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Resolume 4 Avenue & Arena Manual

Introduction

Welcome to the world of audio-visual performance with Resolume! This is the fourth version of Resolume and supports audio as well as video mixing.

This manual is split into several main sections:

After a brief section on installing the software (It's only a brief section because the installation is very easy and painless), we get down to business with a Quickstart Tutorial.

After getting our hands dirty in the quickstart, we take a full look at all of the features of Resolume in A Tour Of Resolume Avenue.

Once we have seen everything that Resolume can do, we will learn about the different ways we can tell it what to do in Controlling Resolume Avenue.

Finally, there is some extra information in Appendices, including Optimising Your Computer For Resolume, Preparing Media For Resolume, Tips For Resolume 2.x Users, Directory list and the Default Application Key Mapping.

What Can I Do With Resolume 4?

Resolume 4 is an audiovisual performance tool. It enables us to play video, audio and audiovisual clips, mix them with each other, apply effects to them and output the results either for a live performance or for recording.

Many people who use Resolume are VJs. They mix video clips live to accompany music. These artists may not use the audio features of Resolume Avenue 4 but they will definitely be hammering the video mixing options and OpenGL accelerated video effects.

Other artists use Resolume for audio-visual performances, using the BPM matching features to synchronise clips with each other and then layering them up to create a complete piece.

While live performance is what most people use Resolume for, it is also useful for many other projects that need to deal with audio-visual content. The MIDI, DMX and Open Sound Control options make it suitable for scripted shows and installations.

Sometimes it's just fun to experiment with clips and effects and see what happens!

What's new in version 4?

If you're used to working with Resolume Avenue 3, the transition should be pretty seamless. You're still able to load your compositions made on Resolume Avenue 3. Also the interface is nearly identical, so you'll feel at home right away.

There are a few powerful new features added, and they are described in detail below. If you're eager to see the new features, here's a quick list with links to the big hitters:

- Auto pilot sequencing
- Auto layer transitions
- Global speed and direction controls
- Play once and hold
- Jump to a random beat and play
- Compositing options
- Advanced output setup
- Effect clips

- MIDI output
- Clip reconnect

A major difference is that Resolume 4 now comes in 2 editions. Avenue is the VJ software you know and love with all these new features. Arena has all the features of Avenue plus features you'd expect from a media server, soft edging, screen warping, DMX input and SMPTE timecode input.

- Screen warping
- Black level and brightness compensation
- Soft edge
- SMPTE input

Installing Resolume 4

I'm sure you are keen to get started so you'll be pleased to know that the installation process is very simple. Simply download the relevant file (.exe for Windows, .dmg for Macs) from www.resolume.com, run the install file and follow the instructions.

Because of the graphical acceleration that is used, Resolume Avenue does have some system requirements:

Windows	1GB Ram, ATI Radeon 9600 or better. NVIDIA GeForce FX 5200 or better.
OSX	1GB Ram, Intel Core Duo, Intel Core 2 Duo, or Intel Xeon processor. Quartz Extreme graphics card (Resolume Avenue is not compatible with integrated Intel graphics processors

Registration

The download of Resolume 4 will work in demo mode straight away. You will notice that occasionally the Resolume logo will appear on the video output and a robotic voice will remind you what software you are using. This is the only limitation of the demo. You can use all the features and it's not crippled in any way.

In order to get out of demo mode and use Resolume for real, you will need to buy a license from www.resolume.com/shop/ or from one of our resellers. When you have done that, you will receive a serial number.

Once you have a serial number, select File > Preferences in Resolume and click the Registration tab. Enter your serial number into the text box and click Register. Resolume will now use your Internet connection to confirm your serial number with the Resolume registration database. Once this is completed, Resolume will be fully registered and the audio and video reminders will be gone. No Internet connection is required to run Resolume after this.

Offline Registration

You can register Resolume without having an Internet connection on the machine you install it on.

To do this, select File > Preferences in Resolume and click the Registration tab. Then click the Offline Registration button. Take a note of the ID Code that is shown.

You will now need to use a computer that does have an Internet connection to visit:

www.resolume.com/register

You will need to enter your serial number and the ID Code that you just noted. The Resolume website will then generate a registration key file. Transfer this file to the computer that you have installed Resolume on.

Now select File > Preferences in Resolume and click the Registration tab. Click the Offline Registration button and then the Load registration file ... button. Select the file and Resolume will become fully registered.

Unregister

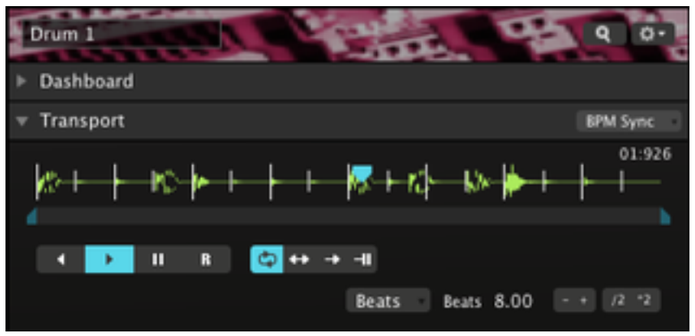
To remove your Resolume registration from a computer, go to the Register tab in the Preferences and click on the "Unregister" button. This will remove your serial number from the computer. And (when you have an internet connection) it will also send a message to the Resolume registration server that your serial is unregistered. This is very useful when you need to re-install your operating system or when you have bought a new computer.

Quickstart Tutorial

Right, so you've got Resolume installed so let's jump in and see what it can do.

Run the Resolume application. The Resolume interface will appear. It may look complicated at first but don't worry - it will soon all make sense.

A new Resolume install comes with a demo composition. A composition is what we call a complete Resolume setup - each composition can include sets of clips, preprogrammed effects and all other settings that you need for a performance.



Trigger Clips

Below the menu bar, you should see a set of horizontal rows that each have some controls on the left and a set of thumbnails. Each thumbnail is a different clip.

Go ahead and click one of the thumbnails now. The clip will start playing. Note that these clips are set up to be synchronised to the BPM (Beats Per Minute) setting, so the clip may not start playing instantly - it will wait for the start of the next bar. (Don't worry, if you want to launch clips instantly, you can set them up to do that)

You should now see the clip playing in the output window on the left and hear the audio of the clip. (If you don't hear the audio, make sure you have your volume up)

You can take control of the clip that is playing by clicking the *Clip* tab. The Transport section of this tab is the bit we are interested in for now.

You can use the Forwards, Backwards and Pause icons to start and stop the clip. You can also grab the moving blue wedge directly to scratch the clip - wikka wikka wah!

Note that messing with the clip like this will mean that it is no longer synchronised with the BPM - the tempo will be right but it will be out of phase. You can resynchronise it by clicking the clip thumbnail again - it will start again at the start of the next bar.

Mixing

Playing one clip is all very well but mixing clips together is where the fun really starts. Each of the horizontal rows of clips is a separate layer. Each layer can play one clip at a time.

Try clicking another thumbnail on the same layer as the one that is already playing. You will see that, at the start of the next bar, the output will change to play the new clip.

Now try clicking a clip from a different layer. This time, the old clip will continue playing and the new clip will be mixed with it.

Have a look over to the left of the thumbnails. There are two vertical sliders marked "A" and "V". Try sliding these up and down on the layers that you have playing.

Logically enough, the "A" slider fades the audio of the layer in and out. The "V" slider does the same for video. You can use the "AV" slider to control both at the same time.

Effects

So we've got some clips playing. Let's mess with them using some effects.

Over on the right hand side of the interface are some tabs that say "Files", "Compositions", "Effects" and "Sources". Select the Effects tab.

Below the tab will now be a list of effects. These are the video effects that are included with Resolume (You can view the audio effects by clicking the Audio VST button)

Pick an effect (I recommend Bendoscope as a good one to start with) and drag it over to the left where there is a tab called Composition. As you get over there, drop the effect in the area where it says 'Drop effect or mask here' (you'll know when you're in the right place when you can 'Drop it like it's hot!')

You should immediately see that the output video has been distorted by the effect.

Now look back to the place where you dropped the effect in. You will see that there are two sliders under the Bendoscope effect. All video effects have the Opacity slider - it is used to mix the effected video with the original.

Most effects also have additional parameters that you can control. Bendoscope has one - the number of divisions used in its distortion effect. Try sliding this slider to the left and right to see what effect it has on the output video.

You can add more effects by dragging them over from the Effects tab. Each effect takes the output of the one before it and effects it, so you can combine many effects to make something beautiful (or sometimes a great big mess!)

If you want to get rid of an effect, just click the x to the right of the Effect's name. You can temporarily disable an effect by clicking the b (Bypass) toggle.

Have a Play!

Now is a good time to have a play with Resolume. Play some clips, add some effects; see what happens!

A useful feature is the help window in the bottom right of the interface. This will show some brief hints about how to use whatever the mouse pointer is currently over.

In the next section of the manual, we will be looking in detail at all of the features of Resolume, so if you come across anything that interests you, you will be able to find out how to use it.

A Tour of Resolume 4

In this section, we will be looking at all of the features that Resolume provides in detail. Unless you really have to know everything straight away, I would recommend skipping to the parts that interest you and coming back to the other stuff later.

Overview

A **Composition** is a complete Resolume setup with sets of clips, assigned audio and video effects, parameter settings and control mappings.

Switching compositions takes some time, so it is usual to put everything for a complete performance into a single composition. Otherwise, you will need other video and audio sources to use while you switch compositions.

The clips in a composition are divided into **Decks** for easy access to the clips that you want, when you want them.

Switching decks is quick and does not interrupt playback, so you can switch between decks while performing.

Each clip sits in a specific **Layer**. Only one clip from each layer can play at a time. Layers can be blended together in a variety of ways to create the final output.

A **Clip** can consist of a video file, an audio file or both. It could also contain a **Source** (a plugin that generates either audio or video). The clip also includes many settings that can be changed to affect how the clip is played and how it looks and sounds.

Effects can be added to the whole composition, a specific layer, a single clip or an empty clip. If added to the composition, the effect is applied after the layers have been mixed together. If it is added to a layer, it is applied to whatever clip is playing in that layer. If applied to a clip, the effect is applied before the layer effects are applied.

If applied to an empty clip, that clip becomes an Effect Clip. For more info check the Effect Clips chapter in the manual.

Wherever effects are placed, any number can be stacked together, each affecting the results of the previous effect.

Parameters

Many features of Resolume are controlled by parameters - sliders that enable us to select a value. To use any of these, click in the slider area and drag the value left or right.

If you want to set a parameter to a specific value, click the numerical value, type in the new value and hit return.

> ***Tip!*** *To set a parameter back to its default value, right click the slider or parameter name.*

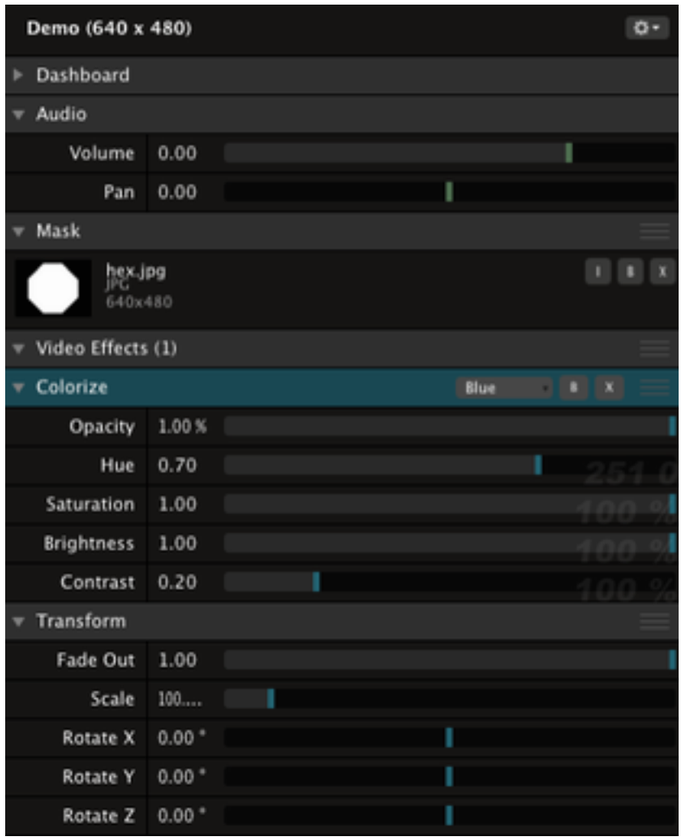
Parameters can also be automatically controlled in a number of ways. We will look at this in the later section on **Controlling Resolume**.

Composition

The composition is a complete performance. When you save a composition, all of the Resolume settings are saved with it.

The *Composition* > *Settings* menu option enables you to set the name and description for the composition and its output resolution. All processing in the composition will happen at this resolution.

> ***Tip!*** *The first time you launch Resolume 4, you'll be asked you if you want to import any compositions from Resolume 3. So you can breath easily, all your comps are still compatible. After the first launch, you can still find this function in the Composition menu.*



Composition

Volume	This controls the global volume of the composition. Fading this right down will mean no sound is output.
Pan	This pans the audio between the left and right channels, affecting the whole composition
Mask	If you created a mask, it will show up here. You can use the B and X buttons to respectively bypass and eject it. Use the I button to invert it. If a .png file with an alpha channel is used, the alpha channel is used for the mask. If another image format is used, the red channel is used for the mask
Video Effects	If you have applied any effects, they will show up here.
Fade Out	This is the video equivalent of the volume control. Fading this parameter down will fade the entire composition's video out to black.
Scale	Scale the output video.
Rotate X	Rotate the 3D surface that the output video is drawn on
Rotate Y	Rotate the 3D surface that the output video is drawn on
Rotate Z	Rotate the 3D surface that the output video is drawn on

Global Composition Controls

With these controls you can quickly eject (X) or bypass (B) all the layers in the composition. Also you can fade the entire output to black with the master opacity fader (M).

You can find the global composition controls at the top left of the interface.

Global Speed and Direction Controls

With the global speed and direction controls, you can quickly change the playback speed for all the clips that are currently playing. So when the music suddenly stops, or becomes very hectic, you can have your visuals react accordingly. Also you can change the direction in which they play (forwards or backwards), as well as set them all to random mode.

> ***Tip!*** *By right-clicking the button you can 'pin' the direction controls. That way, every clip you trigger will automatically be set to this play mode. So when you right-click the R button, it becomes pinned, and every clip you trigger will be set to random playback, regardless of how it was set before.*

Note that the global speed control has no effect on BPM-synced clips. For more info on the direction controls and BPM-synced clips, see the transport section below.

You can find the global speed and direction controls by choosing View -> Show Layer Transport Controls, they then appear in the top left of the interface.

Decks

Each composition can contain a number of decks, which you can use to manage audio-visual clips and sources.

Decks are accessed through the set of buttons just below the clip layers (above the BPM bar). Each deck has a name. When you select a deck, all of the clips in the deck are displayed in their layers.

A new deck can be created by using the Deck > New or Deck > Insert menu options. The New option adds the new deck to the end of the list while the Insert option adds it to the left of the currently selected deck.

You can rename a deck by double-clicking its name.

Layers

Layers are the key to mixing clips with each other. Each layer can play one clip at a time.

A composition can have any number of layers (although note that more layers will mean the computer has to do more work to composite them together)

New layers can be added with the Layer > New and Layer > Insert menu options. The New option adds the new layer to the top of the layer stack while the Insert option adds the new layer below the currently selected layer.

To select a layer, click the area that displays the layer's name (e.g. Layer 1). The currently selected layer is highlighted in blue.

The properties and effects for the currently selected layer will be shown in the properties panel at the bottom of the screen. The layer will also be shown in the preview monitor if it is active.

The layer can be cleared by clicking the X button at the far left of the layer strip. This will stop any clip that is playing on it.

The layer can be temporarily hidden by clicking the B (Bypass) button.

The layer can be displayed on its own by clicking the S (Solo) button.

You can rearrange the layers by using the two buttons with upwards and downwards pointing triangles on them.

Mixing and Compositing

Mixing audio being played by layers is very simple. Just use the A (Audio) slider to control the volume of each layer.

Mixing video can also be simple - use the V (Video) slider to fade layers in and out.

However, there are some fun things you can do with video. Firstly, there are many ways that video can be combined and many of these methods will give different results depending on what order the layers are in when they are mixed.

When Resolume composites layers, it starts from the one at the bottom of the stack, compositing it over a black frame. It then moves up the stack, compositing each layer in turn based on the mixing mode selected and the opacity of the layer.

Mixing modes are the methods that are used to do the compositing. Several are included with Resolume and more can be added as plugins. They are selected from the lists just to the left of the Opacity and Volume sliders. Each layer can have three mixing modes visible for easy access, so you can quickly pick between your three favorite blend modes, without having to scroll through the entire list. The currently selected one is highlighted in blue.

> ***Tip!*** *One quick way of mixing videos that gives a good result is to put a black and white clip in the top layer, and a colorful one below. Then set the blend mode of the top clip to 'multiply'. The colorful clip will now only show in the white parts of the video on top, giving a new result with every clip you try it with.*

For more info on what the blend modes do, check the list below.

In all of the following descriptions, "layer" means the layer that the mode is applied to and "input" means the combined video of all of the lower layers that the layer is being mixed with.

50 Add	Add the RGB value of each pixel in the layer to the RGB value of the input. This mode and 50 Lighten are useful when audio-visual clips are being mixed. They mean that the audio and video faders can be used together and make sense (When they are faded right up, you hear the audio from all layers and see the combined video from all layers)
50 Lighten	Take the lightest pixel from either the layer or the input.
Add	Mix the video so that at 50%, the layer is added to the input. At 0%, only the input is shown; at 100% only the output is shown.
Alpha	A simple crossfade effect. It is usually better to use Add or Lighten instead, as this mode tends to lead to dull looking output when layers are mixed.
Burn	Darken the layer to match the colours of the input.
Cube	Places the layer and the input of individual sides of a cube and then rotates the cube.
Darken	At 50%, the darkest colour from the layer or input will be shown for each pixel.
Difference	At 50%, the video is the difference in colour between the layer and the input.
Difference I	Just like Difference but the output is inverted.
Displace	Displaces the input based on the luminance values of the layer, giving a glass like effect.
Dodge	Like Burn but the layer is lightened.
HardLight	The mix mode with the longest definition in the Photoshop manual.
Lighten	At 50%, the lightest colour from the layer or input is shown for each pixel.
LoRez	The output slowly pixelates, and then un-pixelates to reveal the layer. Yes, un-pixelate is a word. Look it up.
Luma is Alpha	The luma (brightness) of the layer is used as the alpha channel (transparency), so that the darker parts of the video will become more transparent. White parts will be fully opaque.
Luma Key	The opacity slider is used as a threshold. Pixels in the layer that are darker than the threshold are not shown. Pixels that are brighter are shown at full opacity

Luma Key I	Just like Luma Key but pixels darker than the threshold are shown.
MetaMix	The output fills with ever smaller copies of itself, until it deconstructs into the layer.
MultiTask	Like the cover flow effect from your iTunes, your iPod, your iPad and all other things starting with i.
Multiply	The layer and input are combined by multiplication. This usually results in quite a dark output but is very useful if either the input or the layer are bright and high contrast - it then works as a mask.
Parts	The layer eats up the output chunk by chunk.
RGB	One by one, the Blue, Green and Red channel is removed from the input, until the layer is fully revealed.
Rotate X	The output shows a rotating panel. As the panel rotates past horizontal, the input is switched for the layer.
Rotate Y	Just like RotateX but the rotation is vertical rather than horizontal.
Screen	A nice crossfade effect that usually gives a bright output when the layer and input are combined.
Shift RGB	Pulls apart the Red, Green and Blue channel of the output, and pulls in the channels of the layers.
SoftLight	Another crossfade effect that works well for some content.
Static	Degrades the output until its replaced by the layer.
Subtract	At 50%, the dark parts of the layer are overlaid over the input.
Tile	The output is replaced with smaller copies of itself, which in turn are replaced by the layer.
TimeSwitcher	Back from R2.41 after popular demand, this blend mode automatically switches between the layer and the input with a frequency controlled by the opacity slider.
Wipe Down	The input is pushed down by the layer.
Wipe Ellipse	The input is replaced by an opening circle, revealing the layer.
Wipe Left	The input is pushed left by the layer.
Wipe Right	The input is pushed right by the layer.
Wipe Up	The input is pushed up by the layer.
Zoom In	As the slider is moved, the output zooms in on the input and then out on the layer.
Zoom Out	As the slider is moved, the output zooms out on the input and then in on the layer.

