



# Hippotizer V4

4.4.5 — Last update: 2019/07/29

Green Hippo

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# Contacting us

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We strive to ensure this manual is an inclusive guide to all of Hippotizer's features, though there inevitably will be places in the software that are not fully documented or are being used in a new way. For additional information, Green Hippo maintains a user forum, holds training sessions, webinars, operates telephone and email support, and benefits from a network of knowledgeable distributors and users world-wide: help is never far away.

## There are different ways to contact Green Hippo depending on the nature of the Inquiry:

### Sales and marketing inquires:

- [Green Hippo Offices](#)

### Support and training:

- [Support](#)

### Questions about the software or hardware:

- [User Forum](#)

### Feedback and suggestions:

- [Feedback](#)

# Green Hippo Offices

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## UK Main Office:

Green Hippo Ltd.  
Unit 307 Parma House  
Clarendon Road, Wood Green  
London, United Kingdom.  
N22 6UL

The UK offices handle sales and support for Europe, the Middle East and Asia as well as most of our research and development.

## US Office:

US Office Address:  
425 E Colorado St  
Suite 610  
Glendale, CA 91205

The US offices handle sales and support for the Americas.

# Support

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The Hippotizer Media Server is a tool set used by media professionals world wide. With a wide range of skills and requirements, Green Hippo customers have a host of support methods at there disposal.

## Local Distributor

Your local Hippotizer Distributor is frequently the best way to quickly answer questions.

## Green Hippo support

Green Hippo operates a support system. For assistance, visit the support website:

[Green Hippo Support](#)

From here you can search support topics or create a support ticket.

Support tickets monitored seven days a week, with urgent queries answered as fast as possible, often within an hour. Please be sure to include the exact nature of your problem, the Hippotizer software version and hardware you are using.



# User Forum

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## Green Hippo forum

With hundreds of users worldwide active, the Green Hippo forum is an invaluable resource. Green Hippo technical staff also monitor the forum and can help to answer questions.

<http://forum.green-hippo.com/>

# Feedback

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If you have a suggestions or feedback you would like to send to us, please email:

[HippoFeedback@green-hippo.com](mailto:HippoFeedback@green-hippo.com)

All feedback is read by Hippotizer's Product Management and we may contact you to request more information.

# Software Information

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The Hippotizer software package is comprised of different elements developed both by Green Hippo and third parties. Some parts are covered by an End User License Agreement (EULA) these are below. Other software policies such as the Software Assurance Policy are also noted below.

## End User License Agreements

- [Hippotizer and SHAPE EULA](#)
- [3rd Party Licenses](#)

## Other important software information

- [Software Assurance Policy](#)
- [Beta Software](#)

## V4 and V4+ Software Compatibility

### V4 Hardware

- Runs V3 In compatibility mode
- Runs V4 Software Version 4.0 and greater limited by Software Assurance

### V4+ Hardware

- Runs V4 Software Version 4.3 and greater limited by Software Assurance
- Compatible with V4 systems running Software version 4.3 and greater.

# Software Assurance Policy

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## The Software Assurance Policy details the period that systems are entitled to new software

Green Hippo will periodically, and at our discretion, release new versions of software for Hippotizer systems. Each new release will be available for download from our website. A release contains a version number containing a product identifier, major release number and minor release number in a numeric code separated with periods: **Product Identifier.Major Release Number.Minor release Number** For example, 4.2.1 is for the Hippotizer V4 Product, it is the 2nd Major release of V4, and the 1st Minor release of 4.2. Every release is internally coded with the release date which can be seen on the download.

By default, Hippotizer V4 system feature a three (3) year software assurance policy period. While software assurance is active, the Hippotizer V4 system is entitled to install all major releases of V4 with a release date within the software assurance period. The Hippotizer system is entitled to all minor versions within the allowed major version.

For example, assume that Version 4.2 is released in January, 2017 and 4.3 is released in January, 2018. If your software assurance expires in June of 2017, you will be able install 4.2 but not 4.3. Further, if Green Hippo releases minor release of 4.2 (such as 4.2.1) these can be installed as they are part of an allowed major version irrespective of release date. Minor versions of 4.3 will not install as they are part of a major version that is not allowed. Meaning 4.3.1 will not install in this example as it is part of 4.3 which was released after software assurance expired.

Note: Even after software assurance has expired the Hippotizer will continue to operate as normal. The license to run Hippotizer and output video is not time limited.

A Hippotizer system will not be able to install major releases created before or after the software assurance policy is active.

An early adopter extension was in effect for systems purchased in the first year of V4 (From November 2014 to February 2016) all systems purchased on or before February 2016 will end software assurance February 2019.

Systems purchased after February 2016 date have three (3) years of free software upgrades from time of delivery. The system will continue to work as normal after assurance has ended.

The software assurance period can be extended with the purchase of additional time. Please discuss extensions to the software assurance period with Green Hippo or your local distributor.

# Hippotizer and SHAPE EULA

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## HIPPOTIZER V4 & SHAPE EULA

Please read carefully all the terms of this agreement for the use of Hippotizer V4 and SHAPE software. If you do not agree to all the terms please do not click Accept and return the Hippotizer to the location you purchased it.

**GREEN HIPPO LTD** ("The Company") hereby gives you a non-exclusive, perpetual license to use Hippotizer-V4 and SHAPE ("The Software").

The software is for use only in conjunction with a Hippotizer Media Server and a valid use license from Green Hippo Ltd. Any attempt to use this software under any other circumstances will result in legal action.

Should the software be a BETA version it must only be used by individuals or companies aware that BETA software may not function as advertised and should only be used in test environments.

You may

- use the Software on the single media server for which it was supplied;
- copy the Software for archival purposes, provided any copy contains all of the original Software's proprietary notices.

You may not

- modify, translate, reverse engineer, decompile, disassemble in whole or in part (except to the extent applicable laws specifically prohibit such restriction),
- create derivative works based on the Software;
- copy the Software (except as specified above);
- rent, lease, transfer or otherwise transfer rights to the Software to a third party unless as part of rental hire-stock and on the Hippotizer server to which the software was purchased;
- remove any proprietary notices or labels on the Software.

### TERMINATION

The license to use will terminate automatically if you fail to comply with the limitations described above. On termination, you must destroy all copies of the Software and Documentation.

### DATA COLLECTION

The Company will collect user information about you (name, email address, location) for the purpose of licensing the software correctly. This information may be stored on servers located in Europe.

System usage and performance data may be collected for the purposes of improving the product, providing support and other services.

### DISCLAIMER OF WARRANTY

The Software is provided on an AS IS basis, without warranty of any kind, including without limitation the

warranties of merchantability, fitness for a particular purpose and non-infringement.

The Supplier does not warrant that the use of the Software will be uninterrupted or error-free.

The entire risk as to the quality and performance of the Software is borne by you. Should the Software prove defective, you and not GREEN HIPPO LTD assume the entire cost of any service and repair.

The above disclaimer does not affect your warranty agreement on any hardware supplied by the Company. The above disclaimer does not affect your rights to technical support and response to bug-reporting. The software will be supported for an initial 3 years from purchase, and then on

#### LIMITATION OF LIABILITY

GREEN HIPPO LTD IS NOT RESPONSIBLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES.

Title, ownership rights and intellectual property rights in and to the Software shall remain in GREEN HIPPO LTD. The Software is protected by international copyright treaties.

This agreement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with the law of England and Wales.

If you have any questions on this agreement please contact Green Hippo Limited.

#### [3rd Party Licenses and EULAs](#)

# Beta Software

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## **A note about Beta versions:**

Green Hippo frequently uses Beta releases to pre-view features with users and to garner feedback. A Beta release may contain known critical issues within the Zookeeper application including crashes. Those issues that are known at the time of a Beta release will be noted in the release notes as a known limitation. We will not release a Beta version with a known crash in the engine unless we can ensure users will work around it, though certainty of stability only comes with more testing. Please use Beta versions with caution being sure to test required functionality outside of a live environment. If you discover an issue, it would be helpful to feed this back to us by emailing: [beta@green-hippo.com](mailto:beta@green-hippo.com) with a description of the issue and how to reproduce it.

Green Hippo's Beta testers are an open and growing group of users worldwide. If you would like to help us test our next version of software please get in touch by emailing: [beta@green-hippo.com](mailto:beta@green-hippo.com)

# Hardware Information

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Hippotizer is a specialised media playback appliance



Below is some important information about the hardware and good practice for mounting and maintenance.

- [FCC Declaration](#)
- [Rack Mounting](#)
- [Ventilation](#)
- [Power](#)
- [Hardware Changes](#)
- [Restore Utility](#)
- [Hardware Warranty](#)
- [SSD Refresh Tool](#)
- [Capture Cards](#)
- [V4+ System Information](#)
- [V4 System Information](#)
- [Audio](#)



- [EDID Emulation](#)
- [Genlock](#)

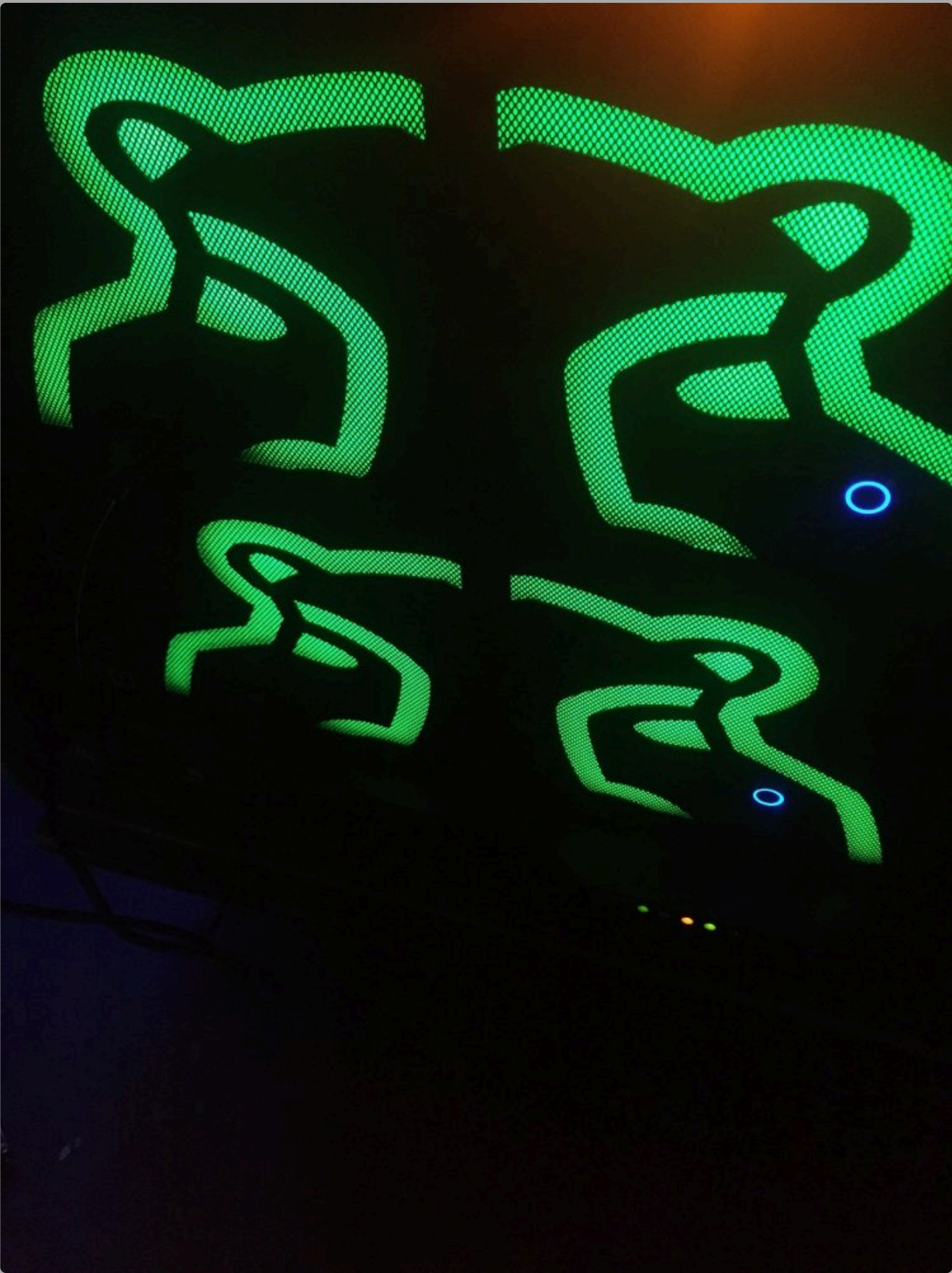
# FCC Declaration

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# Rack Mounting

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Hippotizer V4 systems are purpose built rack-mounted computers that are 1, 2 or 4 rack units (RU).

Included with each unit are front and back rack ears. It is important to ensure the units are properly supported with either a rack shelf or both front and back rack ears.



**Do not only rely on the front rack ears only to support the entire system. Use the back rack ears or shelves to distribute the load.**

Accu-ride rails are available as an option from Green Hippo, please contact your distributor for details.

Green Hippo strongly suggests using shock mounted flight cases to reduce the risk of vibration damage to Hippotizer systems.

# Ventilation

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All V4 units use temperature controlled, forced air cooling. Air is ingested into the cases through filters on the front of the unit and ejected out the back. A single system can generate a significant amount of heat under normal operating conditions; it is imperative to ensure there is adequate ventilation in the front and back of the cases. Do not operate the units in a closed environment and do not obstruct any of the intake or exhaust vents.

**!** The top of the Karst and Amba can get quite warm [up to 50 Degrees C] under normal operating conditions. Take care when handling systems after they have been running and allow them to cool completely before moving.

Over time the intake filters will become dusty; a regular regime of vacuuming the filters out is strongly recommended. Simply pass a vacuum nozzle over the front of the intake filters to remove trapped dust.

Alternatively, the filters can be removed and washed with soap and water. Spare filters are available if required from your Green Hippo distributor.

The fans in all V4 systems are controlled with a temperature monitoring system. This works by varying fan speed with temperature measured from points within the case. It is normal for fan speeds to vary with usage. In the event of a failure of a temperature sensor, the fans will automatically go to full power.

Note: During power up, it is normal for the fans to go to full power for a few seconds. This is in order to eject dust.

Hippotizer systems are designed to operate with an external ambient temperature from 0 – 40 Degrees Centigrade (32 – 104 degrees Fahrenheit).

**!** Do not operate Hippotizer systems in wet or damp conditions

# Power

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Hippotizer V4 systems use an auto-sensing switch mode power supply that is capable of handling 110-250v 50/60hz power.

