



What's new in CatalystPM v4.1 22May 07

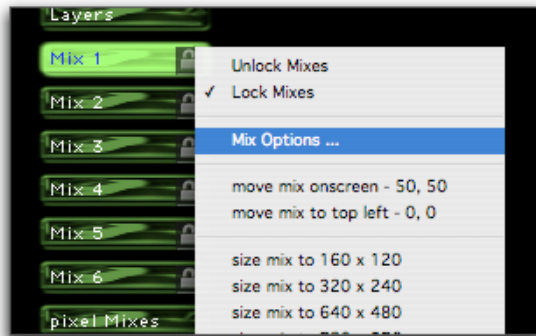
This document refers to version 4.1m119 23rd March 2007. document rev24.
Some features were in 4.06

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More sub-mix flexibility:

Mix options can be opened from layer select



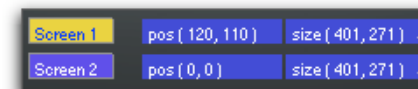
Or from sub-mix



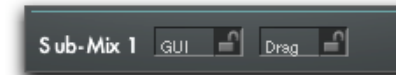
New Mix gui allows you to change the parameters of all mixes from a single place.



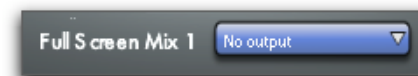
Works for both screens.



You can now lock the position of the sub-mix window so it cant be dragged

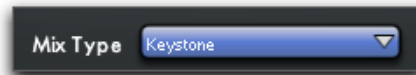


And you can turn on and off the full screen output.
When using sub-mixes – full screen should be turned off.



New mix options for keystoneing the mix.

When using the keystone mix options-

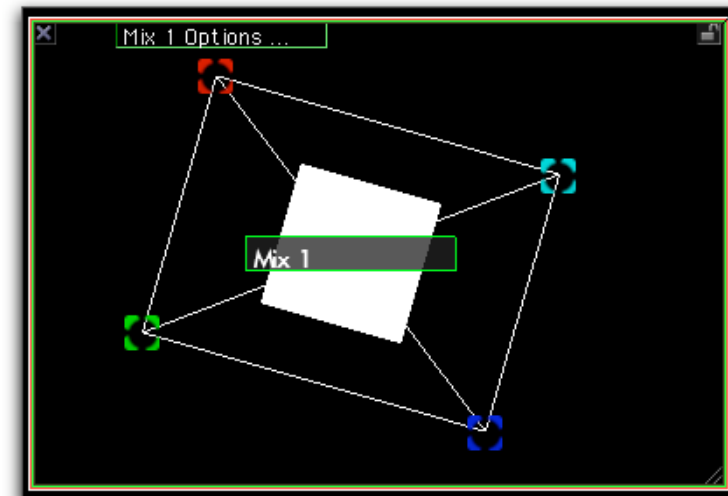


You can now setup the overall geometry of the shape of the keystone you need.



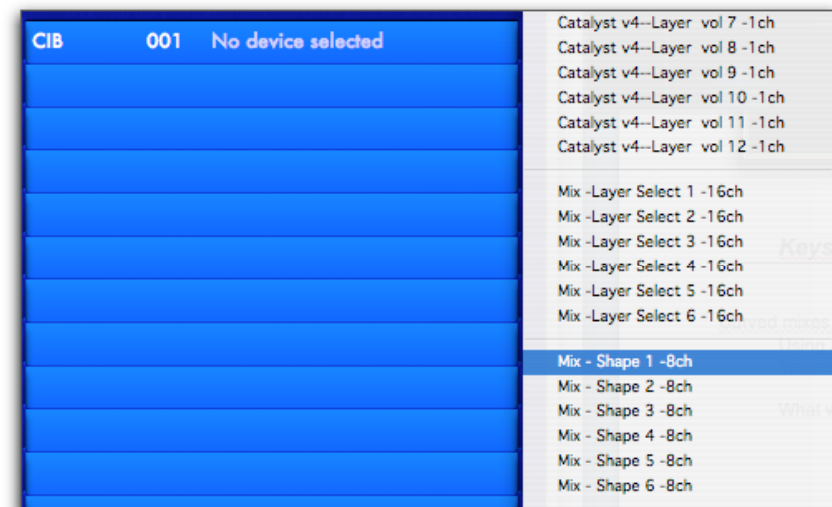
There are a lot of different needs for keystoneing – so this is work in progress- I haven't finished this yet.

You can scale or rotate or change the aspect ratio of the keystoneed mix. Then afterwards change the keystone points themselves.



Keystoneing mix with dmx.

The keystone points are controllable from dmx

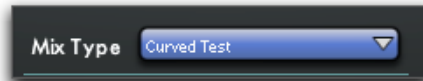


The shape uses the same coordinates and scaling as the keystone points in a layer.

It is my intention to give further access to other parameters via dmx in the future.
It is also my intention to make further changes to this functionality – possibly changing the way the scaling works.
Please be aware that this might change programming in shows.

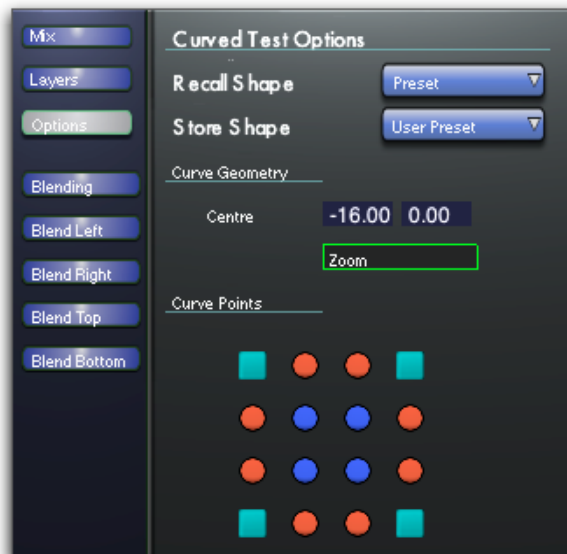
Curved mixes with editable points using surfaces.

New mixed type for curved surfaces.

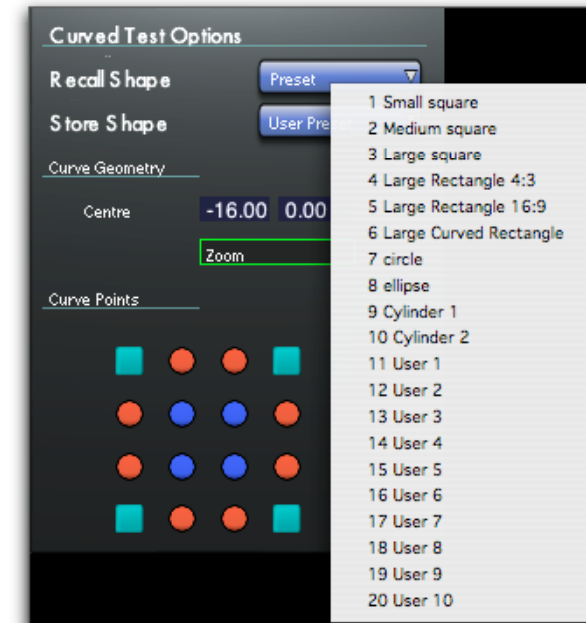


Uses a 4x4 grid of points using a Bezier surface.

You can recall preset shapes, and save user shapes.

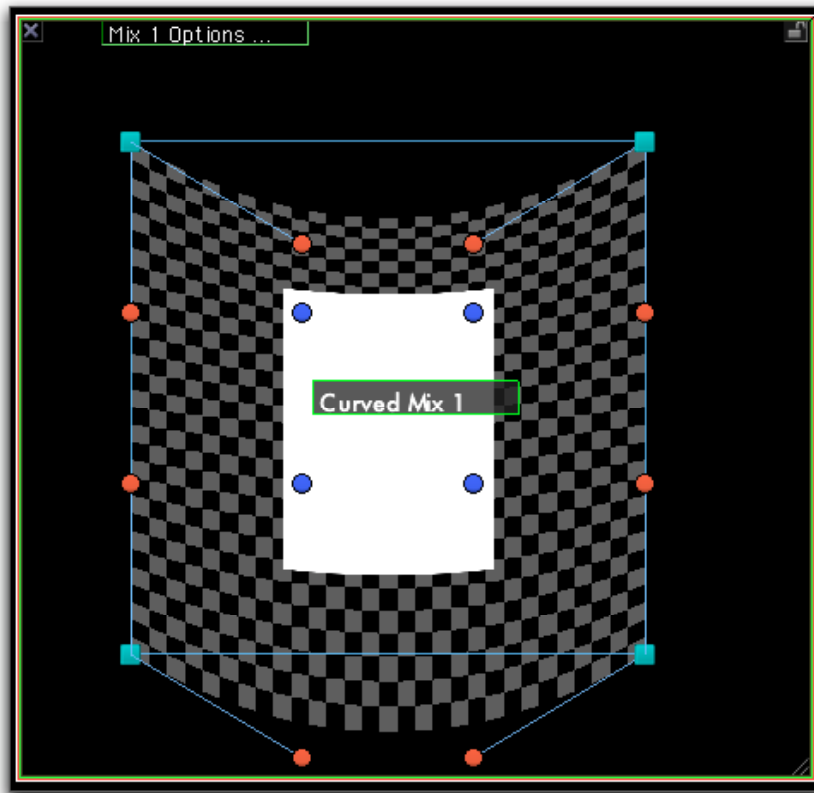


There are presets for curves and rectangles.



Using 3d models to determine the shape of the mix.

For example 'Cylinder 2'

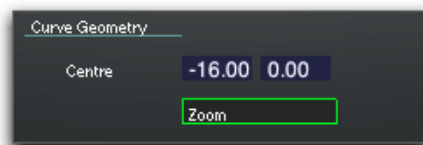


With Bezier surfaces – you some points move the position, others create the curvature or bias.

This is similar to the way that drawing programs work.
But a little simpler. I hope.

You can create quite a few different curved shapes using this method-
But not all surfaces will precisely fit into this.

You can zoom and recenter the points



Trails now work on each keystoneed mix.

The trials parameter in a layer now works in the mixes.

What was new in 4.06 - Global keystoneing on mixes

Output sub-mixes have their own keystone.
Sub mixes can be made full screen.

Keystone can be turned on or off.

Visual fx are preserved - allowing them to be keystoneed.
Sub-mixes can work up to 1280x1024.