Layer Transport Controls

These allow you quick access to your currently playing clips. You can quickly change the playback speed or BPM setting of the clip, as well as change the playback direction and play mode. Also you have access to the playhead of the clip.

This is a familiar way of working for Resolume 2 users. The great advantage is that you have a good overview over what your clips are doing, and you can change it instantly, without needing to select the clip first.

> ***Tip!*** *Move your mouse over the playhead of one of the clips in the layer transport controls, and wiggle your scrollwheel. Look mum, I'm scratching!*

The layer transport controls can be found by choosing View -> Show Layer Transport Controls, and they will pop up to the right of the layer preview thumbnails.

Auto Layer Transitions

These allow you to automatically add a transition when you trigger a new clip in a layer. This way you can smoothly blend from the old playing clip to the new one. Simply choose how long you want the fade to be with the vertical slider (between 0 and 10 seconds), and choose any of the transition modes from the drop down.

For a description of the available transitions, check the list of blend modes above. All the blend modes are also available as transitions, aside from 50 Add, 50 Lighten and 50 Mask. If you really can't decide on a favourite transition, there is also a random option, giving you a different transition every time you trigger a new clip.

The auto layer transitions can be found by choosing View -> Show Layer Transition Controls, and they will pop up to the right of the layer preview thumbnails.

The Cross Fader

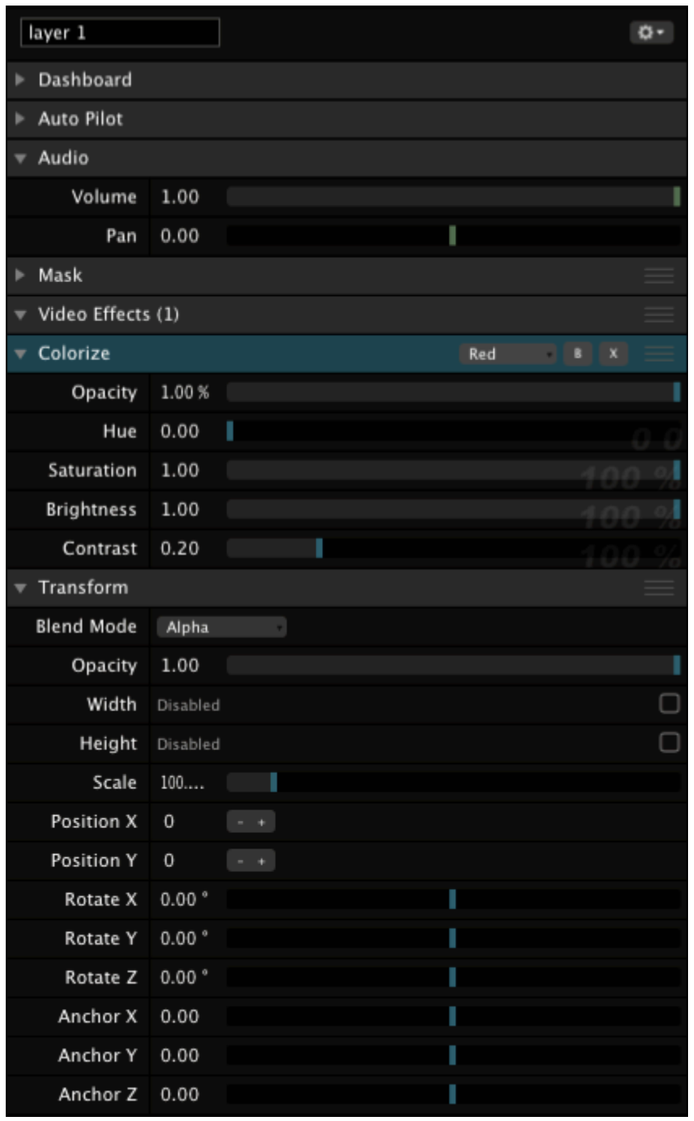
As well as using the layers' own volume and opacity sliders, we can also mix between layers by using the crossfader.

You can find the crossfader, below the layer strips, to the left of the deck selection buttons.

To use the crossfader, first select the layers that you want to use by clicking the A or B buttons below the volume and opacity sliders on the layers. You can set as many layers as you like to use the crossfader but the most common way to use it is to set one layer to A and another to B.

You will also need to set the opacity and volume sliders for the layers to the maximum values you want them to have while crossfading.

Now you can use the crossfader to control the volume and opacity of all of the layers that are assigned to the crossfader. When the crossfader is at A, layers assigned to A will be heard and seen. When the crossfader is at B, the B clips will be heard and seen. This gives us a really easy way to control the opacity of multiple layers at the same time. Clicking on either A or B in the crossfader will automatically fade between the two layers over a period of 2 seconds.



Layer

The properties for the currently selected layer are displayed in the Layer Properties tab at the bottom of the screen.

You can use the textbox at the top of the tab to change the name of the layer.

The drop down menu to the right of the tab provides the same options as the Layer menu at the top of the screen.

> ***Tip!*** *Enable the Width and Height of all your layers, and set it to the composition width and height. That way you never have to worry about your footage not filling the screen again!*

Volume	Control the volume of any clip that plays in the layer. This works in combination with the master composition volume and individual clip volumes.
Pan	Send the audio from the clip playing in this layer to the left or the right
Mask	If you created a mask, it will show up here. You can use the B and X buttons to respectively bypass and eject it. Use the I button to invert it. If a .png file with an alpha channel is used, the alpha channel is used for the mask. If another image format is used, the red channel is used for the mask.
Video Effects	If you have applied any effects, they will show up here.
Blend Mode	Change the current blend mode for the layer here as well as on the layer strip (see **Mixing and Compositing** above for details)
Opacity	Set the opacity for the layer here as well as on the layer strip.
Scale	Scale the surface that the layer is drawn on in the output.
Width	If enabled, any content in this layer will be scaled to this width.
Height	If enabled, any content in this layer will be scaled to this height.
Position X	Tweak the exact position of the layer, pixel by pixel
Position Y	Tweak the exact position of the layer, pixel by pixel
Rotate X	Rotate the surface that the layer is drawn on
Rotate Y	Rotate the surface that the layer is drawn on
Rotate Z	Rotate the surface that the layer is drawn on
Anchor X	Change the position of the surface that the layer is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.
Anchor Y	Change the position of the surface that the layer is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.
Anchor Z	Change the position of the surface that the layer is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.

Clips

Clips are the real nuts and bolts of Resolume - without clips we wouldn't have any content to throw at the screens and speakers.

A clip can consist of a video part, an audio part or both. The video part could be a still image rather than a video file.

Clips can also contain audio or video Sources - plugins that generate content on the fly.

Loading Media

Before you can starting having fun with your content, you need to get it into Resolume. You can do this by dragging and dropping files from your operating system file browser but it is really much easier to do it using Resolume's built in browser.

You will find the browser over to the right of the display, in the Files tab.

The main part of the browser enables you to browse through folders by double clicking them. Click the path at the top to show a list of root drives on your system.

> ***Tip!*** *If you need to search through a long list of files and you already know the name of the file or folder you're looking for, simply start typing the name of it while the browser window is in focus. The browser will then jump to the file or folder automatically.*

Two really useful little buttons are next to the path. Use the A and B buttons to switch between two places in your filesystem.

Next to the A and B buttons is a toggle that enables you to show or hide thumbnail images for media files - really useful when you can't quite remember what you called that fantastic clip you made last night! Also you can double click a clip name to preview it in the preview window, to be really really sure that it is the fantastic clip you made last night.

Loading media into a clip is simply a case of dragging it over to a slot in the channel strips. You can drag an audio file and a video clip or image file onto the same slot to make a combined clip. If you do this, Resolume will automatically transpose the video to the length of the audio to make an audio-visual clip.

There are some tips in Appendix 2 of this manual that will help you prepare your content for Resolume so that you get the most out of your computer's processing power.

Managing Clips

Once clips have been added to a deck, you can move them around by clicking and dragging the clip name below the thumbnail of each clip. If you drag a clip over an already added clip, they will swap places in the deck.

If you want to copy a clip, drag the clip to the new position and then hold down the Ctrl key (Alt on a Mac) as you release the mouse button. A copy of the clip will be created and the original will remain. You can also use the universal copy, cut and paste commands Ctrl-c, Ctrl-x and Ctrl-v (CMD-c, CMD-x and CMD-v on a Mac), allowing you to paste a clip into a different deck as well.

> ***Tip!*** *You can shift select multiple clips and copy/paste multiple clips at the same time!*

When dragging an audio clip straight from the browser onto a video clip, they will merge to become an audio-visual clip. When dragging an audio clip to an empty slot, it will simply remain an audio file, and behave like any other clip.

To merge audio and video clips after both have been added to the deck, hold down shift while dragging the audio clip over the video clip.

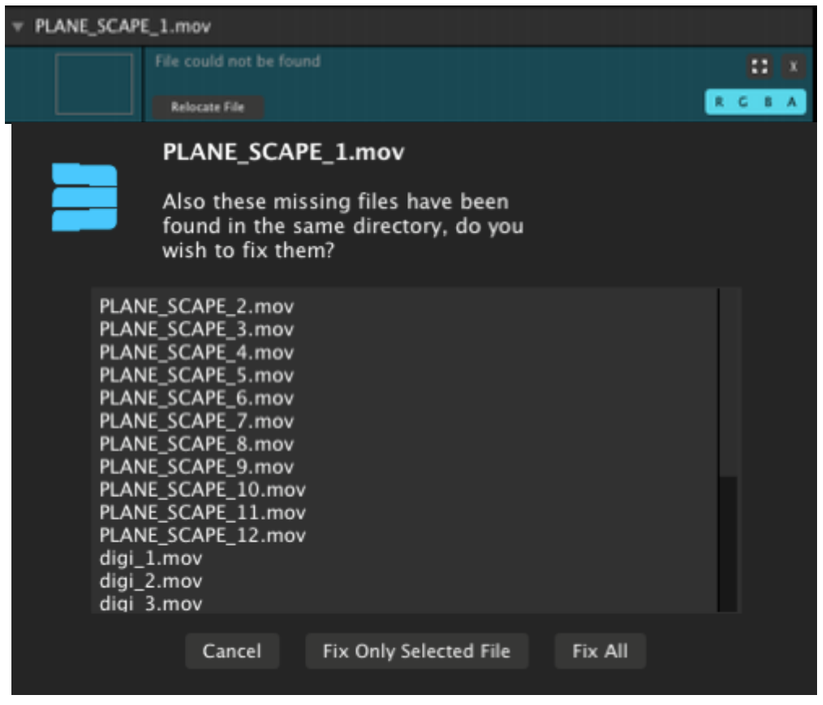
To find the location of a clip on your computer, you can right click on the blue name handle of a clip, and use the option to reveal in Explorer/Finder.

Clip Reconnect

If you have moved your source files around on your computer accidentally or on purpose (for instance when switching laptops, or reorganizing), Resolume will give an error message for which files are missing.

You can choose to reconnect the files, and point Resolume to the new location.

If more missing files are found in the same location, you have the option to fix just one, or all of the files.



Triggering Clips

Triggering a clip is as simple as clicking its thumbnail on the layer strips. You can also organize your content so that clips that fit well together are all in the same column (a column is a vertical row of clip slots). Then you can play them all at the same time by triggering the column, using the trigger found at the top of the column.

> ***Tip!*** *You can use the arrow keys on your keyboard to trigger clips as well. The left and right arrow will trigger the clips to the left and right of the currently playing clip respectively. Hold down shift and use the arrow keys to move around the deck, and press enter to trigger.*

However, there are some options for what happens when a clip or column is triggered.

Beat Snap

You can use the Beat Snap option to have clips wait until the next beat, bar, 2 bars and so on before it starts. This is particularly useful for audio-visual music clips.

In some music software, this feature is known as "Quantising"

You can set the Beat Snap option for the whole Composition through the Composition > Beat Snap menu options.

You can also set the Beat Snap option for an individual clip. Select the clip (by clicking its name below its thumbnail in the channel strips) and select the Clip > Beat Snap menu option. If you set the clip setting to ‘Composition determined’, it will use whatever the Composition setting is.

Trigger Style

Normally, when you click a clip, it starts playing and carries on until you clear the layer or play another clip. Through the Trigger Style setting, you can also use Piano mode, where the layer is automatically cleared when you take your finger off the mouse button (or MIDI key or keyboard button if you are using mapped controls)

You can set the Trigger Style for the whole composition through the Composition > Trigger Style menu option.

You can set the Trigger Style for an individual clip by selecting it and then using the Clip > Trigger Style menu option.

Clip Target

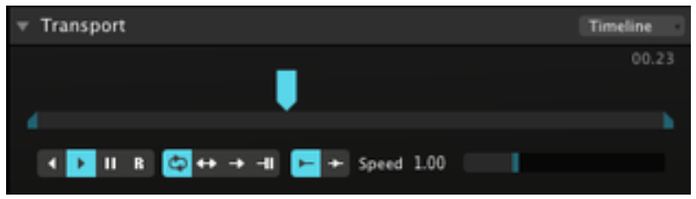
The default thing that happens when you click a clip is that it plays on the layer it is held in. You can also set clips to play in the active layer (this approach will be familiar to Resolume 2.x users) or even to use the next available layer.

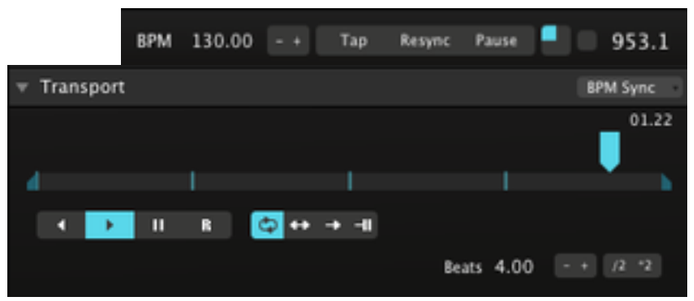
Like Beat Snap and Trigger Style, you can change this setting for the whole Composition (Composition > Clip Target) and for individual clips (Clip > Clip Target)

The Free Layer Clip Target mode is particularly fun when used with the Piano Trigger Style mode (see above). You can then play 'chords' of clips with the keyboard or a MIDI device - each of them will be displayed for as long as it is selected. Obviously, you will need as many layers as you want to play simultaneous clips.

Ignore column trigger

This option allows you to 'lock' a clip or entire layer, so that when you trigger another column, that particular clip will not get replaced and just keeps playing. The option can be found in both the Clip and Layer menus. This particularly useful when using a single clip as a background, or when you are using Resolume to record a video clip, and you want to keep playing a single audio track while you're mixing.





Transport

So, we know how to start clips playing but things would be a bit boring if we had no control over them after that. Fortunately, Resolume provides loads of ways to control and affect how clips behave.

The Transport section of the Clip tab is where we can change the speed and direction that clips play at.

There are two very different ways to control the speed of a clip that are selected by the drop down at the top right of the Transport section.

Timeline is for manual control, with direct control over the Speed (pitc) of the clip. In this mode, you simply use the Speed slider to speed the clip up or slow it down.

BPM mode uses the global BPM to control the speed of the clip.

Let's have a quick look at the BPM section, on the left of the display- under the layer strips.

Here you can set a BPM directly with the + and - buttons or by clicking the BPM value and typing a new one. You can also tap along to a tempo to set the BPM automatically.

The best way to use the Tap tempo function is to click the Tap button a few times to set the tempo and then click the Resync button on the first beat of a bar.

> ***Tip!*** *If you're having trouble finding the right BPM, keep your eye on the blue square moving clockwise around the slightly bigger grey square (in the right of the BPM section). If your BPM is on the money, it should hit the top left corner on every first beat. When you find it's drifting out of sync, and always arriving a little late, increase the BPM slightly by hitting the 'plus' button a few times, or hit the 'minus' when it's arriving early. Now hit resync again and see if it drifts again. Repeat till you get it right. This is how DJs beat match records as well, and after a little practice, you'll be able to dial in on the correct BPM very quickly.*

Later on, in the MIDI section, we will see how we can use MIDI clock to synchronise the tempo in Resolume with another program or piece of equipment.

So, you have Resolume running at the perfect BPM. Clips that have their Transport mode set to BPM will now play at a speed that synchronises them with that BPM.

In order for audio-visual clips to work right, you will need to set the number of beats that the clip spans in the Transport section. You can click the number and change it, use the + and - buttons or use the *2 and /2 buttons to quickly multiply or divide the value by 2.

By using the drop down to the left of the number of Beats, you can also tell Resolume how the clip should behave by setting the BPM directly (BPM) or asking Resolume to detect the number of beats (Auto)

The Transport section also provides some additional options:

Use these buttons to set the direction the clip plays in or to pause the clip.

Use the R button to jump to random frames in your video. When in timeline mode, the Speed slider now controls how often the clip will jump to a new frame. When in BPM sync mode, the clip will jump to a random beat and continue playing from there. This works for both audio and video clips, allowing you to make instant remixes!

Use these buttons to tell the clip to loop, ping pong (play alternately forwards and backwards) or to play once and then hold or automatically clear itself from its layer.

The play once mode is useful for 'one shot' samples that you want to drop into the mix.

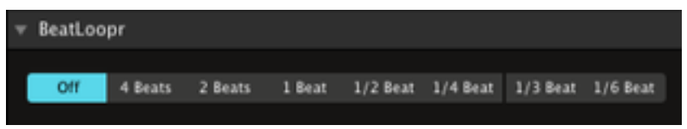
The play once and hold mode will hold the last frame of the clip when it's done playing, similar to how it worked in Resolume 2.

These buttons are only available in Timeline transport mode. Use them to decide what happens when a clip is triggered. The first (default) option plays the clip from the start. The second option starts the clip from wherever it was when it was last played.

The final thing we will look at in the Transport section is the timeline itself. We can manipulate this directly by grabbing the blue pointer that moves along it and sliding it around. This gives an effect similar to DJ scratching.

The smaller bar below the timeline is also useful. Grab and move the small blue pointers at its end to set the In and Out points of the clip. This is great for selecting parts of longer clips to use.

