Virtual Media Server and Pixel Map Control

Eos Family Expert Topics

Workbook

V2.5.0 Rev.A

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Purpose of the Class

The Eos Family Media Server Control class will explore core concepts of media servers, pixel mapping software, and their control. This will include using external media servers, Eos Family Pixel Mapping feature, and utilizing Eos Family control tools to simplify and speed up media server implimentation in a show file.

Learning Objectives:

After completing the Media Server Control class, you should be able to:

- Understand the concepts of Media Servers
- Patch and control external Media Servers
- Operate external Media Servers
- Create and configure Pixel Maps
- Patch and control Virtual Media Servers
- Understand layer control, channel vs. layer output, and crossfades
- Record Media Server information into Cues
- Utilize Palettes and Presets with Media Servers
- Utilize advanced timing with Media Servers
- Record Media Server content into Subs for live playback
- Understand content management and multi-console systems
- Load user generated content into the console

Workbook Syntax annotation

- **Bold** Browser menus
- **[Brackets]** Face panel buttons
- **{Braces}** Softkeys and direct selects
- **<Angle brackets>** Optional keys
- **[Next] & [Last]** Keys to be pressed & held simultaneously

Help

Press and hold **[Help]** and press any key to see:

- the name of the key
- a description of what the key enables you to do
- syntax examples for using the key (if applicable)

As with hard keys, the "press and hold [Help]" action can be also used with softkeys and clickable buttons

Eos Family Virtual Media Server

Eos family consoles have a built-in Virtual Media Server (VMS). VMS does not output to video devices such as projectors or televisions, but rather allows content to be mapped to DMX-capable devices.

For more information on media servers in general, see Appendix 6.

VMS allows you to map content to output devices just like an external media server, but instead of speaking DMX from the console to the media server, and the media server outputting video signal to the output devices, the console speaks DMX directly to the output devices (hence the need for only DMX-capable devices).

First let's patch the LED Fixtures into the show.

Patch Exercise – see Appendix 1

Add the LED fixtures in Appendix 1 to your existing patch.

To Check Your Patch:

[Live] [201] [At] [Full] [More SK] {Chan Check} [Enter]	puts the console in Chan Check mode
then [Next] … [Next] …	steps through all patched channels

Now, how does VMS work?

Output Device Configuration, or Pixel Maps

In Virtual Media Server, the utility to configure the type and physical layout of your output devices is called a **Pixel Map**. Just like an external Media Server, a Pixel Map determines which pixels in the content get mapped to which output devices.

Setting up a Simple Pixel Map

[Displays]	opens Display options
[More SK]	select the second level of soft keys
{Pixel Maps}	open the Pixel Map Editor

Creating the Pixel Map

[1] [Enter]	selects and creates Pixel Map 1

Setting Width / Height

{Width} [13] [Enter]	adjusts the width of the Pixel Map
{Height} [9] [Enter]	adjusts the height of the Pixel Map

Label

[Label] "Back Wall Full Map" [Enter]	assigns a label to the pixel map

Once you have laid out a basic Pixel Map space, you need to add the specific output devices, or fixtures.

Opening the Editor

{Edit}	opens the Pixel Map Editor

Many of the same mouse navigation tools work in this space:

Use your mouse wheel	to zoom in and out
Right click and hold	to pan or drag the display
CTRL+C and CTRL+V	to copy and paste
Control and multiple clicks	to select multiple objects

Selecting the Output Pixels

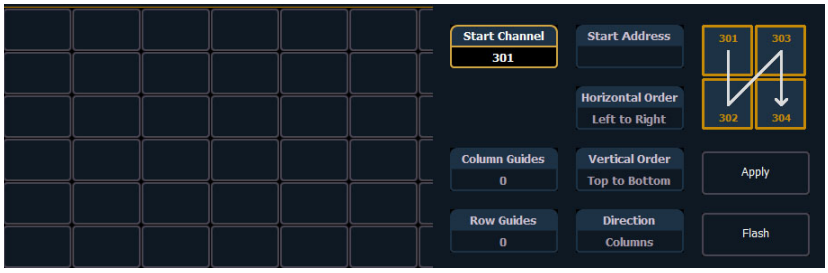
In the edit screen, you will be able to define which pixels in the map will be output devices, or Fixtures.

Click and hold left mouse button and drag to select all the pixels.	selects all pixels in the map

Assigning Channels to Fixtures

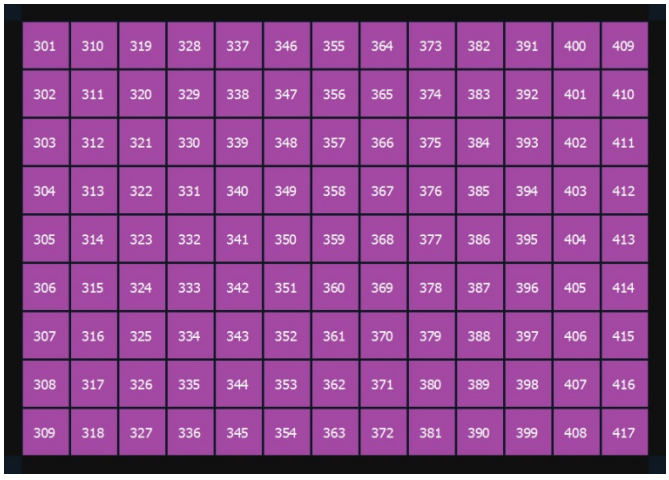
In the Pixel Patch area, there is a channel or address utility that allows you to quickly assign start channels or addresses to the selected output objects in the Pixel Map.

Click Start Channel	posts Start Channel to the command line
[301]	defines the devices patched in channels 1001 and up
Click on Horizontal and Vertical Order	changes the way the auto-numbering populates through the pixels.
Click Direction to "Columns"	changes the way the auto-numbering populates through the pixels.



Click Apply	assigns each fixture channel sequentially according to the utility settings

All fixtures turn purple to indicate that they have been assigned a Channel, and channel numbers appear in each pixel.



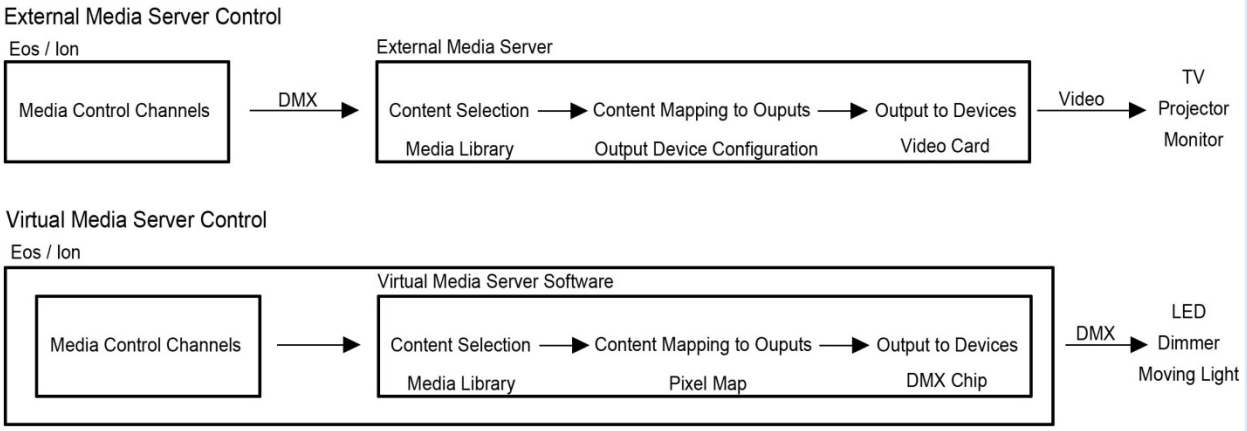
{Done}!!!	exits editor and saves work

A Note about Pixel Maps:

It is important to remember that setting up a Pixel Map is not the same as patching a fixture in the console's patch function. A Pixel Map in VMS is the same as the Output Configuration utility in an external Media Server.

Instead of telling Content Pixel 1 that it will be controlling a pixel on a 1280x1024 monitor on Video Card 1 (as you would in an external Media Server), in a Pixel Map you are telling Content Pixel 1 that it will be controlling an RGB LED on Universe 10 address 1-3.

If it helps, think of the Pixel Map utility as a Media Server box inside of the console – hence the name Virtual Media Server.



Assigning Server & Layer Channels

Just like in an external Media Server, we have to tell the Virtual Media Server what it is listening to for control. In an external Media Server, we would give the server channel and layer channels DMX addresses at the server (similar to a moving light). But because the VMS is contained in the console, we only have to tell the Pixel Map which channels to listen to.

{Server Channel} [511] [Enter]	assigns the channel number for the VMS server channel (Master Layer)
{Layer Channels} [512] [Thru] [515] [Enter]	assigns the channel number for the VMS layer channels (Content Layers)

Patching a Virtual Media Server

Because the VMS is completely internal to the console, there is no address required. Therefore, patching of Servers and Layers must be done in **Patch by Channel** Mode.

Patching the Server:

In {Patch} - By Channel Format	
[511] [Enter]	select channel for server
{Type}	select manufacturer
{ETC Fixtures}	select ETC
{Virtual} {Server Ver 1.0}	assign virtual server

Patching the Virtual Media Layers

A virtual media layer contains one piece of media content, which can be stacked on top of each other or used separately. These layers are controlled in a very similar manner as moving lights and just like their automated counterparts they contain many parameters that can be modified in order to create the desired look.