Note: The switch mode power supplies are sensitive to fluctuations in power supply voltage and power loss. Green Hippo strongly recommends using an Uninterruptible Power Supply (UPS) on all Hippotizer systems.

In common with all computers; allow the Hippotizer to boot down completely before removing the mains supply to the system.

Note: The Hippotizer Taiga and Boreal uses PCIe based solid state storage that must be shut down correctly. In the event that power is lost abruptly, the D: drive on a Taiga may not appear in Windows for several minutes on the next start-up. (Up to 10 minutes) This is normal as the drive re-builds itself. There is no data loss from this process. On a Boreal after an abrupt power loss the D: Drive may not appear in Windows without a further restart of the system.

The power inlet on a Karst, Boreal and Taiga are Neutrik PowerCon True1 with a pass through. Take care not to overload the input power by using the through connections: a Taiga for example uses 1100VA, which at 120v would mean only two systems can be connected to a 20Amp feed.

As an option, Taiga and Boreal can be fitted at the factory with a redundant power supply. This provides the system with two separate, hot-swappable power modules. In the event one of the supplies fails, an audible alarm will sound and the failed supply should be replaced as soon as possible.

Note: Taiga and Boreal use different wattage power supplies and can not be inter-changed.



**Hazardous voltage is contained within the enclosure. Do not open the case with mains power connected.**

Take care when handling the Power supply as it may retain hazardous voltages long after being unplugged from a power source.

Never attempt to disassemble or repair a power supply.

Note: Hippotizer systems contain delicate electronic equipment that is sensitive to electrostatic discharge (ESD). Take appropriate ESD precautions before handling internal components of the system.

# Hardware Changes

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The Hippotizer V4 system is a purpose built computer designed and optimized for video playback.

Green Hippo cannot support after-market changes to the hardware specification of a Hippotizer.

Please do not attempt to change or upgrade components within the system.

Hardware changes are likely to cause the Hippotizer software to stop working, and Green Hippo support will only be able to re-license the software once the machine is returned to the original configuration.

In the event of a component failure please contact Green Hippo support for assistance.



# Restore Utility

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Every Hippotizer unit ships with a restore partition on the C: drive to enable the quick restoration of factory settings. This is accessed at boot-up, before Windows starts up by pressing F12 when prompted.

The F12 restore will delete all data from the C: drive and restore the factory loaded software and defaults. It is therefore important to store newer versions of Hippotizer software on an external drive or the D: drive for fast system rebuild.

3rd party back-up and restore tools may destroy the F12 restore function. If additional back-ups are required, please use the included Acronis software.

Included with the Hippotizer is also a single license for Acronis True Image, an easy to use imaging and restoration tool. Green Hippo strongly recommends regularly backing up each Hippotizer machine's C: Drive to external storage to facilitate rapid recovery in the event of a hardware or software fault.

On Amba, Karst and Boreal the F12 menu is accessed from the prompt during boot-up. On a Taiga, press F8 during boot up and set the boot device to be the Acronis Boot loader.



It is critical to remove all USB and removable hard drives from the Hippotizer system BEFORE beginning an F12 restore. Failure to do so will result in the F12 failing to restore correctly.

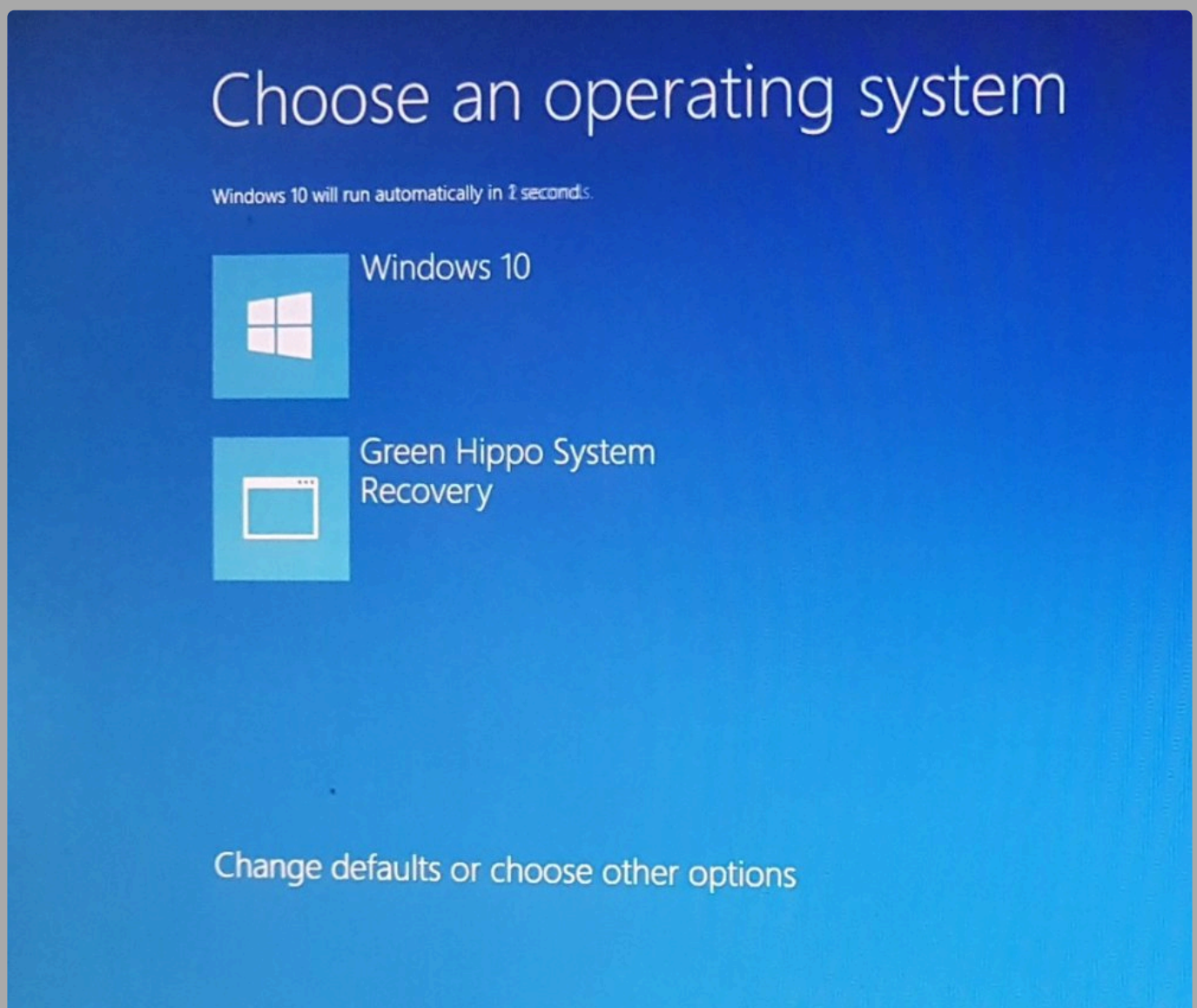
## V4+ System Recovery

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**Hippotizer V4+ servers feature a back-up and restore function called System Recovery.**

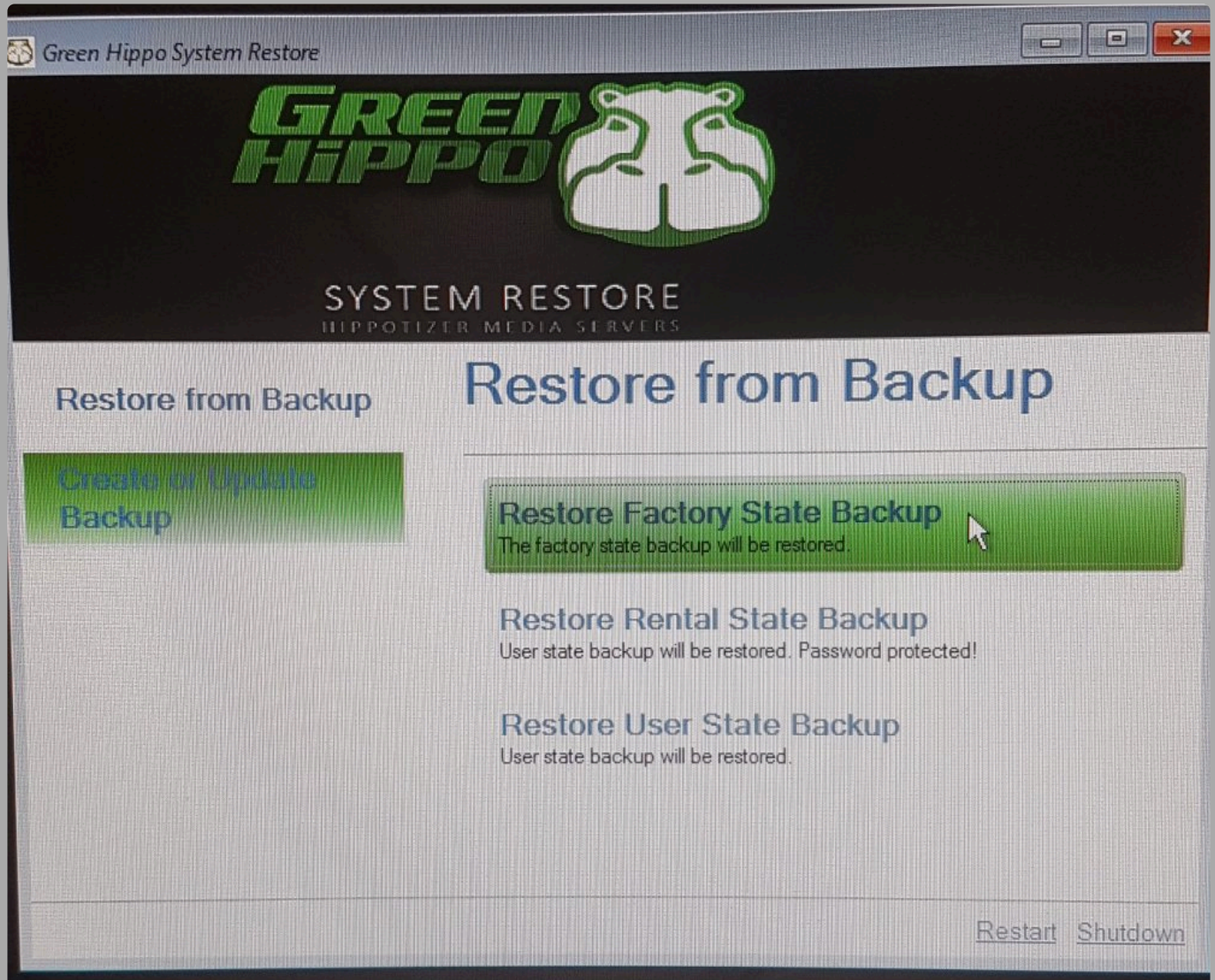
**System Recovery is accessible every time the computer starts up**

Note: The System Recovery screen will appear for several seconds before the system continues to boot normally into Windows. On certain monitors or KVM switches it may take too long for the display to initialise to see this screen. In this case, move the mouse during boot up as this will halt the automatic start of Windows.



To access System Recovery, choose **Green Hippo System Recovery**.

## System recovery offers two basic options: Restore a backup or Create/Edit a Backup



Each system has the capability of storing three Backups: Factory, Rental and User

- The **Factory** Backup is created when the system is manufactured and cannot be overwritten or edited.
- The **Rental** Backup is intended for the system owner to create and edit and is accessed by a password.
- The **User** Backup is for general use and does not have any password protection.

System restore backs up and restores the contents of the C: Drive only. Anything stored on the media drive will NOT be saved or overwritten.

Software assurance dates are stored on a hardware dongle and are not affected by system restoration.

# V4 Acronis

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Every V4 Hippotizer unit ships with a restore partition on the C: drive to enable the quick restoration of factory settings. This is accessed at boot-up, before Windows starts up by pressing F12 when prompted.

The F12 restore will delete all data from the C: drive and restore the factory loaded software and defaults. It is therefore important to store newer versions of Hippotizer software on an external drive or the D: drive for fast system rebuild.

3rd party back-up and restore tools may destroy the F12 restore function. If additional back-ups are required, please use the included Acronis software.

Included with the Hippotizer is also a single license for Acronis True Image, an easy to use imaging and restoration tool. Green Hippo strongly recommends regularly backing up each Hippotizer machine's C: Drive to external storage to facilitate rapid recovery in the event of a hardware or software fault.

On Amba, Karst and Boreal the F12 menu is accessed from the prompt during boot-up. On a Taiga, press F8 during boot up and set the boot device to be the Acronis Boot loader.



It is critical to remove all USB and removable hard drives from the Hippotizer system BEFORE beginning an F12 restore. Failure to do so will result in the F12 failing to restore correctly.

# Hardware Warranty

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Hippotizer V4 and V4+ hardware carries a warranty against defects in material or workmanship for a period of one (1) year from the initial date of purchase.

This limited warranty protects the original and any subsequent owner(s) of the product for the warranty period.

Green Hippo Ltd does not warrant its products against any or all defects arising from unreasonable use, accidents, improper service or any other causes not arising from defects in materials and workmanship.

During the warranty period Green Hippo Ltd, its agents or subsidiaries will supply all parts and labor to repair or replace (at our discretion) defects covered by this limited warranty provided the equipment is returned to an approved Green Hippo repair centre or distributor.

All repairs must be accompanied by a Return Merchandise Authorization (RMA) and be approved by Green Hippo prior to any repairs being carried out.

Products must be returned with transportation costs and full insurance prepaid each way by the customer.

Liability of Green Hippo Ltd, its agents or subsidiaries is limited to the repair or replacement (at our discretion) of any defective part or product and shall not include incidental damages of any kind.

# V4+ System Information

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Each Hippotizer V4+ has a distinct output configuration. Maximum resolution, supported standards and other information can be found below.

- [Amba+](#)
- [Karst+](#)
- [Boreal+](#)
- [Taiga+](#)
- [Montane+](#)
- [Prep](#)



# Amba+

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## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Outputs

### Zookeeper:

The Amba+ has several output connectors for use with Zookeeper. These use the motherboard on-board graphics system. Multiple displays may be used at once; however, these will consume CPU resources so it is advised to connect a single zookeeper display only when the system is in production use.

### Output

The Amba has DVI-I and Display Port Outputs from the main graphics card. The Amba supports the use of a single display output at a time.

### DVI-I:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

### Display Port:

Max Resolution: **4096×2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **Yes**

Supports Display Port to DVI adaptor (active): **Yes**



# Karst+

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## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Zookeeper outputs:

The Karst+ has two Zookeeper Video outputs: One DVI and one display port.

### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### Display Port:

Max Resolution: **3840 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Adaptor to DVI or HDMI: **No**

## Output:

There are several variants of the Karst+

### Karst+ DVI:

The Karst+ DVI has two DVI-DL outputs and one Display Port 1.2 output.

Max Pixel Clock: **330 MHz**

Example Supported Resolutions:

- 1920 × 1080 at 50/60HZ
- 2048 × 1080 at 50/60HZ
- 1920 × 1200 at 50/60HZ
- 3840 × 1080 at 50/60HZ
- 3840 × 2160 at 30HZ
- Other resolutions will likely work provided they are within the maximum pixel clock.

Supports Splitters: **Yes**

Supported Splitters:

- Datapath X4
- Matrox DVI Dual Head to Go.

Supports Conversion to Analogue (VGA): **No**

Supports Genlock: **No**.

### HDMI Connection

Each DVI output has an HDMI output in parallel. The HDMI is limited to 1920 × 1080. If the DVI resolution is set higher the HDMI will not output.

[For instructions on using the EDID emulator please see here.](#)

### Display Port:

Max Resolution: **4096 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Adaptor to DVI or HDMI: **No**

## Karst+ SDI

The Karst+ SDI-2 has two HD-SDI output and one Display Port 1.2 output

### HD-SDI:

Max Resolution: **2048 × 1080 @ 60p (Supports SD/HD/3G SDI)**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

Supports Genlock: **Yes**.

## Display Port:

Max Resolution: **4096 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Adaptor to DVI or HDMI: **No**

## Karst+ Display Port:

The Karst+ DP has two Display Port outputs

Max Resolution: **4096 × 2160 @ 60p**

Supports Splitters: **Yes**

Supported Splitters:

- Datapath FX-4.

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **Yes**

## A Note about Display Port Adaptors and cables

Compatibility with all Display Port devices can never be guaranteed. Green Hippo has tested many cables, adaptors and displays to determine what works best with Hippotizer systems. The findings show that **Active** adaptors from Display Port to DVI are the most reliable with those made by Bizlink, Accell or Startech to be of consistent quality. Similarly, **Active** VisionTek or Tripplite Display Port to HDMI adaptors have also proven to be among the most reliable. The quality and availability of adaptors varies hugely. Always test a specific adaptor before attempting to use it.

Display Port connections directly from the Hippotizer to a Display Port display or signal handling equipment also relies on a good quality cable. Do not exceed the maximum recommended cable length (normally 6ft or 1.8m) especially when working at UHD or 4K resolutions. Use only Vesa certified DP1.2 cable. A full list of which is available [on the Vesa website](#).

# Boreal+

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## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Zookeeper Outputs:

The Boreal+ has two DVI-D Zookeeper connections.

The Zookeeper output configuration is the same for all Boreal+ output types.

### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

## Output:

There are several variants of the Boreal+

### Boreal+ DVI:

Max Pixel Clock:: **330 MHz**

Example Supported Resolutions:

- 1920 × 1080 at 50/60HZ
- 2048 × 1080 at 50/60HZ
- 1920 × 1200 at 50/60HZ
- 3840 × 1080 at 50/60HZ
- 3840 × 2160 at 30HZ
- Other resolutions will likely work provided they are within the maximum pixel clock.

Supports Splitters: **Yes**

Supported Splitters:

- Datapath X4
- Matrox DVI Dual Head to Go.

Supports Conversion to Analogue (VGA): **No**

Supports Genlock: Yes.

## Boreal+ SDI

The Boreal+ SDI-4 has four HD-SDI outputs:

### HD-SDI:

Max Resolution: **2048 × 1080 @ 60p (Supports SD/HD/3G SDI)**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

Supports Genlock: Yes.

### Display Port:

The Boreal+ DP has four Display Port outputs

Max Resolution: **4096 × 2160 @ 60p**

Supports Splitters: **Yes**

Supported Splitters:

- Datapath FX-4.

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **Yes**

## A Note about Display Port Adaptors and cables

Compatibility with all Display Port devices can never be guaranteed. Green Hippo has tested many cables, adaptors and displays to determine what works best with Hippotizer systems. The findings show that **Active** adaptors from Display Port to DVI are the most reliable with those made by Bizlink, Accell or Startech to be of consistent quality. Similarly, **Active** VisionTek or Tripplite Display Port to HDMI adaptors have also proven to be among the most reliable. The quality and availability of adaptors varies hugely. Always test a specific adaptor before attempting to use it.

Display Port connections directly from the Hippotizer to a Display Port display or signal handling equipment also relies on a good quality cable. Do not exceed the maximum recommended cable length (normally 6ft or 1.8m) especially when working at UHD or 4K resolutions. Use only Vesa certified DP1.2 cable. A full list of which is available [on the Vesa website](#).

# Taiga+

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## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Outputs

The Taiga has two DVI-D Zookeeper connections.

### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### Output (Taiga DVI-DL):

The Taiga DVI-DL supports 6 concurrent DVI-DL Outputs;

### DVI-DL:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

### Output (DP-6):

### Display Port (Powered):

Max Resolution: **3840 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **Yes**

**Note::** The Graphics card is limited to how many active and passive DP to DVI adaptors it can support. If you are using more than 4 adaptors, they **MUST** all be active DVI convertors. For less than 4 total outputs, any mix of active and passive adaptors will work.

## A Note about Display Port Adaptors and cables

Compatibility with all Display Port devices can never be guaranteed. Green Hippo has tested many cables, adaptors and displays to determine what works best with Hippotizer systems. The findings show that **Active** adaptors from Display Port to DVI are the most reliable with those made by Bizlink, Accell or Startech to be of consistent quality. Similarly, **Active** VisionTek or Tripplite Display Port to HDMI adaptors have also proven to be among the most reliable. The quality and availability of adaptors varies hugely. Always test a specific adaptor before attempting to use it.

Display Port connections directly from the Hippotizer to a Display Port display or signal handling equipment also relies on a good quality cable. Do not exceed the maximum recommended cable length (normally 6ft or 1.8m) especially when working at UHD or 4K resolutions. Use Vesa certified DP1.2 cable. A full list of which is available [on the Vesa website](#).



# Montane+

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## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Outputs

### Zookeeper:

The Montane+ has two DVI-D Zookeeper connections.

#### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

#### Output (Montane DP):

The Montane supports 2 Concurrent Display Port connections.

#### DP:

Max Resolution: **4096 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **Yes**

## A Note about Display Port Adaptors and cables

Compatibility with all Display Port devices can never be guaranteed. Green Hippo has tested many cables, adaptors and displays to determine what works best with Hippotizer systems. The findings show that **Active** adaptors from Display Port to DVI are the most reliable with those made by Bizlink, Accell or Startech to be of consistent quality. Similarly, **Active** VisionTek or Tripplite Display Port to HDMI adaptors have also proven to be among the most reliable. The quality and availability of adaptors varies hugely. Always test a specific adaptor before attempting to use it.

Display Port connections directly from the Hippotizer to a Display Port display or signal handling equipment also relies on a good quality cable. Do not exceed the maximum recommended cable length (normally 6ft or 1.8m) especially when working at UHD or 4K resolutions. Use Vesa certified DP1.2 cable. A full list of which is available [on the Vesa website](#).

# Montane+ RTX

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**The Montane+ RTX is the second generation of Montane+, using latest generation technology for maximum Notch Performance.**

Montane+ can be Hardware Replaced with Montane+ RTX. Please contact [Sales@green-hippo.com](mailto:Sales@green-hippo.com) for details.

## Software

### Minimum Software Version

V4+ Systems must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

## Outputs

### Zookeeper:

The Montane+ RTX has two DVI-D Zookeeper connections.

#### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

#### Output (Montane+ RTX DP):

The Montane+ RTX supports 2 Concurrent Display Port connections.

**DP:**

Max Resolution: **4096 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **Yes**

## A Note about Display Port Adaptors and cables

Compatibility with all Display Port devices can never be guaranteed. Green Hippo has tested many cables, adaptors and displays to determine what works best with Hippotizer systems. The findings show that **Active** adaptors from Display Port to DVI are the most reliable with those made by Bizlink, Accell or Startech to be of consistent quality. Similarly, **Active** VisionTek or Tripplite Display Port to HDMI adaptors have also proven to be among the most reliable. The quality and availability of adaptors varies hugely. Always test a specific adaptor before attempting to use it.

Display Port connections directly from the Hippotizer to a Display Port display or signal handling equipment also relies on a good quality cable. Do not exceed the maximum recommended cable length (normally 6ft or 1.8m) especially when working at UHD or 4K resolutions. Use Vesa certified DP1.2 cable. A full list of which is available [on the Vesa website](#).

# Prep

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## Software

### Minimum Software Version

Prep must run Hippotizer Version 4.3 or greater.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2024.

To extend Software Assurance for Prep please contact your Green Hippo representative – Software Assurance extensions are issued free for Prep.

## Outputs

### Zookeeper:

Prep Supports an unlimited number of Zookeeper outputs based on the hardware.

### Output

Prep Supports an unlimited number of outputs.

Note: Prep Outputs will be watermarked with a grey Hippo Head and Pixelmapper output will occasionally flash

## Recommended Hardware

Hippotizer Prep will work on many Windows 8.1 and 10 machines, including Apple's running Bootcamp.

The performance of Prep is closely linked to hardware capabilities, specifically the Graphics card (GPU) and media drive.

Prep will generally run well on machines designed for high-resolution gaming. High-end and desktop replacement laptops are preferable to tablets.

## Recommended GPUs:

### For Desktops:

- AMD FirePro or WX Series (eg. WX7100)
- AMD R7, R9 and RX Series. (eg. RX580)
- NVIDIA GTX (eg. 1070 or 1080)
- NVIDIA Quadro (eg. P4000)

### For Laptops:

Discrete Graphics are critical for desirable laptop performance.

- AMD or NVIDIA mobile GPU with at least 2GB of dedicated memory.

## Media Drive considerations

The media drive speed and latency will partially determine how much media can be played back at once.

- Solid State Drives (SSD) are considerably faster than traditional drives and should be used wherever possible.
- For HD playback, the SATA interface is often fast enough.
- For 4K or uncompressed playback, the NVMe interface offers far higher read speeds. (M.2 or PCIe work)
- RAID arrays can be used to increase effective drive speed and size. (RAID is not used in Hippotizer hardware due to higher failure incidence)

## Other considerations:

- Green Hippo has only tested Intel Processors (CPU). AMD will probably work, though it's stability and performance is unknown.
- CPU core frequency is more important than core count. So faster cores (even fewer of them) will be better than more slower cores.
- Intel i5 and i7 CPUs offer the best performance. Generation 5 and higher are recommended.
- A minimum of 8GB System RAM is recommended, up to 16GB can aid performance.
- Faster RAM (eg. DDR4 and / or multi-channel RAM) also will help performance.
- Always ensure the system is properly ventilated and cooled. Hippotizer software can draw maximum power from the CPU and GPU when in use.
- Avoid virtual machines such as VMware, or Parallels as hardware resource sharing frequently leads to instability.

## Example Prep machine:

- Z270 Motherboard
- Intel i5-7600 CPU
- 16GB DDR4-2133 RAM
- 512GB SSD (SATA 6)
- AMD RX570 GPU

## Capturing video into Prep

Hippotizer support Datapath capture cards only. Any Datapath Vision or Vision AV capture cards will work.

## **Getting the most from V4+ Hardware**

**Over time Green Hippo discovers optimisations that improve the reliability and performance of the hardware. They are documented here.**

**Disable “Large Send Offload” on the network card to ensure Mix previews work correctly.**



# V4 System Information

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Each Hippotizer has different output configurations with associated resolution limits.

- [Amba](#)
- [Karst](#)
- [Boreal](#)
- [Taiga](#)

# Amba

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## Software

### Minimum Software Version

V4 Systems must run Hippotizer Version 4.0 or greater. Version 3.2.4 Can be run in compatibility mode.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2021.

## Outputs

### Zookeeper:

The Amba has several output connectors for use with Zookeeper. These use the motherboard on-board graphics system. Multiple displays may be used at once; however, these will consume CPU resources so it is advised to connect a single zookeeper display only when the system is in production use. Output

The Amba has DVI-I and Display Port Outputs from the main graphics card. The Amba supports the use of a single display output at a time.

### DVI-I:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **Yes**

### Display Port:

Max Resolution: **4096×2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **Yes**

Supports Display Port to DVI adaptor (active): **Yes**

# Karst

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## Software

### Minimum Software Version

V4 Systems must run Hippotizer Version 4.0 or greater. Version 3.2.4 Can be run in compatibility mode.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2021.

## Outputs

### Zookeeper

The Karst has two connections for Zookeeper: a DVI-I and Display Port.

#### DVI-I:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **Yes**

#### Display Port:

Max Resolution: **4096 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **Yes**

Supports Display Port to DVI adaptor (active): **Yes**

### Output (Karst DVI-2):

The Karst DVI has two DVI-DL outputs with a parallel HDMI and a Display Port (unpowered) connection:

## DVI-DL:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

## HDMI:

Max Resolution: **1920 × 1080 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

## Display Port:

Max Resolution: **3840 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **No**

## Output (Karst DVI-2 Genlock):

The Karst DVI has two DVI-D outputs with a parallel HDMI and a Display Port (unpowered) connection:

### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### HDMI:

Max Resolution: **1920 × 1080 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### Display Port:

Max Resolution: **3840 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **No**

## Output (Karst SDI-2):

The Karst SDI-2 has two HD-SDI outputs and a Display Port (unpowered) connection:

### HD-SDI:

Max Resolution: **2048 × 1080 @ 60p (Supports SD/HD/3G SDI)**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### Display Port:

Max Resolution:\* 3840 × 2160 @ 60Hz\*

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

Supports Display Port to DVI adaptor (passive): **No**

Supports Display Port to DVI adaptor (active): **No**

# Boreal

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## Software

### Minimum Software Version

V4 Systems must run Hippotizer Version 4.0 or greater. Version 3.2.4 Can be run in compatibility mode.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2021.

## Outputs

### Zookeeper:

The Boreal has two DVI-D Zookeeper connections.

#### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

#### Output (Boreal DVI-4):

The Boreal supports 4 concurrent Outputs; each has parallel DVI-D and HDMI connections.

#### DVI-D:

Max Resolution: **1920 × 1080 @ 60Hz** Supports Splitters: **No** Supports Conversion to Analogue (VGA): **No**

#### HDMI:

Max Resolution: **1920 × 1080 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

## Output (Boreal SDI-4):

The Boreal SDI-4 has four HD-SDI outputs:

### HD-SDI:

Max Resolution: **2048 × 1080 @ 60p (Supports SD/HD/3G SDI)**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

# Taiga

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## Software

### Minimum Software Version

V4 Systems must run Hippotizer Version 4.0 or greater. Version 3.2.4 Can be run in compatibility mode.