In the top right, you can see the current time of the clip. Clicking on this number will switch to show you the remaining time.



BeatLoopr

When BPM transport mode is active on a clip, the BeatLoopr section is displayed. This enables you to have Resolume automatically loop sections of the clip. This is great for adding a bit more variety to rhythmic clips, creating weird vocal combinations or all kinds of other effects.

To use it, just select one of the options - the clip will loop over the relevant number of beats.

When you are done, just click the selected option again or the Off button.

It's really that simple!

Cue Points

You can use the Cue Points section to quickly jump to any part of the clip that you like.

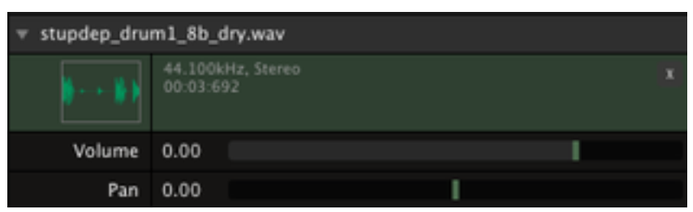
To set a cue point, click the smaller part to the left of one of the cue point buttons. The part you click will turn blue and the letter on the main button will turn white - this means the cue point is ready for use.

Now you can click the main button (or press the relevant keyboard key) to jump straight to the point where you set the cue point.

If you want to set cue points precisely, a good way to do it is to pause the clip, drag the Transport timeline marker to where you want the cue point and then set it.

You can reset an existing cue point in exactly the same way as setting it for the first time.

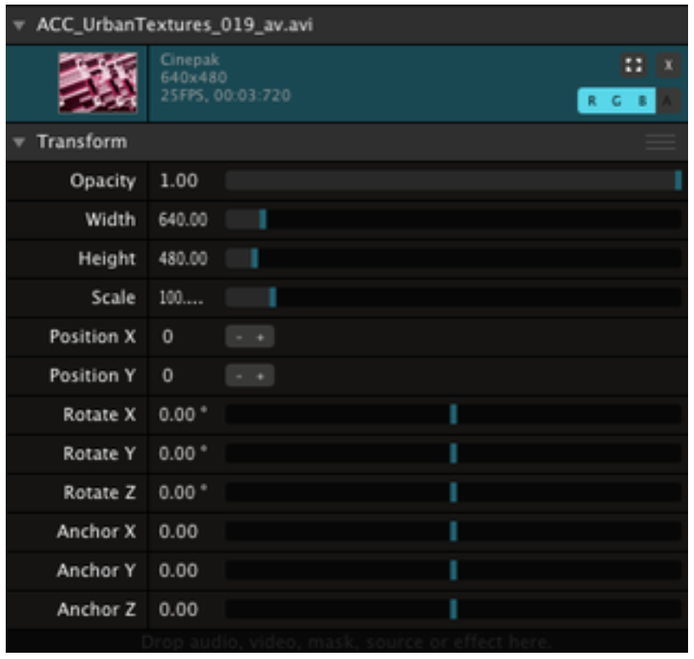
> ***Tip!*** *The Beatloopr (described above) will automatically turn off if you jump to a cue point. This way you can very easily build a climax using the Beatloopr and Cue Points. During a break in the music, simply keep choosing shorter and shorter loops until the beat drops again, and then jump to the cue point you want to resume normal playback at. Reach for the lasers!*



Audio Properties

With the Audio section of the clip properties, we have the same options as at Composition and Layer level:

Volume	Set the volume for this clip individually. This is useful for balancing the volume of clips that will play on a layer.
Pan	Pan this clip individually.



Video Properties

At the top of the Video section of the clip properties tab, along with information about the video part of the clip, you will find some useful features:

Use this to resize the clip to the size of the current composition. This is great when your content isn't at the right size already (although it is more efficient to make content to the right size, we can't always live in a perfect world)

Clicking this multiple times will cycle through a few options available for scaling.

1. Scale the clip to the composition width, maintaining the aspect ratio of the clip.
2. Scale the clip to the composition height, maintaining the aspect ratio of the clip.
3. Scale the clip to the composition width and height, distorting the clip when necessary.
4. Keep the clip at its original size.

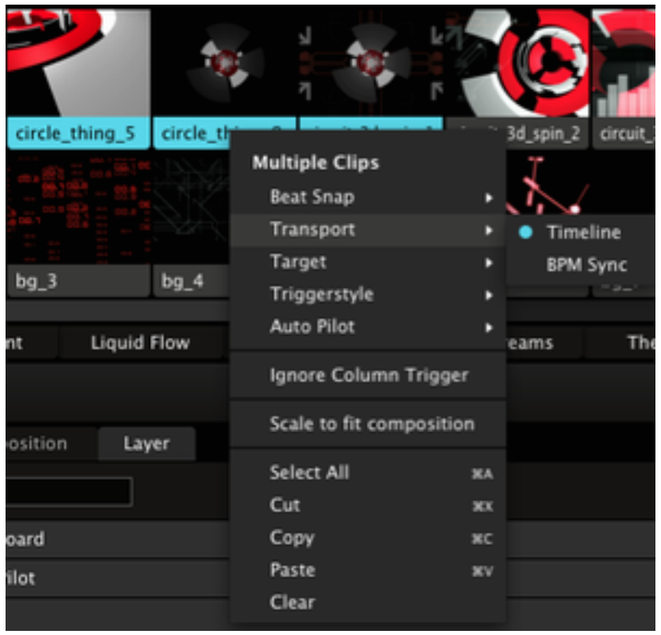
Click this to clear the video from the clip, leaving the audio intact.

Use these toggles to select which colour channels from the clip will be used. By default, Red, Green and Blue are selected. The Alpha channel will only be selectable if your clip has an alpha channel in it.

> ***Tip!*** *By making smart use of all the different combinations that are possible for colors (R= Red, G= Green, B = Blue, R+G = Yellow, R+B = Purple, G+B = Cyan) you can very quickly 'colorize' your content to match the lighting in the venue.*

The rest of the video properties for a clip are very similar to those for layers:

Opacity	Set the opacity for the layer here as well as on the layer strip.
Width	Set the width of the clip. Along with the Height parameter, this is useful for correcting the aspect ratio of content.
Height	Set the height of the clip
Scale	Scale the surface that the clip is drawn on in the output.
Position X	Tweak the exact position of the clip, pixel by pixel
Position Y	Tweak the exact position of the clip, pixel by pixel
Rotate X	Rotate the surface that the clip is drawn on
Rotate Y	Rotate the surface that the clip is drawn on
Rotate Z	Rotate the surface that the clip is drawn on
Anchor X	Change the position of the surface that the clip is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.
Anchor Y	Change the position of the surface that the clip is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.
Anchor Z	Change the position of the surface that the clip is drawn on and also the point that the surface is rotated around if you use any of the Rotate parameters.



Multiple clip select

The clip properties can be adjusted for multiple clips at the same time. Shift-select the clips you want to change, and the Clip tab will now show 'Multiple clips'. Any changes you make there, will be applied on all the selected clips.

Beat snap setting, trigger style, transport mode, auto pilot and the other functions found in the Clip menu can be changed for multiple clips at the same time as well. Shift select the clips, and then change the function via the Clip menu or the right click drop down.

Effects

Resolume enables you to manipulate both the audio and video by using plugin effects. Each effect is a small program that changes the audio or visual in some way, controlled by some parameters.

Resolume supports audio effects based on the VST standard.

For video effects, Resolume supports the Freeframe 1.5 standard (also known as Freeframe GL as it supports OpenGL acceleration for effects). Note that this version of Resolume only supports plugins that use hardware acceleration - it does not support old Freeframe 1.0 plugins that do their processing on the CPU.

To use either an audio or a video effect, just drag the effect from the Effects tab onto the area of the Composition, Layer of Clip tabs where it says 'Drop effect or mask here'. But you can also directly drop it onto a clip, layer or composition area. You can even drop it onto an empty clip in the layer strips.

> ***Tip!*** *If you already know the name of the effect you're looking for, simply start typing the name of it while the effect browser is in focus. The browser will then jump to the effect automatically.*

Clip effects are applied to the individual clip when it is playing.

Layer effects are applied to whatever clip is playing in the layer, after its clip effects have been applied.

Composition effects are applied to the final output, after the layers have been mixed together.

Effect can also be applied to an empty clip, creating an Effect Clip, which has some special properties. For further info, see below.

All effects can be temporarily bypassed (B toggle) or removed (X button)

Effects can be stacked together by dropping more than one into the same place. If you do this, they will be applied in order, starting with the top one in the slot. Each effect will be applied in turn, affecting the output of the previous effect. You can change the order of the effects by dragging them by the three horizontal bars on the right of the effect name.

> ***Tip!*** *Changing the effect order can dramatically change the resulting output. For example, apply the Fragment effect on a clip, followed by Edge Detection. Probably looks cool, but now see the difference when you drag the Edge Detection above the Fragment effect!*

Effect Clips

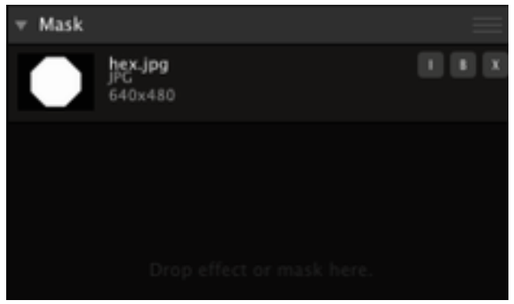
You can also add an effect to an empty clip. In doing this, you will effectively (ha! see what I did there?) create an Effect Clip. If you're used to working with Photoshop or After Effects, you'll know this feature as Adjustment Layers.

Any effect(s) applied on an Effect Clip will be applied to all the clips playing in the layers underneath it. This way you can very quickly create a sequence of different looks and effects, while still being able to swap out the footage on the fly.

Even better, this will allow you to assign MIDI or keyboard triggers to effects, or even fade from one effect to the other using the automatic transitions feature! Like Sources, Effect Clips can be assigned a duration as well, so you can use them with the Auto Pilot too.

Of course, you can stack as many effects in an Effect Clip as you want (or until the output turns to an unrecognizable soup).

> ***Tip!*** *Creating an Effect Clip in fact creates a copy of the clips playing underneath. So after first creating it, you can actually delete the effect, and then use the Transform controls to create all sorts of zooming, picture-in-picture and mirror effects.*

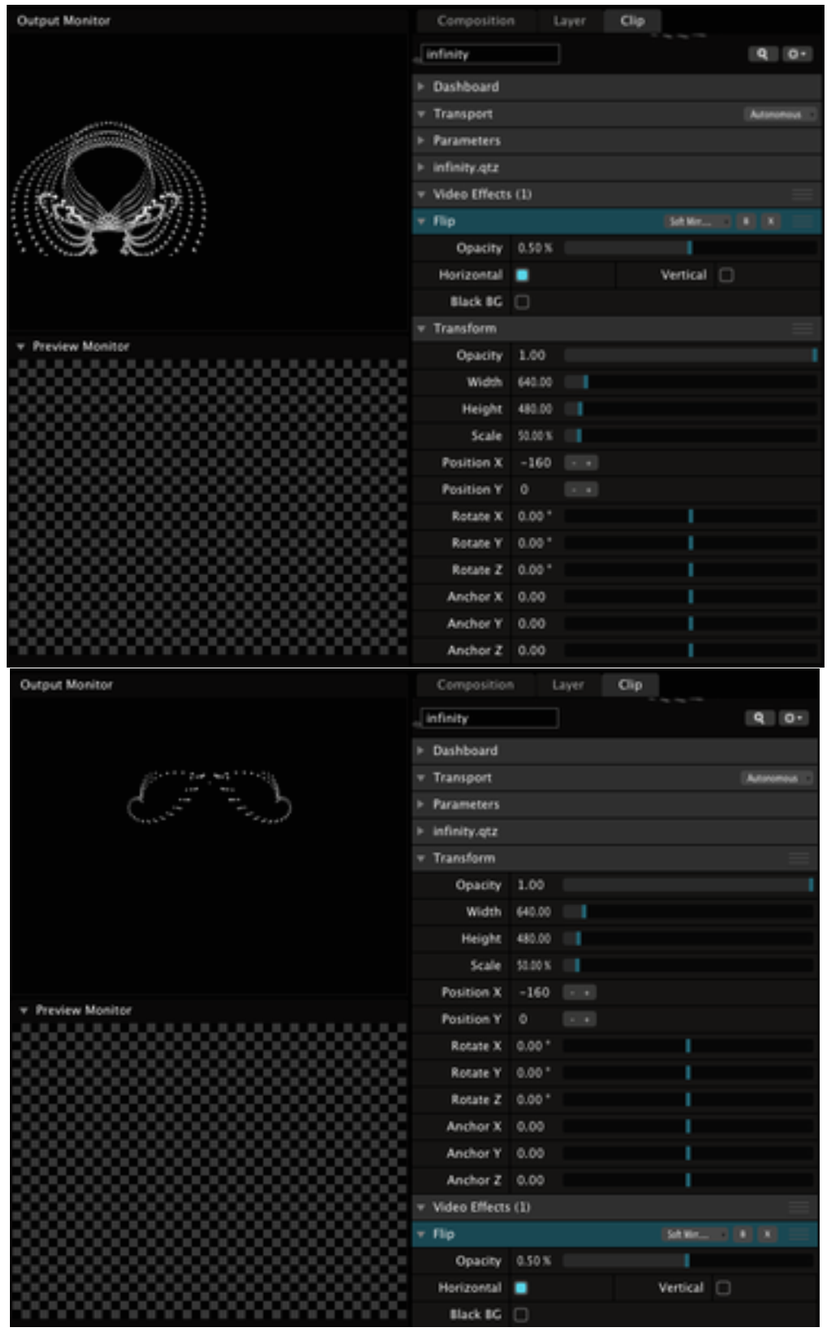


Masks

To create a mask, drop an image file from the file browser onto the area of the Composition, Layer of Clip tabs where it says 'Drop effect or mask here' (you'll know when you're in the right place when you can 'Drop it like it's hot!'). This is useful for creating video with a non-rectangular frame.

If a .png file with an alpha channel is used, the alpha channel is used for the mask.

If another image format is used, the red channel is used for the mask.



Changing the render order of effects, masks and transformations

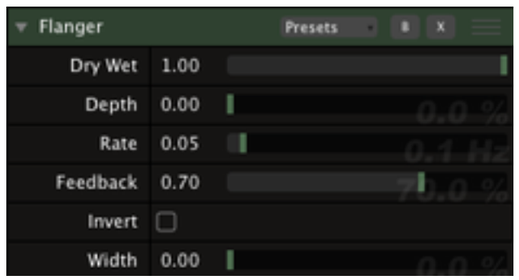
In Resolume 4, the clip properties described above can be applied before and after the effects. By default, Resolume will apply any effects first, and then apply any changes in the properties.

If you want an effect to be applied *after* the changes in properties are applied, simply drag the Transform tab above the Effects tab (you can drag it by the three horizontal bar, similar to the effects).

> ***Tip!*** *This way you can first scale a clip to 50% and position it to the far left, and then apply a flip effect set to horizontal flip and 50% opacity to achieve a widescreen mirror effect.*

The same applies to masks and transformations. By default a mask is applied before any transformations, so you can move, scale and rotate the content, while the mask stays locked to the content and moves with it. This way you can make slight adjustments to your mask to account for lens distortions or misaligned projectors.

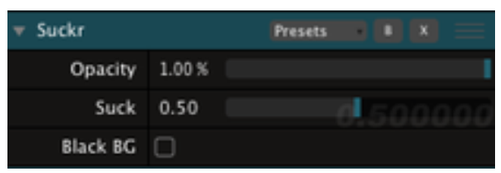
If you want to apply a mask and reposition the content independently from the masked area, you can drag the Transform tab above the Mask tab. This way you can animate or distort content within a mask, without affecting areas outside the mask.



Using Audio Effects

Audio effects may provide any number of parameters but there is one that they all share. You can use Dry Wet to control how the affected version for the audio is mixed with the original.

When this parameter is moved over to the left, the effect will not be heard at all. When it is at the far right, the original audio will not be heard.



Using Video Effects

Similarly to audio effects, video effects always provide at least one parameter - Opacity. You can use this to mix the effect with the original video. As with mixing layers, you can select one of the mixing modes to use.

Aside from this, this manual is too short to tell you what every parameter of every effect does or how you should use it. You can try them out and wiggle a few of the controls to find out yourself. You'll figure out which ones you like soon enough. To get you started though, there is a list of all included effects and their descriptions in Appendix 3. Some of our personal favorites are: RGB Shift, Shift Glitch, Point Grid and Colorize.

Presets

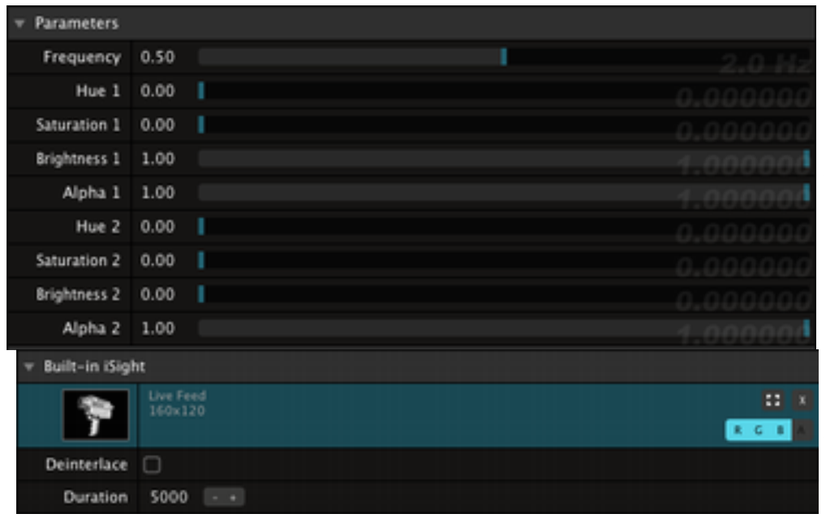
Both audio and video effects support the creation of presets. Each preset contains all the settings for an effect - enabling you to quickly activate an effect with a set of settings that you like.

To create a preset, first get the effect working how you want it. Then use the Preset drop down above the effect parameters and select the Save As... option. Enter a name and hit return. The new preset will now appear in the effects list, under the name of the effect itself.

To use a preset, drag it onto the Composition Properties, Layer Properties or a clip in the same way as you would for the effect itself.

If you make any changes to a preset, you will need to use the Preset dropdown Save option to save the changes.

You can also use the Presets dropdown to rename presets, delete a preset or reset the effect settings to their defaults.



Sources

Sources are very similar to effects. Like effects Freeframe 1.5 plugins are supported. The difference is that, while effects changed existing audio or video, Sources generate new content on the fly.

Because they generate content, Sources need to be placed onto clips in the same way as you would place an audio or video content file.

To use a source, drag it from the Sources tab on the right of the screen, to one of the clip slots.

Once placed in a clip, the properties for the Source will be available in the Clip tab.

Sources can have audio and video effects added to them just like any other clip.

Presets are not available for sources but that isn't a problem - you can just create multiple clips with the same Source, using different parameter settings.