[512] [Thru] [513]	select channels for virtual media layers
{Type}	select manufacturer
{ETC Fixtures}	select ETC
{Virtual} {Layer Ver 1.0}	assigns virtual media layers

Patching the Virtual Efffect Layers

The Virtual Effect Layer allows you to use procedurally generated content. This is content that is created algorithmically in real time, instead of rendering file-based media.

[514] [Thru] [515]	select channels for virtual layers
{Type}	select manufacturer
{ETC Fixtures}	select ETC
{Virtual} {Effect Layer Ver 1.1}	sssign virtual effect layers

Normally if talking to an external media server, we would to patch with addresses so console would know which DMX addresses to use to speak to the media server. Because this is internal and we have established the connection with our pixel map, we don't need to put any addresses in the patch.

There can be up to 12 Media Layers and Effect Layers total per Virtual Server.

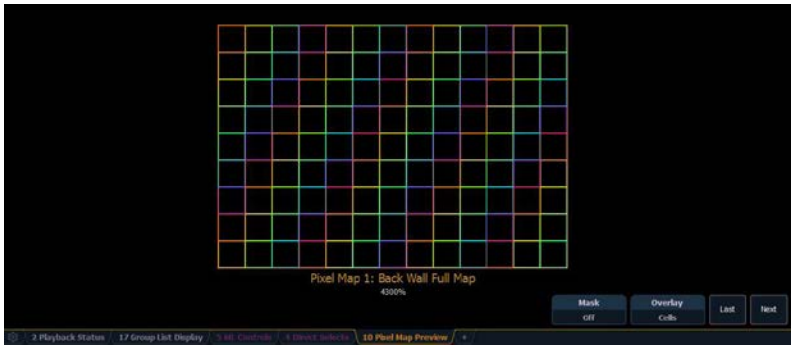
Other Useful Displays

There are two display options that will assist in the usage of VMS:

Pixel Map Preview

Pixel Map Preview shows what the console is outputting to the pixel map.

Use Add-a-Tab (the {+} sign)	
{Pixel Map Preview}	opens Pixel Map Preview (PMP) in a tab



ML Controls

ML Controls shows thumbnails of the media content and provides individual control of all the parameters of the virtual media server.

Use Add-a-Tab (the {+} sign)	
{ML Control}	select ML Controls

VMS Manual Control

Getting Started with Media Layers

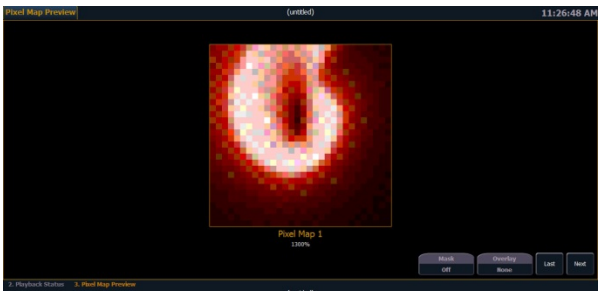
[Live] with ML Controls display	
[511] [At] [Full] [Enter]	turns on the server
[512] [At] [Full] [Enter]	turns on media layer 512
Scroll right to Image section, Library :: 0	

Adjusting Content Playback Options

- **{Library}** - selects the image folder - allows selection of video folder 0 through 255 (0 is default ETC folder)
- **{File}** - selects the media file within the selected library - allows selection of video clip 0 through 255
- {Playback Mode 1}:
  - **{Display Centered}** – shows the file in it's centered frame
  - **{Display In Frame}** – shows the start frame of the video file
  - **{Display Out Frame}** – shows the end frame of the video file
  - **{Play Loop Forward}** – plays the file from its start frame to its end frame and repeats
  - **{Play Loop Reverse}** – plays the file from its end frame to the start frame and repeats
  - **{Play Once Forward}** – plays the file from start frame to end frame and stops
  - **{Play Once Reverse}** – plays the file from the end frame to the start frame and stops
  - **{Stop}** – stops the file in its current frame
- **{Playback Speed}** - the speed at which the video plays back (fps)
- **{In / Out Point}** - determines where in the clip (frame number) you want to enter in or to exit (basic video editing feature – select a section of the video to play)

Playback Exercise

{File} {46}	with mouse, click on file 46
Scroll back left to {Play Mode}, {Play Loop Forward}	select the playback mode
Increase {Playback speed} to 100	mouse over playback speed and click or roll mouse wheel



Adjusting Content Color Rendering Options

Scroll left to Color section

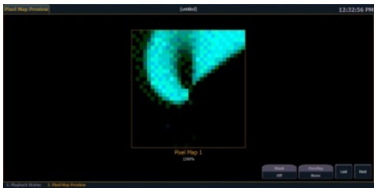
with chan 512 still on the command line

- **Color (Red, Green, Blue; Hue & Saturation) -** Filters the color of the content. For example, if all the colors are set to full, the content will play all colors normally. If blue is at 0, then only the red and green pixels of the content will play. The color and gel pickers can be used to select color filtering quickly.
- **Contrast -** Adjusts the contrast of the content playing, just like a television or monitor.
- **Negative -** With negative on, the output is the negative of the content. With it off, the content plays back normally.
- **Image Brightness -** Adjusts the brightness of the content, just like a television or a monitor. Moving toward 100 shifts the content toward white, moving toward -100 shifts the content toward black. Image brightness should not be confused with Intensity.

Color Rendering Exercise

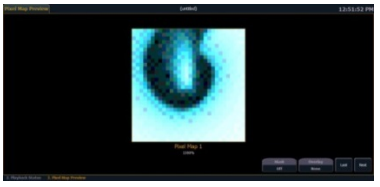
{Red} {Min} **{Red} {Home}**

varies the red filter on the content



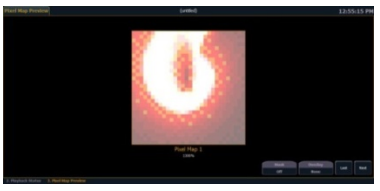
{Negative On} **{Negative Off}**

toggles content output



{Image Brightness} [50] **{Image Brightness} {Home}**

varies the brightness normal to full white



{Contrast} {Max} **{Contrast} {Home}**

varies the contrast from -100 to 100, home = 0 or normal

Adjusting Content Shape and Location Options

Scroll right to Shutter section	with chan 512 still on the command line

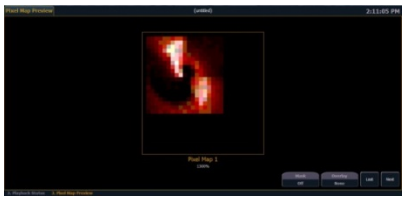
- **Scale -** Changes the scale of the content to either be larger or smaller than the standard content playback.
- **Aspect Ratio -** Stretches or shrinks the content only along the X axis, making it wide or squished looking. Z Rotate can be used to modify the aspect ratio along the Y axis.

Scroll right to Focus section	with chan 512 still on the command line

- **Pan and Tilt -** Moves the content up and down, left and right within the pixel map frame.

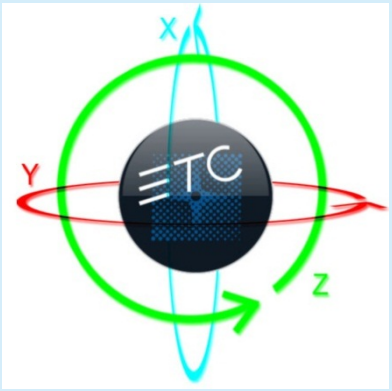
Shape and Location Exercise

{Scale} [15] (Don't forget command line shortcuts!)	changes the content scale to 15% of its original size
{Pan} [-] [15]	moves the content to the left by 15%
{Tilt} [15]	moves the content upwards by 15%



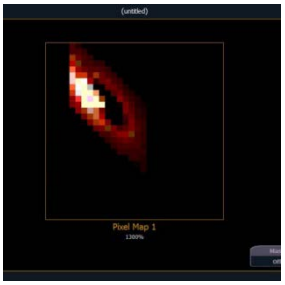
Adjusting Content 3D Rotation Options

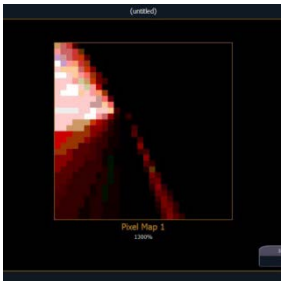
- **{X and Y Rotate}** - Rotates the content in 3 dimensions. X rotates the content along the X axis – or toward and away from you. Y rotates the content along the Y axis – or left and right in front of you.
- **{Z Rotate}** - Rotates the content around the Z axis (the axis pointed straight at you). There are two options, just like gobo rotations:
  - **{Gobo Mode Index}** – adjusts the content by degrees, and does not continually rotate
  - **{Rotate}** – rotates the content continually, from slow to fast.
- **{Field of View (FoView)} -** Adds a perspective view to the content. This can only be used when X and/or Y rotate are not at 0.



3D Rotation Exercise : X, Y &Z Rotate, Field of View

[512] [Enter]	re-selects channel 512
Under Shutter in the ML Controls	
{X Rotate} [50] (roll the wheel slowly to 50 to see changes)	rotates the content along the X-axis.
{Y Rotate} [50] (roll the wheel slowly to 50 to see changes)	rotates the content along the Y-axis.