### Maximum Software Date

V4+ Systems can, subject to Software Assurance, install and run software released until November 1st, 2021.

## Outputs

The Taiga has two DVI-D Zookeeper connections.

### DVI-D:

Max Resolution: **1920 × 1200 @ 60Hz**

Supports Splitters: **No**

Supports Conversion to Analogue (VGA): **No**

### Output (Taiga DVI-DL):

The Taiga DVI-DL supports 6 concurrent DVI-DL Outputs;

### DVI-DL:

Max Resolution: **2560 × 1600 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**

### Output (DP-6):

### Display Port (Powered):

Max Resolution: **3840 × 2160 @ 60Hz**

Supports Splitters: **Yes**

Supports Conversion to Analogue (VGA): **No**



Supports Display Port to DVI adaptor (passive): **Yes**

Supports Display Port to DVI adaptor (active): **Yes**

**Note::** The Graphics card is limited to how many active and passive DP to DVI adaptors it can support. If you are using more than 4 adaptors, they **MUST** all be active DVI convertors. For less than 4 total outputs, any mix of active and passive adaptors will work.

# Audio

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Hippotizer Version 4 supports playback of audio containing video clips as well as audio only files. Stereo audio playback is supported on Karst, Boreal and Taiga systems through the XLR output connectors. These are electrically isolated by way of a transformer from the Hippotizer system and the earth (ground) can be disconnected with the earth lift switch.

Please Note: It is considered best practice to leave earth connected to the sound source whenever possible in audio systems as leaving the earth lifted on both source and destination can cause interference.

On the Amba, Audio output is from the Stereo Line out 3.5mm jack by default.

- [Multichannel Audio](#)

# Multichannel Audio

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In order to output multi-channel audio, an outboard audio interface must be used.

Green Hippo recommends the **Motu 828x USB** interface as a tested, and readily available product. In order to install the Motu, it must be designated as the default device and configured correctly:

- Stop the Hippotizer Engine and Zookeeper
- Run the included Motu Driver installer.
- Goto: Hippotizer (C:) > Program Files(x86) > MOTU > Audio
- Open MOTU Audio Console.
- Change audio sample rate to 48k (not crucial but recommended).
- Untick "Use Stereo Pairs for Windows Audio" .
- Close MOTU Audio Console.
- Plug in your MOTU 828x USB cable.
- Goto: Control Panel > Sound
- Select MOTU Analog and click Set Default.
- Close Control Panel.
- Launch Hippotizer

Other Windows compliant multi-channel audio devices should also work, though we do not test them. In every case, the device must be designated as the default playback device before starting Hippotizer.

# EDID Emulation

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Connecting and disconnecting displays from a Windows computer causes a complete re-discovery of all other displays. This process results in output flashing and can lead to Hippotizer becoming confused about output location. One method of ensuring this does not happen is to ensure that the computer does not see a display being disconnected which can be accomplished with **EDID Emulation**.

**Note:** Extended Display Identification Data (EDID) technically refers to information carried by DVI and HDMI connections to describe displays to the computer. (The display tells the computer what resolutions it can handle). Though display port uses a different signalling standard it is colloquially referred to as EDID as well.

Hippotizer uses three types of EDID emulation, depending on the system:

## Hardware Emulation — DVI

Used by:

- Karst DVI
- Karst DVI Genlock
- Boreal DVI Single Link
- Boreal DVI Genlock

## Hardware Emulation — SDI

Used by:

- Karst SDI
- Boreal SDI
- Taiga SDI

## Software Emulation

Used by:

- Amba
- Boreal DVI-DL
- Taiga DVI-DL

# Hardware Emulation DVI Output

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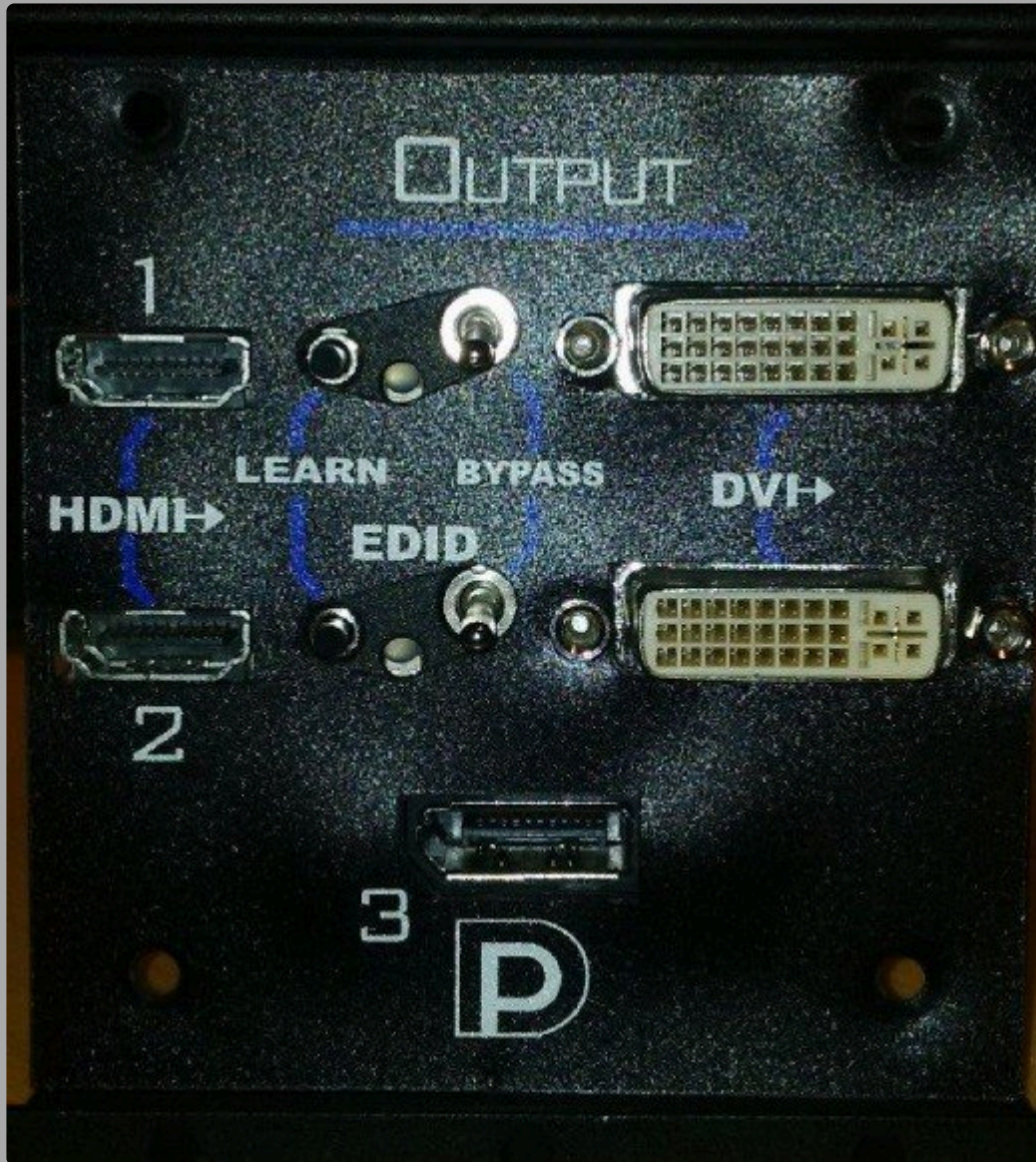
The Hippotizer Karst DVI and Boreal DVI feature a hardware EDID manager called a Mimic, on all production DVI outputs. This allows the system to emulate attached displays after they have been disconnected.

The Mimic can learn the EDID profile of a monitor connected to either its HDMI or DVI port. HDMI is limited to HDMI 1.3 (1080p) while the DVI extends to all supported DVI-DL resolutions.

**Note:** The Mimic can only learn from one display, so if both outputs are being used, disconnect one of them while learning.

Learning the EDID can be triggered from the emulator by pressing and holding the learn button for 2 seconds.. While the unit is in emulating mode, the LED will show Green. When bypassed, the LED shows Red.

## Controls:



### Toggle Switch

The switch controls the state of the emulator, Up enables the board, Down Disables it

### Learn Button

Press and hold the black learn button for 2 seconds to trigger the emulator to learn the EDID from the attached display

### LED Colour Codes

**Green:** Emulating EDID

**Red:** Bypassed, so EDID will pass directly from the attached display.

**Flashing Amber:** Learning EDID

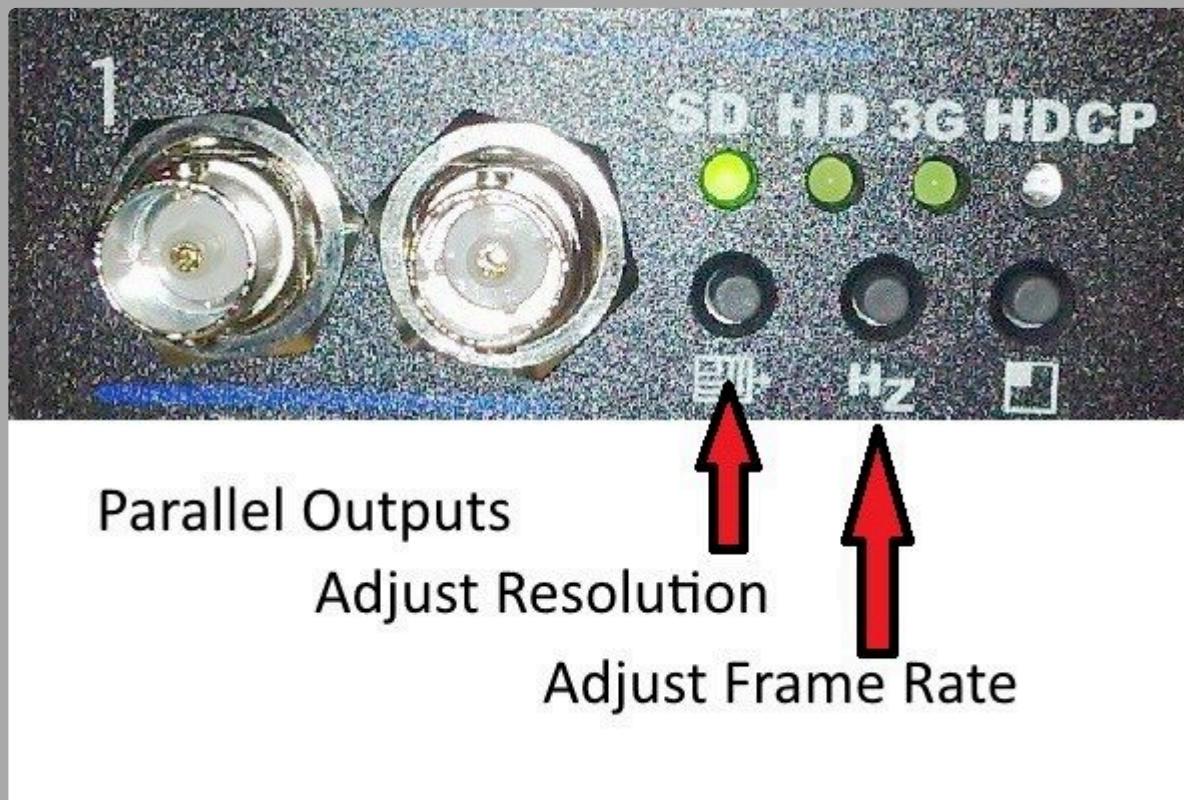
**Flashing Red:** EDID Learn failed

## **Splitting the signal to HDMI and DVI**

The EDID board can also be used as a Distribution amp, sending the video signal to both the HDMI and DVI output at the same time. The only limitation is that of the HDMI which cannot go above HD resolutions. If higher resolutions are used then the HDMI will not output video.

## SDI Outputs

As an option, some Hippotizer V4 units are fitted with an SDI output as standard. This is accomplished by converting the output as an HDMI signal to SDI. Each output is individually controlled, accessed by three buttons on each output.



## Genlock

The SDI output has two modes of frame generation: Free-Run and Self Genlock. In Free-Run mode, any single can be scaled to any resolution. However multiple outputs will not be in-sync with each other. In order to ensure all outputs are synchronised, set the boards to Self Genlock. In Self Genlock mode, the outputs lock to the vertical refresh of the incoming signal. This means that as long as the outputs are Genlocked then the SDI will be as well.

To toggle the Genlock Mode, hold the centre button for several seconds. A window will appear on screen to say "Self Genlock" or "Free Run".

**Note:** For Genlock to work correctly, the Graphics card must also be Genlocked through the ATI FirePro control centre.



## In Genlock Mode, the scaling is limited:

With Self Genlock enabled the Hippo and SDI output frame rates must match.

An input of 720×480, Can be output as: 720×480i, 1280×720p, 1920×1080i and 1920×1080p

An input of 1280×720 can only output 1280 × 720p

An Input of 1920 × 1080 can output as: 1280 × 720p, 1920 × 1080i or 1920 × 1080p

An Input of 2048 × 1080 can output as 2048 × 1080 only.

## Changing Resolutions

To change the resolution, press the adjust resolution button. This will toggle between output resolutions. The output is capable of scaling any input resolution to any output resolution using an on-board scaler.




















As the button is pressed, the resolution light will change to indicate which SDI standard is being used: SD, HD or 3G. A small box appears on the output to indicate what the output resolution is being sent.



**Note:** There are several resolutions within each SDI standard, so it takes several button presses to move from SD to HD.

## Supported SDI output Resolutions

- 720 × 480i
- 1280 × 720P
- 1920 × 1080i
- 1920 × 1080p
- 2048 × 1080p

## LED Codes for resolutions


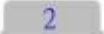

	SD LED	HD LED	3G LED
BY PASS			
720 x 480			
720 x 576			
1280 x 720			
1920 x 1080i			
1920 x 1080p			

 : LED ON  
 : LED OFF

## Changing Frame Rate

To change the frame rate, press the centre button. This will cycle between 50 and 60hz. It is advised to match the input and output framerates.

















Output frame rates of 25, 30, 50, 59.97 and 60 are supported.