Video Capture

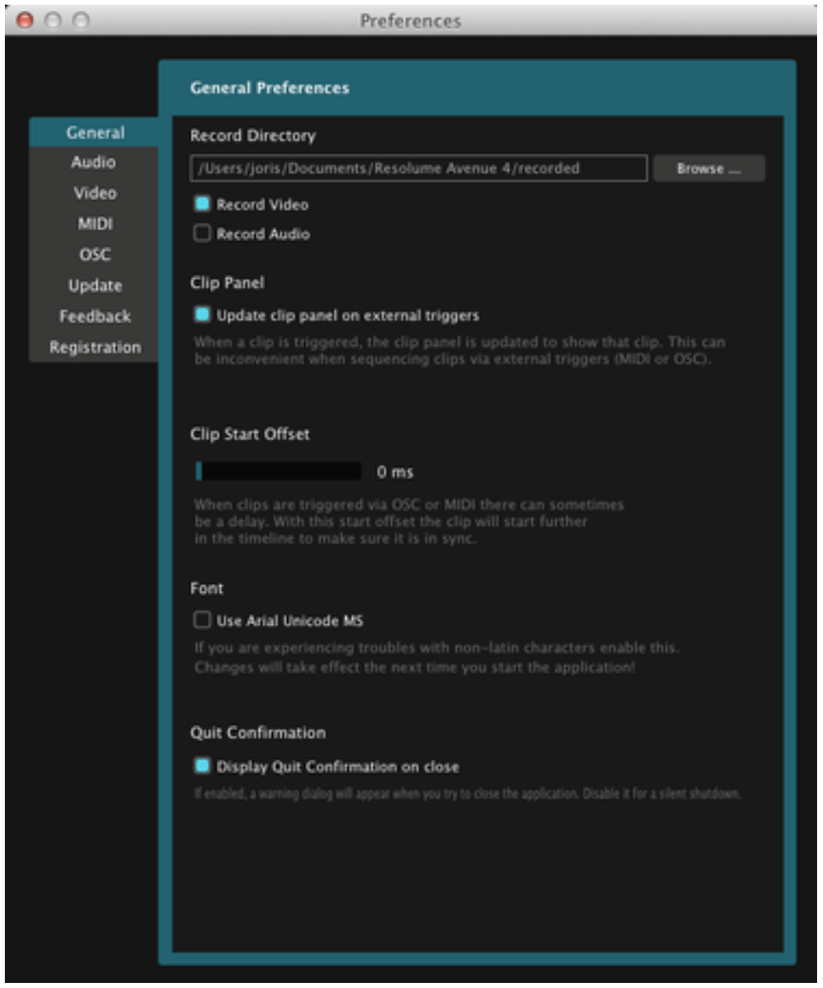
The Sources tab is also where you will find any video capture devices that you have attached to your computer.

If you use a capture device, some additional options will be available in the Clip tab. You can set whether the video from the device should be deinterlaced (You do not need to do this for most webcams but it is useful for solving 'jaggy' problems with video cameras).

Tip! *If you want to use Sources or Live cameras with the Auto Pilot, you can! Specify a duration for each source via the Clip tab. This is set by default to 5 seconds.*

Preferences

The Preferences gives you access to settings that affect the way that Resolume works overall. On the PC you open the Preferences via the menu item called Avenue on the Mac you can find it in the View menu.



General Preferences

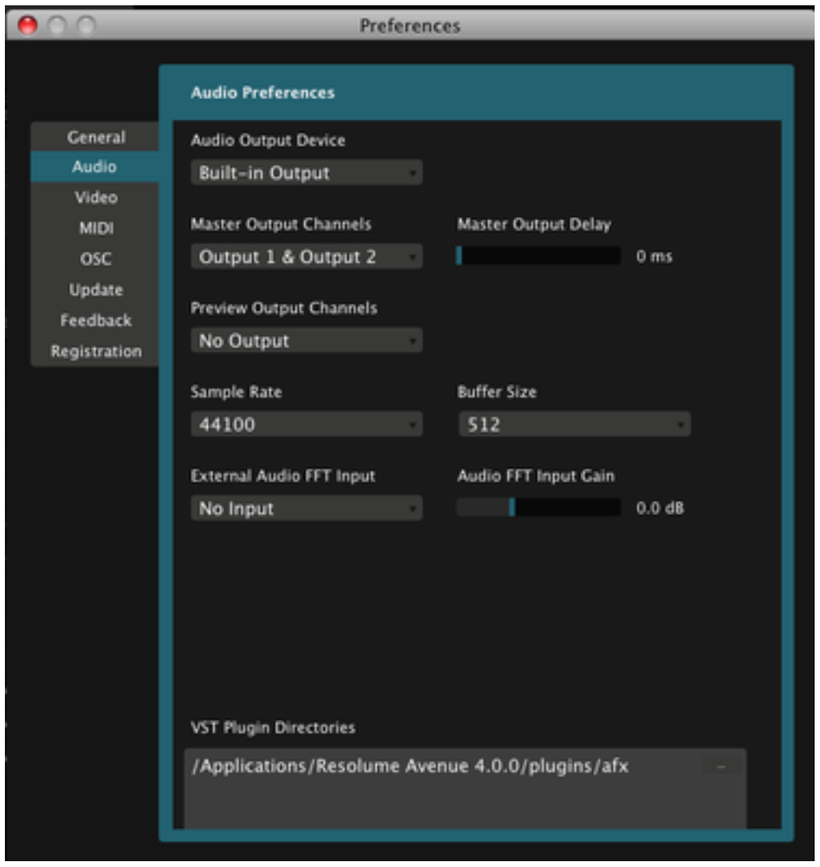
Here, you can also set the directory (folder) that Resolume will use to store recordings that you make and whether to record Video and Audio. See the later section on Recording for details on how this works.

Also, you can choose whether or not Resolume should update the clip panel when a clip is triggered. You'll want to turn it off when you are for instance using an external source for triggering a sequence of clips (via MIDI, OSC or DMX for instance), while you are applying effects on another clip at the same time.

The Clip Start Offset allows you to let a clip start an amount milliseconds further into the timeline of the clip, to compensate for delays with MIDI triggering and/or long cable runs.

The Arial Unicode checkbox changes the font used by Resolume. If you are non-latin characters, and having trouble displaying them correctly please enable this.

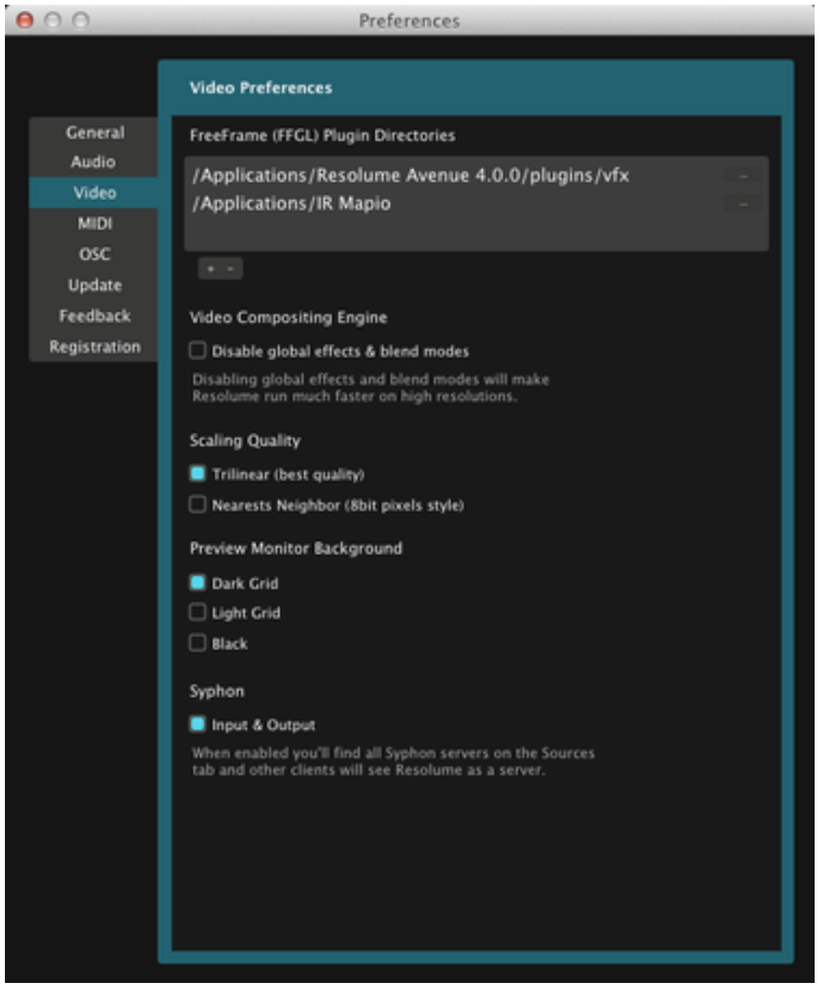
When Quit Confirmation in enabled, Resolume will wait for you to confirm your choice when you've decided to quit. With this disabled, Resolume will shut down immediately when you hit CTRL/CMD+Q or choose to quit via the menu.



Audio Preferences

The audio tab presents you with options that control how audio should be output from Resolume:

Audio Output Device	The device that Resolume should use for audio output. If an ASIO device is selected, an extra button will be displayed that enables access to ASIO settings.
Master Output Channels	The channels that should be used for the main output of Resolume
Preview Output Channels	The channels that should be used for audio monitoring of the clip or layer selected for preview. You will need an audio device that supports more than 2 channels in order to use separate monitoring of the preview.
Sample Rate	Higher sample rates provide higher quality audio but will require more processing, especially if audio effects are in use. The default will usually be okay.
Buffer Size	Higher buffer sizes will introduce more latency into the system but setting the buffer size too low may cause glitches in the audio. The default will usually be okay.
External Audo FFT Input	The audio device and channels that should be used for external audio analysis (See later section for details)
VST Plugin Directories	The directories (folders) that Resolume should look in for VST audio effects and sources.



Video Preferences

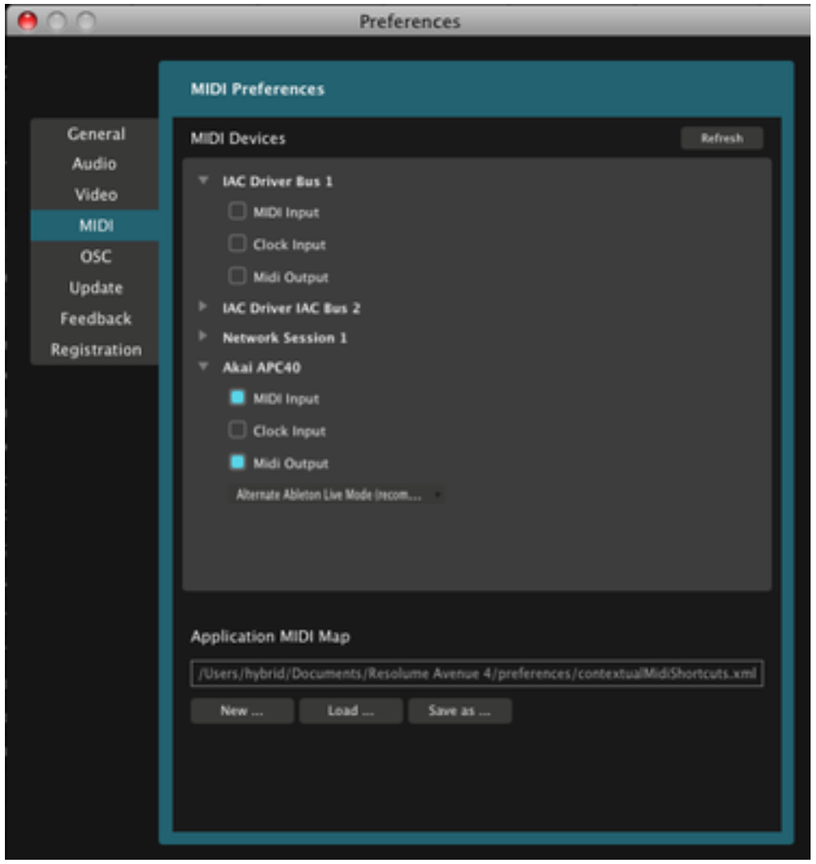
On the Video tab, you can select the directories (folders) that you want Resolume to look in for Freeframe 1.5 compatible video effects and sources.

You can also disable global effects and blend modes. This much reduces your flexibility - when using this option, only a basic Alpha blend will be available for compositing layers. However, it will make Resolume run much faster when dealing with high resolution video, so it can be useful for specific performances.

The Scaling Quality allows you choose between two different algorithms when scaling your clips up. Trilinear gives the best result, but you may want to go for the 8 bit glitch look that you get with Nearest Neighbor.

You can set the preview monitor background to display transparent pixels on a dark checkerboard, a light checkerboard, or just as black.

The Syphon checkbox is available on Mac OSX only, and enables or disables Syphon input and output. For further info, check the Syphon chapter.

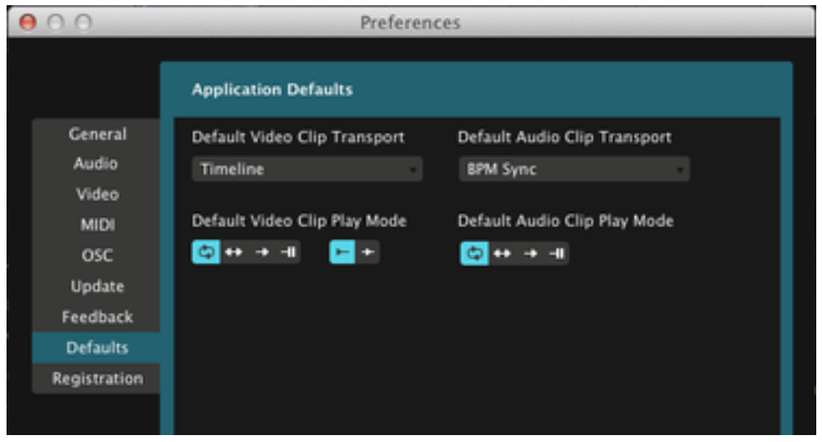


MIDI Preferences

Here you can enable or disable MIDI input and output from and to devices, select how Resolume should deal with MIDI clock messages and load and save MIDI maps (see the section on controlling Resolume with MIDI for more on this).

OSC Preferences

Here you can enable or disable OSC input and output, as well as set the relevant ports and IP addresses used by OSC. For more info check the section on controlling Resolume with OSC.



Defaults

This section allows you to change the default import settings for video and audio files. Whatever you choose here, will be the default setting for files that you import from that moment on. So for instance, if you always use your video clips on BPM Sync and play once and eject, you can choose these as the default settings.

Note that this does not affect clips that were already imported. Also you can still change this setting for individual clips after importing as well.

Update Tab

This tab simply provides an easy link to the Resolume website, where the latest update of the software will available.

Registration Tab

See the earlier section on Registration for details of how to use this tab.

Output Setup

Unless you are just using the recording feature of Resolume to make video clips, at some point you will want to route the video from Resolume out of your computer, hopefully to a really big screen.

Before you can configure the outputs in Resolume you need to set up the displays in your computer's operating system before you run Resolume, in order for the displays to be available in the Output menu.

Windows

To set up the displays in Windows, open the Display panel in The Control Panel. On the settings tab make sure you have at least 2 displays visible and active.

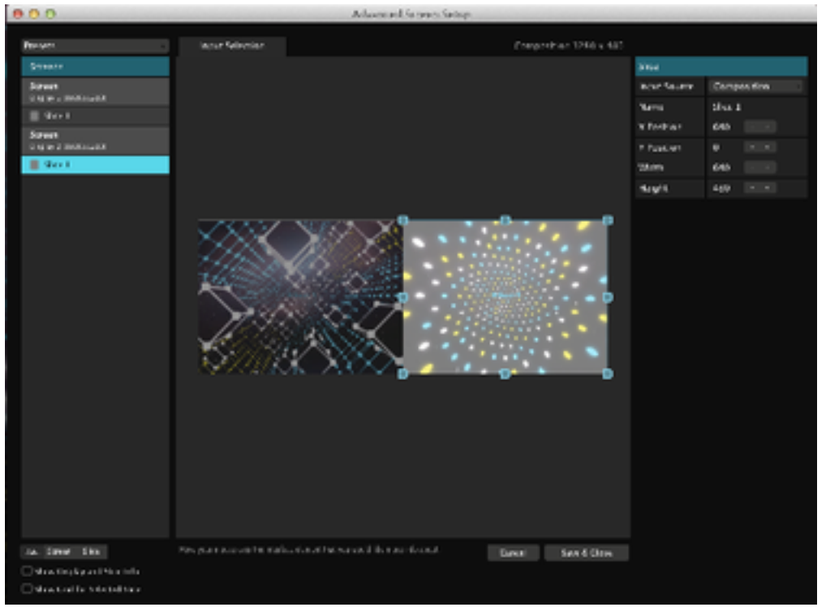
Mac OS X

Open the Display Preferences in System Preferences via the Apple menu. Then on the Arrangement tab make sure 'mirror displays' is turned off. Now you have two separate displays on your computer.

Now start Resolume and checkout the Output menu. The Fullscreen and Windowed options enable you to select which of your computer displays the main Resolume output should go to and whether it should fill the screen (usually the best option if your are using a video out from the computer) or windowed (sometimes useful if you are using an external scan converter)

You can remove the output by selecting the Disabled option.

Advanced Output Settings (Avenue)



If you are spanning your output over several projectors or screens, Resolume provides a flexible way to control which part of your composition goes to which output.

To access these settings, select the Output > Advanced menu option.

You will see a window that lists the active screens on your computer down the left hand side and shows a rectangle representing your composition on the right hand side.

To setup a screen, select it on the left hand side, and choose which output of your computer it should use on the right hand side. This way you can assign the correct screen to the correct output very quickly when working with multiple outputs.

After setting up the outputs correctly, you can tweak the output further by using slices.

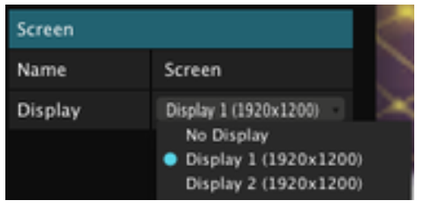
Each screen can have one or more slices. By defining a slice, you can control what part of the composition it will contain. This way you can define that the left hand side of the screen will always go the projector on output 1, and the right hand side should go to the projector on output 2. But you're not limited to dividing it vertically, or even halfway. You can select any part of the composition you want to account for different output resolutions and aspect ratios.

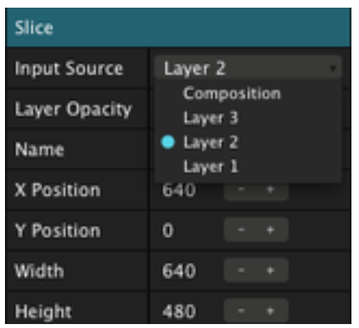
You can select a slice by clicking it on the left hand side. You can then use the **Input Selection** panel to resize it and drag it around in the right hand panel.