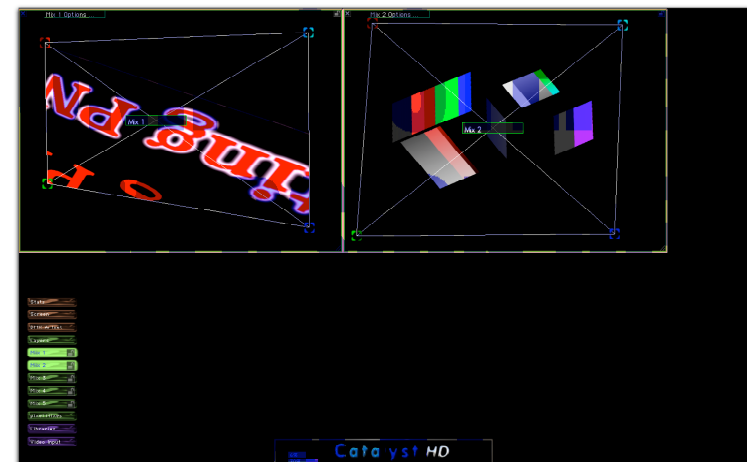


Figure 1 Full screen showing keystoneing

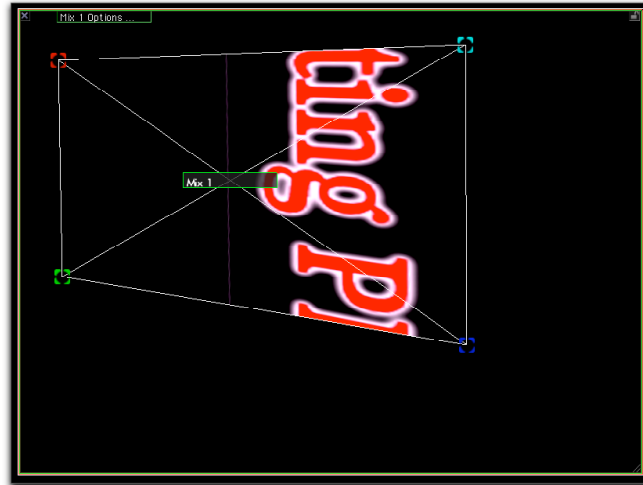


Figure 2 New mix window

In this build keystoneing points are edited using the mouse, by dragging to correct position.

Move keystone area around by click and drag.
Click here to move keystone area:

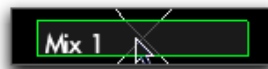


Figure 3 - Click to drag

Click in keystone corner points to move the keystone:



Figure 4 - Click to move

Hold the 'SHIFT' key down to remove other gui elements.
You can then drag the keystone points into the corners.

New mix options for v 4.06

Mix options set mix position offset, background colours, layers, edge blending.

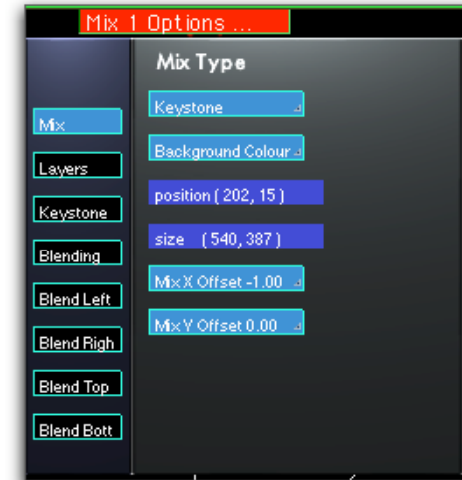


Figure 5 New mix options

Triple head 2 Go – Dual head 2 Go

Matrox Triple head 2 GO:

<http://www.matrox.com/graphics/offhome/th2go/home.cfm>

Dual Head 2 GO:

<http://www.matrox.com/graphics/offhome/dh2go/home.cfm>

matrox triple head gives you 3 'full screen' vga outputs from a single dvi interface.
matrox dual head gives you 2 'full screen' vga outputs from a single dvi interface.

Full screen outputs using sub-mixes for all Matrox outputs:

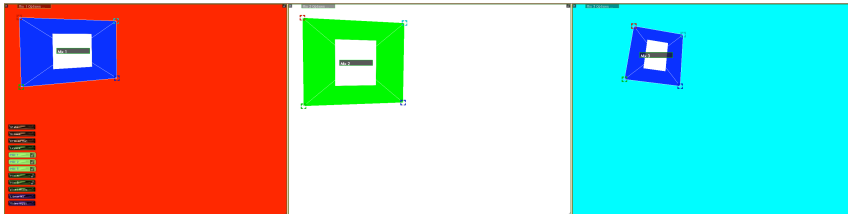


Figure 6 Matrox full screen canvas with 3 mixes

The matrox triple head tells the computer to create an ultra-wide desktop of up to 3072x768 or even 3840x1024 – 3 full screens widths.

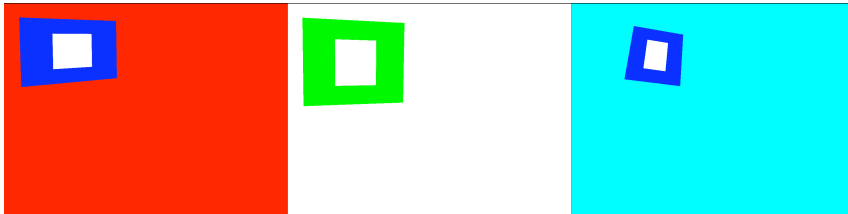


Figure 7 Matrox output without HUD

The matrox Triple head has 3 vga outputs, each third of the above image is displayed on one of the matrox's three outputs.

To position the sub-mixes accurately – there are preset sub-mix positions for Matrox **Triple Head 2 go** and **Dual Head 2 Go**

Click on the mix-lock icon



Figure 8 - Mix preset menu

Full menu is shown below.

There are light right and centre options at various screen resolutions for the matrox triple head and dual head.

✓ Unlock Mixes
Lock Mixes
move mix onscreen - 50, 50
move mix to top left - 0, 0
size mix to 160 x 120
size mix to 320 x 240
size mix to 640 x 480
size mix to 720 x 576
size mix to 800 x 600
size mix to 1024 x 768
size mix to 1280 x 1024
Single Screen 640x480
Single Screen 800x600
Single Screen 1024x768
Single Screen 1280x1024
Dual Head 1280x480 Left
Dual Head 1280x480 Right
Dual Head 1800x600 Left
Dual Head 1800x600 Right
Dual Head 2048x768 Left
Dual Head 2048x768 Right
Dual Head 2560x1024 Left
Dual Head 2560x1024 Right
Triple Head 1920x480 Left
Triple Head 1920x480 Centre
Triple Head 1920x480 Right
Triple Head 2400x600 Left
Triple Head 2400x600 Centre
Triple Head 2400x600 Right
Triple Head 3072x768 Left
Triple Head 3072x768 Centre
Triple Head 3072x768 Right
Triple Head 3840x1024 Left
Triple Head 3840x1024 Centre
Triple Head 3840x1024 Right

Figure 9 Mix presets for size and position

An intel macbook or an intel mac mini can output 2 or 3 full screens.

You don't have to use a matrox box to do any of this. It works well enough with existing graphics cards

Picture in picture mixes. V4.06

Mixes can be overlapped and overlayed without any HUD elements appearing.

Layers fade in and out and become transparent.

This works in both keystone and non-keystone modes.

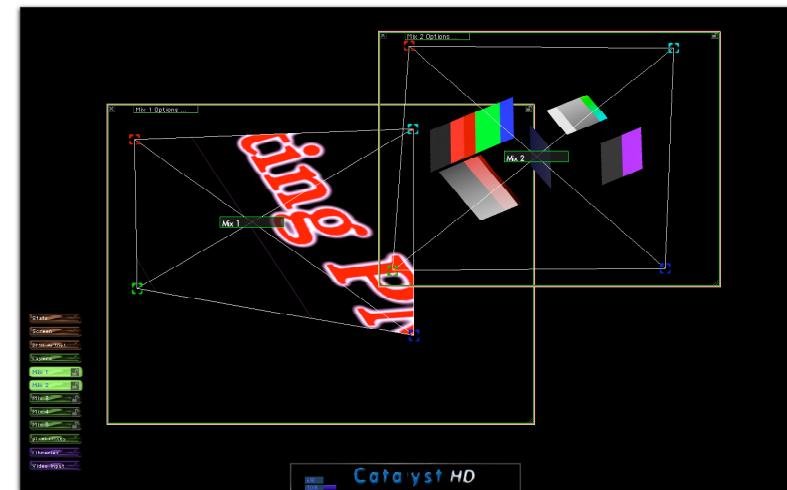


Figure 10 Mixes unlocked and keystone

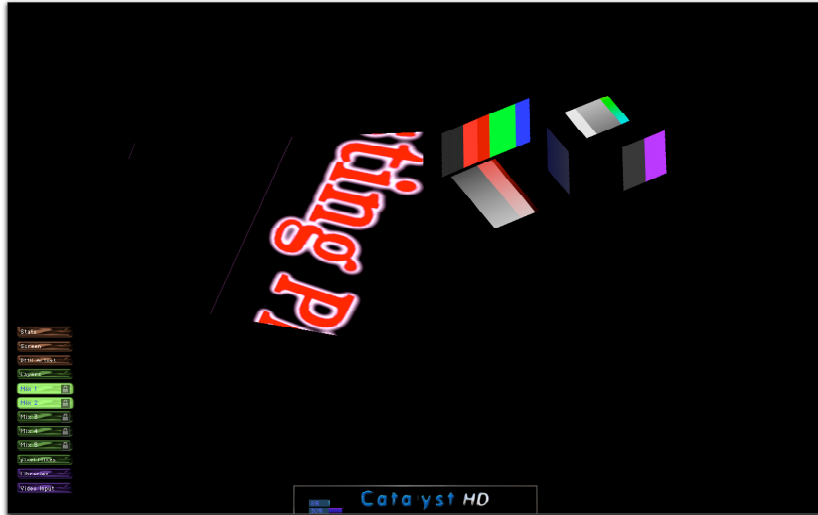


Figure 11 Mixes Locked.

Edge blending across mix canvas. V4.06

Layers shift seamlessly across mix boundaries.
No additional programming OR visual fx required to do panoramas.
You just select the mixes you want that image to appear on.