RES	FRAME RATE	FRACTION
		
By Pass		
720x480	60i	59.94i
	60p	59.94p
720x576	50i	
	50p	
1280x720	60p	59.94p
	50p	
1920x1080i	60i	59.94i
	50i	
1920x1080p	60p	59.94p
	50p	
	30p	29.97p
	25p	
	24p	23.97p

**Note:** All output frame-rates and resolutions are available in free run mode only.

As the centre button is pressed, the LEDs will indicate the output frame rate:

a. Output Mode:

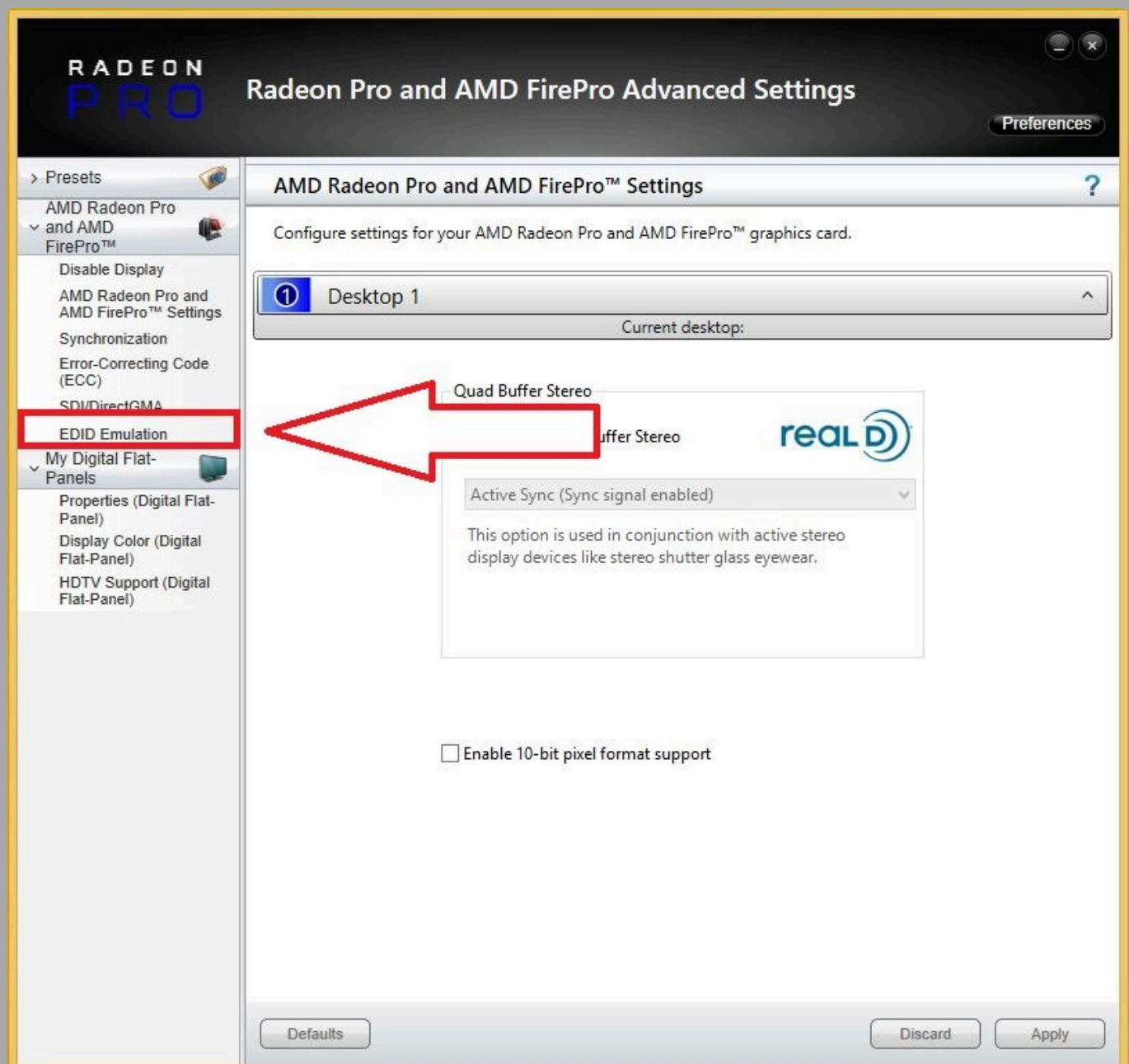
Resolution	SD LED	HD LED	3G LED	HDCP LED
NTSC / PAL				
720p / 1080i / 1080 [24p, 25p, 30p]				
1080 [50p,60p]				
HDCP Content				

# Software EDID Emulation

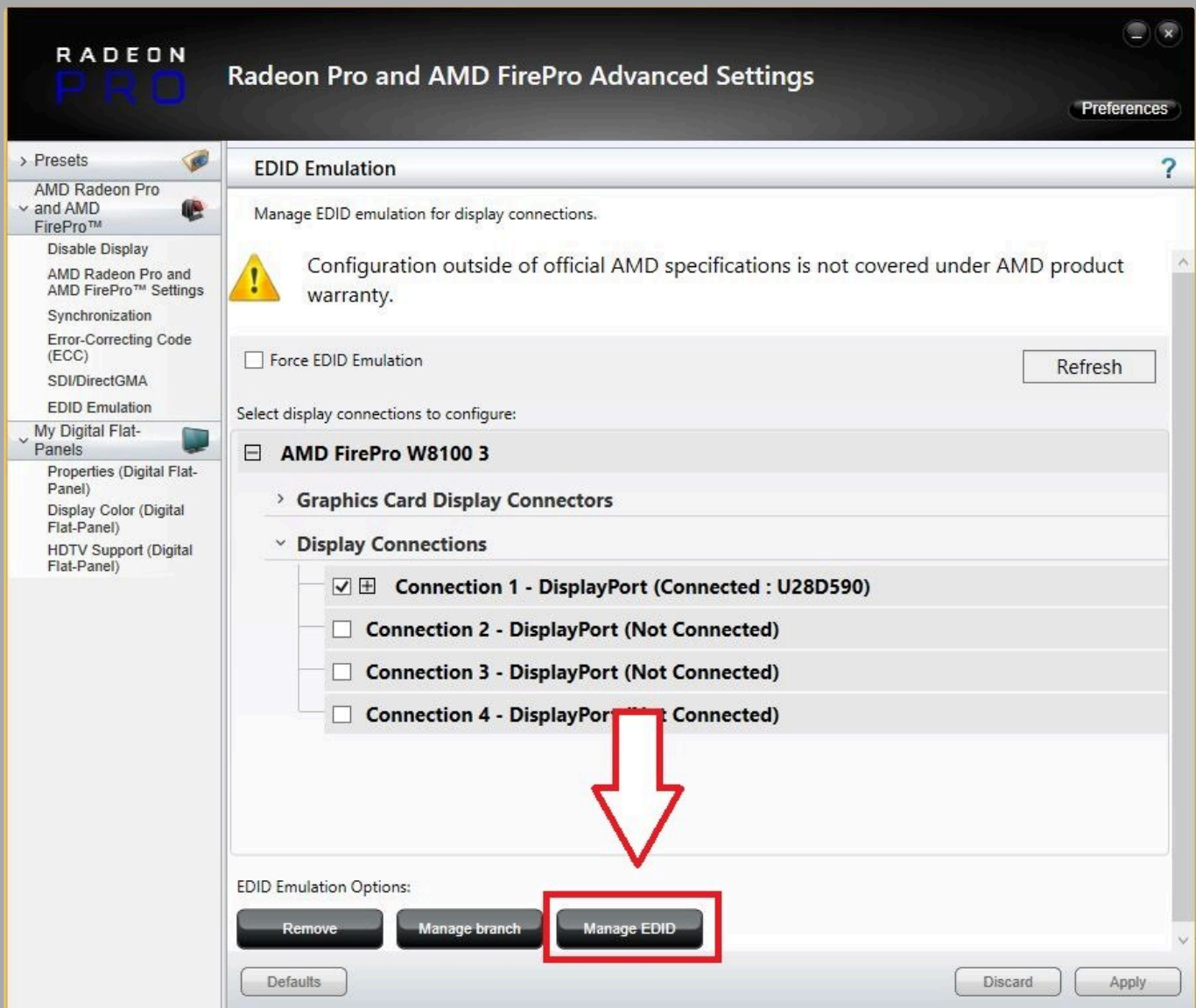
On systems with Genlock and Amba, the Graphics drivers provide a software based EDID emulation. This allows the computer to read connected displays and retain them even after the display has been unplugged.

To enable EDID emulation go to the advanced AMD control centre by right click on the computer's desktop and selecting **AMD Firepro Advanced**.

Select EDID Emulation from the left side menu.



Tick the displays to manage from the list and click **Manage EDID**



The EDID can be learned from one display and applied to others, or retrieved from a file saved on the machine.

**Note:** In order to genlock outputs they must have the same EDID. EDID emulation is the best way to guarantee this. Learn the EDID from one display to be Genlocked and save it to the others.

## EDID Emulation



EDID emulation may affect any existing AMD Eyefinity configurations that include emulated displays. To minimize this impact, configure EDID emulation before configuring AMD Eyefinity.

Any existing EDID emulation settings for the selected connections will be lost.

### Apply EDID emulation to these connections:

 **AMD FirePro W8100 3**

### Select EDID:

☒ From Display:

U28D590( AMD FirePro W8100 3 Port 1 - DisplayPort) ▼

☐ From File:

Browse

 View Raw EDID

### Connection Properties:

Emulation	Emulate always
Connection	DisplayPort
Lanes	4
Bit Rate	5.4 GHz

Discard

Apply

EDID Emulation will continue to work if the system has been restarted.

# Genlock

Many Hippotizer system have the ability to use an external Genlock signal in order to ensure the vertical refresh occurs in sync across multiple systems.

**Note:** Genlock synchronises the vertical refresh only; synchronising frame playback is handled by timecode.

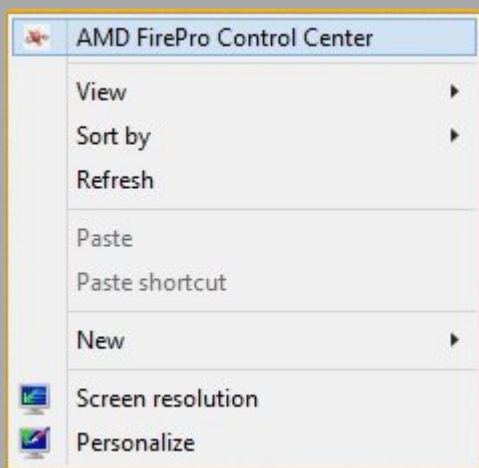
Genlock can be taken from an external source, refereed to has **house sync** or a display output can be used as a source. Where multiple systems are being used an external sync source must be used.

## House Sync

The Genlock input on Hippotizer can use many signals for sync including:

- Black Burst
- Tri-Level
- SD/HD/3G SDI signals.

To configure Genlock, navigate to the Firepro Control Centre by right clicking on the desktop



Navigate to the Sync settings in the Firepro tab





The Sync window shows all attached displays and house sync (if present).





To set sync, in the timing server drop down menu select a display and press configure.

**Configure Timing Server**

1.U28D590 : AMD FirePro W9100 (60 Hz) Display Group 3

**Timing Signal Source:**

House Sync (Genlocked)

**Signal configuration**

Signal Type: 1080i 60.00 Hz ☐ Sync to field 1

Triggering Edge: Rising

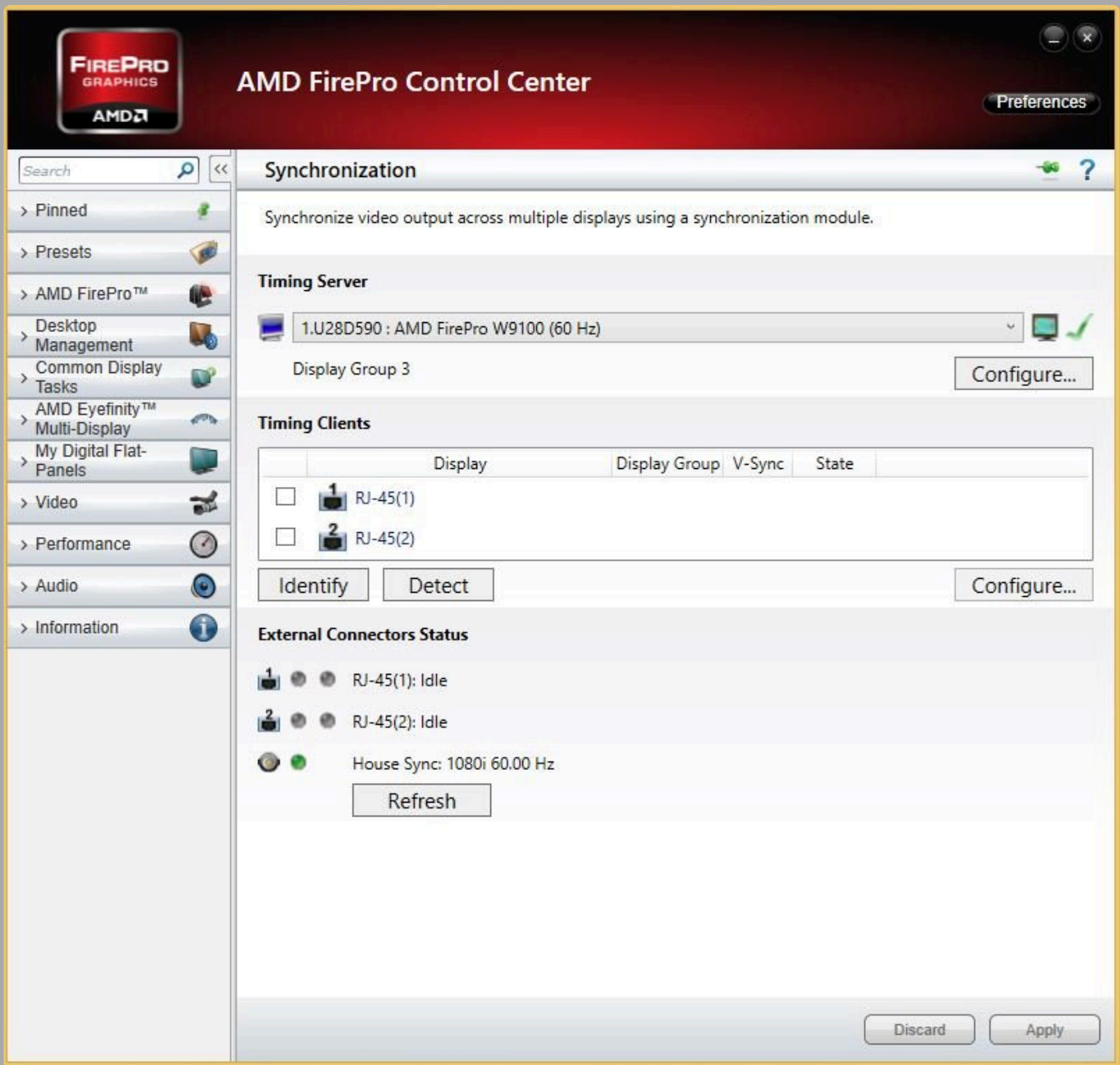
Scan Rate Coefficient: 1:1

Sync Delay (µs): 0

OK Cancel

Set the timing source to either house sync or the display and press ok.