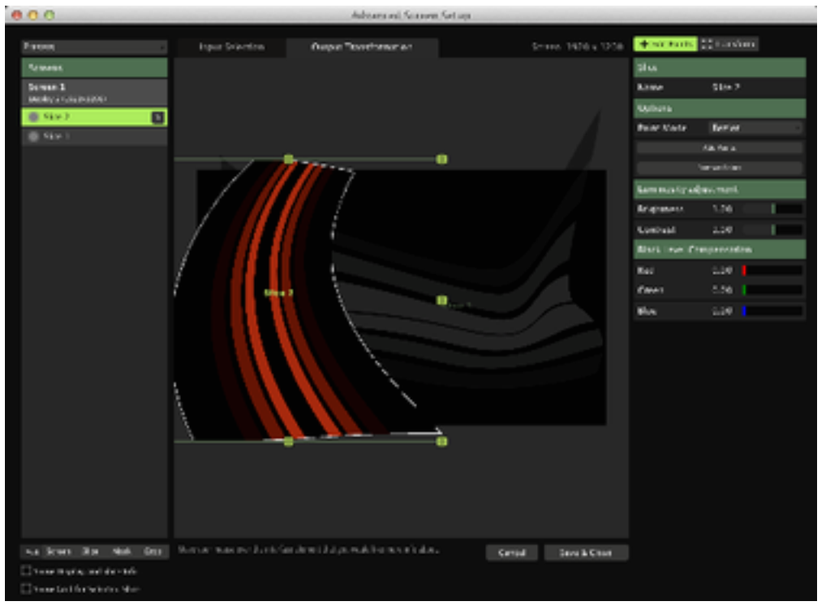
> ***Tip!*** *Hold down CTRL (CMD on a Mac) and drag in the Input Selection area to quickly create a slice where you are dragging.*

You can also type precise numbers into the boxes at the right if you need the output to show a precise part of the composition. Right clicking a slice will reveal a drop down with some useful slice setting presets.

> ***Tip!*** *You can select each layer of your composition to go directly to a slice. This means you don't have to reposition your layers to send different content to each display.*







Screen warping (Arena only!)

In Resolume Arena, the Advanced Output Settings has many powerful additional features.

Each display can be configured in two modes: **Input Selection mode** and **Transformation mode**.

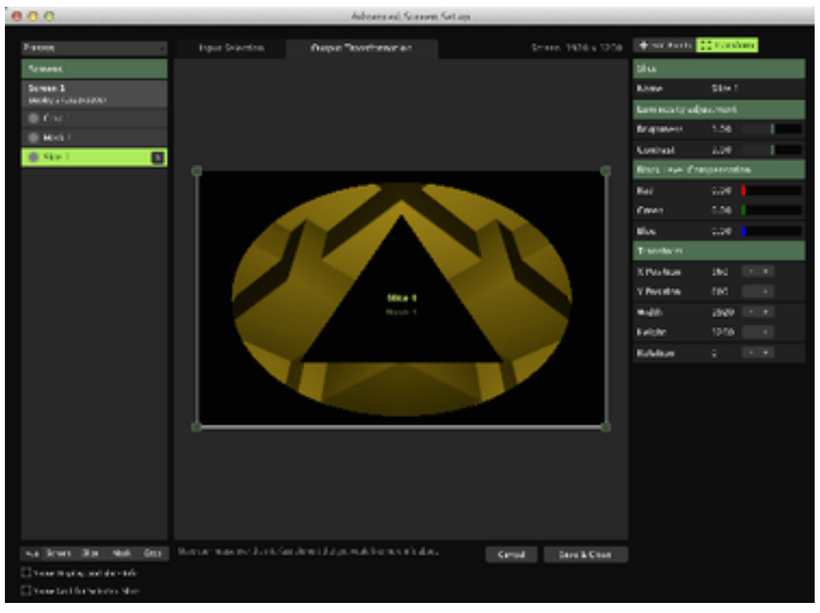
Input Selection mode works the same as for Resolume Avenue, see above. Additionally, you can tell the slice to wrap around the composition for 360 degree panoramic projections.

In **Transformation mode** you can apply screen warping, which means you can adjust the position or geometry on the final output. This is useful for projection mapping the output to an irregularly shaped surface, or when aligning multiple projectors for a spanned output.
This mode again is made up of two submodes: **Edit points mode** and **Transform mode**.

> In **Edit Points mode**, you can select a slice on the left and then pick up corner points and drag them to a desired location. You can add or remove points on the right, as well as choose between linear or bezier interpolation. Bezier interpolation adds bezier handles to the points that allow you to curve the edges. Also you can show a grid to help the aligning process.
>
> When you have a single point selected, you can fill in precise values or nudge the point with the arrow keys or controls on the right.
>
> In **Transform mode** you can change the position, scale and rotation of the entire slice in the output. This is useful if you want the same part of your composition repeated on two differently sized displays.
>
> You can hold down CTRL on a PC/CMD on a Mac to quickly switch between **Edit Points** and **Transform** modes. Also you can right click for some useful preset settings.

If at any point you get confused during the process for which part of the output is going to which monitor, you can troubleshoot by identifying the displays by type and number, which will show in both the interface and the output. Also you can display a test card to calibrate and align your projectors.

Tip! *If you are using a lot of slices, masks and crops for a project, you can quickly rearrange their order by dragging them up or down in the slice stack. You can even drag them to another display.*



Advanced Output Settings/Masks and Crops (Arena only!)

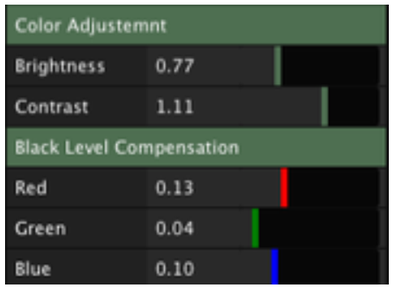
Besides adding displays and slices, you can also add masks and crops directly in the Advanced Output. Masks and crops allow you to hide parts of the output, without distorting it.

A crop will cut off all pixels that are outside of it. A mask will cut out a part of the image, effectively creating a hole. You can have as many crops and masks as needed.

Masks and crops can have an arbitrary amount of points. By default they are created as squares, but you can make them into triangles, circles, stars, hexagons or in the shape of that weird stain on the wall in the attic.

Double click the outline to add a point at that location, double click a point to remove it.

A crop can be turned in to mask and vice versa using the drop down on the right.

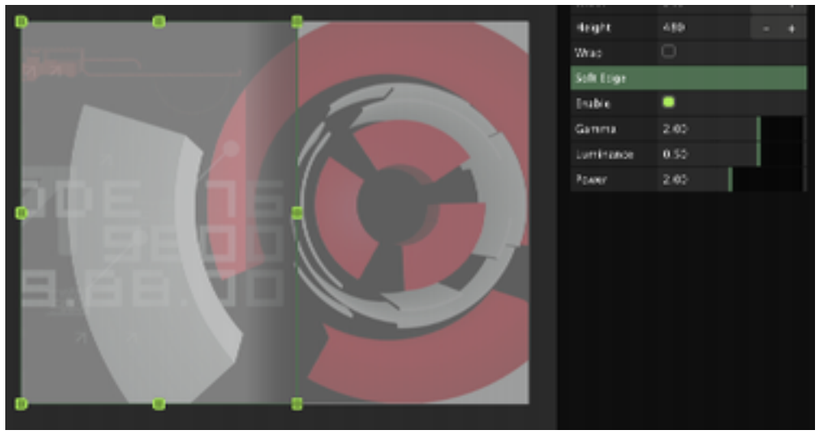


Advanced Output Settings/Black level and brightness compensation (Arena only!)

In both modes you have the option to compensate the black level of the slices. Since projectors project light, they can never project true black (black actually is the absence of light). Rather they project a very deep grey. So where two projectors overlap, in the areas that should be 'blacked out' by softedging, they will project deep grey on deep grey. Since projectors work in additive colour space, this causes the problem to accumulate, and the result in the overlapping area will be an even lighter grey. The black level compensation is to make up for this difference, by allowing you to make the non-overlapping areas slightly brighter.

Also you can adjust the brightness and contrast of each output, to fine tune any difference in luminosity that can't be solved by adjusting the projectors or screens themselves.

> ***Tip!*** *If you are using both a LED screen and a projector, and the LED screen is blowing all the other lights in the venue away, you can decrease the brightness on the LED screen, while still having the projector at full power. Or just leave everything at maximum, and give the audience a tan with your visuals.*



Advanced Output Settings/Soft Edge (Arena only!)

Also, you can apply **edge blending** to any slice. This will help you blend the output where two projectors are overlapping, by gradually fading out the area where they overlap.

In order for edge blending to take effect, you need to have two slices cover the same part of your composition. For best results, a minimum of 15% overlap is recommended. Then you can turn on edge blending for each slice in turn. Resolume will automatically blend the edge in the middle, but you can still control the edge by refining the following three parameters:

Power: This control the slope of the edge blend curve. The higher this number is, the steeper the curve will be in the center of the fade area.

Luminance: This control the brightness of the centerpoint of your fade. This allows you to further adjust the slope of the curve.

Gamma: This is the overall brightness of the fade area.

For detailed info on the edge blending process, check out the paper by Paul Bourke: http://paulbourke.net/texture_colour/edgeblend/

Previewing

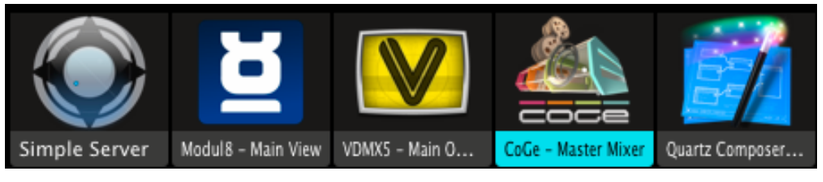
Sometimes you want to try things out before sending them out to the main audio and video outputs. This is what the previewing feature is for. We can use previewing to take a peek at a layer or clip without actually playing it out.

The Preview Monitor window sits in the bottom left of the screen, below the main Output Monitor. Make sure the preview is expanded (by clicking the small triangle at the left) before using it to preview video.

To preview a layer or clip, click its name on the layer strips. You will now see the video for the layer in the Preview Monitor. If you have set up preview channels for audio (In the Audio tab of the Preferences window) you will hear the audio for the layer or clip through the channels that you have selected.

If the clip has an alpha channel, you will see the transparent parts on a checkerboard background. This setting can be adjusted in the Video tab of the Preferences Window.

When previewing, the volume and opacity parameters of the layer or clip are ignored.



Syphon (Mac OSX Only!)

Syphon is a great set of tools to route the visual output of one program to another. This way you can for instance get jiggy with your funky Processing sketches, but apply effects and map them to a surface with Resolume Arena.

To enable Syphon, simply check the box in the Video tab of the Preferences.

Any program that is broadcasting its output via Syphon will now show up under the sources tab. You can add them to a deck like you would any other live input.

The moment Syphon is enabled, Resolume will immediately start broadcasting its main output as well.

Resolume Arena allows you to further control this via the Advanced Output. Syphon will be treated like a separate physical screen. This allows you to warp the output before sending it, or to select parts of your composition to send to Syphon. All the while you can still send a different output to your physical screens.

Controlling Resolume Avenue

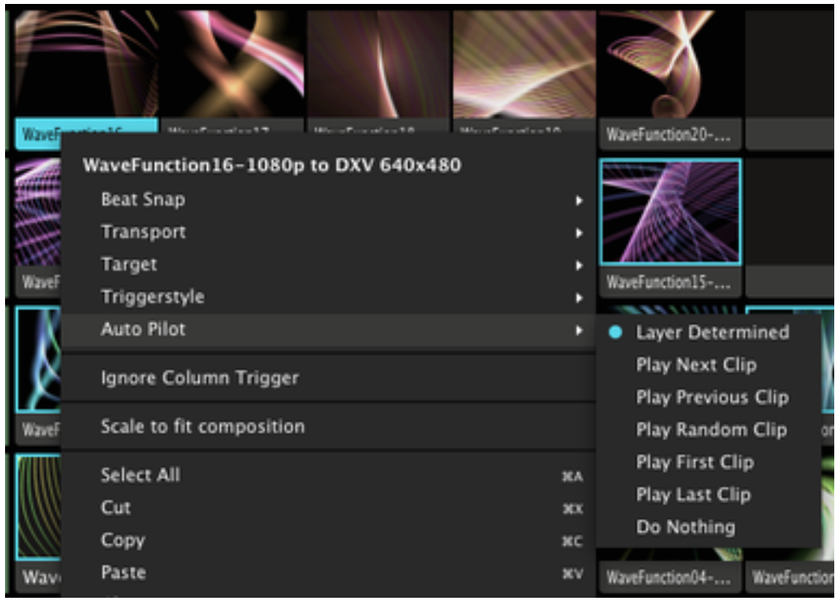
In the previous section, we looked at the ways in which Resolume can play and manipulate audio, video and audio-visual clips. Now we will look at the different ways we can tell Resolume what to do.

Controlling the individual features of Resolume with the mouse pointer is okay a lot of the time but in a live performance situation, you really want to have instant access to the features that you need. This is why Resolume enables you to control it in a number of ways:

- Let the autopilot sequence clips for you
- Animate parameters automatically so they move without you needing to control them directly
- Link parameters together to make them easy to control together
- Drive parameters from audio, either from within Resolume or external to it
- Map controls to keys on the computer keyboard for instant access
- Use MIDI keyboards or controllers to access controls and parameter values
- Use the Open Sound Control protocol to send instructions to Resolume from other applications or equipment

Auto pilot sequencing

This powerful feature allows you to sequence clips in a layer. When activated, Resolume will start playing the next clip in the layer when the current clip reaches its end. You can specify whether the sequence should play forwards, backwards or play a random clip. Empty slots are always skipped.



Auto pilot can be turned on for all clips in a layer in the layer properties panel, but individual clips can be set to have some additional options. By right clicking on the name handle you can set the auto pilot on a per clip basis. By using this setting on the last clip of a sequence, you can tell it to loop or simply stop the sequence.

> ***Tip!*** *This way you can keep switching automatically between two clips, keeping your hands free to improvise on the other layers, or head over to the bar for that well deserved drink.*

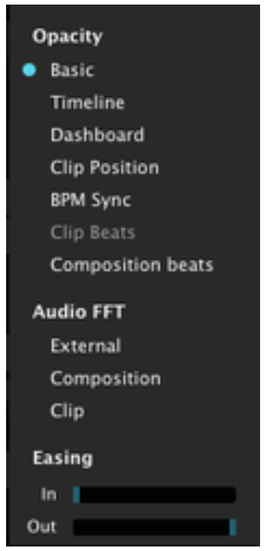
> ***Tip!*** *You don't need to turn on the auto pilot for the entire layer. Using the right click drop down, each clip can have an individual auto pilot setting.*

Also Sources can be used in auto pilot sequences. Although a Source doesn't have a set duration like a normal clip, you can change the duration in the clip tab.

This way you can use content that doesn't have a fixed duration like Flash files, Quartz Composer files or even live cameras in your sequence as well. By default sources are set to a duration of 5 seconds.

One thing to keep in mind when using the auto pilot is that beat snapping is still taken into account. This means that when the current clip is finished, it will try to trigger the next one, like expected. However, when beat snapping is turned on for that next clip, the current clip will actually loop until the master bpm gives the all clear, and the next clip is triggered in perfect sync to the beat. This is a feature not to be underestimated, and it allows you to create very complex loop structures, presentations and story lines.

When you've assigned a clip target other than the current layer for a clip in auto-pilot mode (see the triggering clips section for more info on how to go about this), auto-pilot will actually ignore this, since otherwise the chain would be broken.



Animating Parameters

You have seen how a wide variety of things can be controlled in Resolume by moving parameter sliders, from the volume of the composition to an individual setting on an effect.

There are several options for moving these parameters automatically. To access these options, click the little grey triangle next to the parameter name. A menu will appear.

The options in the menu will be slightly different depending on whether the parameter you are working with is for the Composition, a layer or a clip. However, they all work in much the same way.

The **Timeline** option presents you with an interface similar to the Timeline clip transport mode. You can have the parameter loop, ping-pong or play once and you can set the speed that the parameter animates at. You can set in and out points for the parameter, just like with a clip.

We will look at the **Dashboard** option in the next section.

If you select **Clip Position**, the parameter will be animated along with the current clip position. You can use the range markers to select the values that the parameter should animate over.

BPM Sync is like the BPM Sync transport mode on the clips. You set the number of beats that the parameter should animate over, whether it should loop or ping-pong and the in and out points. The parameter will then be animated in time with the global BPM.

The **Clip Beats** or **Composition Beats** enables us to animate the parameter in time with either the global BPM or the beats of a clip. It works slightly differently to the BPM Sync mode. Rather than presenting us with a timeline interface, it works by setting the parameter to its maximum value (set by the in and out points) when a beat occurs and then sliding it down to the minimum value.

You can use the invert toggle to have the parameter slide upwards after each beat instead of downwards.

> ***Tip!*** *A great way to use this mode is to use it to control the Scale parameter of a clip. If the minimum and maximum values of the parameter are set right, this will make the clip appear to jump forwards on each beat before receding away again. This trick also works well with the opacity parameter for a BPM-matched strobe effect.*

We will look at the **Audio FFT** options later, in the section about Audio Analysis.

Easing can be applied on every type of animation, which will allow you to controls how smooth the value should start and stop.

Linking Parameters with The Dashboard

Sometimes you want to control more than one parameter at the same time. The is often the case when dealing with both audio and video effects. We can get some really nice results by moving the parameters of an audio effect at the same time as a video effect to make a unified result.

The secret to doing this is the Dashboard. There is a Dashboard for the composition, and one for each Layer and Clip. Each dashboard is separate and deals with parameters at its own level.

Each dashboard provides 8 controls. Any parameters that you choose can be linked to these controls. Any number of parameters can be linked to each control.

To link a parameter, simply drag the parameter's name up to one of the Dashboard dials. You can also select the Dashboard option in the parameter control drop-down menu. You will then be able to select which of the dashboard dials the parameter should be linked to.

Once a parameter is linked to a dashboard, the parameter display will change so that you can select the range of values the parameter should take and whether the dashboard controller should be inverted when applying it to this parameter.

You can then move on to other parameters, linking them to the same or different controls on the Dashboard.

> ***Tip!*** *Of course the obvious use of the dashboard is linking audio and video effects. But also by linking multiple effect parameters that look good together, you can drastically change the look of the output with only one mouse movement.*

Once a dashboard dial has at least one parameter assigned to it, you can change its name by clicking it in the Dashboard section.

To control the parameter values that are linked to the Dashboard, click and drag the dial up and down. You will see the parameter moving with the value of the Dashboard dial.

Audio Analysis

Audio analysis enables you to drive parameters directly from the music to make your visuals dance (if you are really brave you could also use Audio Analysis to drive audio parameters - who knows what would happen?)

To activate audio analysis, select one of the Audio FFT options in the control drop-down menu for a parameter:

External	Use the audio device specified in the audio preferences to drive the parameter. This is the one to use if you want to use a feed from a DJ or band or if you have an external microphone. You can also use it to play along with a CD or audio file.
Composition	Use the main audio output of the composition to drive the parameter.
Clip	Use the audio output of the individual clip to drive the parameter. (Only available on clip parameters and clip effect parameters)

The parameter display will now change to display the Audio Analysis options. The first thing you should do is click the small grey arrow to display the full options. You can now use the L, M and H buttons to select the Low, Middle or High end frequencies to use to drive the parameter. You can take even finer control of the frequencies used by adjusting the in and out points below the audio spectrum display.

