 200, **Default:** 10)

How long in frames the trailly effect should last.

Fade Length (Number **Min:** 2, **Max:** 200, **Default:** 5)

How many frames the trail fades out over.

Use Blur (Checkbox **Default:** Off)

Use the **Blur** value to soften the trails.

Vary Blur (Checkbox **Default:** Off)

Vary the amount of **Blur** over the length.

Blurring (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

Blur amount for the trailed image.

Use Matte Clip (Checkbox **Default:** Off)

On: Take the red channel from the Matte clip and put it in the Alpha channel of the Input clip.

Off: Use the alpha of the input clip.

Composite (Checkbox **Default:** Off)

Composite over background.

Pre Multiplied (Checkbox **Default:** Off)

Are the images pre-multiplied or not.

7 SpeedSix.TrailParticle (Discreet Trailz Raptor)

PURPOSE

Particle trail generation using optical flow based motion estimation to control the direction and velocity of the particles movement.



INPUT CLIPS

- 1: Input Clip** : Clip to have trails. The motion is estimated using this clip and the colour of the trails comes from this clip.
 - 2: Background** : Background to optionally composite result over.
 - 3: Matte** : Matte to control trail locations. Areas which have a higher luminance value than specified will be considered for trails.
 - 4: Obscure** : A clip that can optionally modulate the trails.
 - 5: Particle Image** : A particle can be this image! Use with caution as rendering many particles as an image will *take some time*.
-

TrailParticle CONTROL PAGE

Restart ([Pushbutton](#))

When changing styles or skipping frames, the true image will not be created. The new output image will be using the frame created from the old settings. Therefore to be sure, click on **Restart** and process a few frames to see the true picture.

Type ([List Box](#) **Options:** Direct | Direct and Save Flows | Only Save Flows | Reuse Flows | Setup Matte, **Default:** Direct)

Direct: Calculates the flow fields and draws the trails.

Direct and Save Flows: Calculates the flows, saves them to disk and draws the trails,

Only Save Flows: Calculates the flows and saves them to disk. No trails are drawn,

Reuse Flows: Reads saved flows back from disk and draws the trails.

Setup Matte: Play with the luminance of the matte clip to define zones where trails will be drawn.

Note: Currently all the saved flows are put into a fixed location with a fixed name.

Windows: The location is

S6_HOME_DIR\SpeedSix\flow_store\flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is C:\Program files\SpeedSix

Linux or Irix: The location is

S6_HOME_DIR/SpeedSix/flow_store/flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is /usr/local/SpeedSix

Image (List Box **Options:** Full Frame | NTSC Fields | NTSC Fields (Rev) | PAL Fields | PAL Fields (Rev), **Default:** Full Frame)

This specifies whether the images in the input sequence are frame based or fields based. If they are fields based (interlaced), it also specifies the field order (based on the TV system type). Output images will be frame or field based to match the input image type as selected here.

Full Frame: Images are not interlaced. This is the case with film and progressive video formats (and is, of course, the One True and Proper Way).

NTSC Fields: Images are interlaced, with fields in the normal order for the NTSC television standard.

NTSC Field (Rev): Images are interlaced, with fields the other way around from the normal order for the NTSC television standard.

PAL Fields: Images are interlaced, with fields in the normal order for the PAL television standard.

PAL Fields (Rev): Images are interlaced, with fields the other way around from the normal order for the PAL television standard.

Note: "PAL" and NTSC" don't necessarily imply anything about the image resolution in this case.

Luminance Low (Number **Min:** 0.0, **Max:** 1.0, **Default:** 0.8)

Only area in the **Matte** clip with a luminance value greater than the chosen amount will be considered for trails.

Luminance High (Number **Min:** 0.0, **Max:** 1.0, **Default:** 1.0)

Only area in the **Matte** clip with a luminance value lower than the chosen amount will be considered for trails.

Brightness (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

Tweak the luminance value to be used to encompass the area to create trails.

Seed (Number **Min:** 0, **Max:** 999, **Default:** 127)

Change to have a different selection of particles.

Plugin Status (Text String)

This gives you information on what the plugin is doing, and displays error messages if

appropriate. Keep an eye on it as it is very useful to know what is going on especially if you have any problems.