The timing server should now show a green check.



To add displays to sync to the timing server tick the box next to them and press apply.

**Note:** It is common to have a long pause (up to a minute) after pressing apply while the catalyst window will be unresponsive. Please wait until it responds again before closing it.

Only displays that have identical resolutions and EDIDs can be synced together. It is strongly advised to emulate the same EDID on displays to be Genlocked. [Information on EDID emulation can be found here.](#)

# SSD Refresh Tool

As part of ongoing product testing, Green Hippo has discovered a fault with Solid State Drives used in certain Hippotizer V4 systems; this fault can severely impact playback performance and should be addressed urgently. While the drives will ultimately require warranty replacement, we have created a software based tool to ensure all systems in the field continue to operate normally indefinitely. This tool is available from 4.0.2 Beta 4. We want to make our distributors and users aware of this issue and distribute contact information to ensure free replacement of the affected drives.

All Hippotizer V4 systems use multiple Solid State Drives (SSDs), for media storage (media drive) and one for general system use (OS Drive). Throughout the Hippotizer V4 line, Green Hippo uses several different makes and models of SSD. This bulletin concerns a specific type of SSD used as the media drive in Amba and Karst systems.

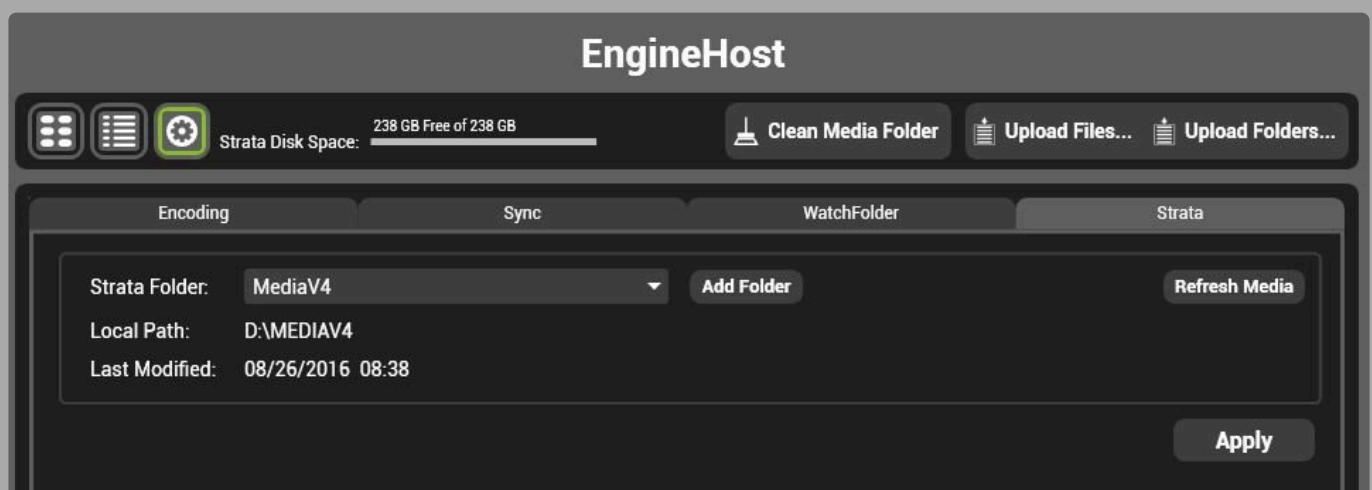
**This affects Karst with serial numbers: 210036 – 210074**

**This affects Amba with serial numbers: 240038 – 240092**

Testing has shown that files written on the drive for longer than two months can suffer from vastly reduced read speeds. For media files, this will manifest as un-even playback and jumping on the output. Often times the stock content will be the first files to be affected. Long running shows with the same content (such as tours) could also be affected by this issue.

## Using the Refresh Tool

The refresh media tool is part of the STRATA dialogue in Media Manager's settings.



Note: While the Media Refresh is being carried out the engine will be stopped. The refresh process can take a long time: up to a minute per gigabyte of media.

# Capture Cards

---

V4 offers several hardware based video capture options to bring SDI, DVI and Display Port signals into Hippotizer systems. Capture cards are available fitted when the server is built, or can be fitted afterwards by a qualified technician. For Karst, Boreal and Taigas a capture card also requires new back plates which can be ordered from Green Hippo.

Note: Green Hippo strongly recommends sourcing cards from your local distributor to ensure compatibility.

## Capture Cards per system

Each model Hippotizer system supports different numbers of capture cards based on the space available:

### Amba or Amba+

- 1 x Capture Card or Accessory Card

Note: Amba and Karst does not support Quad SDI or Dual Display Port capture Cards

### Karst or Karst+

- 1 x Capture Card or Accessory Card

Note: Amba and Karst does not support Quad SDI or Dual Display Port capture Cards

### Boreal or Boreal+

- 2 x Capture Cards

and

- 1 x Accessory Card

### Taiga+

- 2 x Capture Cards

and

- 1 x Capture Card and 1 x Accessory Card

## Taiga

- 2 x Capture Cards

or

- 1 x Capture Card and 1 x Accesory Card

## Montane +

- 2 x Capture Cards

or

- 1 x Capture Card and 1 x Accesory Card

## Supported Capture Cards

The following lists supported capture cards:

- **Data Path VisionSDI2** — Dual 3G-SDI Capture
- **Data Path VisionSC-SDI4** — Quad 3G-SDI Capture
- **Data Path VisionSC-DP2** — Dual Display Port 1.2 Capture
- **Data Path VisionAV-SDI** — SDI, DVI and Composite Capture
- **Data Path VisionRGB-E2S** — Dual DVI Single Link Capture

## Capture Drivers

Using the correct software driver for Hippotizer is critical to ensure proper functioning of the capture cards. Please refer to the release notes of the specific Hippotizer software version for guidance on which driver to use.

Note: The firmware of each capture card is updated during driver installation. For this reason it may be required to run the driver installation after a factory restore to ensure card firmware matches software.



# Welcome To Hippotizer

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## Welcome to Hippotizer!

Hippotizer combines the flexibility of a real-time media server with the power of a fully integrated 3D workflow. Designed to be intuitive to learn and use, yet powerful and flexible enough for the largest events. Hippotizer's open structure allows it to be controlled seamlessly from a variety of sources such as Lighting desks, Timelines, show controllers or the Zookeeper Interface. Combined with SHAPE, Hippotizer is a fully configurable 3D media tool box.



**Eurovision Song Contest 2016.**

**Video Design:** Mikki Kunttu

**Technical Manager Video:** Morgan Brown

**Video Operators:** Fraser Walker, Pekka Martti, Neil Trenell

**Hippotizer Technicians:** Anders Granström, Magnus Grönberg

**Photo Credit:** Ralph Larmann

*All Rights Reserved*

**[Hippotizer software is continuously updated. Please visit our website for the most up to date software and manual.](#)**

## Using this manual.

Hippotizer V4 is comprised of three pieces of software with more than a dozen component plugins, presenting a challenge in finding a logical order of explanation. To improve readability, this manual seeks to address functionalities in context of where they appear in the software.

Many sections of Hippotizer and SHAPE are interdependent or appear in multiple places. Videomapper for example is a component with it's own control interface, but also has selection interfaces in the viewport and layer. Each of these interfaces are explained from the point of view of where it is in the manual — the layer UI explains Videomapper on layer but not the component. Where possible, links to other relevant sections are provided.

If you find a section to be ambiguous or unclear please, leave feedback so that we can fix it.

## Important information before starting the software

- [What is Hippotizer?](#)
- [Before you start](#)
- [Starting Up](#)
- [Contacting us](#)
- [Software Information](#)
- [Hardware Information](#)



# What is Hippotizer?

---

Hippotizer is a real-time media server designed for the live events industry.



**Lowlands festival 2016 – Bravo Stage**

**Hippos Supplied and Operated by:** tenfeet

**Photos:** Bart Heemskerk, De fotomeisjes

Borne from visual jockey software first developed 15 years ago, Hippotizer uniquely combines ease of use and flexibility with the industries' most powerful 3D mapping engine; SHAPE.

Known as a real-time media server, Hippotizer reacts to changes from many different control sources instantly from DMX to Zookeeper. Built for stability and flexibility, Hippotizer is used to drive video on some of the largest live events worldwide.

Hippotizer is comprised of dedicated media server hardware running the Hippotizer V4 software.

**The Hippotizer software is made of three applications: the Engine, Zookeeper and SHAPE.**

- The **Engine** renders video. It runs on every Hippotizer machine and communicates over the

network.

- **Zookeeper** is a remote management program creating an interface to Engine(s) on the network.
- **SHAPE** is a projection mapping tool-set that sits inside the Engine as a plugin. SHAPE has a separate network based management application.

Hippotizer separates 2D and 3D workflows for the simple reason that content is 2D. Media Management, playback and manipulation is handled within the Hippotizer and Zookeeper applications. Increasingly however, content is being mapped onto 3D objects through projection mapping, this is where SHAPE comes in. SHAPE is the 3rd dimension of Hippotizer V4. 3D in Hippotizer is made up of two pieces: a plugin within the Engine and a management application called SHAPE.

SHAPE enables the user to import a model and apply video from a Hippotizer V4 machine to the model. SHAPE allows you to edit model meshes, UV map and is able to assist with aligning, blending, masking and warping the projector(s).

SHAPE communicates via the network the Engine running on Hippotizer hardware to allow real time manipulation. Once the model is configured, all settings are saved to the Hippotizer which then handles all content play back; the SHAPE application is then no longer required.

SHAPE's manual can be found here: [SHAPE Manual](#)

# Before you start

---

Hippotizer systems are designed to 'work by default' for easy and fast setup. Setting up the hardware and software for the first time correctly will ensure a better experience.

- [Installing Hippotizer and Zookeeper](#)
- [Minimum system requirements](#)
- [Networking](#)
- [Disable Windows DPI Scaling](#)

# Installing Hippotizer and Zookeeper

---

All Hippotizer V4 systems come from the factory pre-installed with Hippotizer Version 4 software and Compatibility Mode (V3) software. The Hippotizer system contains a license that allows any Hippotizer Version 4 software to be installed. Only Green Hippo Hippotizer Version 4 hardware can operate the entire system and output video.

**Note:** The system type (V4 or V4+) and Software Assurance determines which versions can run on a given Hippotizer. All V4 systems can run software version 4.0 to 4.5 (higher versions may be compatible subject to purchase date and Software Assurance) V4+ can run from 4.3 onward.

## The Hippotizer V4 system is comprised of two separate pieces of software: The Engine, and Zookeeper.

- The Engine is the core of the Hippotizer system and carries out all video rendering, as well as running all components (such as DMX or Media Manager).
- Zookeeper is the user interface that talks to the engine. Zookeeper talks to the engine over the network and can be run anywhere on the local network to control one or many Hippotizers.

The Engine and Zookeeper are installed from the same installer. You do not need a separate piece of software to install Zookeeper only.

**Note:** The latest version of Hippotizer V4 can be found [Here](#)

The Hippotizer V4 installer will also install several other pieces of software that are critical with normal operation of Hippotizer systems including the Hippo Launch Application. This program manages Hippotizer V4, Compatibility Mode and SHAPE installations on the system.

**Note:** Zookeeper is a free application, to install it simply run the Hippotizer installer and when the system requests a license key press ok, leaving the license field blank.

# Minimum system requirements

---

All Hippotizer V4 systems use hardware designed for video playback. Zookeeper and Hippotizer Play however are often used on other hardware. The specification of this hardware can have a dramatic effect on performance.

## ZooKeeper Minimum Specs

- Windows 8 or 10, 64bit
- 4GB RAM
- 8GB Drive space on system drive
- 1Gb Networking
- English Windows (UK or US)
- English Keyboard (UK or US)
- 1920 × 1080 Display
- [Disable Screen Scaling](#)

## ZooKeeper Recommended Specs.

- Intel 4th Gen CPU or newer
- 8GB RAM
- SSD System Drive
- AMD or NVIDIA Discrete graphics with 1GB GDDR5 RAM
- English Windows (UK or US)
- English Keyboard (UK or US)
- 1920 × 1080 Display or greater
- [Disable Screen Scaling](#)

## Hippotizer Play or Prep Minimum Specs

- Windows 8 or 10, 64bit
- 8GB RAM
- 8GB Drive space on system drive
- Intel i5 or i7 4th Gen CPU
- English Windows (UK or US)
- English Keyboard (UK or US)
- OpenGL 4.5
- 1920 × 1080 Display
- [Disable Screen Scaling](#)

## Hippotizer Play or Prep Recommended Specs

- Intel 5th Gen i5 or i7 CPU or newer.
- 8GB RAM
- SSD System Drive with 20GB free space
- AMD Discrete graphics with 2GB GDDR5 RAM
- English Windows (UK or US)
- English Keyboard (UK or US)
- OpenGL 4.5
- 1920 × 1080 Display or greater
- [Disable Screen Scaling](#)

## Windows on a Mac

Hippotizer Play and Zookeeper will run on Mac based hardware that has installed Windows 10 in [Boot Camp](#)

**Note:** Other methods of installing Windows onto a Mac (Such as Parallels) are not supported by Hippotizer due to resource sharing conflicts.

# Networking

---

Hippotizer relies on the network to control systems, carry DMX data, synchronize playback and many other vital functions.

Computer networking is a complex topic that extends far beyond the scope of this manual. Simple best practice suggestions are offered here. If in doubt, it is strongly advised to seek professional advice. A faulty network can lead to system instability.

Green Hippo strongly suggests using only [static IPV4 networking](#).

In general, there are two networks to consider: HippoNet and Data.

## [HippoNet](#)

HippoNet is the backbone of the Hippotizer system; it carries all the media previews, pin data and synchronization between Hippotizer and Zookeeper systems.

## [Data Network](#)

The data network everything except HippoNet is carried. This is commonly ArtNet for DMX control, Pixelmapping output, CITP, and external triggers (such as TCP)

## [Firewalls](#)

Firewalls are a software or hardware application that blocks specific data on a network. All Hippotizer systems ship with the firewalls configured correctly however, Zookeeper or Play systems may need to be set up manually.

# HippoNet

---

Setting up a solid HippoNet Network is perhaps the most important aspect of a system design.

A malfunctioning network can result in slow user interfaces in Zookeeper, delayed or slow media uploads and many other undesirable behaviors.