Use the Gain control to boost the signal until it is having the right amount of effect on the parameter. The Fall control sets how quickly the value falls back from a peak.

The buttons on the left enable us to drive the parameter directly from low to high (>), high to low (<) or to have the audio signal drive the speed the parameter moves at in either direction (- and +)

Note that you have to select a source if you want to use the external option. This can be done via the audio tab of the preferences. Under ‘External Audio FFT Input’ you will see the list of available inputs on your computer, and you can choose which one to use.

Keyboard Control

The computer keyboard provides you with a really convenient way to access particular features of Resolume instantly.

You set which key should do what by setting the Key Maps.

There are two Key Maps in Resolume:

The Application Map is used by all compositions. In Application Mapping, you can choose between Deck and Layer Focus. Keys set up in Layer Focus will change what they control depending on what is selected. For example, if you set a key to clear a layer while in Layer Focus, the currently active layer will be cleared when you hit that key. You can then change the active layer and clear it with the same key.

Deck focus is different in that the mapping is absolute, so every layer can be cleared with its own key.

An exception is made for mappings applied to the Clip tab. These are always context dependent, meaning that the same keys will control the same functions on all clips. regardless of whether they were mapped in Deck or Layer focus.

> ***Tip!*** *This way you can for instance set and trigger the cue points of all clips in your deck with the same keyboard shortcuts, without having to map each one individually. By default, the QWERTY keys will trigger cue points, pressing these keys while holding down SHIFT will set them.*

The Composition Map is saved along with the composition. Keys set up in this map affect particular things. For example, you can set separate keys to clear each of the layers - each key will only clear the layer it is assigned to.

The secret to good keyboard control is to combine the Application and Composition maps together so you get control over the specific things that you need through the Composition Map while also maintaining some flexibility with the Application Map.

To start assigning keys, select the Mapping > Edit Application Key Map menu option. You will see that some of the Resolume interface is overlaid with blue boxes. Each box represents an item that you can bind to a key. You will notice that some items already have keys assigned and have the relevant key on them in white.

You can now use the Key Map box in the bottom left of the screen to select whether to focus on the currently selected layer or the deck. While Layer is selected, the keys you bind will control things based on the currently selected layer. If you select Deck, they will control things based on the currently selected deck.

To bind a control to a key, click the blue box over it and then press the key that you want to control it with. The Key Map box will then show options depending on the kind of control you clicked.

Single click button (e.g. a clip slot)	No controls - hitting the key works just like clicking the button.
Toggle button (e.g. a layer bypass toggle)	Select either toggle (control toggles each time you hit the key) or mouse control (control value is based on the mouse position when you hit the key) You can also select piano mode (control toggles when you release the key as well as when you press it down) ***Tip!*** *Apply an Invert RGB effect to the entire composition, and set the effect in bypass mode by pressing the 'B' button. Now enter Application Mapping, map the space bar to the bypass button and set it to piano mode. Now every time you hit and release the space bar, your output will flash inverted. Great for that sweeping climax!*
A numerical value control (e.g. an Opacity slider)	Select maximum and minimum values for the control using the sliders. Toggle mode will switch between the maximum and minimum values each time you press the key (or when you release it as well if you select the Piano option) Mouse mode will use the current mouse position to set the parameter value when you press the key.

Editing the Composition map is very similar - the only difference is the controls that are available for mapping.

You can hit escape to exit the Keyboard Mapping mode.

MIDI

MIDI mapping enables you to use a wide range of MIDI compatible hardware and software to control Resolume.

MIDI mapping works very similarly to Key mapping (above), so it's a good idea to read that part as well if you haven't already. It explains the difference between Application and Composition mapping, and the 'layer' and 'deck' focus.

> ***Tip!*** *Read the Key mapping paragraph. Even if you just want to map your shiny new midi controller, it has essential info for all mapping modes. You don't want to come across like a noob because you don't know how to map all the layers, now do you?*

MIDI does give you a few more options as many MIDI keyboards send velocity (how hard the key is hit) along with which key was hit. MIDI also supports sliders and dials (called Continuous Controllers) which give you more control over numerical values.

Before you can start mapping MIDI notes and controllers to Resolume features, you will need to activate the MIDI inputs that you want to use in the MIDI Preferences.

If you want to send back MIDI feedback to the device, you can now enable MIDI output for that device as well. To send MIDI feedback to a device, simple enable in it the preferences, and map your controller as your normally would. Feedback will be sent automatically, so changes in the interface will be reflected on your controller.

Mapping

As with key mapping, we can map midi notes and controllers at either Application level or Composition level.

To start MIDI mapping, select the Mapping > Edit Application Midi Map or the Mapping > Edit Composition Midi Map menu option.

You can now click the illuminated interface elements to select them and then hit the MIDI key or move the MIDI controller that you want to use with each feature.

If you use a controller, the Mapping options panel in the bottom left of the screen will contain options for Absolute and Relative modes (Relative modes are good for 'endless' controllers). You can also invert the controller value.

If you assign a MIDI note to a numerical parameter then you will see options for how this should be handled.

By default, the value will toggle between the maximum and minimum values set in the mapping options panel each time you hit the note.

If you select the Velocity option, the strength with which you hit the key or pad will be used to set the new value for the parameter.

If you select the Piano option, the parameter will jump to the maximum value when the key is pressed and then return to the minimum value as soon as it is released.

You can also set a specific range for incoming MIDI values. This way, you can for instance let a rotary which is turned all the way open, correspond to a parameter which only goes 3/4 open.

> ***Tip!*** *Most blend modes work best at 50% opacity. Turning the layer opacity all the way up will make all the layers underneath invisible. So when you slide a fader on your MIDI controller all the way up, you'll hide the other layers. By limiting the MIDI range of the fader to 0.5, you can fully flick open a fader, and still have all the layers visible.*

You can hit escape to exit the Midi Mapping mode.

Manual Mapping

While in one of the MIDI mapping modes, you can right-click an illuminated interface element and select Create Controller Shortcut to manually set the element to be controlled by a MIDI controller. You can select the controller to be used in the mapping options panel.

Midi Clock

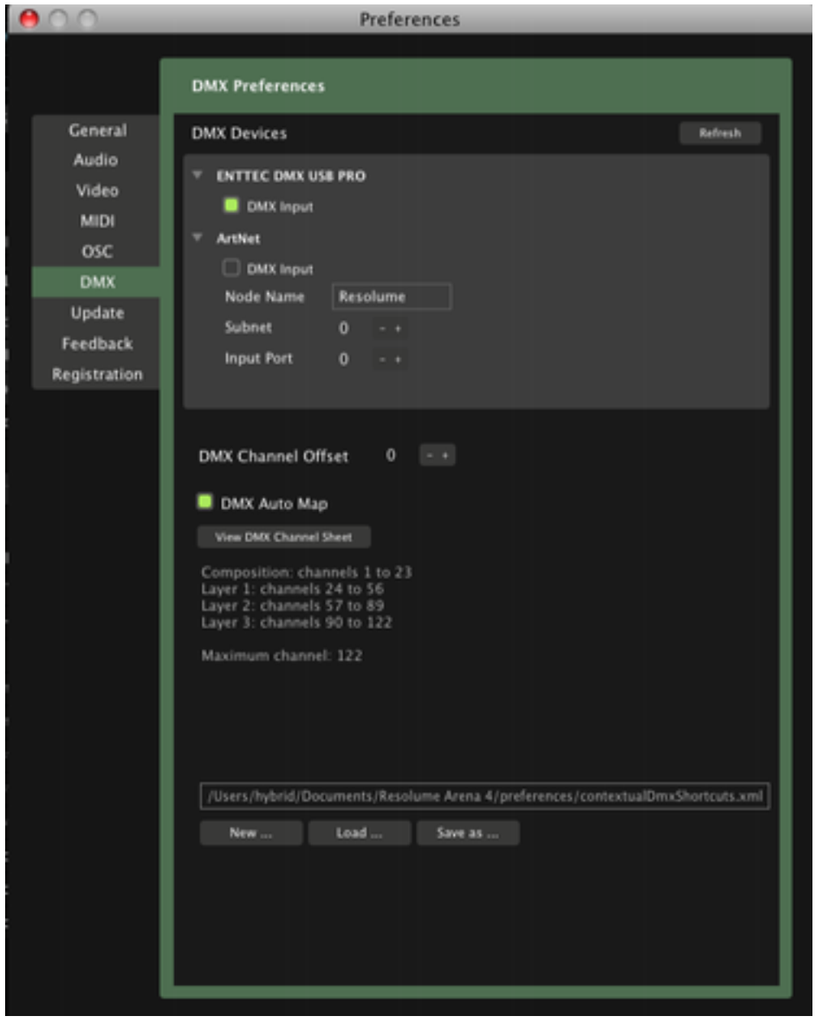
As well as using MIDI to control Resolume features directly, we can also use the MIDI clock signals sent out by software and equipment that support it to synchronise the tempo of Resolume to the external source. This means that you can then use all of the BPM features of Resolume safe in the knowledge that your video and audio will be in sync with whatever you are playing along with.

Resolume cannot send MIDI clock signals - it can only receive them.

To use MIDI clock, you must enable the MIDI device that will be receiving the clock signals in the MIDI tab of the Preferences window.

Then, you can use the Midi clock menu in the MIDI preferences to select how MIDI clock should be treated:

Disabled	MIDI clock will be ignored.
Start / Stop	MIDI clock will start and stop the Resolume BPM counter
Switch to manual on stop	MIDI clock will start the Resolume BPM counter but will not stop it. When the MIDI clock stop signal is received, Resolume will switch to manual BPM control.



DMX (Arena only!)

DMX is similar to MIDI, it's a signaling protocol that makes hardware talk to software and vice versa. Where MIDI is the standard protocol for electronic music instruments, DMX is the standard for lighting equipment like moving heads, stroboscopes, LED strips and our all-time favourite; the disco ball (actually, only very advanced disco-balls are DMX controllable).

Resolume is capable of receiving DMX signals so it can be controlled via a lighting desk. DMX input is done via an ENTTEC DMX USB PRO dongle or via a computer network (including WiFi) using ArtNet.

ENTTEC DMX USB Pro

The Enttec USB Pro dongle has a 5 pin female XLR DMX input and connects to your computer via USB. Before you can use it you need to install the drivers on your Mac or PC.

FTID Virtual Com Port drivers for OSX:
http://www.ftdichip.com/Drivers/VCP.htm

FTID Virtual Com Port drivers for Windows:
http://www.ftdichip.com/Drivers/VCP.htm (get the setup executable from the right side of the table).

After you have installed the drivers and connected all the cables you need to enable the DMX Input in the Resolume Preferences on the DMX tab and you're ready to rock.

ArtNet

If your computer is connected to a network you can receive DMX via ArtNet. This includes a wireless WiFi network. To use ArtNet you do not have to install any additional drivers or anything. All you have to do is configure your network properly, enable the DMX Input in Resolume and you're ready to receive DMX.

Network Settings

Before you can use ArtNet in Resolume you first need to make sure your network is configured correctly in Windows or Mac OX. You need to make sure the device (or software) sending the DMX to Resolume is in the same IP range for instance (10.0.0.X) and that the subnet mask is set to 255.0.0.0 or 255.255.255.0.

Node Name
The node name helps you identify each Resolume instance in the ArtNet network. By default this name is set to Resolume, you may change it to Donkey or Monkey.

Subnet
This is not the same as the Subnet Mask that you need to configure in the network settings of your PC or Mac! ArtNet can have up to 16 different sub networks and this number tells which sub network Resolume should listen to. Make sure the device or software that is sending ArtNet is on the same Subnet.

Input Port
ArtNet can have up to 16 ports and this number tells which port Resolume should listen to. Make sure the device or software that is sending ArtNet has its output port set to the same number as this input port.

DMX Auto Map

Resolume does not have an Application DMX Map like the Application MIDI map that you need to create yourself but it has a smart DMX Auto Map that is always the same for the whole application and automatically maps the layers and the most common controls. This way you can create profiles for your lighting desks and be assured that the DMX Map is always the same. If you would like to create your own DMX map for Resolume then you should disable this Auto Map and use the Composition DMX Map that is accessible through the Mapping menu.

All DMX channels are described in this separate PDF document:

Resolume 4 DMX Auto Map Sheet.pdf

Composition DMX Map

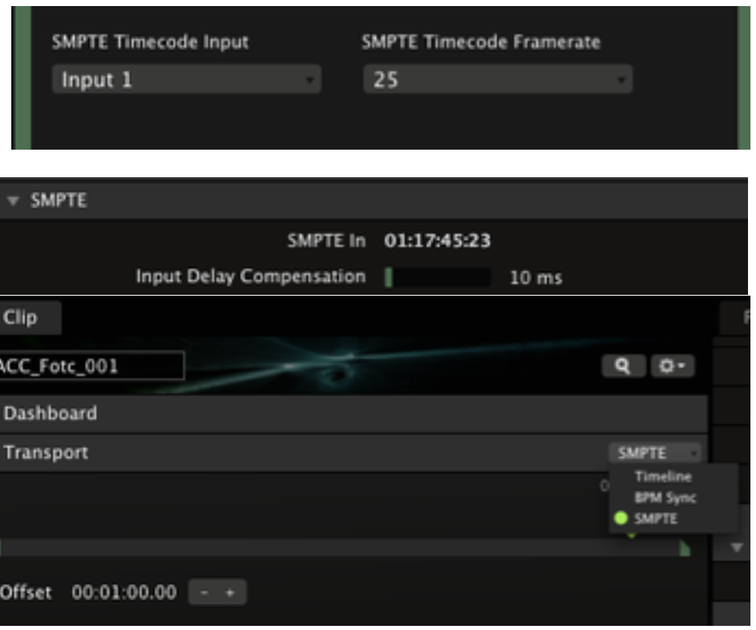
If the DMX Auto Map does not suit your needs then you can also disable it and create your own DMX Map. You create your own DMX Map via the Mapping menu and selecting "Edit Composition DMX Map". This works the same as the MIDI and Keyboard mapping. Select the interface element you want to map, then touch the DMX fader and Resolume will learn it. Alternatively you can double click the interface element, or right-click it to assign a DMX channel manually.

You can hit escape to exit the DMX Mapping mode.

DMX Channel Offset

With the DMX channel offset number you can shift all the mapped DMX channels up or down. This is useful if there are other DMX

devices preceding the channels that Resolume wants to use. This works for both the DMX Auto Map and the Composition DMX Map.

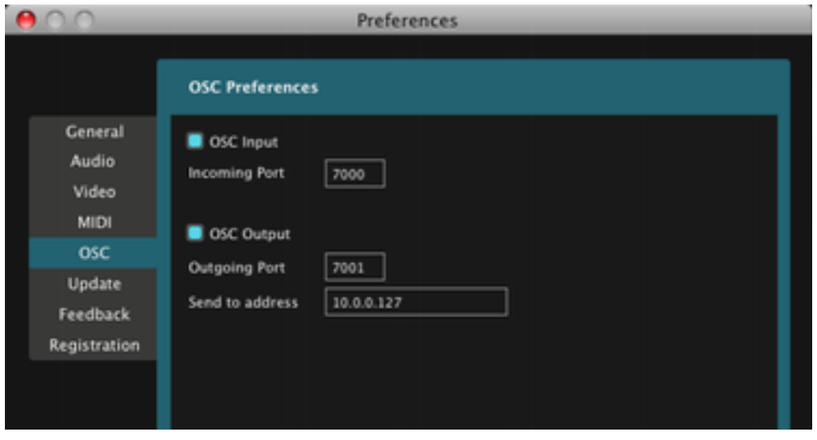


SMPTE input (Arena only!)

When your computer is connected to a valid SMPTE input, you can let clips run in time with it. Select the incoming SMPTE signal and required framerate via the Audio tab of the Preferences. The Composition tab should now show the current SMPTE timecode.

You can select your clips to run on SMPTE via the Timeline dropdown. A special icon will appear in the layer strip to indicate that this clip is now listening for timecode. You can select a starting timecode for a clip via the offset parameter. Note that the clip has to be active in a layer for it show in the output, the clip trigger itself is not sent via SMPTE.

Optionally you can add an Input Delay compensation in milliseconds to account for any lag that may occur in the signal flow.



Open Sound Control (OSC)

If you want the ultimate in external control of Resolume, the Open Sound Control (OSC) protocol is the answer.

OSC is becoming increasingly popular and is used by programs like MAX/MSP, VVVV and Reaktor (Native Instruments)

OSC can be seen as a successor of MIDI and offers a much higher accuracy and is more flexible because it can be sent over a network including wifi.

You can find out more about the OSC protocol and implementations at the OSC website.

Before you read any further you might want to get a bit more acquainted with the protocol at the OpenSoundControl website and WikiPedia.

In order to use OSC, you will need to enable OSC input and/or output in the OSC tab of the Preferences window and set the port on which Resolume should listen for or send OSC messages.

Overview

Resolume exposes a number of **objects** to OSC, each of which has several **properties**. These properties may be values or may be objects in their own right, with properties of their own.

The objects that Resolume exposes contain three kinds of property:

String	Used to pass in text, can be used to set the name of a clip or set a text parameter of an effect
Event	Used for functions such as Clear layer that are represented in the interface by a one-click button.
Toggle	Used for functions such as Bypass layer that are represented by a button that is clicked to toggle it from one value to another and back again.
Parameter	Used for functions such as Layer Opacity that are represented by a slider with options to animate and control it in various ways

Parameters

OSC properties that are of the Parameter type are themselves objects. This is so that we can use OSC to set the various animation options that we can set for parameters through the Resolume interface.

Each Parameter property includes the following properties:

values	1 floating point number (to set the current value) or 3 floating point values (to set the in point, current value and out point). 0.0 is the start of the clip. 1.0 is the end
textvalue	A String. Use this value when the parameter is represented by a text field.
direction	An integer. 0 for backwards, 1 for forwards, 2 for pause, 3 for random
speed	A floating point value between 0.0 and 1.0
playmode	An integer. 0 for play once, 1 for loop, 2 for bounce (ping pong)
playmodeaway	An integer. 0 for rewind, 1 for continue

Objects

All of Resolume's features are accessed through OSC with an address pattern that includes the names of objects.

For ease of use, the properties on each object are divided into common properties that sit directly under the object itself and two groups of properties - audio and video that collect together the properties related to the audio and video parts of the object.

Below you can read how each object can be addressed. **To quickly find the address for an object, simply enter the Application OSC Mapping mode, and click on the object.** You'll see the address appear in the bottom left, ready to copy paste.

Composition

There is only one composition at a time, so the address pattern for the Composition is easy:

/composition

We then need to add the name of the property that we want to access. For example, to access the bypassed property, we would use:

/composition/bypassed

to access the volume, we would use:

/composition/audio/volume/values

(Note that, since the volume property is a parameter, we access its values property to set the actual volume value)

Common properties (accessed through /composition)

Property	**Type**	**Value(s)**
bypassed	toggle	0 and 1
disconnectall	event	1

Audio properties (accessed through /composition/audio)

Property	**Type**	**Value(s)**	**Internal range**	**Units**
volume	parameter	0 to 1	-40 to +12	decibel
pan	parameter	0 to 1	-1 to 1	

Video properties (accessed through /composition/video)

Property	**Type**	**Value(s)**	**Internal range**	**Units**
fadeout	parameter	0 to 1	0 to 1	
scale	parameter	0 to 1	0 to 1000	percent
rotatex	parameter	0 to 1	-180 to 180	degrees
rotatey	parameter	0 to 1	-180 to 180	degrees
rotatez	parameter	0 to 1	-180 to 180	degrees

Layer

Since there may be more than one layer in a composition, we need to specify which layer we want to manipulate when we send an OSC message.