Under Form in the ML Controls	
{FoView} [100] (roll the wheel slowly to 100 to see changes)	shifts the Field of View more drastically as you move toward 100.
{FoView} {Home}	restores Field of View to home.

Under Shutter in the ML Controls	
Click on the Z Rotate Header	opens Z Rotate encoder next to X,Y Rotate
{Gobo Mode Index}, notice scale -180 to 180 Degrees	default mode for Z Rotate
Roll Z Rotate encoder	indexes content
{Z Rotate} {Home}	homes the content index
{Rotate}, notice scale -100 to 100%	default mode for Z Rotate
Roll Z Rotate encoder	rotates content continually, from slow to fast
{Z Rotate} {Home}	homes the content

Multiple Layer Control and Options

[Clear] [Sneak] [Enter]	clears all previous work

Setting up content layers

Because each VMS can have multiple layers, there are certain tools that work specifically with two or more layers interacting. But first, let's look at layer structure and interaction rules.

[511] [Thru] [513] [At] [Full] [Enter]	turns on the server channel, as well as both content (media) layers
[512] [Enter]	selects channel 512 – first content layer
Within ML Controls:	
Scroll to Library :: 0 and then select {File 39}	loads the ETC logo content
{Scale} [5] [Enter]	adjusts the scale to 5%
{Pan} [-] [25] [Enter] {Tilt} [25] [Enter]	places the graphic near the upper-left corner

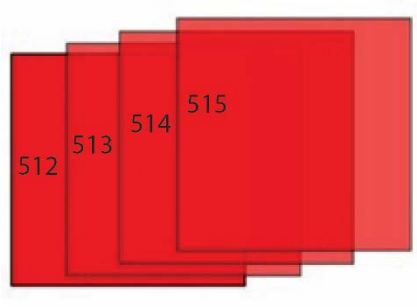
[513] [Enter]	selects channel 513 – a media layer
Scroll to Library :: 0 and then select {File 65}	loads the pink swirl content
{Scale} [5] [Enter]	adjusts the scale to 20%
{Pan} [20] [Enter] {Tilt} [-] [20] [Enter]	places the graphic near the lower-right corner

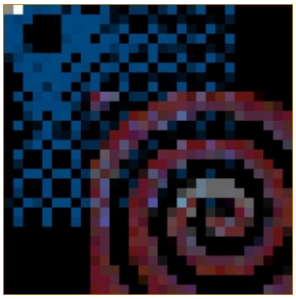
Layer Intensities (Opacity)

Notice that the higher numbered Layer Channel is on top. The lowest numbered layer will always be on the bottom, and the highest on the top in each VMS.

With [513] still selected, roll down intensity wheel	notice transparency of overlapping layers.
Roll intensity back in	

Intensity can be used to dim a layer or to allow other lower layers bleed through (also known as opacity).

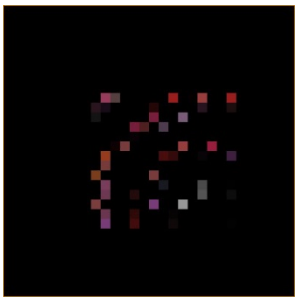




Mask

A Mask takes a lower layer and a higher layer, finds only the non-transparent pixels they have in common, and then displays the common pixels of the higher layer.

[513] [At] [Full] [Enter], [512] [Enter]	brings 513 to full, selects 512
{Mask} {On}	notice the only pixels showing are the ones in [513] that overlap with [512]



Using some of the shapes in the library (folder 0, files 12-38) are great ways to trim or shape content on another layer. Just remember, the Mask must always be applied to the lower of the two layers.

Setup for Mixer Mode exercise

[512] [Enter]	
Scroll to Library :: 0, select {File 65}, {Scale} [15] [Enter], {Focus} {Home}	loads and sets the ETC Logo content
[513] [Enter]	
Scroll to Library :: 0, select {File 20}, {Scale} [12] [Enter], {Focus} {Home}	loads and sets the star content

Mixer Mode

The Mixer allows different transparencies, masks, and color rendering tools to be utilized in how two layers interact.

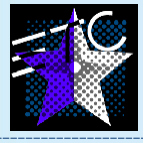
File :: 39

Top Layer (lowest channel)

File :: 20

Bottom Layer (highest channel)

Mixer Mode	Description	Result
{Over} (Default)	Top layer blended with bottom layer	
{In}	Top Layer with opacity reduced by opacity of bottom layer	
{Out}	Top layer with opacity reduced by inverse opacity of bottom layer	
{Atop}	Top layer with opacity reduced by opacity of bottom layer and then blended with bottom layer	
{Add}	Top and bottom layers color and opacity added together	
{Subtract}	Top and bottom layers color and opacity subtracted from each other	
{Multiply}	Top and bottom layers color and opacity multiplied together	
{Screen}	Top and bottom layers colors inverted and then multiplied together	

{Overlay}	Does a multiply or screen effect based on the lightness or darkness of the bottom layer	
{Lighten}	Top layer's color merges with bottom layer's color, with the lighter color winning	
{Darken}	Top layer's color merges with the bottom layer's color, with the darker color winning	
{Dodge}	Bottom layer's color brightened to reflect top layer's color	
{Burn}	Bottom layer's color darkened to reflect the top layer's color	
{Hard Light}	Does a multiply or screen effect on the lightness or darkness of the top layer	
{Soft Light}	Darkens or lightens colors depending on the top layer	
{Xor}	Top layer with opacity reduced by inverse opacity of bottom layer, and then blended with the bottom layer with opacity reduced by the inverse opacity of the top layer	

Virtual Effect Layers

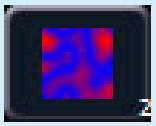
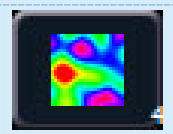
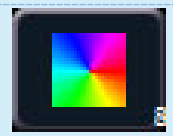
Virtual Effect layers are a special type of layer in that they do not need pre-generated content to output to devices. Instead, they use variables defined by the programmer to create algorithmically-generated procedural media. To put it more simply – you change a few parameters, and the board mathematically generates content.

Virtual Effect Layers share many of the same controls as Media layers. Some of these have the same behavior as their Media Layer counterparts, and some behave differently. This section will go through examples on things that are different in Effect layers. Parameters whose behaviors remain entirely the same are:

- Pan & Tilt
- Playback Mode
- Negative and Image Brightness
- FoView, Scale, Aspect Ratio and X, Y & Z Rotate
- Mask and Mixer Mode

About Generated Content

Because there are simple but powerful algorithms, there is no need for a massive library of folders and files for content. Therefore, you will only find a File 1 parameter. The parameter includes 4 types of content:

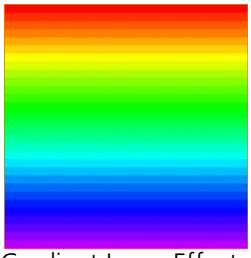
Perlin Noises, user defined colors (files 1-3)	
Perlin Noise, rainbow colors (file 4)	
Gradients, rainbow colors (files 5-9)	
Gradients, user defined colors (files 10-19)	

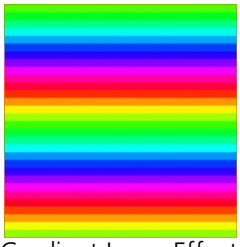
Each content type will have different selections for shape and size.

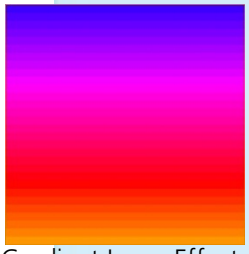
Certain tools will behave differently based on whether a Perlin or a Gradient is selected, or whether it is Rainbow or User Defined color. We will cover all instances applicable to each parameter.

Virtual Effect Layers: Gradient, Rainbow

[Clear] [Sneak] [Enter]	clears all previous work
[511] [At] [Full] [Enter]	turns on the server
[514] [At] [Full] [Enter]	turns on the effect layer
Scroll to File :: 0, select {File 5}	selects linear rainbow gradient
{Width} [13] [Enter] {Height} [9] [Enter]	increases the content to fill the entire pixel map
{Playback Speed} [0] [Enter]	stops the movement of the gradient
{Playback Speed} [50] [Enter]	speeds up the movement of the gradient
{Layer Effect} [50] [Enter]	compresses gradient, adding more repeats – up to 4 as you approach 100
{Layer Effect} [-] [50] [Enter] {Min}	spreads gradient, eventually becoming a single color as you approach -100

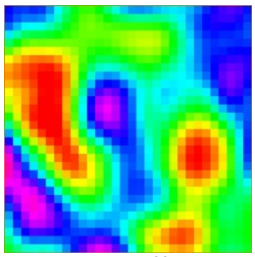

Gradient Layer Effect: 0

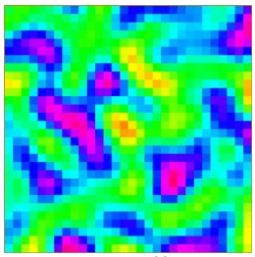

Gradient Layer Effect: 50

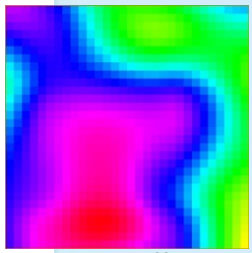

Gradient Layer Effect: -50

Continuing Content: Perlin Noise, Rainbow

Scroll to File :: 0, select {File 4}	selects Perlin noise rainbow
{Layer Effect} [50] [Enter]	increases noise and pixelation, getting sharper as you approach 100
{Layer Effect} [-] [50] [Enter]	decreases noise, less pixalation (larger), getting softer as you approach -100
{Layer Effect 2} [50] [Enter]	scrolls the effect in one direction as you approach -100 to 100
{Layer Effect 2} [-] [50] [Enter]	scrolls the effect in opposite direction as you approach -100 to 100
{Layer Effect 2} [0] [Enter]	stops the effect from scrolling


Perlin Layer Effect: 0


Perlin Layer Effect: 50


Perlin Layer Effect: -50

Parameters with no affect on rainbow effects are Intensity 2, Red, Blue, Green, Red2, Blue2, Green2, Hue, Saturation, In Point, and Out Point.