## What should be on HippoNet?

- All Hippotizer systems
- Remote Zookeeper systems
- Network Storage for watchfolders

HippoNet uses a mixture of UDP and TCP data to communicate with all Hippotizers and Zookeepers on the network.

## Requirements

- Switched gigabit network
- Cat5e or better network cable
- Switching capable of handling high UDP loads (eg. Cisco SG series, Netgear or Luminex 1Gb switches).
- Static IP addresses for each system. (IPv4, Class C, eg. 192.168.0.xxx with a sub net of 255.255.255.0)
- Disable IGMP snooping on all managed switches

## Recommendations and best practice

- HippoNet should only contain Hippotizer systems
- Physically separate HippoNet and other networks where possible avoiding virtual networks.
- Do not connect HippoNet network to the internet
- Avoid Cat5e cable run lengths greater than 90m (300ft) as packet loss can occur. For longer runs use fibre optic network cable.
- Where large media synchronizations are going to occur, consider using 10Gb networking.



# Data Network

---

The Data Network is the 'everything else' connection.

## What should be on the Data Network?

- DMX Control of Hippotizer over ArtNet
- Ma-Net
- CITP
- Remote Management
- TCP or other remote control protocols
- Internet connections
- Pixelmapper output
- Remote wake-up / magic packets

## Recommendations and best practice

- ArtNet and Pixelmapper can generate high volumes of Multicast and Broadcast traffic; switches that are capable of handling this is important in larger setups.
- Large pixel-mapping projects should try to use sACN instead of ArtNet due to better traffic handling.
- If connecting to the internet, ensure there is firewall protecting the network

# Firewalls

It is important to ensure that Hippotizer is given full access to the network by Windows firewalls.



Ensure all Hippotizer applications are allowed on both Public and Private networks.

Hippotizer sends and receives data over the network relying on a mixture of TCP and UDP data. In order for this to work, Firewalls must allow data through certain ports:

## Hippo Launch

Port 9009

## Hippotizer Engine and Zookeeper

Port 6091, 6092

## MongoDB

Port 27017

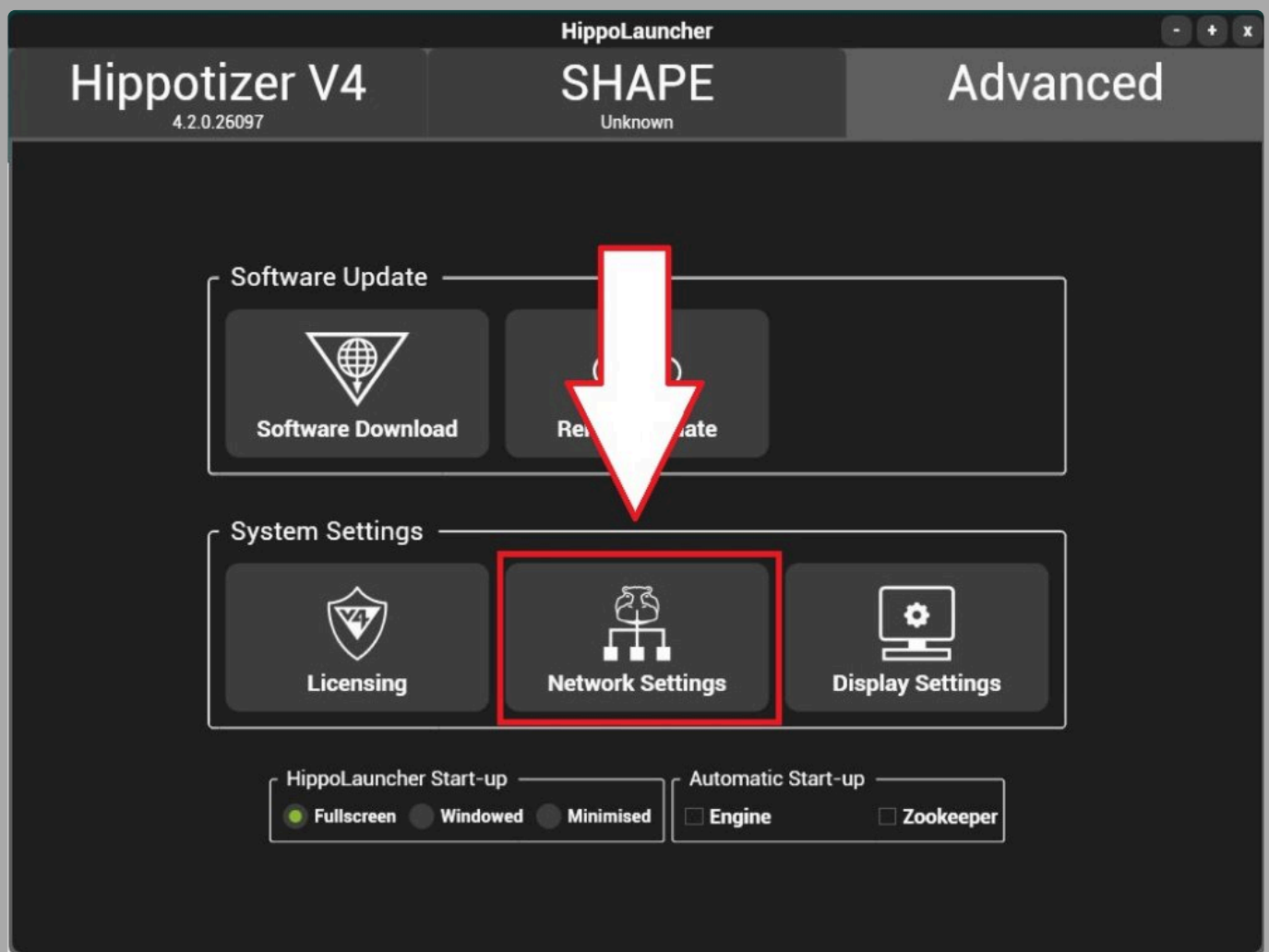


Network connectivity is critical to Hippotizer's normal function and may require ports not listed here. Green Hippo **STRONGLY** advises disabling all firewalls on show networks.

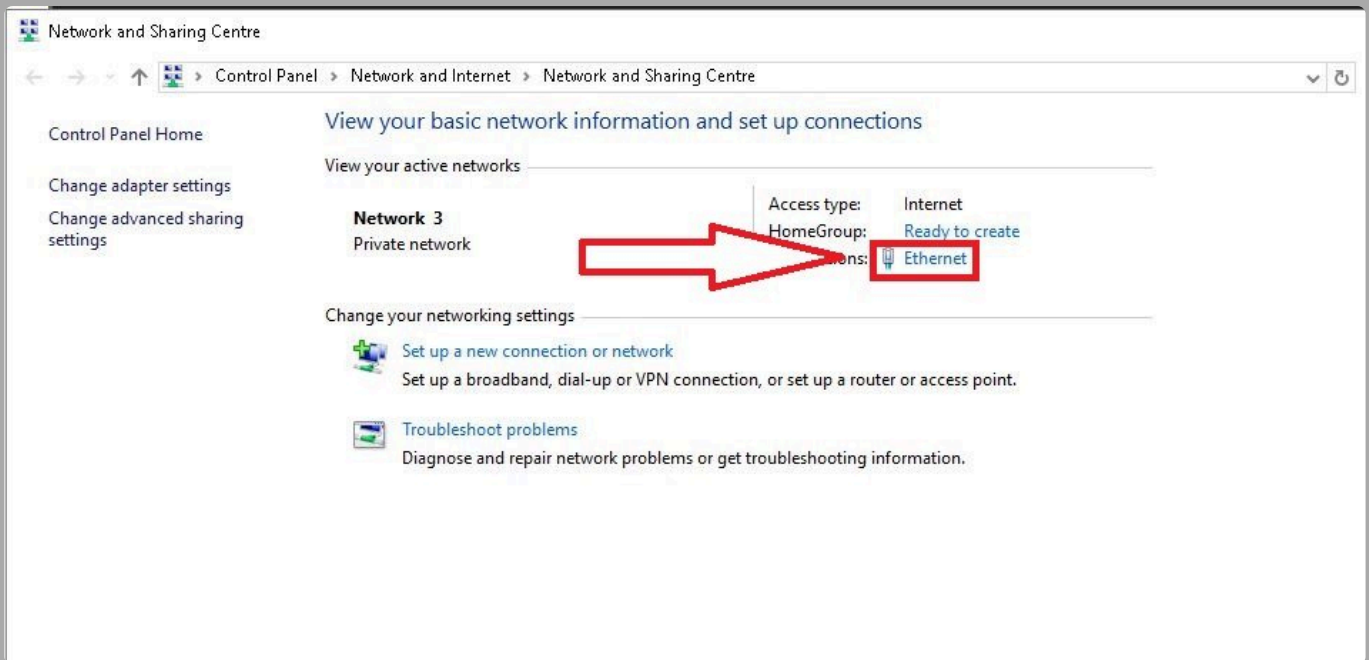
# Setting a Static IP address

Every device on a network must have a unique IP address. Though automatic methods exist to set address (DHCP most commonly), it is considered best practice to manually set unchanging IP addresses (Static IPs) to avoid potential problems should the DHCP server fail.

IP addresses are set in Windows Network Configuration. This can be quickly accessed from within Hippolaunch's advanced tab.

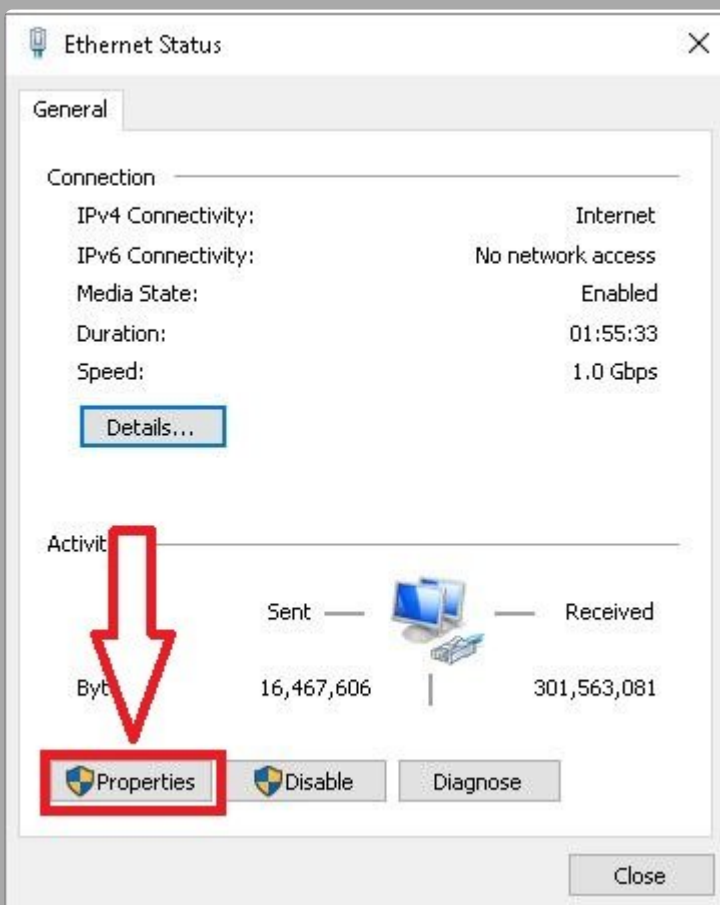


The Windows Dialogue for all Network interfaces will be shown

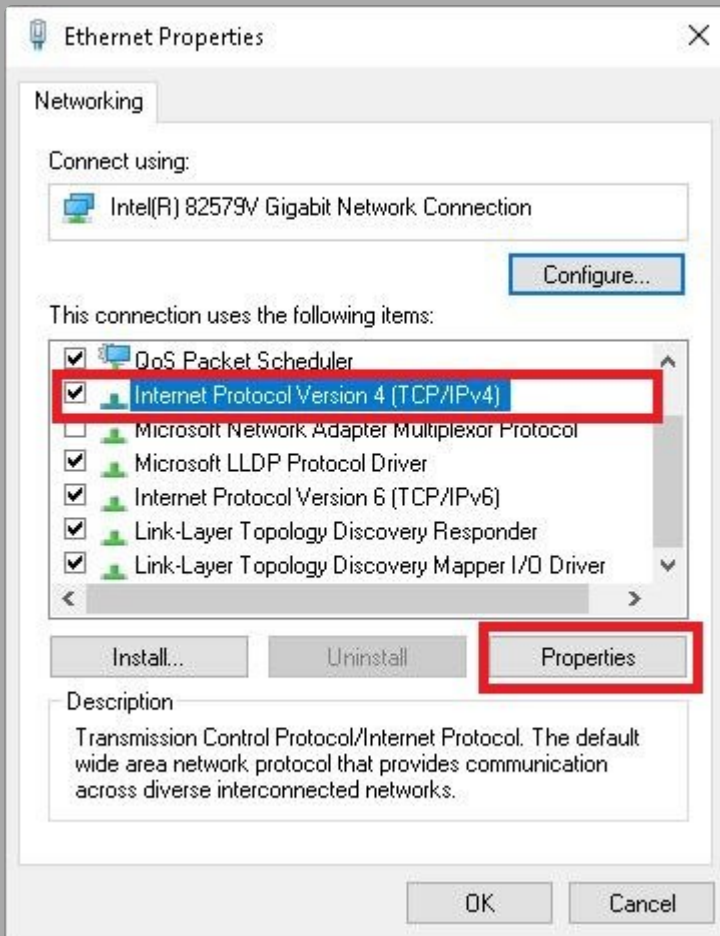


**Note:** Only network connections that are plugged in and enabled will appear in the list of connections.

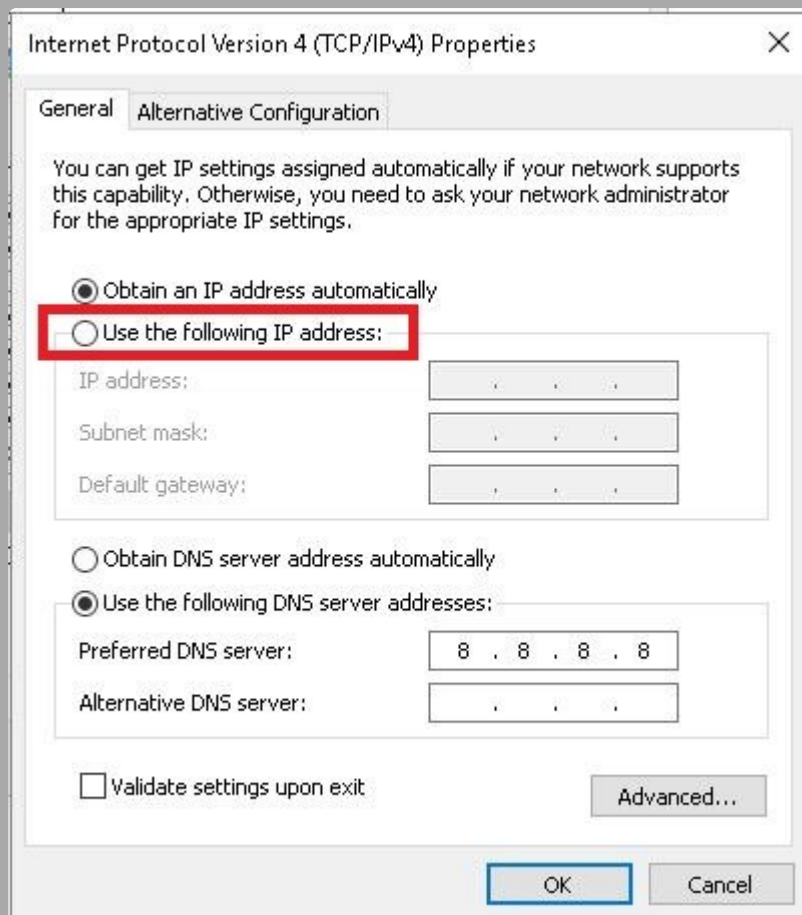
Clicking on the desired interface will open it's properties.