Shutter (Number Min: 2, Max: 100, Default: 2)

How many frames the "shutter" is open for. In this case particles will be generated along the length of the path tracked by the flow field data.

Hint: Use **TrailSmooth** to see the motion paths created.

Step Over (Number Min: 1, Max: 20, Default: 8)

Using every possible location can create vast numbers of particles. Reduce or increase –n

Obscure (Checkbox Default: Off)

Use the Obscure clip to modulate the drawn particles.

Composite (Checkbox Default: Off)

The trails can be directly composited over a chosen background or output onto black.

Obscurity (Number Min: –1.0, Max: 1.0, Default: 1.0)

Blur the trails created to soften them as desired.

Particles (Number Min: 0.0, Max: 100.0, Default: 5.0)

Quantity Variance (Number Min: 0.0, Max: 100.0, Default: 10.0)

The actual number of particles born at each frame is the average number specified by **Fecundity** plus or minus a random amount ranging up to the specified **Fecundity Variance**.
Note: if you are using a birth matte you may not get the full amount as checks are made on the probability of finding a suitable place to create a particle. Without this the particle system could try indefinitely to create the particles and you would not like that!

Lifetime (Number Min: 1.0, Max: 1000.0, Default: 20.0)

The average number of frames for which a particle will live. It will definitely be killed after it has lived this number of frames (plus or minus the **Lifetime Var** below). They may die younger (see **Extinction**).

Lifetime Var (Number Min: 0.0, Max: 100.0, Default: 5.0)

The actual lifetime of a particle is the average lifetime plus or minus a random number ranging up to **LifetimeVar**.

Extinction (Number Min: 1.0, Max: 100.0, Default: 20.0)

Extinct Var (Number Min: 0.0, Max: 100.0, Default: 5.0)

Each particle will gradually fade out as it gets older. Making the extinction twice the lifetime will ensure they do not disappear, but pop off if still in screen.

Restart On Process (Checkbox Default: Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.

Look CONTROL PAGE

Particle (List Box **Options:** Point | Soft Point | Streak | Lump | Star | Image | Star and Streak, **Default:** Star)

Chose the style of particle you want to draw with.

Point: a single pixel.

Soft Point: this softened pixel will need a great many particles to be seen, but probably the nicest if you have the time.

Streak: pixels drawn between the current and previous position to give directionality to the movement. Often helpful to see exactly what is happening.

Lump: soft blobs of a given size.

Star: well they are stars!

Image: the last input clip can be used as an image to be drawn wherever a particle is needed. When it is read in, the image area is clipped to a bounding box based on the image being on a black background. The complete image can be used if needed.

Lump Rad (Number **Min:** 1.0, **Max:** 40.0, **Default:** 10.0)

Lump RadVar (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

When lump, star or image is used they are scaled to the **Lump Radius** plus or minus a random **Radius Variance**.

Add a Sparkle (Checkbox **Default:** Off)

Amount of Sparkle (Number **Min:** 0.0, **Max:** 1.0, **Default:** 0.2)

Add a sparkle to the stars by fluctuating the brightness.

Streak Scale (Number **Min:** 0.1, **Max:** 1000.0, **Default:** 100.0)

When **Streak** is selected the 'tail' can be scaled to exaggerate the motion.

Init Dens (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

Condensation (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

The density of each particle at birth can be reduced and then the rate of condensation, or 'solidifying' is applied. Think of smoke, at the source you hardly see it until, as it cools it becomes more visible, then turbulence dissipates it. Changing the **Condensation** will have an immediate effect on all the particles as it is based on the time each particle has been alive. To see an **Initial Density** change you need to re-run the sequence.

MonoVar (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

ColourVar (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

Initial Colour (Colour Box **Default:** black)

Each particle can take its colour from the colour box which is then changed by the **Colour Variance** and the saturation by the **Monochrome Variance**. Thus you can have various colours for your particles if you feel like it.

Fade (List Box **Options:** Col+Dens | Colour | Density, **Default:** Col+Dens)

Choose the compositing mode you prefer. **Density** will make the most use of **Density**, **Condensation** and **Extinction** factors. **Colour** on its own, the least.