Continuing Content: User Defined Colors (gradient)

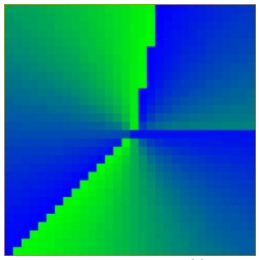
User-Defined Colors use a Start Color and an End Color to define their range and behavior. Each has a few parameters associated with it. The **Start Color** uses Red, Green, and Blue to mix the color, Intensity to change opacity, and In Point to select how far from the mixed color the gradient starts. Not surprisingly, the **End Color** uses Red2, Green2, Blue2, Intensity2, and Out Point for all of the same features.

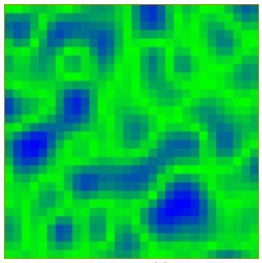
[514] [Enter]	selects the effect layer
Scroll to File :: 0, select {File 3}	selects user-defined gradient
Use first Color Picker to select green	changes the start color to green
Use second Color Picker to select blue	changes the end color to blue
{Layer Effect} [50] [Enter]	just like rainbow gradients, layer effect compresses or expands the gradient

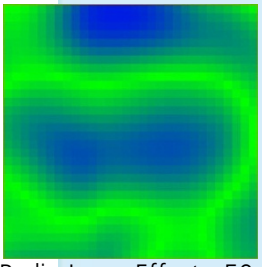
Continuing Content: Perlin Noise, User Defined Colors

Perlin noise with user defined colors combines the tools already learned as one would expect. The colors are user-definable through the above mentioned color and opacity selection, but the noise and animation can be adjusted just like in rainbow Perlin noise.

[514] [Enter]	selects the effect layer
Scroll to File :: 0, select {File 2}	selects user-defined Perlin noise
{Layer Effect} [-] [50] [Enter]	decreases noise, getting softer as you approach -100
{Layer Effect 2} [50] [Enter]	scrolls the effect faster in opposite directions as you approach -100 to 100


Gradient Layer Effect: 50

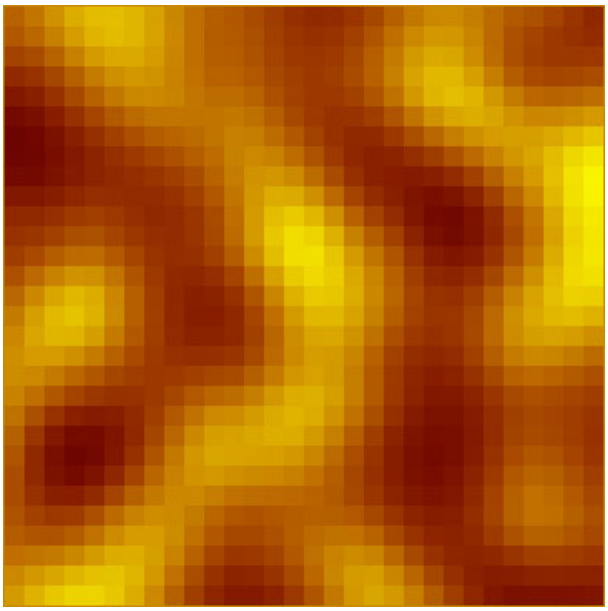

Perlin Layer Effect: 50


Perlin Layer Effect: -50

Effect Layer Exercise: Simple Fire Effect

Let's build a quick example – you need the look of fire, and instead of finding video content, sizing it, importing it, and trying to loop it on a Media layer, you decide to use a VMS Effect Layer.

[Clear] [Sneak] [Enter]	clears all previous work
[511] [+] [514] [At] [Full] [Enter]	turns on the server and the effect layer
[514] [Enter]	selects just the effect layer
Scroll to File :: 0, select {File 1}	selects a user defined Perlin noise effect
Use first Color Picker to select yellow	makes the start color yellow
Use second Color Picker to select red	makes the end color red
{Playback Speed 1} [50] [Enter]	gives the noise a bit more movement
{Layer Effect 2} [50] [Enter]	gets the fire moving – but sideways
{Z Rotate} [90] [Enter]	rotates the fire to flame vertically
{Intensity 3} [40] [Enter]	makes the red more opaque – gives a smoldering look



Server Controls

Server controls have the same functionality as layer controls, but instead of affecting a single layer and its content, the server controls affect every layer in the VMS.

Basic Controls

Intensity	works similarly to the video layer except for all layers
Pan/Tilt	moves all layers
Color – Red, Green, Blue; Hue, Saturation	filters color for all layers
FoView	adjusts the perspective of all layers
Scale	adjusts scale of all layers
Aspect Ratio	adjusts aspect ratio of all layers
XYZ Rotation Controls	rotation control for all layers

Crossfade

Crossfade is a server-only parameter, and is used to adjust the priority when parameters in a Pixel Map are also patched as desk channels. A value of 100 gives the desk channel priority, while -100 gives the VMS priority. At 0 (the default home) the output is calculated as Highest Takes Precedence (HTP) per parameter between the two sources.

[Live] [301] [Thru] [417] [At] [Full]	turns on LEDs (desk control)
Put the LEDs in a *Green* using Color Picker	fire effect running from previous exercise
[511] [Enter]	reselects server, currently HTP per color
{Crossfade} [100] [Enter]	desk channels have control where data is available
{Crossfade} [-][100] [Enter]	Virtual Media Server has control
{Crossfade} [Home] [Enter]	Home or 0 – Highest takes precedence for each emitter

Multiple Servers using the same Output Devices

It is possible to have multiple servers talking to the same output devices by patching the same fixtures in multiple pixel maps. Unless there is a Server channel with a higher Crossfade parameter, all parameters will respond HTP to all Server and Desk channel sources speaking to it. If a Server channel's Crossfade gives it a higher priority over Desk channels, it will win over Desk channels with values, but not other Server channels. Crossfade does not affect priorities between Server channels.

Recording

Recording Cues

[Record] [Cue] [1] [Enter]	records cue 1 with VMS content

Yes, it is that simple! Since Virtual Media Servers and Layers are handled exactly like moving lights, all the same rules apply. Some things to keep in mind when recording Virtual Media content are:

- Mark/AutoMark
- Tracking rules
- Update rules
- Discrete Timing
- Snap Parameters

Recording Subs

[Record] [Sub] [1] [Enter]	records Sub 1
[Sub] [1] {Fader} [Enter]	designates the sub as an Intensity master sub

Subs will work in the same manner as cues in regards to Virtual Media Servers. Due to the amount of information needing to be preset it is highly recommended that all subs that utilize Virtual Media Servers be made into Intensity Masters. This will help reduce some of the visible parameter changes.

Recording Palettes and Presets

Due to the massive amount of data available for modification with Virtual Media Servers, it is highly recommended that the users take advantage of the console's presets and palettes.

Some examples of where presets and palettes could be helpful:

- Quick File/Folder Recall
- Color Overlay
- Layer Positioning
- Overall Look Recall

Locked Palettes are very useful when working with Virtual Media Servers.