So, to set the volume of the first layer we would use:

/layer1/audio/volume/values

You can replace the "1" with other numbers to access the other layers in the composition

Common properties (accessed through layer[number]/)

Property	**Type**	**Value(s)**	**Internal range**
name	string		
select	event	1	
clear	event	1	
bypassed	toggle	0 and 1	
solo	toggle	0 and 1	
group	choice	0, 1, 2	none, A, B
movedown	event	1	
moveup	event	1	

Audio properties (accessed through layer[number]/audio)

Name	**Type**	**Value(s)**	**Internal range**
volume	parameter	0 to 1	0 to 1
pan	parameter	0 to 1	-1 to 1

Video properties (accessed through layer[number]/video)

Property	**Type**	**Value(s)**	**Internal range**	**Units**
opacity	parameter	0 to 1	0 to 1	
scale	parameter	0 to 1	0 to 1000	
positionx	parameter	0 to 1	-4096 to 4096	pixels
positiony	parameter	0 to 1	-4096 to 4096	pixels
rotatex	parameter	0 to 1	-180 to 180	degrees
rotatey	parameter	0 to 1	-180 to 180	degrees
rotatez	parameter	0 to 1	-180 to 180	degrees
anchorx	parameter	0 to 1	-2048 to 2048	pixels
anchory	parameter	0 to 1	-2048 to 2048	pixels
anchorz	parameter	0 to 1	-2048 to 2048	pixels

Track

A track is a single column of clips in the layer strips.

There is a single event property, connect, of each track object which will play all of the clips in the column, as if you had clicked the column name in the Resolume interface.

For example, to play all of the clips in the third column:

Address pattern	Type Tag String	Value(s)
/track3/connect	i	1

Clip

Clips are accessed through the layer that they are in. For example, to access the third clip in the second layer, you would use layer2/clip3

Like layers and the composition, clips have common properties, audio properties and video properties.

Common properties (accessed through layer[number]/clip[number]/)

Property	**Type**	**Value(s)**
name	string	
preview	event	1
connect	event	0 and 1

Audio properties (accessed through layer[number]/clip[number]/audio/)

Property	**Type**	**Value(s)**	**Internal range**	**Units**
position	parameter	0 to 1	length in msec	
volume	parameter	0 to 1	-40 to +12	decibel
pan	parameter	0 to 1	-1 to 1	

Video properties (accessed through layer[number]/clip[number]/video/)

Property	**Type**	**Value(s)**	**Internal range**	**Units**
position	parameter	0 to 1	length in msec	
opacity	parameter	0 to 1	0 to 1	
width	parameter	0 to 1	0 to 4096	pixels
height	parameter	0 to 1	0 to 4096	pixels
scale	parameter	0 to 1	0 to 1000	
positionx	parameter	0 to 1	-4096 to 4096	pixels
positiony	parameter	0 to 1	-4096 to 4096	pixels
rotatex	parameter	0 to 1	-180 to 180	degrees
rotatey	parameter	0 to 1	-180 to 180	degrees
rotatez	parameter	0 to 1	-180 to 180	degrees
anchorx	parameter	0 to 1	-2048 to 2048	pixels
anchory	parameter	0 to 1	-2048 to 2048	pixels
anchorz	parameter	0 to 1	-2048 to 2048	pixels

Effect

Effects are accessed through the object that they are attached to. Each effect sits in the audio or video property group depending on whether it is an audio or a video effect.

So to access the first video effect on the composition, you would use composition/video/effect1

To access the second audio effect on the first layer you would use layer1/audio/effect2

To access the first video effect on the first clip in the first layer, you would use layer1/clip1/video/effect1

Audio effects have the following properties:

Property	**Type**	**Value(s)**	
bypassed	toggle	0 and 1	
drywet	parameter	0 and 1	
param(1-n)	parameter	0 and 1	

Video effects have the following properties:

Property	**Type**	**Value(s)**
bypassed	toggle	0 and 1
opacity	parameter	0 and 1
param(1-n)	parameter	0 and 1

Output

To output OSC to other devices, you should first enable it in the OSC preferences. Specify the output port and IP address of where you want to send it.

Then enter Application or Composition OSC Mapping mode, and click a feature. In the bottom right you'll see the current input and output address for that feature. By default the output address will be the same as the input address (so when running Resolume on one computer, you can easily control Resolume running on a second computer as well, in a master/slave setup). You can change the output address to whatever is needed to communicate with your device. The input address can not be changed.

You can hit escape to exit the OSC Mapping mode.

Examples

To demonstrate how OSC can be used we have cooked up some Processing sketches for you. To try the sketches yourself you need to download Processing and install an additional library called oscP5. This library enables you to send OSC messages from Processing.

Download the examples here.

Flash

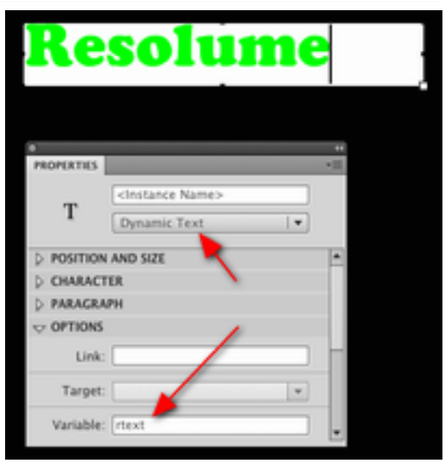
Playing Flash animations in Resolume is great! Because a Flash animation contains vector information, it scales to any resolution without loss of image quality, so it will look great at any resolution.

Flash content can be made interactive using ActionScript so you can script animations that display something completely different every time you play it or even have it display content from the Internet: Show headlines from RSS feeds. Display pictures of your cat from Flickr. Or show your grandma's latest Tweets. It's all possible with Flash in Resolume.

And it gets even better! You can control your Flash animations with custom sliders and buttons in the Resolume interface. You define these parameters in ActionScript - as many as you like. You can use Text input, Sliders, Buttons and check-boxes. You could, for instance, write a basic particle emitter in ActionScript and have a slider in Resolume adjust the speed of the particles, or the colour, the amount of particles etc. Endless possibilities! Let's learn how it's done.

Text Input

You can send text to a Flash animation with Resolume to dynamically display text on screen. This is useful to show, for instance, your VJ name or the DJ's name on screen. There are two ways you can do this in Flash: The Easy Way - this is fine if you just want to quickly make a simple Flash animation to display some text. Or The Hard Way - this method uses the Resolume Parameter Input system. It requires more advanced ActionScript-ing but offers greater flexibility.



Simple text input with rtext

Pros:
No scripting required to display text
Compatible with Resolume 2

Cons:
Does not work with ActionScript 3

Creating a Flash movie that displays text entered in Resolume 3 is quite simple.

1. Create a new Flash document (ActionScript 2).
2. Create a text field with the text tool. Make sure you type in some text otherwise Resolume 3 is unable to pick it up.
3. On the Properties panel make sure you set it to dynamic text.
4. In the Variable field you enter: "rtext" (without the quotes).
5. Click the Character Embedding button under CHARACTER and make sure Uppercase, Lowercase, Numerals, Punctuation and Basic Latin are selected.
6. Publish the movie and load the .swf file in Resolume
7. On the clip properties panel in Resolume you should see a text input field below the timeline.

Notes:
If your old Flash text movies for Resolume 2 are not working in Resolume 3 then make sure the Flash text field contains some characters. For Resolume 2 this was not required but for Resolume 3 it is.
Do not put the text field inside a movie clip. If you want to animate it you should convert it to a Graphic, NOT a Movie Clip.

Parameter Input

You can control a flash movie by defining some parameters in ActionScript and then these parameters will be visible on the clip properties panel in the Resolume interface. This gives you unlimited live control on your Flash content.

FloatParameter

Returns a float value (0.0 - 1.0) to Flash.

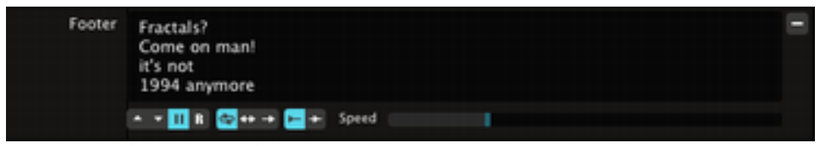
Shown as a basic slider in the Resolume interface that can be animated like any other parameter.

You set the name and default value when you define the parameter with ActionScript.

AS3 Example:

```
var hMove:FloatParameter = resolume.addFloatParameter("H Move", 0.0);
```

StringParameter



Returns a string value to Flash.

Shown as a single line or multi-line text field in the Resolume Interface. Multi-line text can be animated to send one line at a time to Flash.

You set the name and default value when you define the parameter with ActionScript.

AS3 Example:

```
var rText:StringParameter = resolume.addStringParameter("Text", "Michael Jackson");
```

BooleanParameter

Returns a Boolean value (0 or 1) to Flash.

Shown as a check-box in the Resolume Interface.

You set the name and default value when you define the parameter with ActionScript.

AS3 Example:

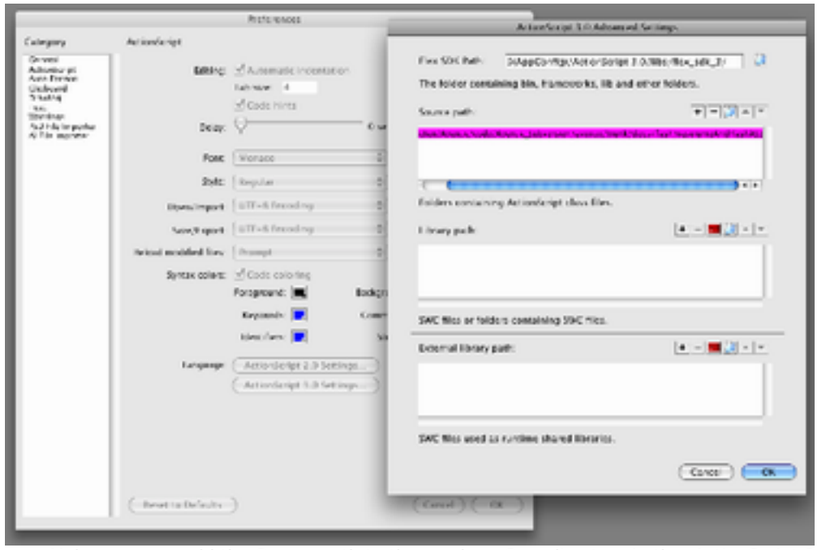
```
var showBG:BooleanParameter = resolume.addBooleanParameter("Background", true);
```

EventParameter

Returns a Boolean value (0 or 1) to Flash. 1 when the button is pressed, 0 when it's released.
Shown as a button in the Resolume Interface.
You set the name when you define the parameter with ActionScript.

AS3 Example:

```
var showSurprise:EventParameter = resolume.addEventParameter("Surprise!");
```



Make sure you add the Source path to the resolumeCom directory in the ActionScript 3 Preferences.

ActionScript 3 Example

Below is a very basic AS3 script with comments that will show one parameter in Resolume. It's the most basic example that shows the bare minimum required to get communication from Resolume to Flash working.

The Resolume installer includes example movies that will get you started:
MAC: /Applications/Resolume Avenue 4.0.0/media/flash/
PC: /Program Files/Resolume Avenue 4.0.0/media/flash/

```
/**
*    Very basic Resolume Flash communication AS3 DocumentClass example
**/

package
{
      import flash.display.MovieClip;

    //import the resolume communication classes
      import resolumeCom.*;
      import resolumeCom.parameters.*;
      import resolumeCom.events.*;

      public class Resolume3Example1CS4AS3 extends MovieClip
      {
            //create the resolume object that will do all the hard work for you
          var resolume:Resolume = new Resolume();

            //create as many different parameters as you like
          var scaleX:FloatParameter = resolume.addFloatParameter("Scale X", 0.5);

            public function Resolume3Example1CS4AS3():void
            {
                  //set callback, this will notify us when a parameter has changed
                  resolume.addParameterListener(parameterChanged);
            }

            //this will be called every time you change a parameter in Resolume
            public function parameterChanged(event:ChangeEvent): void
            {
                  //check to see what parameter was changed
                  if (event.object == this.scaleX)
                  {
                //now it gets interesting
                        //do whatever you like with the value of the parameter
                        this.logo.scaleX = this.paramScaleX.getValue() * 2.0;
                  }
            }
      }
}
```

ActionScript 2 Example

Below is a very basic AS2 script with comments that will show one parameter in Resolume. It's the most basic example that shows the bare minimum required to get communication from Resolume to Flash working.

The Resolume installer includes example movies that will get you started:
MAC: /Applications/Resolume Avenue 4.0.0/media/flash/
PC: /Program Files/Resolume Avenue 4.0.0/media/flash/

```
/**
*    Very basic Resolume Flash communication AS2 example
**/

//import the resolume communication classes
import resolumeCom.*;
import resolumeCom.parameters.*;

if (this.init == undefined) {

    //create the resolume object that will do all the hard work for you
      var resolume:Resolume = new Resolume();

    //create as many different parameters as you like
      var scaleX:FloatParameter = resolume.addFloatParameter("Scale X", 0.5);

    //set callback, this will notify us when a parameter has changed
      resolume.addParameterListener(this);

    //this will be called every time you change a parameter in Resolume
      this.parameterChanged = function(object:Object): Void
      {
        //check to see what parameter was changed
            if (object == scaleX)
          {
            //now it gets interesting
                //do whatever you like with the value of the parameter
                  this.logo._xscale = this.scaleX.getValue() * 200;
            }
      }

      this.init = true;
}
```

Resolume 2 and Resolume 3 Flash Differences

The only common ground that Resolume 2 and Resolume 3 share is the rtext parameter for basic text input. And for this to work in Resolume 3 you need to make sure that the text field in Flash contains some text otherwise it will not recognise it.

Resolume 3 does not support the RParameter or the RAudio variable input that Resolume 2 had because this only works in ActionScript 2. The parameter input system described above for Resolume 3 is compatible with ActionScript 3 and an ActionScript 2 version is also available if you prefer to use that.

Resolume 2
ActionScript 2 only
Fixed number of parameters
Only slider and text input
rtext variable for text input

Resolume 3
ActionScript 2 and 3 compatible
Unlimited number of parameters with custom names
Slider, Button, Text and Check-box inputs
rtext variable for basic text input

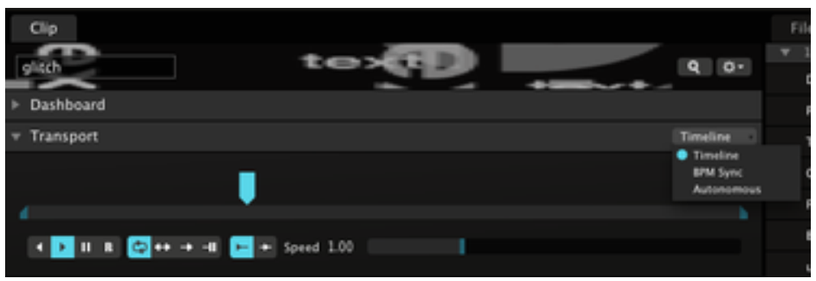
Flash Clip Settings

On a Flash clip you get some extra clip settings that are not available for normal video files, quite similar to Sources.

Render Width & Height
Render Width and Height determine the size at which the vectors in the Flash animation will be rendered to pixels (rasterized).

Quality
Determines the quality of the vector rasterizing. Can be set to low, mid or high. The higher the quality, the slower the rasterizing.

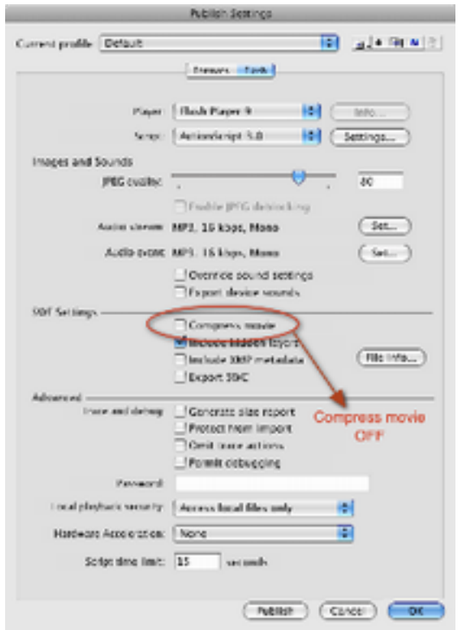
Duration
Determines how long the Flash clip should play when used with the Auto Pilot.



Timeline, BPM Sync and Autonomous

Besides the usual Timeline and BPM Sync modes, a Flash clip can play Autonomous. This means that Flash itself will determine what frames to play and in what order. In this mode you will not see a play-head for the clip in Resolume.

If you are writing ActionScripts to jump to different positions in the animation then you should have it set to Autonomous in Resolume or it will not work. In Timeline and BPM Sync mode Resolume will determine what frame to play and it will ignore any ActionScripts that position the clip. When a Flash clip is only 3 frames or shorter then Resolume will play the clip in Autonomous mode by default.



Publish Settings

Make sure you turn off "Compress movie" in the Publish Settings. Otherwise Resolume can not read the width, height and framerate of the movie and it will default to 640x480 @25fps.

Quartz Composer

Quartz Composer is a program for Mac OS X that allows you to make realtime visuals on the GPU of your Mac. The cool thing about is that you don't have to learn all sorts of crazy code languages, instead you can just use the simple and easily understandable graphical interface. For more information on Quartz Composer, you can check the info on Wikipedia.

In Resolume Avenue on OS X, Quartz Composer patches playback is fully supported. This means that you can play and mix your compositions in Resolume, having the same control for layering, blend modes and added effects as you would with a normal clip. You can load the composition from the file browser, or drag and drop them from the mighty Finder.

Similar to the way Flash clips are supported, you have full access to published parameters in Resolume as well. This allows you to have direct control over the parameters you want to have access to, making each performance you do with them new and different.

In order for any published inputs to show up in Resolume, you'll have to publish the parameter at the top level, and add an input splitter. See the examples included in your Resolume Avenue Application folder: /Applications/Resolume Avenue 4.0.0/media/quartz composer/

Resolume supports the following input types :

- NUMBER. Shows up as a slider, with all the animation options for BPM syncing, timeline, audio FFT, etc that all sliders in Avenue have. Don't forget to set a min and max value using the Patch Inspector.

- BOOLEAN. Shows up as a checkbox.

- INDEX. Shows up as drop down menu.

- STRING. Shows up as a text input field, allowing you to change the text in realtime.

For tutorials on making visuals with Quartz Composer:
http://www.hybridvisuals.nl/category/tutorials/

Recording

The record function records the composition output to disk and immediately imports this movie into Resolume as a new clip when you stop recording. All this is done without interrupting the video output.

Before you start recording, you need to go to the General tab of the Preferences window and select the folder that you would like recorded files to be stored in and whether you would like to record video, audio or both.