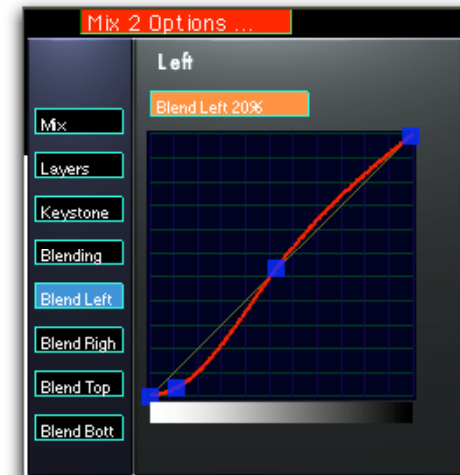


Figure 12 - Curve editing for edge blending

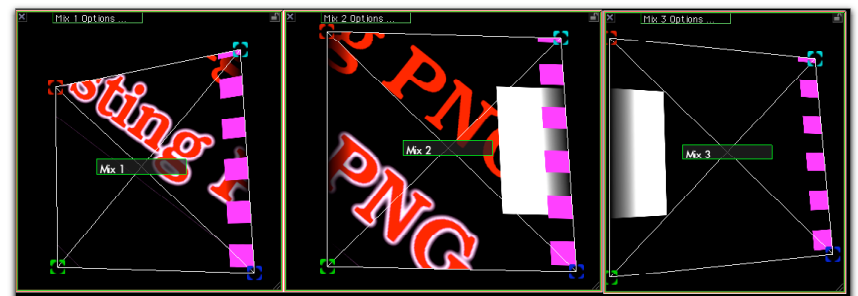


Figure 13 Keystone edge blended mixes



Figure 14 Layers for 'extended canvas'

Panoramas. V4.06

Using Mix Offsets – seamless panoramas can be created in horizontal and vertical direction.

To create a double panorama use mix offsets of +1.0 and -1.0



Figure 15 - Panorama using mix offsets

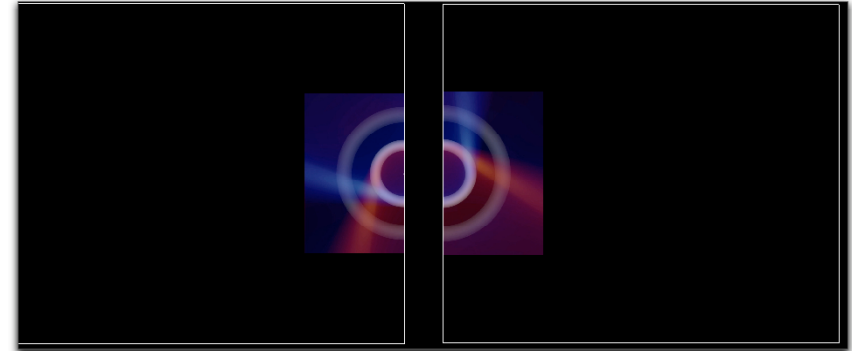


Figure 16 - Double panorama

To create a triple panorama use 3 mixes with mix offsets of -2.0 0.0 and 2.0

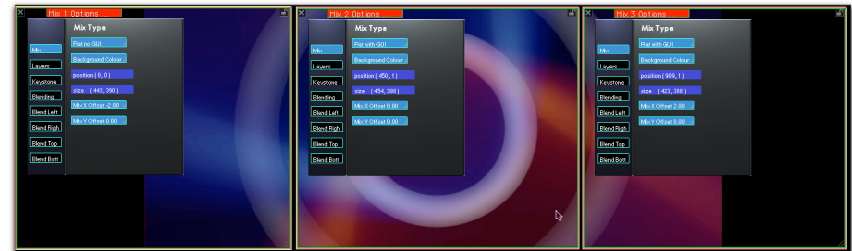


Figure 17 - Mix offsets for Triple panorama

When using edge blending you have to adjust the mix offsets to take account of the required overlap.

You can choose an overlap of 10%, 20%, or 25%



Figure 18 - Triple panorama

You can also create keystone mixes with and without edge blending-

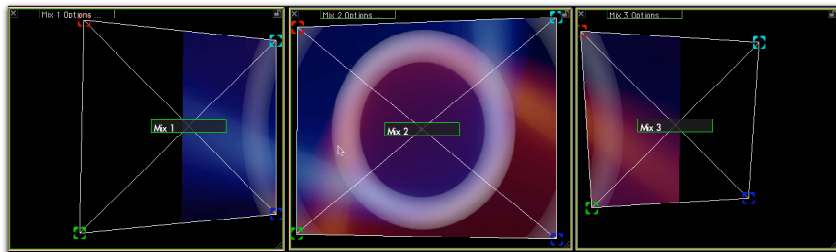


Figure 19 - Keystone triple panorama – no edge blending

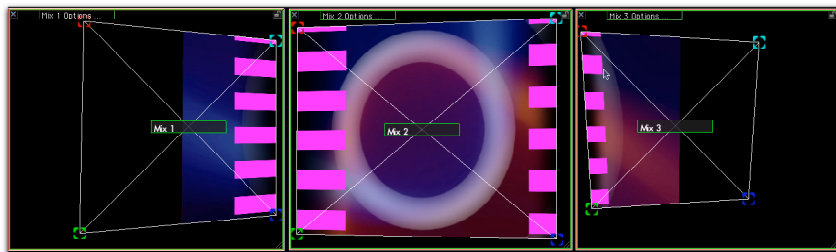


Figure 20 - Triple keystone mixes with edge blending user interface



Figure 21 - Blending percentages

You might also have to adjust the blend curve to account for the way light works out of a projector.

Select Layers from DMX. V4.06

A new DMX input gives the ability to select the layers in a mix from the DMX input.

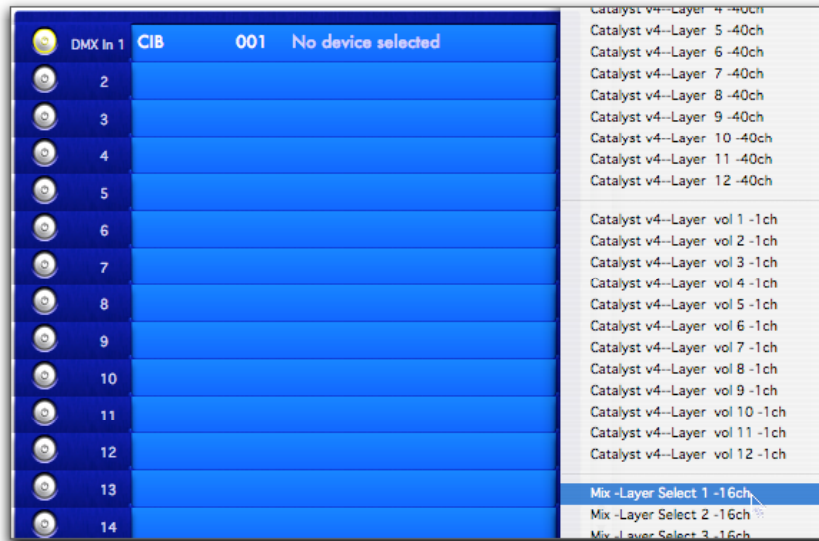


Figure 22 - Mix Layer Select from DMX

Each channel in the fixture selects whether a layer is active or not in that mix.

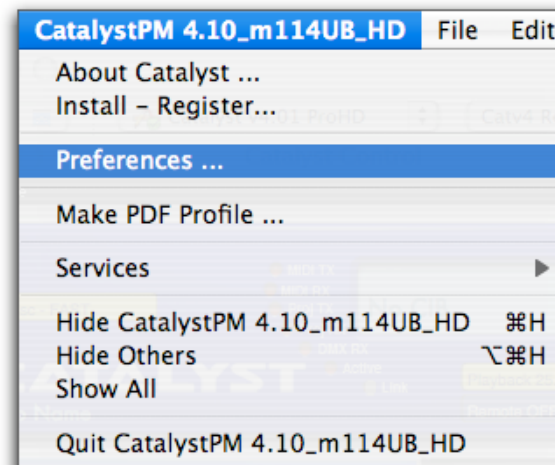
Channel in Mix fixture	Selects Layer
1	Layer 1
2	Layer 2
3	Layer 3
4	Layer 4
5	Layer 5
6	Layer 6
7	Layer 7
8	Layer 8
9	Layer 9
10	Layer 10
11	Layer 11
12	Layer 12
13	Spare
14	Spare
15	Spare
16	Spare

For each Layer you can select or deselect that layer from the mix.

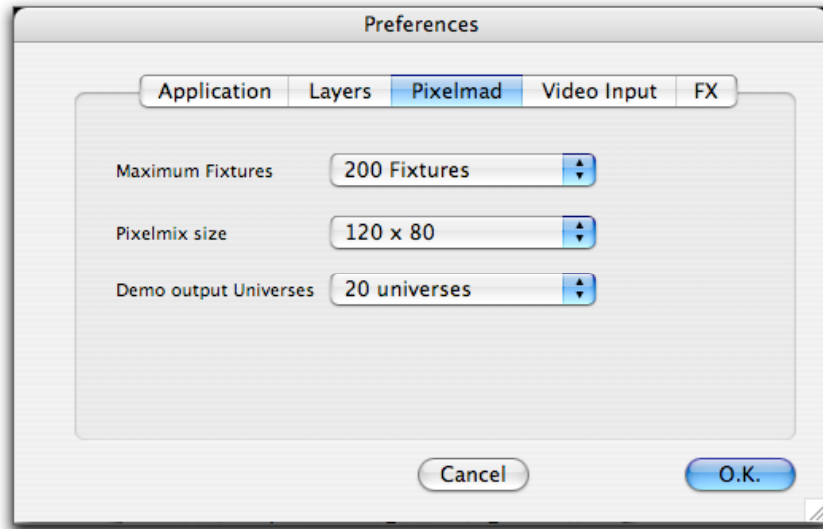
DMX Value in channel	
0- 10	No effect. Default.
11- 127	Deselects layer from mix
128- 255	Selects layer in mix.