Other Pixel Map Tools

Column / Row Guides

Provides gathering elements in the pixel map display that may be useful for large maps

Navigating Within the Pixel Map Editor

Right Mouse Button	Pan control
Mouse Wheel	Zoom
[Format] + Level Wheel	Zoom

Options available for changing the mapping

{Horizontal Order}	toggle state from left to right/right to left
{Vertical Order}	toggle state from top to bottom to bottom to top
{Direction}	toggle state from rows to columns
{Rotate 90}, {Flip V}. {Flip H}, {Invert}	

Pixel Map Preview Advanced Options

Zoom	mouse wheel
Mask On/Off	see full video or just pixels
Overlay:	default in None
Grid	displays a grid on top of the preview
Cells	displays outline of pixels (by cell)
Fixtures	displays outline of pixels (by fixture)
Next & Last	preview different Pixel Maps

Appendix 1 – Effects & Pixel Mapping Hookup

MUSIC Pixels

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
201	12	1	Generic	LED RGB – 8B	MUSIC Pixels
202	12	4	Generic	LED RGB – 8B	MUSIC Pixels
203	12	7	Generic	LED RGB – 8B	MUSIC Pixels
204	12	10	Generic	LED RGB – 8B	MUSIC Pixels
205	12	13	Generic	LED RGB – 8B	MUSIC Pixels
206	12	16	Generic	LED RGB – 8B	MUSIC Pixels
207	12	19	Generic	LED RGB – 8B	MUSIC Pixels
208	12	22	Generic	LED RGB – 8B	MUSIC Pixels
209	12	25	Generic	LED RGB – 8B	MUSIC Pixels
210	12	28	Generic	LED RGB – 8B	MUSIC Pixels
211	12	31	Generic	LED RGB – 8B	MUSIC Pixels
212	12	34	Generic	LED RGB – 8B	MUSIC Pixels
213	12	37	Generic	LED RGB – 8B	MUSIC Pixels
214	12	40	Generic	LED RGB – 8B	MUSIC Pixels
215	12	43	Generic	LED RGB – 8B	MUSIC Pixels
216	12	46	Generic	LED RGB – 8B	MUSIC Pixels
217	12	49	Generic	LED RGB – 8B	MUSIC Pixels
218	12	52	Generic	LED RGB – 8B	MUSIC Pixels
219	12	55	Generic	LED RGB – 8B	MUSIC Pixels
220	12	58	Generic	LED RGB – 8B	MUSIC Pixels
221	12	61	Generic	LED RGB – 8B	MUSIC Pixels
222	12	64	Generic	LED RGB – 8B	MUSIC Pixels
223	12	67	Generic	LED RGB – 8B	MUSIC Pixels
224	12	70	Generic	LED RGB – 8B	MUSIC Pixels
225	12	73	Generic	LED RGB – 8B	MUSIC Pixels
226	12	76	Generic	LED RGB – 8B	MUSIC Pixels
227	12	79	Generic	LED RGB – 8B	MUSIC Pixels
228	12	82	Generic	LED RGB – 8B	MUSIC Pixels
229	12	85	Generic	LED RGB – 8B	MUSIC Pixels
230	12	88	Generic	LED RGB – 8B	MUSIC Pixels
231	12	91	Generic	LED RGB – 8B	MUSIC Pixels
232	12	94	Generic	LED RGB – 8B	MUSIC Pixels
233	12	97	Generic	LED RGB – 8B	MUSIC Pixels
234	12	100	Generic	LED RGB – 8B	MUSIC Pixels
235	12	103	Generic	LED RGB – 8B	MUSIC Pixels
236	12	106	Generic	LED RGB – 8B	MUSIC Pixels
237	12	109	Generic	LED RGB – 8B	MUSIC Pixels
238	12	112	Generic	LED RGB – 8B	MUSIC Pixels
239	12	115	Generic	LED RGB – 8B	MUSIC Pixels
240	12	118	Generic	LED RGB – 8B	MUSIC Pixels
241	12	121	Generic	LED RGB – 8B	MUSIC Pixels
242	12	124	Generic	LED RGB – 8B	MUSIC Pixels
243	12	127	Generic	LED RGB – 8B	MUSIC Pixels
244	12	130	Generic	LED RGB – 8B	MUSIC Pixels
245	12	133	Generic	LED RGB – 8B	MUSIC Pixels
246	12	136	Generic	LED RGB – 8B	MUSIC Pixels
247	12	139	Generic	LED RGB – 8B	MUSIC Pixels
248	12	142	Generic	LED RGB – 8B	MUSIC Pixels
249	12	145	Generic	LED RGB – 8B	MUSIC Pixels

250	12	148	Generic	LED RGB – 8B	MUSIC Pixels

MUSIC Pixels (continued)

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
251	12	151	Generic	LED RGB – 8B	MUSIC Pixels
252	12	154	Generic	LED RGB – 8B	MUSIC Pixels
253	12	157	Generic	LED RGB – 8B	MUSIC Pixels
254	12	160	Generic	LED RGB – 8B	MUSIC Pixels
255	12	163	Generic	LED RGB – 8B	MUSIC Pixels
256	12	166	Generic	LED RGB – 8B	MUSIC Pixels
257	12	169	Generic	LED RGB – 8B	MUSIC Pixels
258	12	172	Generic	LED RGB – 8B	MUSIC Pixels
259	12	175	Generic	LED RGB – 8B	MUSIC Pixels
260	12	178	Generic	LED RGB – 8B	MUSIC Pixels
261	12	181	Generic	LED RGB – 8B	MUSIC Pixels
262	12	184	Generic	LED RGB – 8B	MUSIC Pixels
263	12	187	Generic	LED RGB – 8B	MUSIC Pixels
264	12	190	Generic	LED RGB – 8B	MUSIC Pixels
265	12	193	Generic	LED RGB – 8B	MUSIC Pixels
266	12	196	Generic	LED RGB – 8B	MUSIC Pixels
267	12	199	Generic	LED RGB – 8B	MUSIC Pixels
268	12	202	Generic	LED RGB – 8B	MUSIC Pixels
269	12	205	Generic	LED RGB – 8B	MUSIC Pixels
270	12	208	Generic	LED RGB – 8B	MUSIC Pixels
271	12	211	Generic	LED RGB – 8B	MUSIC Pixels
272	12	214	Generic	LED RGB – 8B	MUSIC Pixels
273	12	217	Generic	LED RGB – 8B	MUSIC Pixels
274	12	220	Generic	LED RGB – 8B	MUSIC Pixels
275	12	223	Generic	LED RGB – 8B	MUSIC Pixels
276	12	226	Generic	LED RGB – 8B	MUSIC Pixels
277	12	229	Generic	LED RGB – 8B	MUSIC Pixels
278	12	232	Generic	LED RGB – 8B	MUSIC Pixels

Back Wall Pixels

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
301	11	1	Generic	LED RGB – 8B	Back Wall Pixels
302	11	4	Generic	LED RGB – 8B	Back Wall Pixels
303	11	7	Generic	LED RGB – 8B	Back Wall Pixels
304	11	10	Generic	LED RGB – 8B	Back Wall Pixels
305	11	13	Generic	LED RGB – 8B	Back Wall Pixels
306	11	16	Generic	LED RGB – 8B	Back Wall Pixels
307	11	19	Generic	LED RGB – 8B	Back Wall Pixels
308	11	22	Generic	LED RGB – 8B	Back Wall Pixels
309	11	25	Generic	LED RGB – 8B	Back Wall Pixels
310	11	28	Generic	LED RGB – 8B	Back Wall Pixels
311	11	31	Generic	LED RGB – 8B	Back Wall Pixels
312	11	34	Generic	LED RGB – 8B	Back Wall Pixels
313	11	37	Generic	LED RGB – 8B	Back Wall Pixels
314	11	40	Generic	LED RGB – 8B	Back Wall Pixels
315	11	43	Generic	LED RGB – 8B	Back Wall Pixels
316	11	46	Generic	LED RGB – 8B	Back Wall Pixels
317	11	49	Generic	LED RGB – 8B	Back Wall Pixels
318	11	52	Generic	LED RGB – 8B	Back Wall Pixels
319	11	55	Generic	LED RGB – 8B	Back Wall Pixels
320	11	58	Generic	LED RGB – 8B	Back Wall Pixels
321	11	61	Generic	LED RGB – 8B	Back Wall Pixels
322	11	64	Generic	LED RGB – 8B	Back Wall Pixels
323	11	67	Generic	LED RGB – 8B	Back Wall Pixels
324	11	70	Generic	LED RGB – 8B	Back Wall Pixels
325	11	73	Generic	LED RGB – 8B	Back Wall Pixels
326	11	76	Generic	LED RGB – 8B	Back Wall Pixels
327	11	79	Generic	LED RGB – 8B	Back Wall Pixels
328	11	82	Generic	LED RGB – 8B	Back Wall Pixels
329	11	85	Generic	LED RGB – 8B	Back Wall Pixels
330	11	88	Generic	LED RGB – 8B	Back Wall Pixels
331	11	91	Generic	LED RGB – 8B	Back Wall Pixels
332	11	94	Generic	LED RGB – 8B	Back Wall Pixels
333	11	97	Generic	LED RGB – 8B	Back Wall Pixels
334	11	100	Generic	LED RGB – 8B	Back Wall Pixels
335	11	103	Generic	LED RGB – 8B	Back Wall Pixels
336	11	106	Generic	LED RGB – 8B	Back Wall Pixels
337	11	109	Generic	LED RGB – 8B	Back Wall Pixels
338	11	112	Generic	LED RGB – 8B	Back Wall Pixels
339	11	115	Generic	LED RGB – 8B	Back Wall Pixels
340	11	118	Generic	LED RGB – 8B	Back Wall Pixels
341	11	121	Generic	LED RGB – 8B	Back Wall Pixels
342	11	124	Generic	LED RGB – 8B	Back Wall Pixels
343	11	127	Generic	LED RGB – 8B	Back Wall Pixels
344	11	130	Generic	LED RGB – 8B	Back Wall Pixels
345	11	133	Generic	LED RGB – 8B	Back Wall Pixels
346	11	136	Generic	LED RGB – 8B	Back Wall Pixels
347	11	139	Generic	LED RGB – 8B	Back Wall Pixels
348	11	142	Generic	LED RGB – 8B	Back Wall Pixels
349	11	145	Generic	LED RGB – 8B	Back Wall Pixels
350	11	148	Generic	LED RGB – 8B	Back Wall Pixels

Back Wall Pixels (continued)