Image (List Box **Options:** Stamp | Punch Front&Back | Punch Back, **Default:** Stamp)

Using the 6th input as a particle Image chose the method of compositing the shape in the scene.

Stamp: replaces the background.

Punch Front & Back: uses the luminance of the image to composite it into the scene.

Punch Back: uses the luminance to add it into the scene.

Note: The aspect ratio of this input clip should match the background aspect ratio to avoid distortion.

Use Input Colours (Checkbox **Default:** Off)

Take base colour for the particles from the input image.

Moving (Checkbox **Default:** Off)

When the Image mode is selected the image used can either be static (faster) or moving; When moving each particle will use the current frame from the **Particle Image** clip.

When **static**, the frame used is taken from the current position when **Restart** is called.

Reacquire (Pushbutton)

The 6th input need only be one frame. Once loaded it may be used throughout. If you change the input to the 6th clip nothing will happen until you activate the **Reacquire** button. The old image is then replace with the new. Currently alive particles will now be drawn with the new image.

Forces CONTROL PAGE

Scale Speed (Number **Min:** 10.0, **Max:** 500.0, **Default:** 100.0)

If the motion you have set up is too fast or slow then use this global speed change control to adjust the pace of the particles. It will not change any of your set values, but scales them appropriately behind the scenes for you.

Turbulence (Checkbox **Default:** On)

SwirlDens (Number **Min:** 0.0, **Max:** 100.0, **Default:** 60.0)

SwirlAmp (Number **Min:** 0.0, **Max:** 100.0, **Default:** 1.0)

SwlMaxTim (Number **Min:** 0.0, **Max:** 1000.0, **Default:** 0.0)

For natural swirls and eddies of the air through which the particles move you need turbulence. The **Density** is the fineness of the turbulence patterns. The lower the **Density** value the broader the sweeps of turbulence are. High values give rapid changes in direction. The motion can be exaggerated with the **Amplitude** setting, dramatically forcing the particles around or subtly twisting them as they move. The effect of the turbulence can be built up using **Swirl Maximum Time**. At 0.0

the particles are influenced by the turbulence immediately. Otherwise it takes that number of frames from birth for the turbulence to build up.

Friction (Checkbox **Default:** On)

Friction (Number **Min:** 0.0, **Max:** 1.0, **Default:** 0.05)

Friction slows things down. Rubbing against the air and each other, friction will reduce the momentum of the particles,

Gravity (Checkbox **Default:** On)

Gravity (Number **Min:** 0.0, **Max:** 10.0, **Default:** 0.2)

Grav Angle (Number **Min:** 0.0, **Max:** 359.0, **Default:** 270.0)

At values over 0.0 gravity acts on the particles dragging them in the direction set by the **Gravity Angle**. A setting of 270.0 degrees is downwards. A natural choice, but varying the angle can bias the movement for artistic purposes.

Multi Directional (Checkbox **Default:** Off)

Wind (Checkbox **Default:** Off)

Wind Source (Position **Default:** 0.2,0.4)

Wind Target (Position **Default:** 0.8,0.4)

Wind Spread (Number **Min:** 0.0, **Max:** 180.0, **Default:** 10.0)

Wind Speed (Number **Min:** 0.0, **Max:** 180.0, **Default:** 5.0)

Add in **Wind** when you want to blow the particles, or some of them, in a specific direction. Drag the wind source to where you want to blow from and the target sets the direction or extent of influence depending on **MultiDirectional**. When **Off** the wind has a cone of influence and the wind does not stop blowing at the target location. The **Spread** governs how far the affect of the wind reaches. When a particle enters the cone, the wind starts to take effect which gradually builds up towards the center of the cone, and then dies away again. Turn **MultiDirectional On** and the wind blows outward from the center, gradually losing speed as it reaches the target perimeter. **Speed** is how fast the wind is blowing. It can be nice to animate this to give gusts.

***Motion&Tune* CONTROL PAGE**

Position Var (Number **Min:** 0.001, **Max:** 2.0, **Default:** 0.01)

The particles are born within the region of **Position** plus and minus **Position Var** along the motion tracked trail.