New Application preferences:

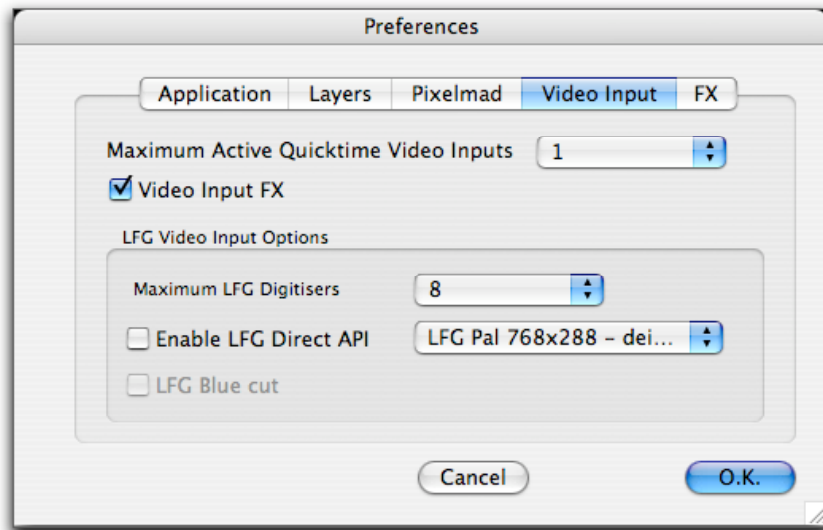
Some preferences have moved to the application preferences.



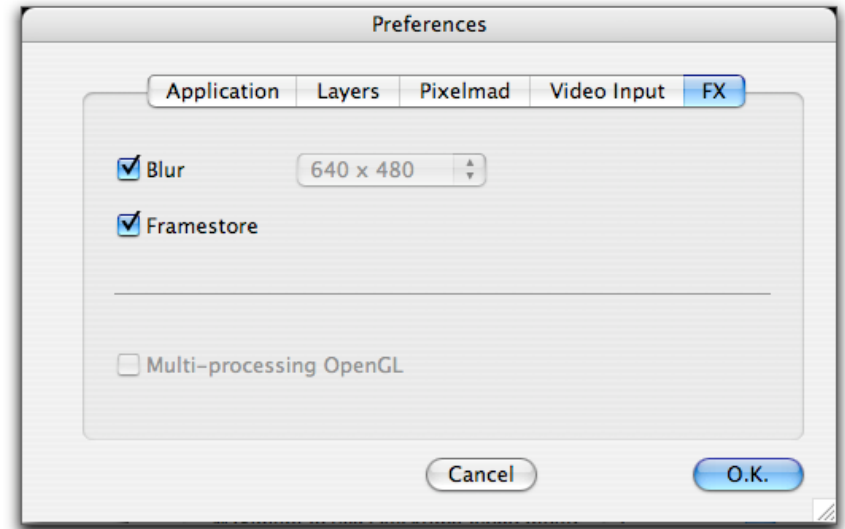
You can change the number of things active in pixelmad



Set up video input options



Enable or disable some visual fx.

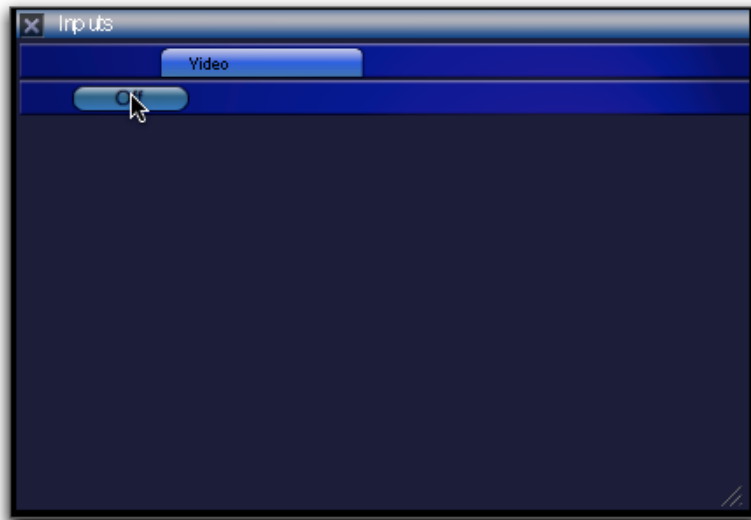


Video input

Video input support changed a lot recently

It is now turned on and off through the inputs HUD





To turn video input on and off you need to use this button



When you do this all of your active and enabled video input will show here.

Support for 8 video inputs and multiple LFG4 video input cards.

I have been doing a lot of shows with LFG 4 video input cards from Active Silicon

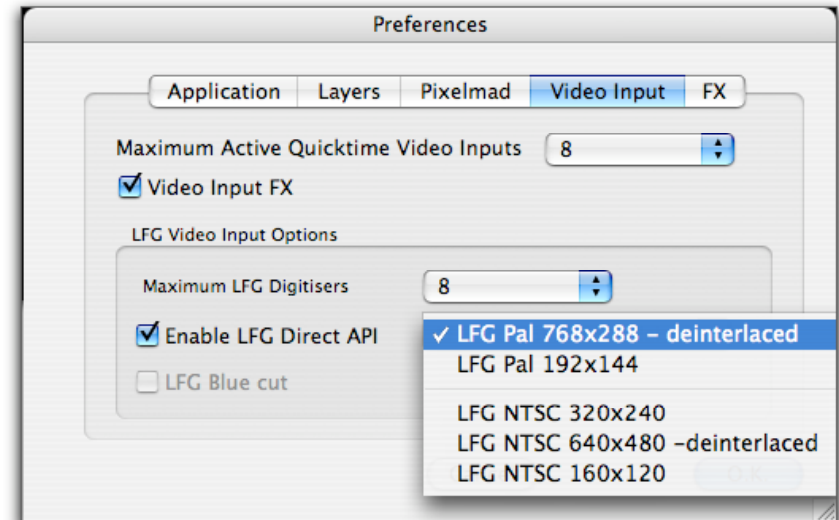
<http://www.activesilicon.co.uk/>

The software supports up to 8 video inputs using 2 LFG4 cards.
I have tested up to 12 inputs.

You currently have to use the LFG direct driver- which must be enabled in my preferences.
As of this date – this can be downloaded from

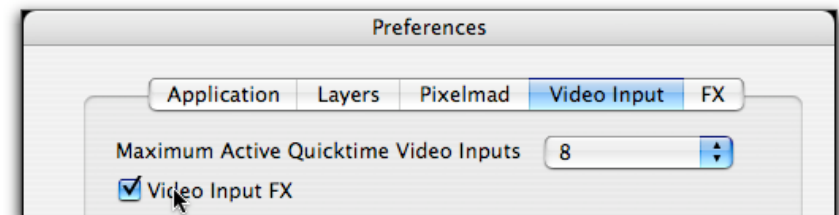
http://www.activesilicon.co.uk/downloads/as-lfg-mac-apps-v02_00_00.dmg

Im sure this link will change in the future.



Video input FX – freeze frame, stagger, over-expose.

Video input FX need to be turned on from video input preferences.



You control these fx using the playspeed channel on a layer using video input.

Playspeed channel on layer	Video input Effect
0	Normal speed video input
1	Pauses or freezes video input frame
2-15	hold video input frame at different rates
16-30	Strobe hold video input frame at different rates
31-60	Video input trails and overexpose.

Hidef Camera input using decklink HD.

Needs work – needs people to try and see if it works.

Hi-def camera sources from decklinkHD card added – but not tested.

I have managed to connect an FX1e to a decklink HD extreme using the component output from the FX1e at 1080i.

FX1e Green -> Decklink Y

FX1e Blue -> Decklink B-Y

FX1e Reb -> Decklink R-Y

Seems to work.

Framestore record of video input

2 new visual fx on a layer control recording into and playback from the framestore

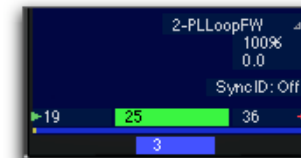


To use the framestore you set up one layer to control the recording, and another to display frames.



First recording.

In this version of software there are 120 frames in the frame store.



You set the in and point points for the frames you want to record continuously – then change the playmode to PLLoopFWD – this initiates the record.

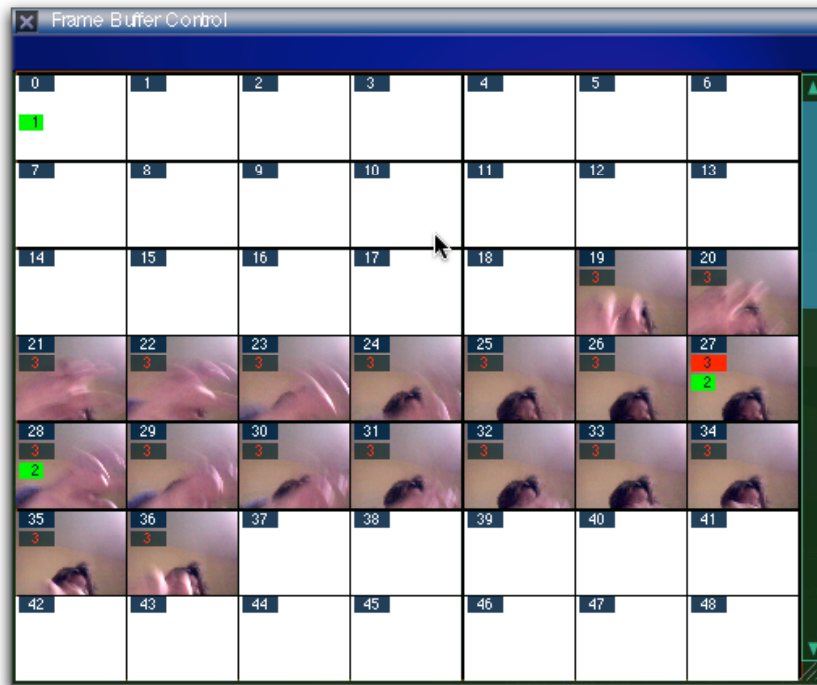
When you don't want to record any more set the playmode to 'inpoint'

The Control layer has a gui for all frames in the frame buffer.

Click on the 'I' here

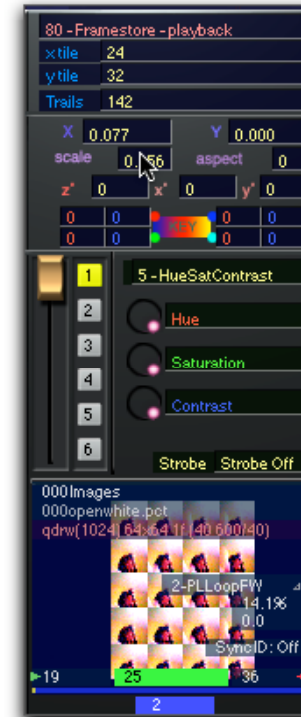


You can now see the frames being recorded.