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
351	11	151	Generic	LED RGB – 8B	Back Wall Pixels
352	11	154	Generic	LED RGB – 8B	Back Wall Pixels
353	11	157	Generic	LED RGB – 8B	Back Wall Pixels
354	11	160	Generic	LED RGB – 8B	Back Wall Pixels
355	11	163	Generic	LED RGB – 8B	Back Wall Pixels
356	11	166	Generic	LED RGB – 8B	Back Wall Pixels
357	11	169	Generic	LED RGB – 8B	Back Wall Pixels
358	11	172	Generic	LED RGB – 8B	Back Wall Pixels
359	11	175	Generic	LED RGB – 8B	Back Wall Pixels
360	11	178	Generic	LED RGB – 8B	Back Wall Pixels
361	11	181	Generic	LED RGB – 8B	Back Wall Pixels
362	11	184	Generic	LED RGB – 8B	Back Wall Pixels
363	11	187	Generic	LED RGB – 8B	Back Wall Pixels
364	11	190	Generic	LED RGB – 8B	Back Wall Pixels
365	11	193	Generic	LED RGB – 8B	Back Wall Pixels
366	11	196	Generic	LED RGB – 8B	Back Wall Pixels
367	11	199	Generic	LED RGB – 8B	Back Wall Pixels
368	11	202	Generic	LED RGB – 8B	Back Wall Pixels
369	11	205	Generic	LED RGB – 8B	Back Wall Pixels
370	11	208	Generic	LED RGB – 8B	Back Wall Pixels
371	11	211	Generic	LED RGB – 8B	Back Wall Pixels
372	11	214	Generic	LED RGB – 8B	Back Wall Pixels
373	11	217	Generic	LED RGB – 8B	Back Wall Pixels
374	11	220	Generic	LED RGB – 8B	Back Wall Pixels
375	11	223	Generic	LED RGB – 8B	Back Wall Pixels
376	11	226	Generic	LED RGB – 8B	Back Wall Pixels
377	11	229	Generic	LED RGB – 8B	Back Wall Pixels
378	11	232	Generic	LED RGB – 8B	Back Wall Pixels
379	11	235	Generic	LED RGB – 8B	Back Wall Pixels
380	11	238	Generic	LED RGB – 8B	Back Wall Pixels
381	11	241	Generic	LED RGB – 8B	Back Wall Pixels
382	11	244	Generic	LED RGB – 8B	Back Wall Pixels
383	11	247	Generic	LED RGB – 8B	Back Wall Pixels
384	11	250	Generic	LED RGB – 8B	Back Wall Pixels
385	11	253	Generic	LED RGB – 8B	Back Wall Pixels
386	11	256	Generic	LED RGB – 8B	Back Wall Pixels
387	11	259	Generic	LED RGB – 8B	Back Wall Pixels
388	11	262	Generic	LED RGB – 8B	Back Wall Pixels
389	11	265	Generic	LED RGB – 8B	Back Wall Pixels
390	11	268	Generic	LED RGB – 8B	Back Wall Pixels
391	11	271	Generic	LED RGB – 8B	Back Wall Pixels
392	11	274	Generic	LED RGB – 8B	Back Wall Pixels
393	11	277	Generic	LED RGB – 8B	Back Wall Pixels
394	11	280	Generic	LED RGB – 8B	Back Wall Pixels
395	11	283	Generic	LED RGB – 8B	Back Wall Pixels
396	11	286	Generic	LED RGB – 8B	Back Wall Pixels
397	11	289	Generic	LED RGB – 8B	Back Wall Pixels
398	11	292	Generic	LED RGB – 8B	Back Wall Pixels
399	11	295	Generic	LED RGB – 8B	Back Wall Pixels
400	11	298	Generic	LED RGB – 8B	Back Wall Pixels

Back Wall Pixels (continued)

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
401	11	301	Generic	LED RGB – 8B	Back Wall Pixels
402	11	304	Generic	LED RGB – 8B	Back Wall Pixels
403	11	307	Generic	LED RGB – 8B	Back Wall Pixels
404	11	310	Generic	LED RGB – 8B	Back Wall Pixels
405	11	313	Generic	LED RGB – 8B	Back Wall Pixels
406	11	316	Generic	LED RGB – 8B	Back Wall Pixels
407	11	319	Generic	LED RGB – 8B	Back Wall Pixels
408	11	322	Generic	LED RGB – 8B	Back Wall Pixels
409	11	325	Generic	LED RGB – 8B	Back Wall Pixels
410	11	328	Generic	LED RGB – 8B	Back Wall Pixels
411	11	331	Generic	LED RGB – 8B	Back Wall Pixels
412	11	334	Generic	LED RGB – 8B	Back Wall Pixels
413	11	337	Generic	LED RGB – 8B	Back Wall Pixels
414	11	340	Generic	LED RGB – 8B	Back Wall Pixels
415	11	343	Generic	LED RGB – 8B	Back Wall Pixels
416	11	346	Generic	LED RGB – 8B	Back Wall Pixels
417	11	349	Generic	LED RGB – 8B	Back Wall Pixels

Appendix 2 – Pixel Mapping Hookup Additions

Virtual Media Servers

Channel	Universe	Address	Manufacturer	Type	Focus/Notes
501	NA	NA	ETC	Virtual – Server Ver 1.0	MUSIC Pix Map Server
502	NA	NA	ETC	Virtual – Layer Ver 1.0	MUSIC Pix Map Media Layer
503	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	MUSIC Pix Map FX Layer
504	NA	NA	ETC	Virtual – Layer Ver 1.0	MUSIC Pix Map Media Layer
505	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	MUSIC Pix Map FX Layer
511	NA	NA	ETC	Virtual – Server Ver 1.0	Full Panel Pix Map Server
512	NA	NA	ETC	Virtual – Layer Ver 1.0	Full Panel Pix Map Media Layer
513	NA	NA	ETC	Virtual – Layer Ver 1.0	Full Panel Pix Map Media Layer
514	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	Full Panel Pix Map FX Layer
515	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	Full Panel Pix Map FX Layer
521	NA	NA	ETC	Virtual – Server Ver 1.0	SR Panel Pix Map Server
522	NA	NA	ETC	Virtual – Layer Ver 1.0	SR Panel Pix Map Media Layer
523	NA	NA	ETC	Virtual – Layer Ver 1.0	SR Panel Pix Map Media Layer
524	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	SR Panel Pix Map FX Layer
525	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	SR Panel Pix Map FX Layer
531	NA	NA	ETC	Virtual – Server Ver 1.0	C Panel Pix Map Server
532	NA	NA	ETC	Virtual – Layer Ver 1.0	C Panel Pix Map Media Layer
533	NA	NA	ETC	Virtual – Layer Ver 1.0	C Panel Pix Map Media Layer
534	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	C Panel Pix Map FX Layer
535	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	C Panel Pix Map FX Layer
541	NA	NA	ETC	Virtual – Server Ver 1.0	SL Panel Pix Map Server
542	NA	NA	ETC	Virtual – Layer Ver 1.0	SL Panel Pix Map Media Layer
543	NA	NA	ETC	Virtual – Layer Ver 1.0	SL Panel Pix Map Media Layer
544	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	SL Panel Pix Map FX Layer
545	NA	NA	ETC	Virtual – Effect Layer Ver 1.1	SL Panel Pix Map FX Layer

Appendix 3 – Adding Media

Importing Media Content

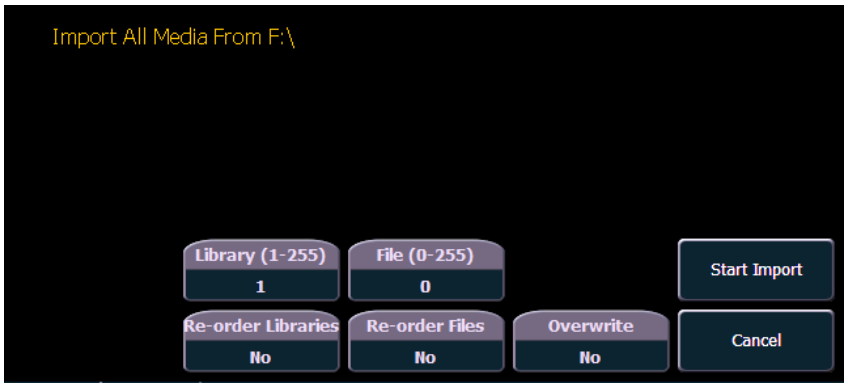
There are three ways to import media. Those methods are:

- Import All Pixel Map Media - An automatic method for importing media.
- File Manager - A manual method for importing media.
- Import Show Pixel Map Media - An automatic method of importing all media needed for the current show file. Used by backup and clients.

File names for media content need to follow the naming convention of file number underscore filename. For example, 002_Volcano.mov is a file name that would be recognized. When importing by using the file manager, you need to number the files prior to importing. However using Import All Pixel Map Media allows you to specify the library and file numbers, and the console will auto-number the file names as needed during the import process.

Using Import All Pixel Map Media

To import go to Browser>Import>Import Pixel Map Media>Import All Pixel Map Media and select the device with the media on it.