Vel Dir (Number **Min:** 0.0, **Max:** 360.0, **Default:** 0.0)

The direction initially comes from the flow data but you can change the natural direction by adding to the initial angle.

Flow Resolution (List Box **Options:** Full | Half | Quarter, **Default:** Quarter)

7 SpeedSix.TrailParticle (Discreet Trailz Raptor)

Resolution at which to compute optical flow. The basic algorithm used by TrailParticle System is optical flow. This treats brightness in an image as it were a sort of fluid (like water), and it tries to see in which direction the brightness has flowed out of each pixel from one input frame to the next. To capture big motions, it does this on a "pyramid" of image resolutions, starting from the very small and refining the estimates up to a fairly high resolution (potentially the full image resolution). The maximum image resolution it will use for this pyramid is called the Flow Resolution.

Note: This not the resolution at which your result images are computed!

Show Vectors (List Box **Options:** None | Forward | Backward | Both, **Default:** None)

None: Motion vectors will not be drawn.

Forward: Draw forward motion vectors (from the earlier image of a pair to the later).

Backward: Draw backward motion vectors (from the later image of a pair to the earlier).

Both: Draw the forward and backward motion vectors.

Vel Mag Var (Number **Min:** 0.0, **Max:** 100.0, **Default:** 10.0)

A random amount, plus or minus the initial velocity, is added to vary the initial velocity.

Vel Dir Var (Number **Min:** 0.0, **Max:** 100.0, **Default:** 0.0)

At 100.0 percent the particles will travel in all directions. 0.0 they will follow the direction set. And anywhere in-between...

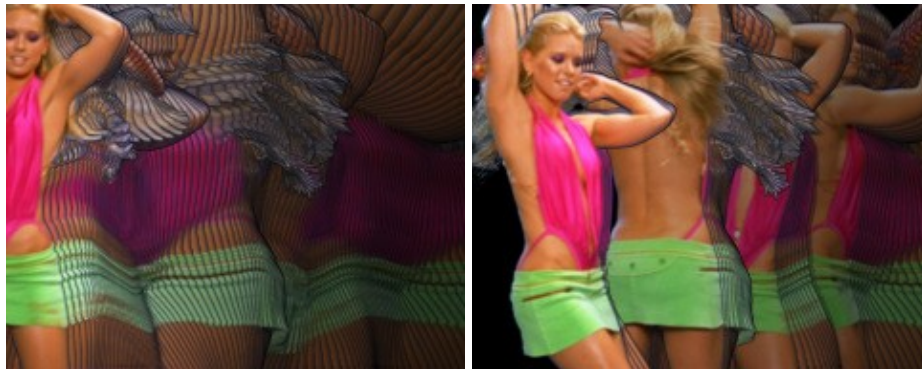
Vel Scale (Number **Min:** -100.0, **Max:** 100.0, **Default:** 100.0)

The particles derive their base velocity and direction from the flow data. Use this to increase or decrease their natural speed. Positive values with **Motion** will throw the particles in the direction of the movement; negative values throws the particles in the opposite direction to the motion.

8 SpeedSix.TrailStopMo (Discreet Trailz Raptor)

PURPOSE

Has the features and abilities of TrailAll and TrailDecay but with the opportunity of adding in motion estimation to give that lovely smoothness. It can also present 'strobe-like' trails.



INPUT CLIPS

- 1: **Input Clip** : Clip to create the trails.
 - 2: **Background** : Background to composite result over.
 - 3: **Matte** : Matte to control trail locations.
-

TrailStopMo CONTROL PAGE

Restart (Pushbutton)

When changing styles or skipping frames, the true image will not be created. The new output image will be using the frame created from the old settings. Therefore to be sure, click on **Restart** and process a few frames to see the true picture.

With Motion (Checkbox **Default:** Off)

On: Turns on the motion analysis to add motion blur and a smoother result.

Image (List Box **Options:** Full Frame | NTSC Fields | NTSC Fields (Rev) | PAL Fields | PAL Fields (Rev), **Default:** Full Frame)

This specifies whether the images in the input sequence are frame based or fields based. If they are fields based (interlaced), it also specifies the field order (based on the TV system type). Output images will be frame or field based to match the input image type as selected here.