As we set the in and out points to 19 and 36 –we see video input recorded into these frames.

When we have recorded some frames – we use the framestore playback layer to display these frames

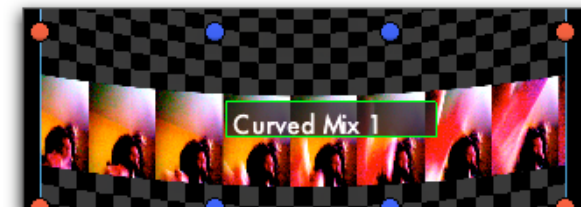


In the basic mode here –we can display the frames in an x and y tile configuration.

Or something like a Muybridge type effect

http://en.wikipedia.org/wiki/Eadweard_Muybridge

in the mix showing consecutive frames.

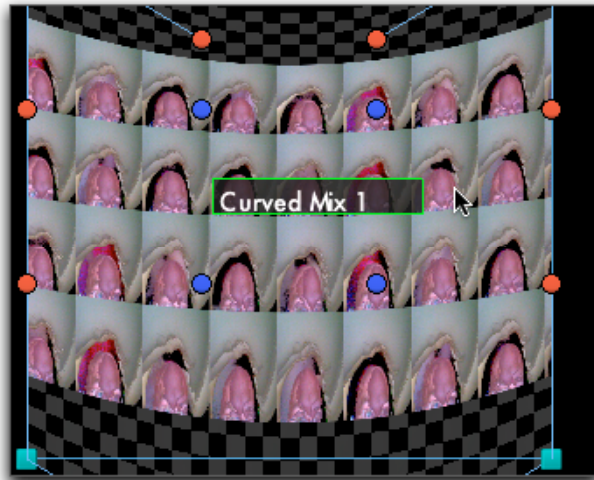


You can use the playspeed channel to change the speed of recording or playback.

You can also add colour fx to the video input frames as they are recorded into the buffer. Or use the trails channel to make the images ghost.



Using transparent colour on the record and trails you can create dynamic fx.



Can be used to record all 8 video inputs at once.

Use the visual fx param1 to change the source of the framestore record.



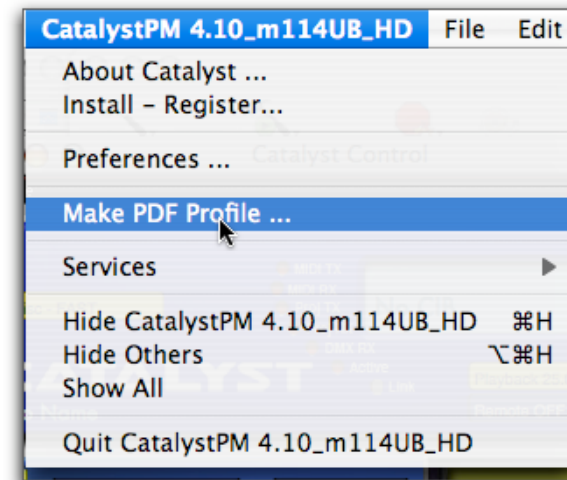
Framestore also records layers and mixes.

Param1 channel on layer	Framestore record
0 - 19	Selects video input for record
20-31	Selects layer 1- 12 for record
50-55	Records submix 1-6 into framestore

Updated pdf profile for debugging.

If you have technical support queries the first thing to do is to create a pdf profile of system information.

This is done from the application menu:



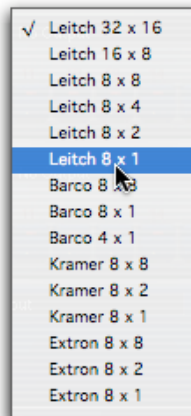
This creates a pdf file in the same folder as the application.
This can then be emailed.

New Video Switcher device controlled from DMX

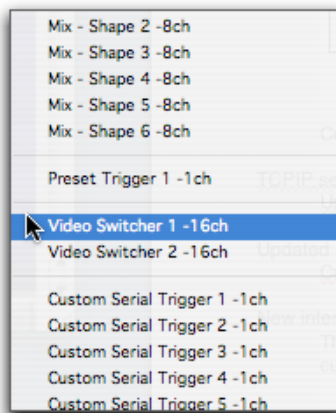
A dmx to video crosspoint control panel



Many video switchers work the same way – routing inputs to outputs.



I have done a common dmx interface that works with common switchers. The dmx channel routing is from destination to source.



Each dmx channel selects the source for the destination.

The size of the dmx switcher is 16 channels and channel 1 is for destination 1 channel 16 for destination 16

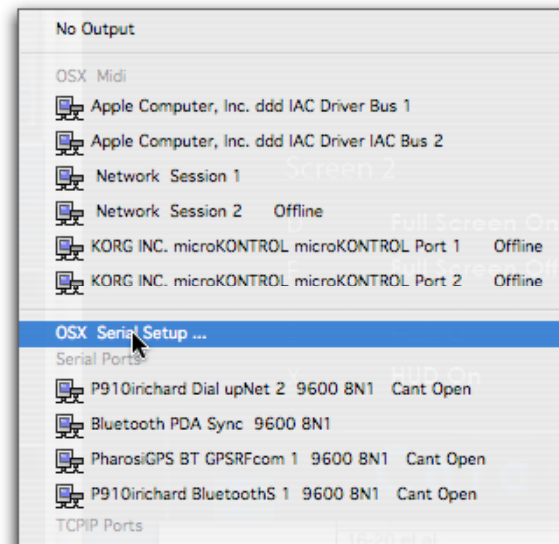
DMX channel	Source select
1	Selects source for destination 1
2	Selects source for destination 2
3... et al	Selects source for other destinations up to 16.

For each channel	Source number
0 -5	No source selected. No change.
6 - 10	Source 1
11-15	Source 2....etc
16-20 et al.	Source 3 etc

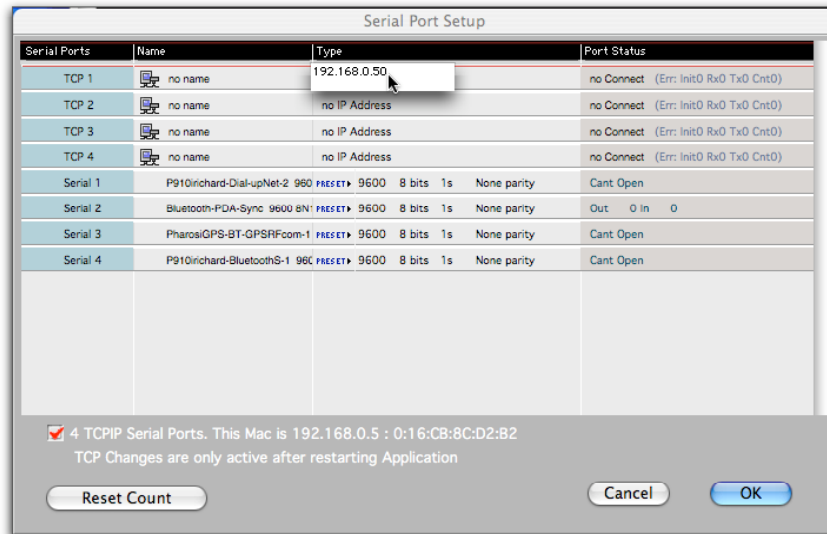
TCPIP serial ports.

There are quite a few manufacturers that have TCPIP rs232 and rs422 serial ports. Using these the devices that need to be controlled can be located some distance away from the computers.

To set up TCPIP serial ports – use the OSX Serial port setup from the serial device menu



You select the number of TCPIP ports you need



You have to set the address of the tcpip port and the port number. This is quite geeky...
You have to read the manual for the devices – as these might work in slightly different ways.

Creating a weekly or monthly show schedule using iCal and Applescript

Applescript-
<http://www.apple.com/macosx/features/applescript/>
<http://en.wikipedia.org/wiki/Applescript>
<http://macscripter.net/>

New web server commands and applescript commands for remotely playing cues in cue lists.

New web server commands and applescript commands:

This was used for the daily external lighting at the Gallerie Lafayette in paris XMAS 2006.

<http://www.gallerieslafayette.com/index.do>

Command	Applescript command	Web server command on local machine. Web server uses port 8080.	
FindPlayShowCue	FindPlayShowCue "theshowcue"	http://localhost:8080/commands/?FindPlayShowCue=theShowCue	Searches for and plays Cue with 'Show Cue' theShowCue
RunPreset	RunPreset 1	http://localhost:8080/commands/?RunPreset=1	Runs preset
StartPlayCueListNumber	StartPlayCueListNumber "0.0"	http://localhost:8080/commands/?StartPlayCueListNumber=0.0	Searches for cue list number '0.0' and plays it.
StartPlayCueListNumber	StartPlayCueListNumber "0.0"	http://localhost:8080/commands/?StartPlayCueListNumber=0.0	Searches for cue list number '0.0' and stops it.
StopAllCueLists	StopAllCueLists	http://localhost:8080/commands/?StopAllCueLists	Stops all cue lists.