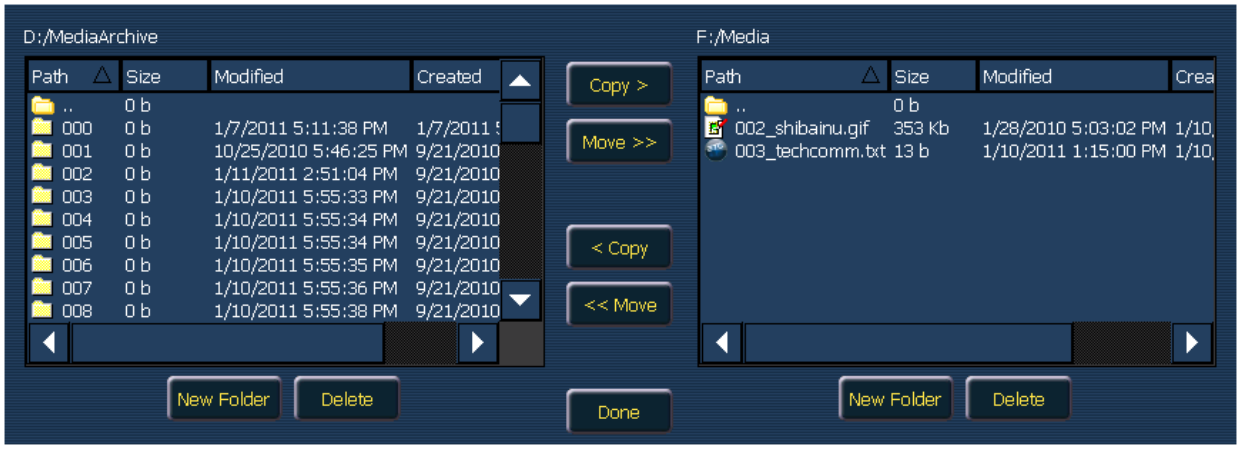
Options in this display include:

- **{Library(1-255)}** - selects the library to import media.
- **{File(0-255)}** - selects the file number.
- **{Reorder Libraries}** - specify whether or not the library on the source device will be renumbered. If the source device's library is not numbered, it will be assigned the specified library number.
- **{Reorder Files}** - specify whether or not the file(s) on the source device will be renumbered. If the source device's file(s) is not numbered, it will be assigned the specified file number.
- **{Overwrite}** - overwrite the existing media files.
- **{Start Import}** - begins the import process. A progress bar will appear to indicate the status of the import process. When finished, click **{Done}**.
- **{Cancel}** - stops the import, and exits the display.

Importing with the File Manager

To import, go to ECU>Settings>Maintenance>File Manager

Select the device with the media on it in one window and in the other window select the MediaArchive folder. Inside the MediaArchive folder, you will see numbered folders. Those folders correspond to libraries. You can copy or move files.



Exporting Media Content

There are two ways to export media. Those methods are:

- Export Pixel Map Media - An automatic method for exporting media.
- File Manager - A manual method for exporting media.

Using Export Pixel Map Media

This is an automatic method of exporting all the media used in the current show file. This includes any pixel map media stored in cues, presets, submasters, etc.

To export, go to Browser>Export>Export Pixel Map Media
Select the device you want to export the media content to.

There are only two options available in this display:

- **{Start Export}** - begins the export process. A progress bar will appear to indicate the status of the import process. When finished, click **{Done}**.
- **{Cancel}** - stops the export and exits the display.

Using File Manager

Exporting with the file manager is very similar to importing with it. You select the files in the MediaArchive folder that you wish to export, and you can either copy or move them to your device.

Appendix 4 – Pixel Mapping in a Multi-Console System

When using file based media in a multi-console environment, the primary console should be used as the 'base' media archive.

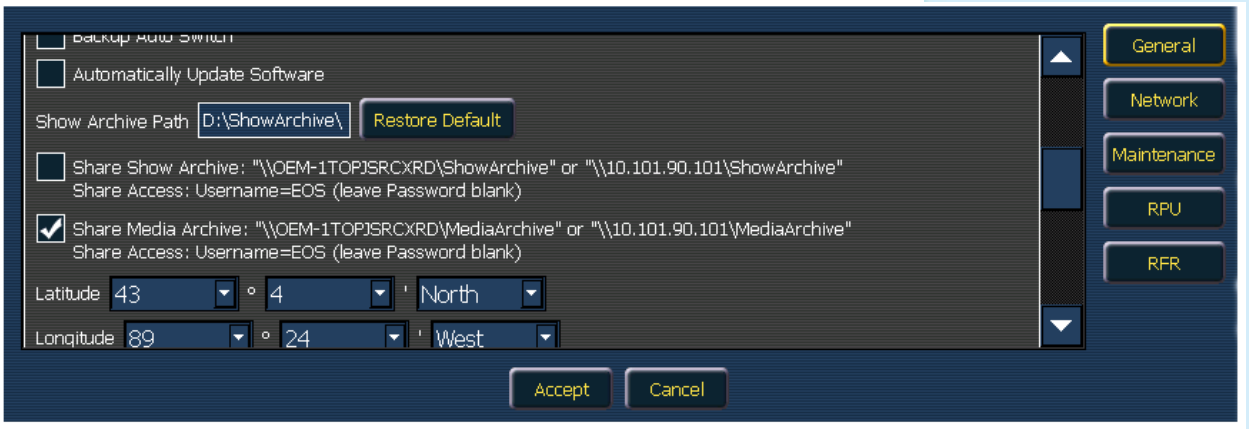
Media can be imported to the primary, and the backup console and/or any other clients can then synchronize their own, local media archives with the primary. The backup must synchronize media with the primary in the event that the backup must take control as the master. For clients, synchronizing the media is optional but useful if you wish to see the media playing back in the Pixel Map Preview display.

Steps for Configuring a Multi-Console System

Once the Eos Family Pixel Mapping Installer has been installed on all consoles, follow these steps to configure your multi-console system:

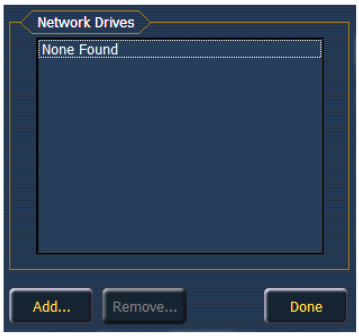
Setting up the Primary

Step 1:	On the primary console, exit to the Eos Configuration Utility (ECU).
Step 2:	Press the **{Settings}** button
Step 3:	Press **{General}** if needed.
Step 4:	Make sure that the **{Share Media Archive}** box is checked. This will allow for sharing of the primary's media archive. Copy the path name, you will need it to setup the backup and/or client.



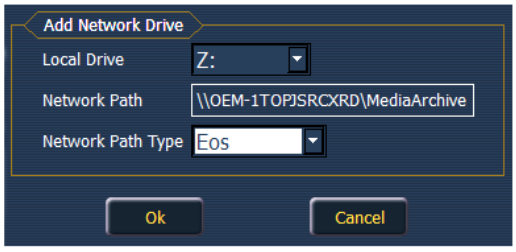
Setting up the Backup and Clients

Step 5:	On the backup or client, exit to the Eos Configuration Utility (ECU)
Step 6:	Press the **{Settings}** button
Step 7:	Press {Maintenance}
Step 8:	Press {Network Drives}



Step 9:	In the Network Drives display, click the **{Add}** Button
Step 10:	In the Add Network Drive display, choose a drive letter for **{Local Drive}**

Step 11:	Enter in the **{Network Path}.** The path name is listed next to the primary's **{Share Media Archive}** checkbox.
Step 12:	Select the appropriate console type for the **{Network Path Type}.**



Step 13:	Click **{Ok}.** You will now be able to access the primary's media archive from the backup or client. This new drive will appear in the browser like a USB drive.
Step 14:	Click **{Done}** and launch the Eos Application.

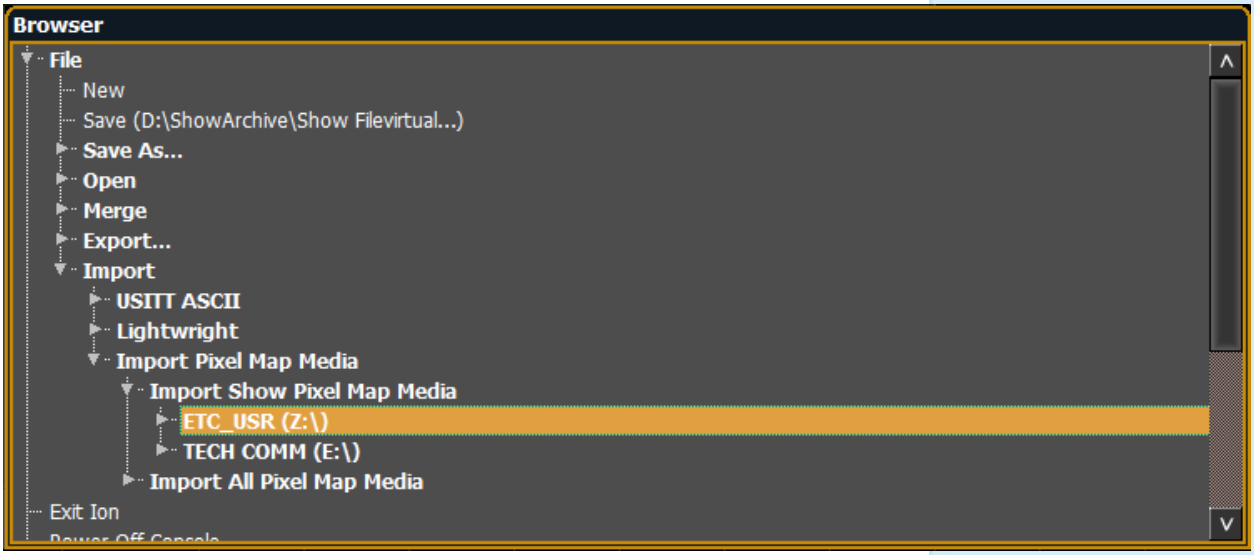
Synchronizing Media Archives

To view media playback in the Pixel Map Preview display, you will need to first import the required media into your backup and/or client's local media archive. This is done from the browser. There are two options for importing media:

- Import Show Pixel Map Media - This import function should be used by the backups and clients. It is the easiest way to ensure that your console will have all of the media required by the current show file.
- Import All Pixel Map Media - This import function should be used by the primary to load the base media content and later to load media on the fly as required. This import function provides more complex options, like targeting which Library and File the media data will be imported into.