Full Frame: Images are not interlaced. This is the case with film and progressive

video formats (and is, of course, the One True and Proper Way).

NTSC Fields: Images are interlaced, with fields in the normal order for the NTSC television standard.

NTSC Field (Rev): Images are interlaced, with fields the other way around from the normal order for the NTSC television standard.

PAL Fields: Images are interlaced, with fields in the normal order for the PAL television standard.

PAL Fields (Rev): Images are interlaced, with fields the other way around from the normal order for the PAL television standard.

Note: "PAL" and NTSC" don't necessarily imply anything about the image resolution in this case.

Plugin Status (Text String)

This gives you information on what TrailStopMo is doing in Motion mode, and displays error messages if appropriate. Keep an eye on it as it is very useful to know what is going on especially if you have any problems.

Type (List Box **Options:** Direct | Direct and Save Flows | Only Save Flows | Reuse Flows, **Default:** Direct)

Direct: Calculates the flow fields and draws the trails.

Direct and Save Flows: Calculates the flows, saves them to disk and draws the trails,

Only Save Flows: Calculates the flows and saves them to disk. No trails are drawn,

Reuse Flows: Reads saved flows back from disk and draws the trails.

Note: Currently all the saved flows are put into a fixed location with a fixed name.

Windows: The location is

S6_HOME_DIR\SpeedSix\flow_store\flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is C:\Program files\SpeedSix

Linux or Irix: The location is

S6_HOME_DIR/SpeedSix/flow_store/flowa_<4digit_number>.ts6

The usual value of S6_HOME_DIR is /usr/local/SpeedSix

Use Matte Clip (Checkbox **Default:** Off)

On: Take the red channel from the Matte clip and use it for the Alpha channel of the Input clip.

Off: Leave well alone.

Matte PreMultiply (Checkbox **Default:** Off)

On: Pre-multiply the Input clip by the Matte clip using the Red channel

Off: Do not pre-multiply.

Composite (Checkbox **Default:** Off)

Optionally composite over background.

Pre Multiplied (Checkbox **Default:** Off)

Are the images pre-multiplied or not?

Endurance (Number **Min:** 2.0, **Max:** 100.0, **Default:** 90.0)

How long the trail effect should last.

Fluctuate (Number **Min:** 0.0, **Max:** 100.0, **Default:** 100.0)

Fluctuate the brightness of the input clip.

Use Blur (Checkbox **Default:** Off)

Use the **Blur** value to soften the trails.

Blurring (Number **Min:** 0.0, **Max:** 10.0, **Default:** 1.0)

Defocus the image before adding it to the result.

Restart On Process (Checkbox **Default:** Off)

If available turn **On** immediately before processing to ensure that the first frame is taken from the clip with no flowing affecting it.

***Tuning* CONTROL PAGE**

Motion Samples (Number **Min:** 4, **Max:** 32, **Default:** 4)

This is the number of samples taken while the shutter is open. The samples are uniformly spaced in time over the shutter open interval, but the motion vectors at each pixel are perturbed randomly to an extent related to the time between samples to reduce potential artefacts due to sampling. (More samples means more computation, hence more time to calculate a result frame).

Flow Resolution (List Box **Options:** Full | Half | Quarter, **Default:** Quarter)

Resolution at which to compute optical flow. The basic algorithm used by TrailStopMo System is optical flow. This treats brightness in an image as it were a sort of fluid (like water), and it tries to see in which direction the brightness has flowed out of each pixel from one input frame to the next. To capture big motions, it does this on a "pyramid" of image resolutions, starting from the very small and refining the estimates up to a fairly high resolution (potentially the full image resolution). The maximum image resolution it will use for this pyramid is called the Flow Resolution.

Note: This not the resolution at which your result images are computed!

Show Vectors (List Box **Options:** None | Forward | Backward | Both, **Default:** None)

None: Motion vectors will not be drawn.

Forward: Draw forward motion vectors (from the earlier image of a pair to the later).

Backward: Draw backward motion vectors (from the later image of a pair to the earlier).

Both: Draw the forward and backward motion vectors.