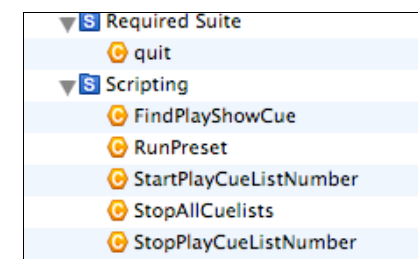


Figure 23 - New Applescript Commands

Create applescripts to access web server or Applescript in Catalyst

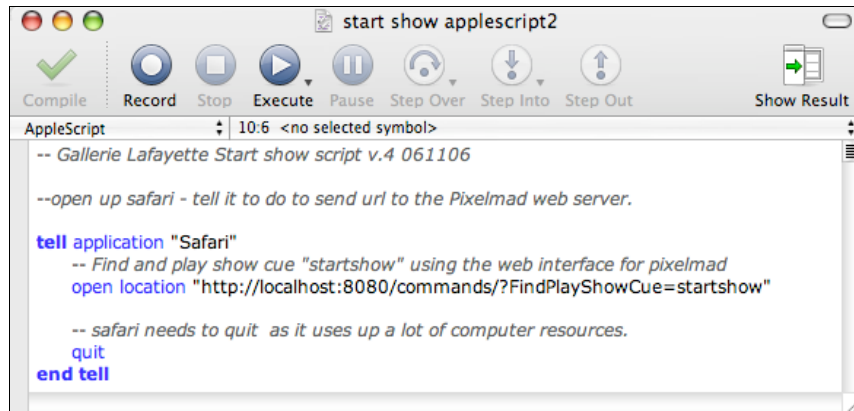


Figure 24 - Start show using Safari

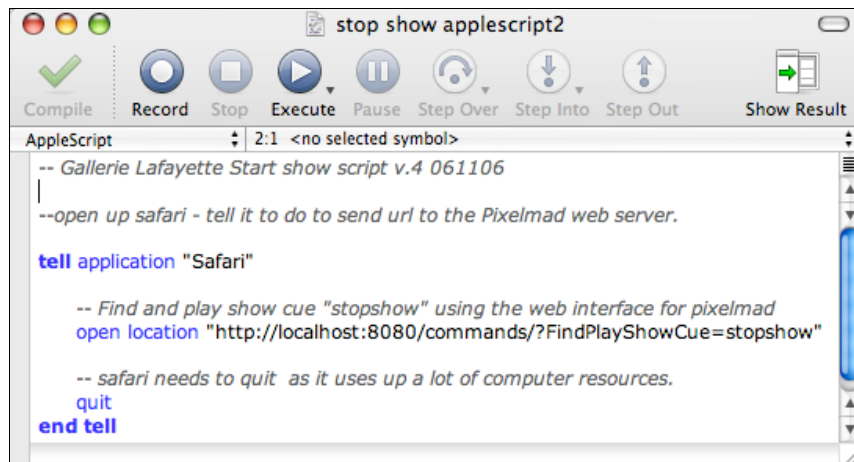


Figure 25 - Stop show using Safari

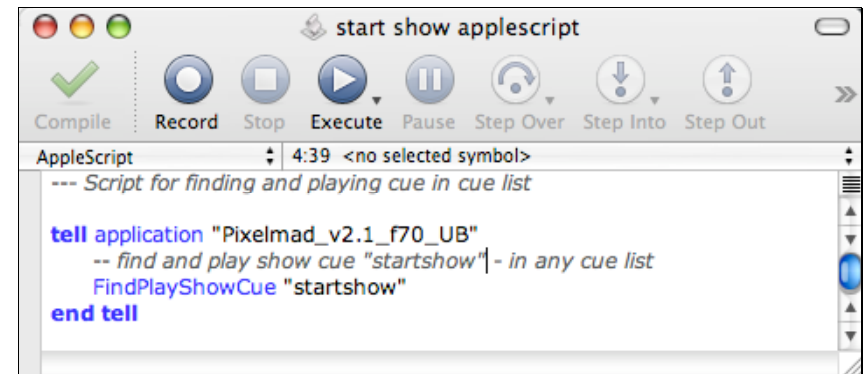


Figure 26 - Start show using Applescript

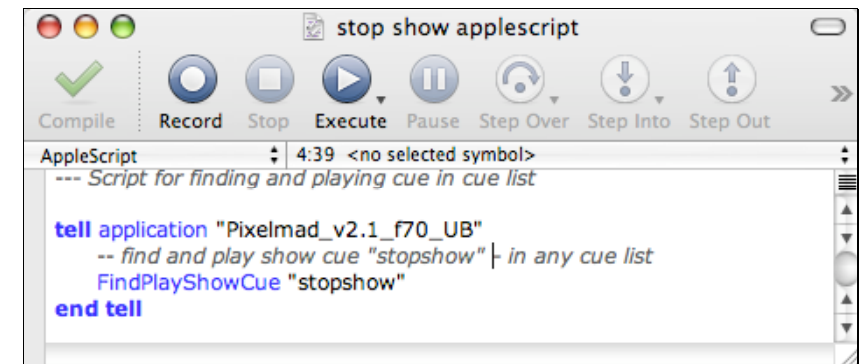


Figure 27 - Stop show using Applescript

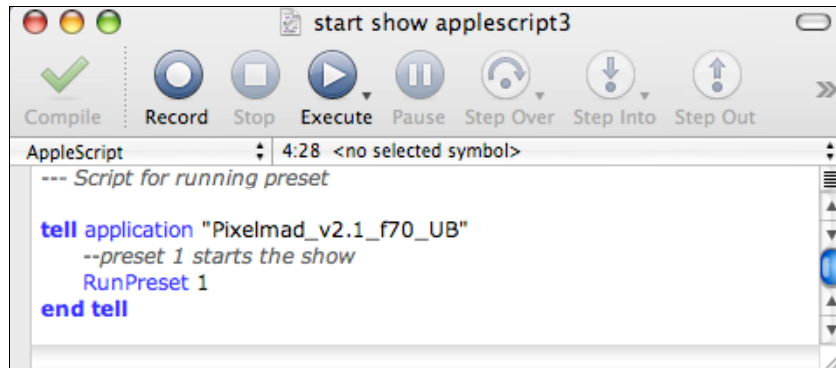


Figure 28 - Start show using RunPreset in script



Figure 29 - Stop show using RunPreset in script

You can use the curl command to directly send the http command without using safari
 Curl is part of the system.
 Curl is documented at <http://curl.haxx.se/docs/manpage.html>

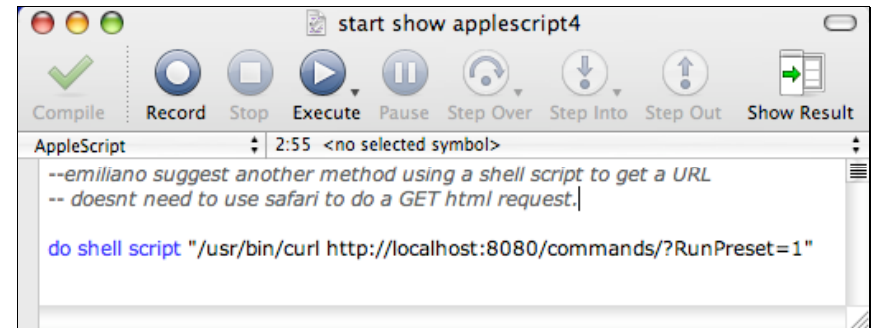


Figure 30 - Start show using applescript to do a shell script

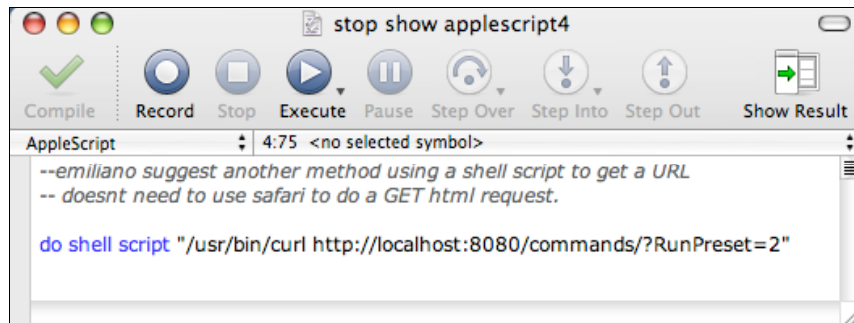


Figure 31 - Stop show using applescript to do a shell script

Setup schedule in iCal

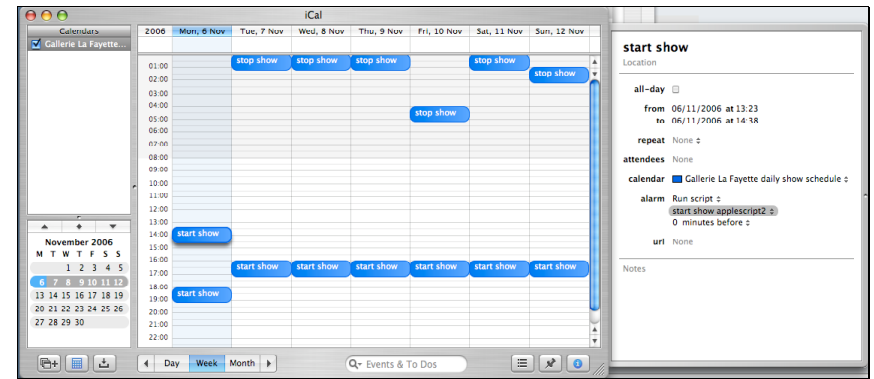


Figure 32 - iCal daily schedule

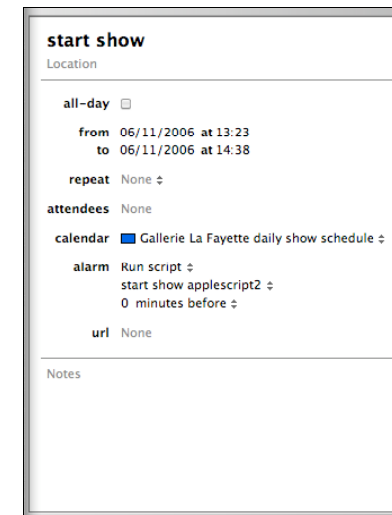


Figure 33 - iCal Start show event

stop show

Location

all-day

from

07/11/2006 at 00:00

to

07/11/2006 at 01:15

repeat

None

attendees

None

calendar

Gallerie La Fayette daily show schedule

alarm

Run script

stop show applescript2

0 minutes before

url

None

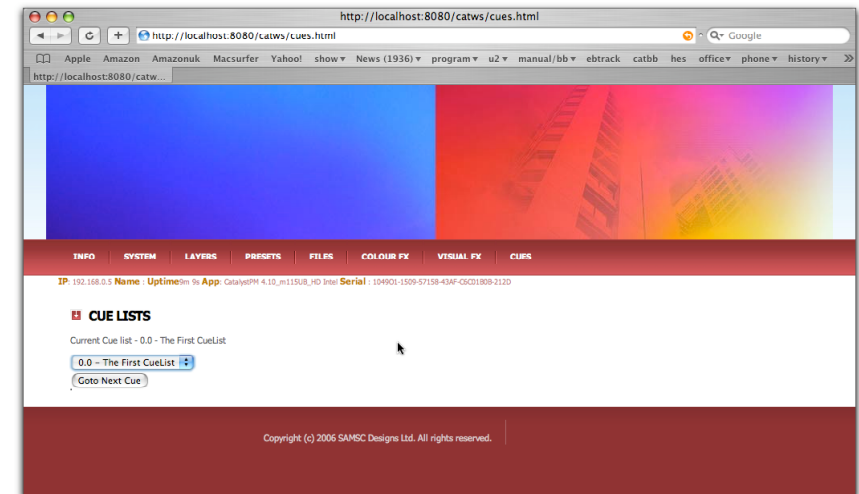
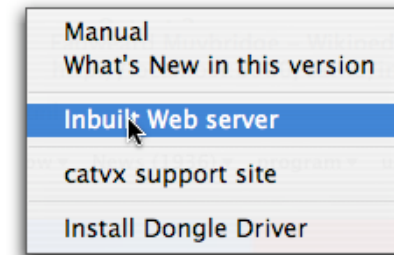
Notes