Steps for Synchronizing Show Pixel Map Media

Step 1:	On the backup or client, navigate to the browser.
Step 2:	Expand File>Import>Import Pixel Map Media>Import Show Pixel Map Media



Step 3:	Select the appropriate network drive.
Step 4:	The Import Show Media display will open. Press the **{Start Import}** button.
Step 5:	A progress bar will appear to indicate the status of the import process. When finished, click **{Done}**. You will now be able to see the media playing in the Pixel Map Preview display on the backup and/or clients.

Appendix 5 – General Notes on VMS Usage

Software Installation

If your desk was purchased previous to 1.9.6 release (January, 2011), you will need to install a separate piece of software in addition to your Installation of the most recent console software.

Go to www.etcconnect.com, navigate to the Eos Family downloads page

Download and unzip "Pixel Map Installer v1.0.0 for Eos, Ion, PRU, RVI and PC"

Install exactly the same as you would a standard software update

You MUST install separately on each device – automatic software updates do not work with the Pixel Map installer

You only need to install this once on each device. Once it is installed, you will not need to update it with every other software update.

Devices, Outputs, and Show Limitations

VMS is only available on Eos, Gio and Ion, not on Element. The addresses you patch in a Pixel Map count toward the output limitation of your console. They will only count once if you patch the same address in both desk patch and in a Pixel Map.

VMS has the following limitations in each show file:

- 12 Layers per Virtual Media Server
- 40 Pixel Maps
- 16,384 pixels per Pixel Map

User-Added Content

Users may import their own content in to PBM. Supported media file formats are:

- Images - .png, .jpg, .gif, .tiff, and .svg
- Movies - any format that QuickTime® supports. (.3gp .3gpp .3gpp2 .3gp2 .3g2 .3p2 .flc .h264 .hdmov .m4a .m4b .m4p .moo .moov .mov .movie .mp4 .mpg4 .mpg4 .mqv .mv4 .pic .pict .qif .qt .qti .qtif .tvod .vid)
- Text - .txt
- HTML - .htm, .html

Your content storage is limited by your console hard drive. It is a good idea to remove content when not being used.

When creating content for VMS, keep your output device in mind. There is no need to waste processing power rendering a 1080p video for a 50 pixel by 50 pixel output range.

Copywrighted Content

Don't forget to observe copyright laws on any content that you are importing that is not your original creation.

Appendix 6 – General Information on Media Servers

What is a Media Server?

A **Media Server** is a highly specialized computer with software that can manipulate and play back images, videos, and audio content to devices such as projectors, monitors and televisions.

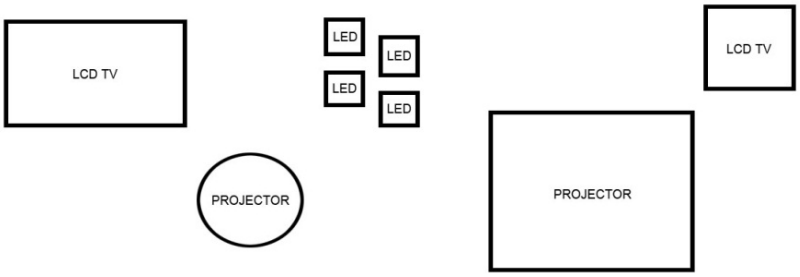
Media Server Hardware consists of large storage devices (hard drives), lots of memory and processing for managing resources, and many high-quality video cards to render content output.

Media Server Software consists of output device configuration tools, content import and management tools, and complex content modification tools that allow changes to content before or while it is being played back.

How does a Media Server work?

Output Device Configuration:

First, you need to connect the devices the Media Server is going to output content to, tell the Media Server what kind of device they are, and where they are located in relation to one another:



The Media Server Software will allow you to tell each output what type of device will be connected to it, as well as its resolution (how many pixels it contains). Generally there is also a graphical environment to arrange the objects in a way that is similar to how they are arranged in real life.

Because the Media Server knows each object's true-space relation to all of the other objects, the Media Server can map the right pixels of the content to the right object and its pixels:

The actual output of your Media Server and its associated objects will be what content resides on the output devices:

Content Import and Management:

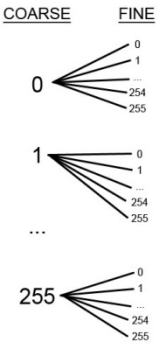
Content is any media file that the Media Server can play back – movies, photos, animations – whatever the Media Server's software and graphics cards can render. These differ by manufacturer.

Because Media Servers are controlled by DMX values (more about this in Control), their content file structure is very specific. Most media servers allow you to have up to 256x256 – or 65,536 – individual pieces of content. So why the odd limit on pieces of content?

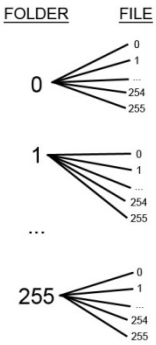
Media Servers use 2 DMX addresses like Coarse and Fine control on a moving light for content navigation (think Pan & Tilt). And just like moving lights, each coarse step – 256 total – has a full range of Fine steps – 256 total (65,536 total possible combinations of Coarse and Fine).

Thus, a Media Server uses 256 folders in its content library – like the Coarse parameter on a moving light – and each folder can contain up to 256 pieces of content – like the Fine parameter (65,536 total possible combinations of folder and file).

MOVING LIGHT COARSE & FINE (PAN/TILT)



MEDIA SERVER COARSE & FINE (CONTENT)



So you could load a specific piece of content by going to folder (Coarse) 15, and file (Fine) 158.

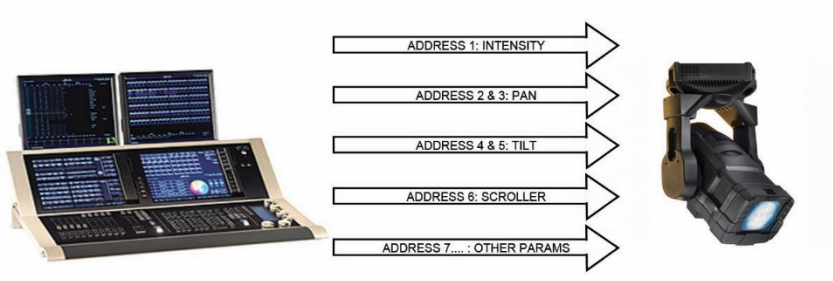
All Media Servers have ways to import your content into the server. Most servers will help you organize your content by starting the folder and file names with a number from 000 to 255. Many servers allow a user-defined name to follow the numeric code in the folder or file name. A file path might look like:

D:/MediaArchive/015-Lava/158-Red_Lava_Fast.mov

Media Server Control:

So now you have a remote computer with tons of video and images loaded on to it, and lots of output devices connected to receive the content. How do you get your Eos or Ion to make the Media Server work?

A moving light uses multiple DMX addresses, each controlling a different parameter in the fixture:



Each motor that is associated with a parameter listens to its own DMX address – move the DMX value, move the motor.

Luckily, Media Servers behave a lot like moving lights when it comes to control, only there are no motors to move. Each controllable parameter of the Media Server is listening to its own DMX address – move the DMX value, change the parameter:

Server and Layer Channels:

One final common element to all Media Servers is the server and layer channel structure. Think of the server channel as a grandmaster and the layer channels as submasters. The layer (just like a sub) controls individual pieces of content – you can have multiple layers with different values to create a single look. However your server (just like a grandmaster) affects ALL of your layers. So if you take your server channel to 50% intensity, all layer channels will be limited to 50% of their current value.

In the Media Server software, there is a utility to assign DMX start addresses to the server channel and each of the layer channels. You will need this information to patch the Media Server in the console, just like when you patch a moving Light.

The amount of layers you can use depends on the model of Media Server you have. Just like subs, the more layers you have, the more individual control you have. But more layers usually means using a more expensive Media Server. For basic Media Server programming, four layers are usually sufficient. When we start controlling Media Servers, we'll discuss some situations that may require more layers.

Patching An External Media Server

Patching the Media Server Channel:

In {Patch} - By Channel Format	
[171]	select channel for server
{Type}	select manufacturer
{Green Hippo}	select Green Hippo
{Hippo} {V3.2 Master}	assigns type as a server
[At] [8] [/] [1] [Enter]	patches the server at address 8/1

Patching the Layer Channels:

[172] [Thru] [175]	selects four channels for media layers
{Type}	select manufacturer
{Green Hippo}	select Green Hippo
{Hippo} {V3.2 Media}	assigns type as media layers
[At] [8] [/] [61] [Enter]	patches layers starting at address 8/61

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