By default the files are stored in this directory:

Mac: ~/Documents/Resolume Avenue 4/recorded/
PC: ~/My Documents/Resolume Avenue 4/recorded/

To start recording press the 'Record' button on the toolbar. To stop recording press it again. That was pretty simple huh? The movie you just recorded is saved to disk and inserted in the first empty clip on the bottom layer so you can directly use it again in your mix.

Note that recording does not interrupt your mixing or the video output so go ahead and go crazy on the effects and layers while you are recording.

The recorded video files are Quicktime with the Photo Jpeg codec at 100% quality. The audio files are in uncompressed WAV format.

Note that the record function is not intended as a full fledged video production tool. Instead it is meant to quickly record and then play back a content that has a few effects or modulations applied, so that for instance you do not have to continuously keep moving a fader to achieve a certain look.

If recording suddenly stops, this is because you have run out of memory. When recording, Resolume tries to write the rendered frame immediately. This is done at a very low priority, because you don't want this to interfere with the actual output. So when it's too busy (lots of effects/clips/pixels), it stores the rendered frame in memory, and tries to write it later. At a certain point, when the memory is 90% full, it will stop recording and write the remaining frames in memory.

If you want to record longer segments, you will either have to write to a faster drive, get more memory or lower your resolution.

Appendix 1: Optimising Your System for Resolume

While Resolume is designed to get you up and running quickly, if you are serious about live audio visual performance then you should really take some steps to get the most out of your computer and your content.

Installation

The nature of audio-visual performance is that it needs as much processing power as possible, especially if you want to mix lots of layers, apply loads of audio and video effects and work on a high resolution.

While software like internet firewalls, virus checkers, desktop utilities and so on are really useful for day to day use, they do consume computer resources and you do not need them running during a performance.

For maximum stability and performance, the best thing to do is to have more than one installation of Windows or OSX on your computer, with one set up with the bare minimum of software running. You can then boot into your stripped down, high performance OS when you want to perform with Resolume.

If you don't want to create a separate installation for performance, the next best thing is to set up a user account that is set up to run less software at startup. This is not as good as a completely separate installation, but it will help.

To manage users in Windows, open Control Panel from the Start menu, and then double click User Accounts. Make sure that the User account you create also has Administrator rights!

To manage users in Mac OSX you open the Accounts settings in the System Preferences.

Codecs

Do not install codec packs like the K-Lite Codec Pack. They install a lot of codecs and utilities that can cause more harm than good. Only install the codecs that you actually use. See the next section for advice on what codec to use.

Preparing Media

Choosing how to encode your content is critical in audio-visual performance. The codec (Compressor / Decompressor) that you choose will affect how much processor time is used to decompress each video frame. This in turn will determine how many layers of smoothly playing video you can use and how many audio effects you can apply.

For the very best performance in Resolume you should use the Resolume DXV codec. It is by far the fastest codec because Resolume can decompress the video frames on the GPU instead of the CPU.

We highly recommend rendering the audio and video in separate files and joining them together in a clip in Avenue instead of rendering a video file that also contains audio.

Keeping the audio and video in separate files is better for your work-flow. If you want to change the audio of a clip and not the video you only have to re-save the audio file instead of rendering the entire video file with the audio again.

The audio and video is often created using different software, sometimes even by different people. By combining the audio and video files in Avenue you can create the music in your favourite audio software and create the video in your video app of choice.

There is another problem with including audio in video files - it limits the BPMs that can be used. When rendering a video file with audio, the length of the file is quantized to the number of frames of the video. This makes it impossible for audio to loop seamlessly at certain tempos.

For example, using PAL video format at 25 frames per second, it is not possible to create a one bar AV loop at 90BPM that will loop perfectly. The closest we can get is a 66 frame long clip, but that will actually be at around 90.9 BPM

Avenue transposes the video to the length of the audio in a clip to create a perfectly looping audio visual clip.

Video

On both Mac and Windows we recommend Quicktime files using the DXV Codec. For a detailed guide on how to export with most major video applications, check here.

Resolution

You should be able to use video files that are minimum 640x480 pixels in size using any of these codecs. Using 320x240 is so year 2000. Use square pixels, do not interlace and render every frame as a key frame.

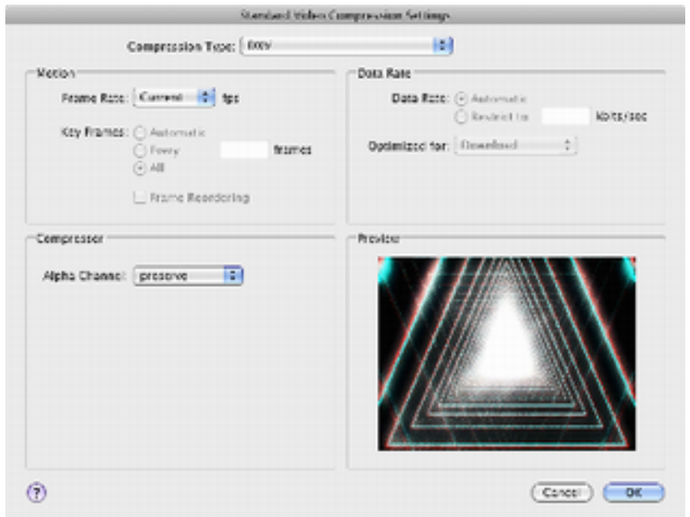
PAL resolution with square pixels is 768x576. NTSC resolution with square pixels is 720x540.

Audio

Don't compress audio. Period. Don't do it. Save it to an uncompressed (linear PCM) .wav file. Avenue needs very fast access to the audio data, leaving it uncompressed enables this. Uncompressed audio files are relatively small compared to uncompressed video files so reducing the file size with compression is not necessary.

Sample rate & bit depth

In most cases using a sample rate of 44,100 kHz and a bit depth of 16 bit is fine.



DXV Codec

The Resolume DXV Video Codec is a hardware (GPU) accelerated codec. The decompression of the video frames is done directly on the video card. Because of the enormous processing power available on today's video cards you can work on much higher resolutions and frame-rates with the DXV Codec with much lower CPU and RAM usage.

The DXV Codec is a cross-platform Quicktime codec so you can use from any video application that supports rendering to the Quicktime (.mov) file format on the Mac and PC. Applications that are supported: Quicktime Player Pro, Final Cut Pro 7, Adobe Premiere, After Effects, Sony Vegas, Maya, Etc.

Rendering movies with the DXV Codec is extremely easy because there is nothing to configure. No quality settings, no data rate, no key-frames, nothing. It is pre-configured to be as fast as possible. All you have to do is select the DXV Codec and start rendering.

Playback of video files with the DXV codec is only hardware accelerated when played in Avenue. When a DXV video is played with any other software (like the Quicktime player) it is not rendered by the videocard so there is no performance gain in other software but Avenue.

Alpha Channel

Starting with version 2.0 the DXV codec can also store the alpha channel. On the codec compression settings window set the Alpha Channel to "preserve" and you're ready to start rendering. DXV version 2.0 only works with Resolume version 3.2 and higher.

Appendix 2: Tips for Resolume 2.X Users

Resolume 4 offers many of the same (and more!) features that Resolume 2 provides. However, it does work a bit differently, so users of older versions of Resolume might be wondering how to get the new version to do the things they are used to.

Trigger clips on selected layer

To have clips play on the currently selected layer, you need to select the Clip Target setting to Selected Layer. You can do this either for the whole composition (Composition > Clip Target) or for an individual clip (Clip > Clip Target)

Global Effects

Global effects are now called Composition Effects. To add one, you need to drag the effect from the effects browser onto the Composition Effects or Composition Properties tab. There is no longer a limit to how many such effects you can use.

Layer Transport Controls

You can use the View > Show Layer Transport Controls menu option to display transport controls on each layer, similar to how they were displayed in older versions of Resolume.

Video Only

If you are not interested in the audio side of things, you can simplify the interface somewhat by unselecting the View > Show Audio Controls menu option. All audio-related controls will now be hidden, giving you more space for your video stuff.

Appendix 3: The Included Effects

Audio Effects

Bitcrusher

If you want lo-fi then this is the effect for you. It reduces the bit rate of the audio as it passes through the effect, giving a retro computer music sound.

Distortion

This is the classic guitar-pedal effect, where the audio is overdriven and clipped for grungy, industrial sounds.

EQ-3

A basic low/mid/high frequency EQ that you can use to tweak sounds

Flanger

The audio signal is mixed with an out of phase copy of itself, giving all kinds of interesting 'squidgy' audio effects depending on the settings that are used.

High-Pass

Lower frequencies are filtered out of the audio. The resonance setting enables some more depth to the sound.

Low-Pass

Higher frequencies are filtered out of the audio. The resonance setting enables some more depth to the sound.

Video Effects

AddSubtract

Simply add to or subtract from the red, green or blue value of each pixel in the video.

Auto Mask

Create an alpha channel based on the luminance of each pixel in the video. The higher the brightness of the pixel, the more opaque it will be in the alpha channel.

Bendoscope

A curvy kaleidoscope-style effect. You can set the number of divisions to use.

Blow

Pixels at the edge of the video are replaced with coloured strips. You can set how much of the video should be replaced.

Blur

A simple blur effect. Using a high quality setting may slow down your output, depending on the speed of your graphics card.

Bright Contrast

Basic brightness and contrast controls. I like to use one of these on the composition all the time, so I can tweak the overall look of the video whenever I need to.

ChromaKey

Allows you to select (key) a color range from a clip and make it transparent. Dial in on the correct hue using the hue slider, then use the additional controls to refine your matte.

Circles

The video is reinterpreted as a set of concentric coloured circles. This effect works well when the size parameter is high and the opacity is mixed down to overlay the effect over the original video.

Colorize

Choose a hue and the video is coloured into that hue, using its original brightness.

Colour pass

Keep particular hues coloured while making the rest of the image greyscale. Use the Hue1 parameter to select the hue to be kept. The Hue2 parameter selects how wide a range of hues should be kept.

Cube Tiles

Places a controllable number of copies of the clip on the sides of a 3d cube. The cube has controls for zoom and X,Y and Z axis rotation,

Delay RGB

Apply a delay on the Red, Green and Blue channels individually.

Displace

Pixels in the video are moved horizontally and vertically based on their luminance. The Horizontal and Vertical factor parameters can be used to set the scale of the movement.

Distortion

Great for a broken TV effect. The Distort parameter sets how much of the image is distorted while the Radius parameter sets how far the distorted areas are moved.

Drop Shadow

Apply a drop shadow on clips with transparency.

Edge Detection

Traces and optionally colorizes the outlines of the shapes in the clip.

Exposure

A useful alternative to using brightness/contrast to brighten up an image. This effect will brighten the brighter parts of the image while keeping the black parts black.

Fish Eye

Creates a nineties skateboard film look.

Flip

Simple options to flip the video horizontally and vertically. Try mixing the flipped version with the original using the Opacity parameter.

Fragment

Display the video multiple times, scaled and distributed around a circle in 3D space. This works well when the rotation parameter is animated.

Freeze

Freeze the whole video frame by clicking the Frozen Solid option or freeze parts of it by playing with the X and Y parameters.

Goo

An ever shifting liquid effect. Very high values for the parameters destroy the liquid illusion and create glitchy look, which is fun too!

Heat

Give your video the look of a heat-sensitive camera.

Hue Rotate

Recolour the video by rotating the hue of each pixel.

Invert RGB

Separate options to mix the original Red, Green and Blue channels of the video with inverted versions of themselves.

Iterate

This one is a bit of a beast. It draws the video onto multiple planes in 3D space, each time adjusting the position, rotation, scale and opacity of the next plane based on the parameter settings. Try some of the presets to see some of the things it can do.

Kaleidoscope

The classic optical effect.

Keystone

Gives control over the location of the four corner points of your clip. Useful for projection mapping projects.

Keystone Crop

Similar to Keystone, but instead of warping the video, it simply crops off the parts of the clip that fall outside of the Keystone area.

Keystone Mask

The opposite of Keystone Crop, this will make the inside of the Keystone area transparent.

Levels

A really useful effect for tweaking the overall look of video, especially content that hasn't been properly preprocessed to get the contrast right.

LoRez

A combination of a pixelate effect to display the video in blocks and a bit reduction on the colour. Together, they give a nice retro computer look.

Luma Waves

Display the video as a series of strips in 3D space, extruded based on the brightness of the input video

Mirror

Set vertical and horizontal mirrors on the video at any position you like. You can use the in/out parameter to slide the mirrors from offscreen to your preset positions.

Particles

Generate a stream of particles with colour based on the input video. The various parameters control how the particles behave and how you view them.

Pixel High Pass

Separate high pass filters for Red, Green and Blue channels of the video.

Pixels In Space

Similar to LumaWaves but this effect displays a matrix of cubes in 3D, using the brightness of the input video to determine how far above a plane they rise.

Point Grid

Display the video as a grid of coloured circles in 3D space.

Posterize

Reduce the number of colours in the video. The higher the parameter setting, the fewer colours will be displayed.

Radial Blur

Displays the video on a series of planes, zoomed and rotated to give the appearance the video being blurred out from the centre of the screen.

Recolour

Change the colours of the video to one of a series of built in palettes. Use the Floor and Ceiling parameters to select a particular part of a palette to use. Use the cycle parameters to animate the colours.

Ripples

Another liquid effect, this time showing regular waves moving across the video. To get the waves to move, you will need to animate the Phase parameter. Extreme parameter settings give distinctly non-liquid like results.

Saturation

Desaturate the colours of the video to greyscale.

Shift Glitch

Glitches up the video by randomly shifting parts of it left and right, with control for size and frequency of the shifting.

Shift RGB

Very cool effect that allows you to shift the Red, Green and Blue colour channels of the video. The Mode parameter allows you to switch between horizontal, vertical or rotating shifts.

Slide

Push the video horizontally or vertically with the part that leaves the screen looping back onto the opposite edge.

Snow

Turns the video in to falling snow flakes, ideal for winter time parties. The Textured parameter allows you to texture the snowflakes with the colours of the original video.

Static

Simulates a TV tuned to a dead channel.

Stingy Sphere

Map the video onto a sphere in 3D space.

Stop motion

Stops and holds the video on a single frame. The Frequency controls how many times a new frame should be picked. The Frame Count controls how many frames should play before the video is held again.

Stripper

A whole set of strip-based effects based on those in the SyzygyStripShow Freeframe 1 plugin pack. Use the Mode parameter to select the different effects. The Speed parameter to get the strips moving.

Strobe

Alternates between the video and a blank frame of controllable colour. Beware of any epileptics in your audience.

Suckr

Suck the video in toward the middle of the screen.

Threshold

Display the video as two colours. Each pixel takes one of the colours depending on whether its brightness is greater than or less than the threshold.

Tile

Display the video multiple times in a grid with plenty of options for skew and rotation.

Trails

Create ghost trails behind movement in the video. You will notice that there are two opacity parameters in this effect - one is the standard opacity and the other sets how the current frame of the video is mixed with older frames that are used to make the trails.

Tunnel

If you like cheesy trance tunnels then this is the plugin for you. Animate the position parameter or set the speed parameter to get it moving.

Twisted

Twist the pixels of the video around the centre of the screen in a spiral effect.

Videowall

Create the effect of the video being displayed on the screens of a an array of video monitors.

Vignette

Fade the edges of the video out smoothly to black. This works well before the Videowall effect to make the illusion of video monitors more realistic.

Wave Warp

A wave distortion effect, which bends and twists the video in all kinds of ways it shouldn't bend and twist.

Appendix 4: Directory list

Resolume Avenue creates and stores data in several locations on your computer. Here is a list.

Application folder.

Contains the application and licensing information. Has subfolders for Default (default key and midi maps, default demo composition, default effect presets), Docs (language files for GUI and help), Media (demo media files), and Plugins (included audio and visual plugins).

MAC: Macintosh HD/Applications/Resolume Avenue 4.x/
XP: C:\Program Files\Resolume Avenue 4.x\
Win7: C:\Program Files (x86)\Resolume Avenue 4.x\

So the default directory for effect plugins would be the above path followed by:
FFGL (video):
.../plugins/vfx/

VST (audio):
.../plugins/afx/

Saved compostions, preferences, user effect presets, screen setup presets and recordings.

Can each be found in their own subfolder at
MAC: /Users/[username]/Documents/Resolume Avenue 4/
XP: C:\Documents and Settings\[username]\My Documents\Resolume Avenue 4\
Win7: C:\Users\[username]\My Documents\Resolume Avenue 4\

Log files.

Can be found at:
MAC: /Users/[username]/Library/Logs/Resolume Avenue 4 log.txt
PC: C:/Documents and Settings/[username]/Application Data/Resolume/Resolume Avenue 4 log.txt (folder may be hidden)
Win7: C:\Users\[username]\AppData\Roaming\Resolume

Alternatively, you can use the Feedback option found in the Preferences, with the logfile checkbox ticked, to send it to us.

Thumbnail previews.

Mac: /Users/[username]/Library/Application Support/Resolume Avenue 4/
PC: C:\Documents and Settings\[username]\Application Data\Resolume Avenue 4\
Win7: C:\Users\[username]\AppData\Roaming\Resolume Avenue 4\

Registration files.

Mac: Macintosh HD/Library/Application Support/Resolume Avenue 4/
PC: C:\Documents and Settings\All Users\Application Data\Resolume Avenue 4\
Win7: C:\Users\All Users\Resolume Avenue 4\

Appendix 5: Default Application Key Mapping

Layer focus:

F1	Select Layer 1
F2	Select Layer 2
F3	Select Layer 3
1	Trigger Clip 1
2	Trigger Clip 2
3	Trigger Clip 3
4	Trigger Clip 4
5	Trigger Clip 5
6	Trigger Clip 6
7	Trigger Clip 7
8	Trigger Clip 8
9	Trigger Clip 9
0	Trigger Clip 10
Shift + !	Trigger Column 1
Shift + @	Trigger Column 2
Shift + #	Trigger Column 3
Shift + $	Trigger Column 4
Shift + %	Trigger Column 5
Shift + ^	Trigger Column 6
Shift + &	Trigger Column 7
Shift + *	Trigger Column 8
Shift + (	Trigger Column 9
Shift +)	Trigger Column 10
i	Set In-point for currently selected clip
o	Set Out-point for currently selected clip
,	Play current clip backwards
.	Play current clip forwards
/	Pause current clip
z	Turn off Beatloopr for current clip
x	Set Beatloopr to 4 beats for current clip
c	Set Beatloopr to 2 beats for current clip
v	Set Beatloopr to 1 beats for current clip
b	Set Beatloopr to 1/2 beats for current clip
n	Set Beatloopr to 1/4 beats for current clip
Shift + Q	Set Cue Point 1 for current clip
Shift + W	Set Cue Point 2 for current clip

Shift + E	Set Cue Point 3 for current clip
Shift + R	Set Cue Point 4 for current clip
Shift + T	Set Cue Point 5 for current clip
Shift + Y	Set Cue Point 6 for current clip
q	Jump to Cue Point 1 of current clip
w	Jump to Cue Point 2 of current clip
e	Jump to Cue Point 3 of current clip
r	Jump to Cue Point 4 of current clip
t	Jump to Cue Point 5 of current clip
y	Jump to Cue Point 6 of current clip
Shift + F	Maximize current clip
s	Hold and move mouse to scale current clip up and down
p	Hold and move mouse to move current clip