Figure 34 - iCal Stop show event

New internal web page design

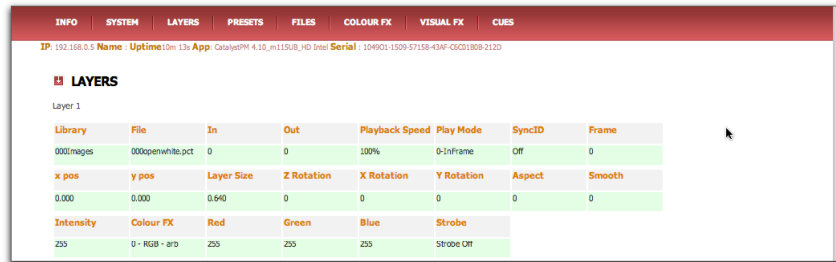
Inbuilt webserver for status has been redesigned.
It now has cuelists too.
Web server can be accessed from other computers on network.

You get to this from the 'Help' menu in the application.



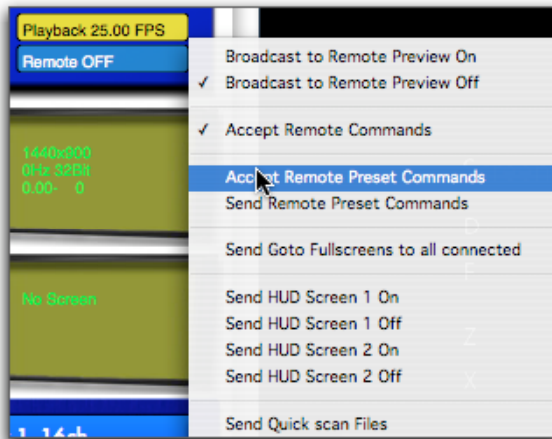
Pages now use javascript and AJAX technologies to get live feedback from the web page.

Live layer information is also displayed. Update rate is quite low to keep bandwidth low.



Presets remotely.

Presets can be sent from a cue list to another computer.



Maximum texture size increased

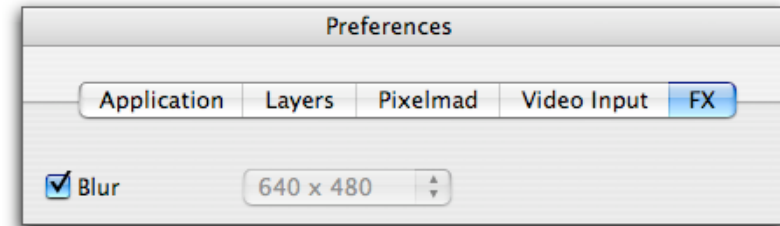
Maximum texture size on a layer increased to 4096x2048 – Doesn't mean you should do this. Because this wont work very well on most machines.

New Colour and Visual FX

There are a number of new visual and colour fx I have added in the last few months.

Simple Blur

Blur needs to be enabled in the Application preferences- as there is the good possibility it wont work well on older machines.



Blur is visual fx 152



It has 2 parameters



The first one does smaller blurs
Blur 0



Blur param1 57
Blur param2 0



Blur param1 57

Blur param2 255



Blur param two gives a much larger range depth of blurring at lower resolution.

Noise

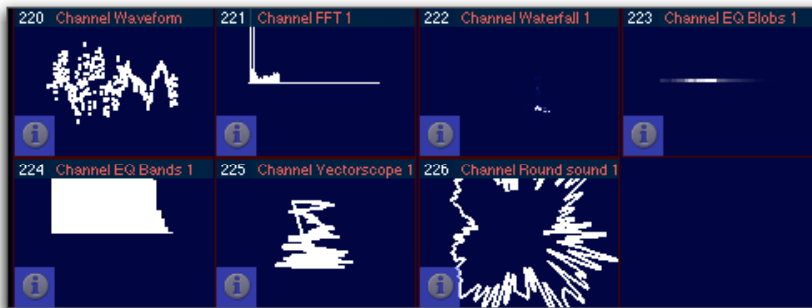
Colour fx 106 adds dynamic noise to an image. The noise is live and realtime.



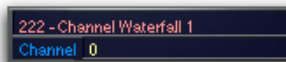
This isn't quite finished yet.

Advanced sound analysis and display – including waterfall charts.

Visual FX 220- 226 display sound waves and do different kinds of spectral analysis or display.



These fx work with devices with multiple input channels. You select the channel using visual fx param 1

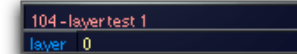


Mix and layer fx – display mix or layer as a layer.

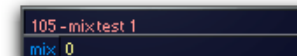
Visual fx 104 and 105 allow nesting of FX



They both have one parameter



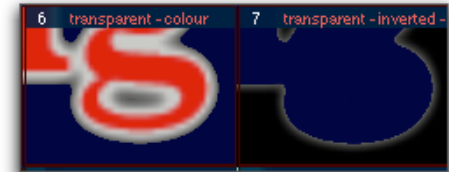
for FX 104 -Visual FX param selects the layer you want to display. 0 is layer 1 etc.



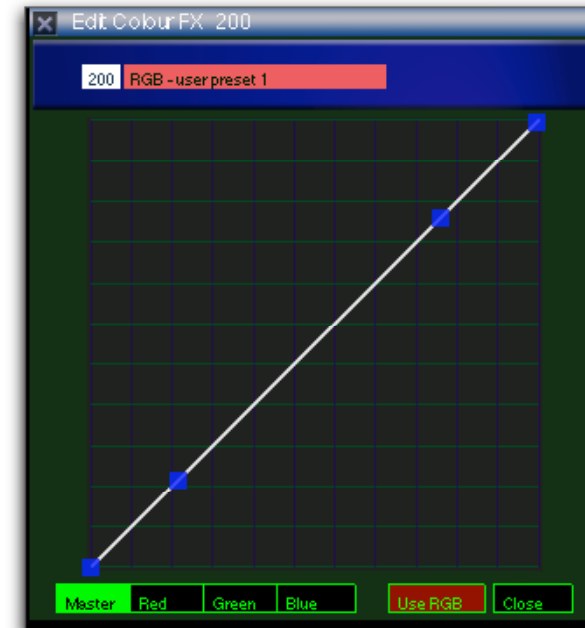
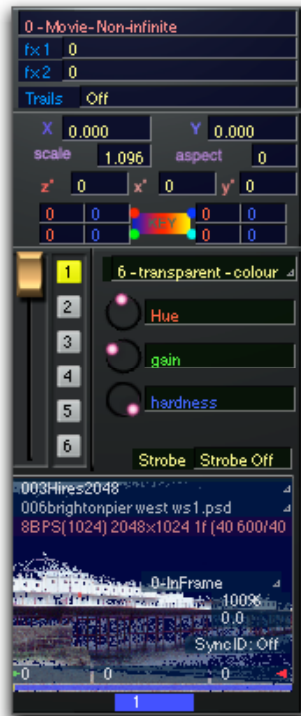
For FX 105 -Visual FX param1 selects the mix. 0 value is mix 1.

Transparent colour – or simple chromakey

Colour FX 6 and 7 do transparent colour. FX7 inverts the transparent areas.



With transparent colour, the three colour fx channels RGB, select the hue of the transparent colour, the sharpness of the transparent edges, and the contrast.



You can edit the gamma of the individual colour channels as you would in photoshop.

Curve editing for rgb.

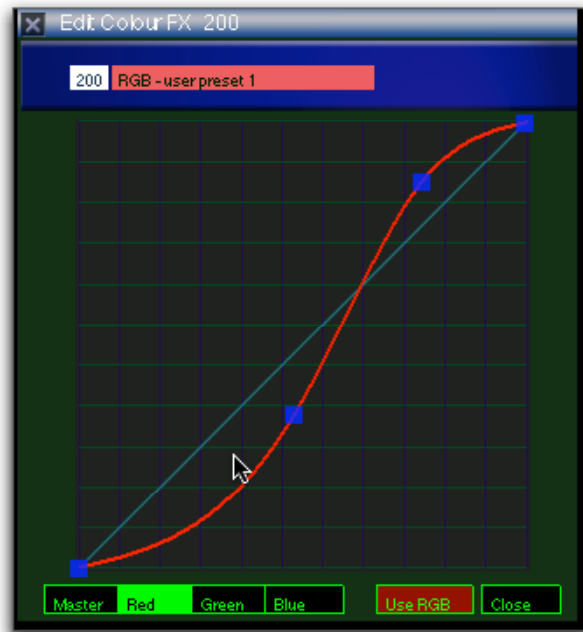
Colour FX 200-239 have editable gamma curves for the master gain, and also per channel rgb.



To edit the gamma curve – click on the 'i'



This gives you the gamma curve editor



Midi input Visual FX Oct 06.

visual FX 218 shows midi input notes as blocks.
Pressing keys on your keyboard reveals a grid related to the notes pressed.
The image displayed inside the blocks is the image on that layer.
Here the file 'testgrads.tif' is revealed by midi notes.

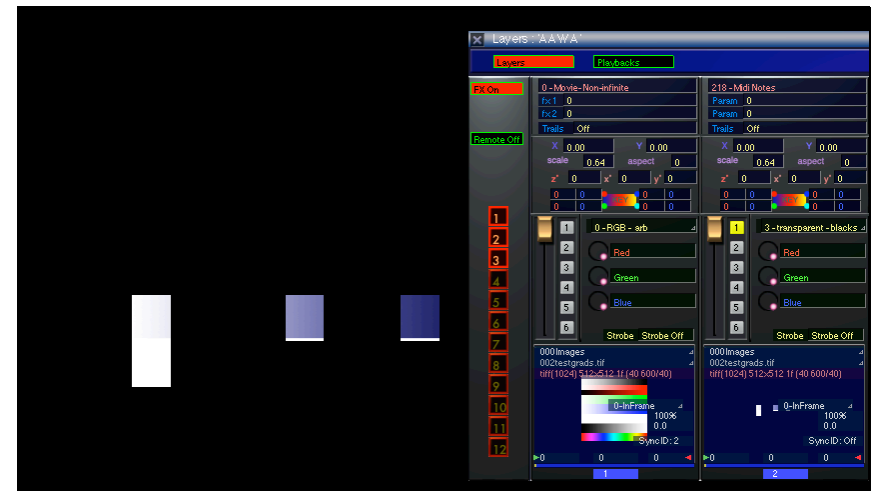
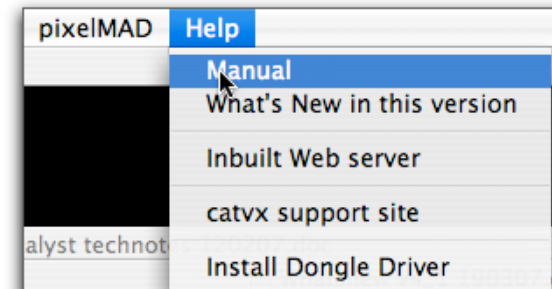


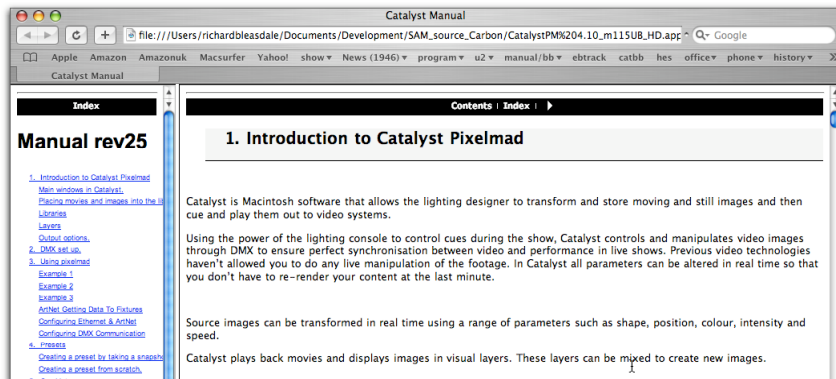
Figure 35 - Visual FX 218

Installation

There is some new v4 builtin help accessed via the 'Help' menu.
It opens up in the web browser.

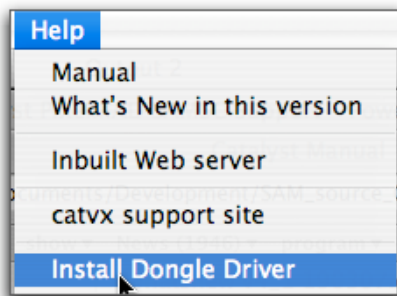


Its not complete to date – but it has some useful information – and is indexed and cross-referenced.

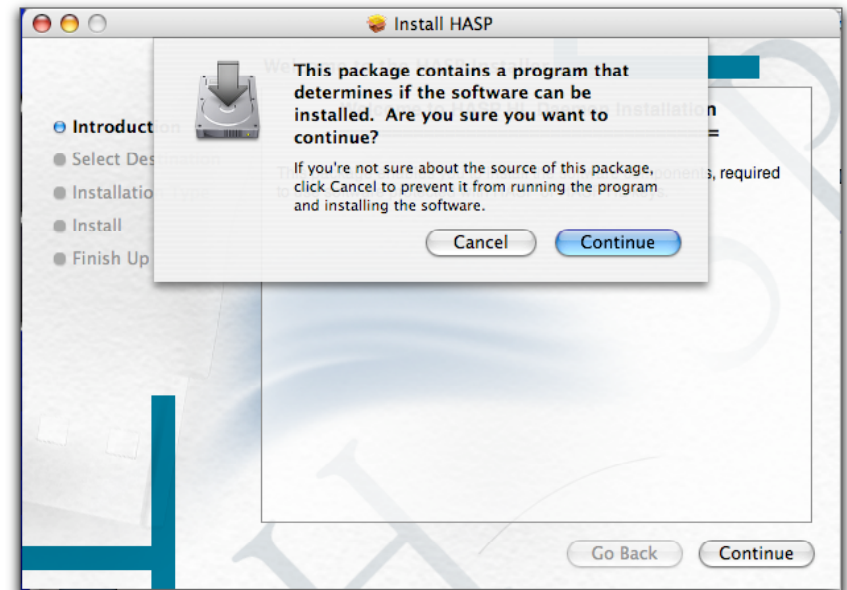


Dongle driver installer embedded in application.

I made it easier to get access to the dongle driver – by embedding the installer application for the alladin dongle



You should see the Aladdin installer come up.



Pixelmad XML fixtures.

Ability for users to define their own fixtures using simple xml
Fixtures can be like grids, or have individual channel definitions.
Or more complex shapes.

```
<Fixture menuname="Test CMV 3" uniqueid="XRF3" exceleportid="RFB3" pixelwidth="10" pixelheight="2" outp
<Fixture menuname="Test Custom 4 top left" uniqueid="XRF4" exceleportid="RFB4" pixelwidth="3" pixelheight="3"
  <channel index="1" fixedoutput="0" />
  <channel index="2" fixedoutput="255" />
  <channel index="3" fixedoutput="255" />
  <channel index="4" output="RED" />
  <channel index="5" output="GREEN" />
  <channel index="6" output="BLUE" />
  <channel index="7" output="MASTER_INT" />
  <channel index="8" output="CYAN" comment="leave out 7 for testing" />
  <channel index="9" output="MAGENTA" />
  <channel index="10" output="YELLOW" />
  <channel index="11" output="INT" />
</Fixture>
```

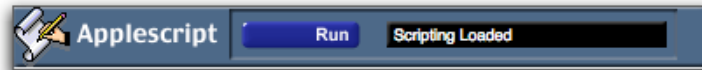
Or more complex like the hi-res colour web

```
<Fixture menuname="Test 5 hi-res colourweb left" uniqueid="XRF6" exceleportid="RFB6" pixelwidth="5" pixelheight="5"
  <pixel index="1" output="RGB" xcoord="0" ycoord="0" orientationicon="FIRSTPIXEL" />
  <pixel index="2" output="RGB" xcoord="1" ycoord="0" />
  <pixel index="3" output="RGB" xcoord="2" ycoord="0" />
  <pixel index="4" output="RGB" xcoord="3" ycoord="0" />
  <pixel index="5" output="RGB" xcoord="4" ycoord="0" />
  <pixel index="6" output="RGB" xcoord="0" ycoord="1" />
  <pixel index="7" output="RGB" xcoord="1" ycoord="1" />
  <pixel index="8" output="RGB" xcoord="2" ycoord="1" />
  <pixel index="9" output="RGB" xcoord="3" ycoord="1" />
  <pixel index="10" output="RGB" xcoord="4" ycoord="1" />
  <pixel index="11" output="RGB" xcoord="0" ycoord="2" />
```

Applescript

<http://www.apple.com/macosx/features/applescript/>
<http://en.wikipedia.org/wiki/AppleScript>

You can put files with applescript commands in the cue list



Drag the RUN



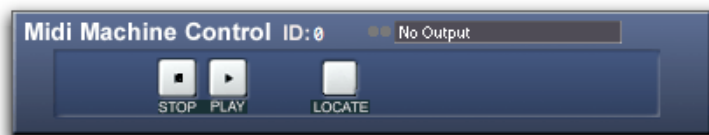
Button on the cue list-

Select	Show Cue	Wait	Time	Device	Command	Comment
<input type="checkbox"/>	<input type="checkbox"/>		0: 0: 0: 0	Applescript	No script	

Click on 'No Script' to select the file that has the applescript
 The section with iCal scripting shows some sample applescripts.

Midi machine control.

http://en.wikipedia.org/wiki/MIDI_Machine_Control
 Some audio decks and midi time code generators can be controlled using midi machine control.



You can put play stop and goto commands into a cuelist.
 I used this last year to control a midi time code generator.

Embedded XML for getting File lists from web server.

The html source for the Catalyst internal web server - file access
<http://localhost:8080/catws/files.html>

Has embedded information to tell a lighting console which files are available.
 This html file contains pseudo-xml tags which tell you which movies are available.

The format is currently

```
<MovieInfo folder=000 file=001 name="001black.pct"/>
```

For each file - this might change in the future and more information might be added.

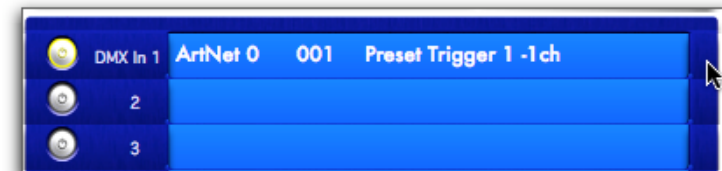
DMX Presets – Triggering the cue list from DMX

You can trigger a cue list from DMX using a special show cue label-

DMXPreset=preset number



You need to have a DMX Input preset trigger turned on-



DMXPreset=100

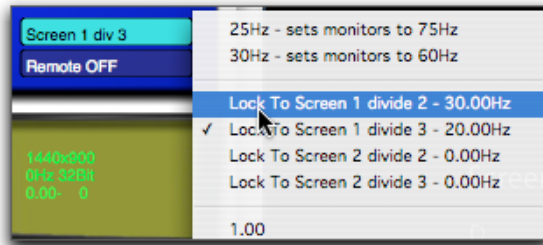
this will trigger the cue that would have been triggered Preset 100 – real dmx value 105

there is a gap at zero

So DMXPreset=1 is real dmx value 6.

Locking playback to exact screen refresh

Refresh rates of vga and dvi are not exactly 60Hz or 75Hz.
The exact refresh varies at different screen sizes.



Sometimes this variation causes issues when 2 monitors are connected.
You might need to lock the playback to the exact screen rate to make playback work.

Leopard (OSX 10.5)

Small glitches with leopard fixed.
Seems to work- no performance data.

Tiger compatibility only (OSX 10.4.6 or greater)
Universal Binary. Intel and PowerPC.

<http://www.catvx.com/>

Richard Bleasdale SAMSC Designs Ltd 23rd May 2007