Click on the properties button.



Select **Internet Protocol Version 4 (IPV4)** and the properties button to set an address.



Finally, select **Use the following address**, set an IP and subnet mask.

Default Gateway and DNS settings can remain blank in most cases.

In general, a HippoNet Network should have an IP address similar to: 192.168.1.XXX and a Subnet mask of 255.255.255.0 with each system having a unique number in the **XXX** field of the IP address.

Usually a Data Network carrying Art-Net will have an IP Address similar to: 2.0.0.xxx and a Subnet mask of 255.0.0.0 with each system having a unique number in the **XXX** field of the IP address.



This guide covers only the most simple network setups and should not be used in place of expert advice in any situation. Incorrect network configuration is the single largest cause of support calls that Green Hippo receives.

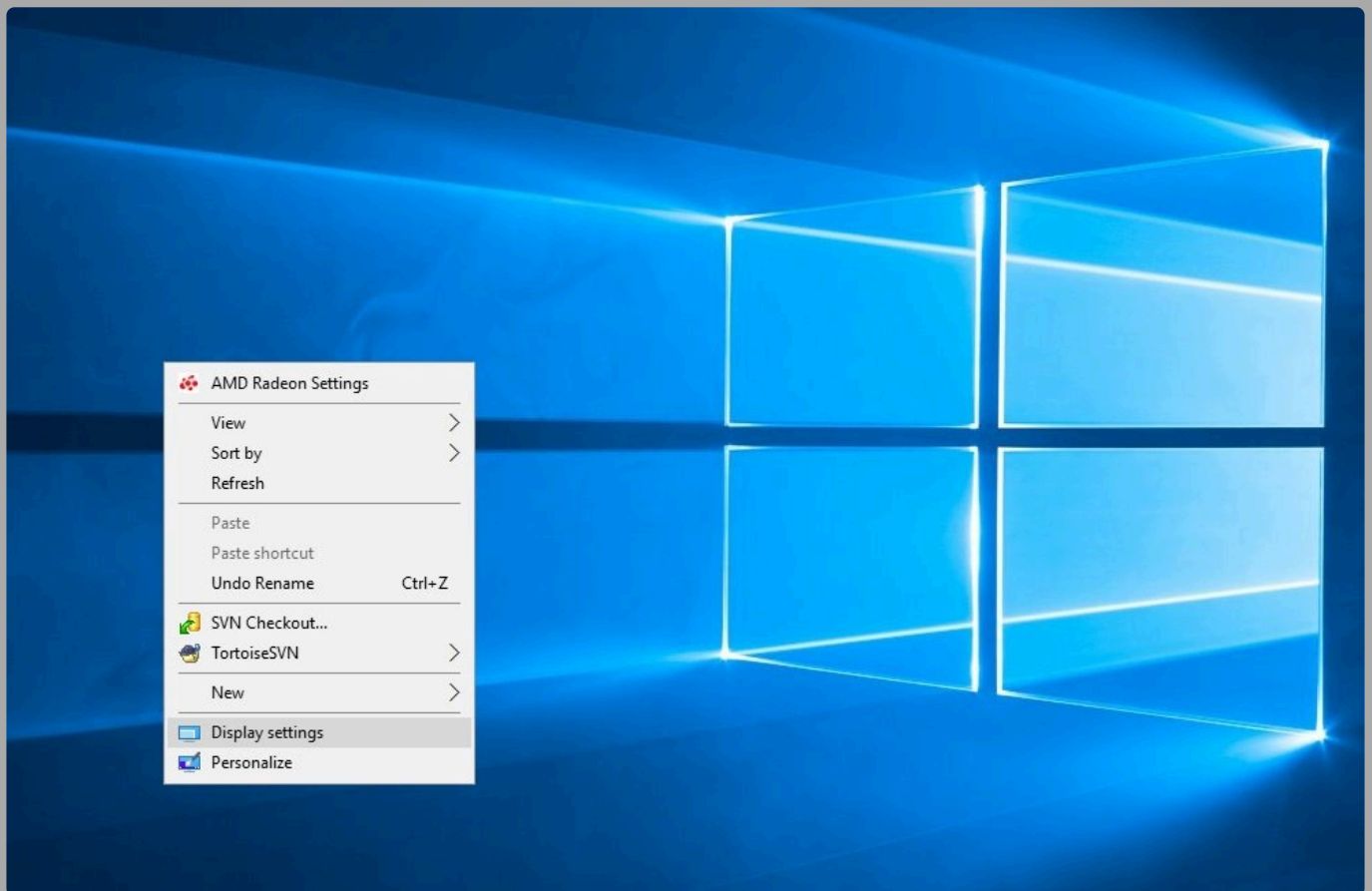
# Disable Windows DPI Scaling

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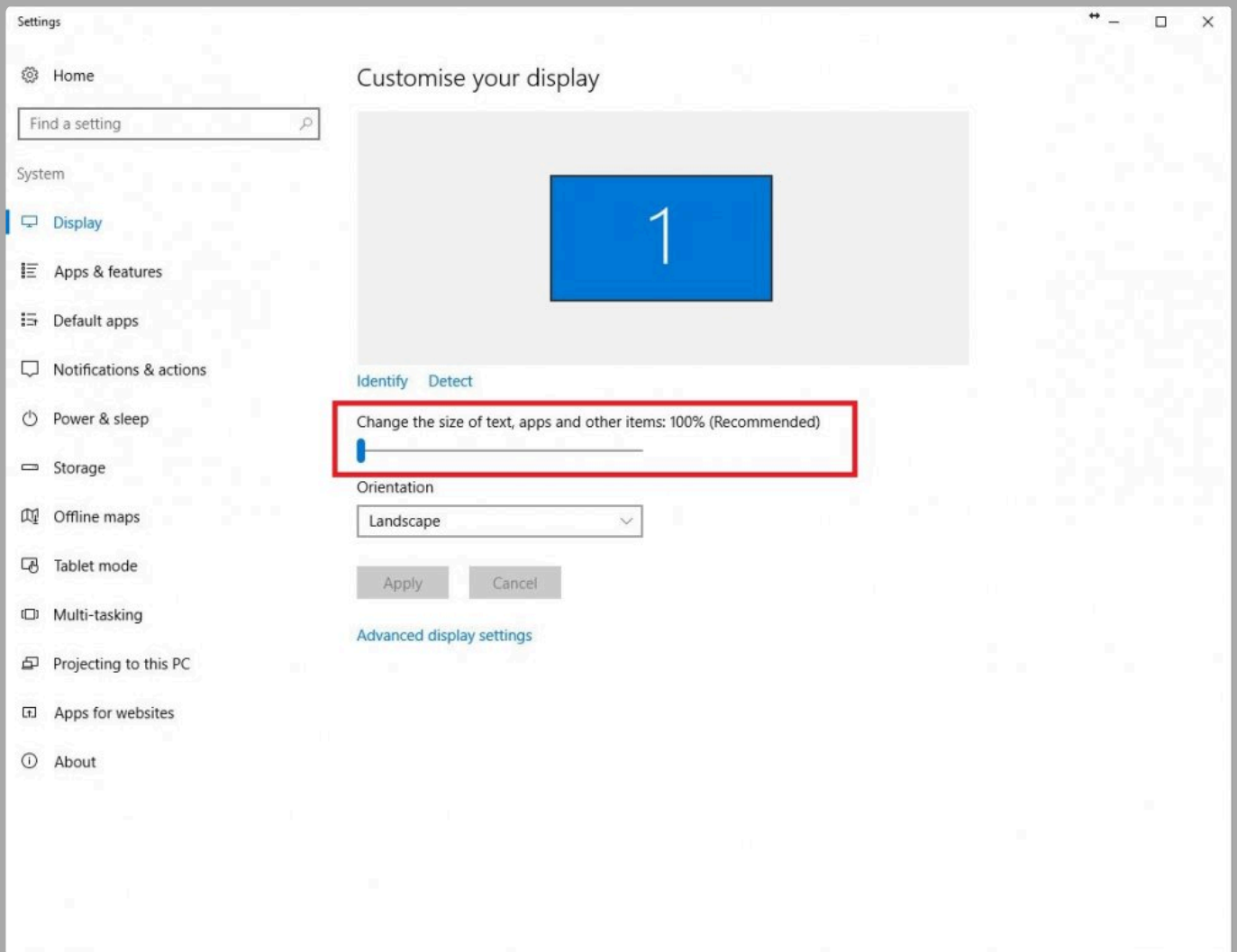
Windows 8 and 10 will scale outputs automatically to match pixel size between dissimilar resolution displays. This will cause the problems with Zookeeper and Output manager as they rely on pixel size to lay out screens. To solve this, disable DPI Scaling.

## To Disable DPI Scaling:

Right Click on the desktop and select **Display Settings**



Select each display and ensure the scaling slider is set to 100%.





# Starting Up

---

## Hippotizer V4 is comprised of three applications:

### Hippolaunch



**HippoLauncher** is a management application for the Engine and Zookeeper, helping to start and stop the programs as well as provide some useful features.

[More information on HippoLauncher can be found here](#)

To Start Hippotizer, use Hippolaunch.

Hippolaunch will start two other applications automatically:

### The Engine



The core of the system: the **Engine** renders video and receives external control (such as DMX).

[More information about the Engine can be found here.](#)

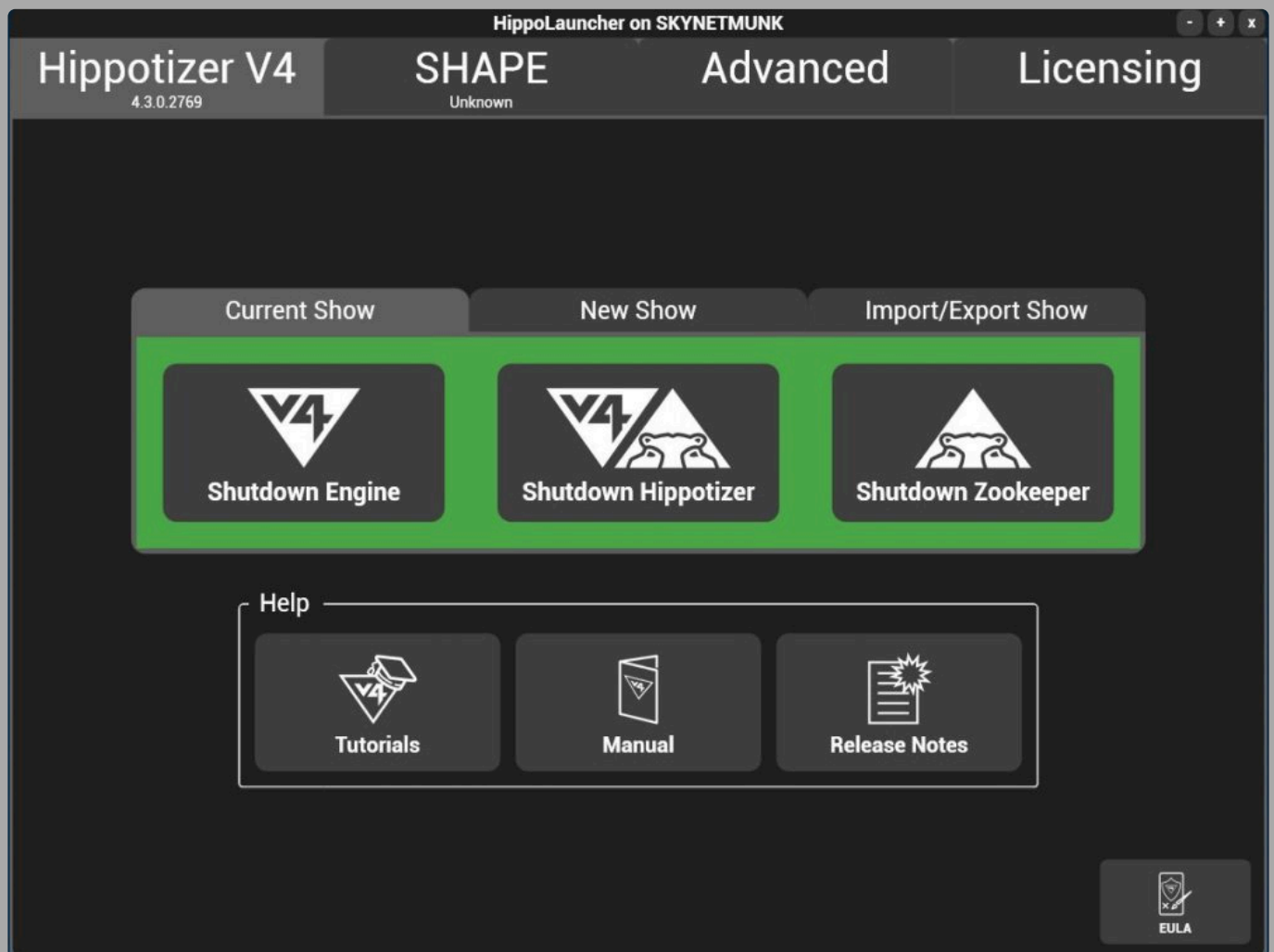
### Zookeeper



**Zookeeper** is the user interface for Hippotizer; it controls all engines on the local network.

[More information about Zookeeper can be found here.](#)

# HippoLauncher

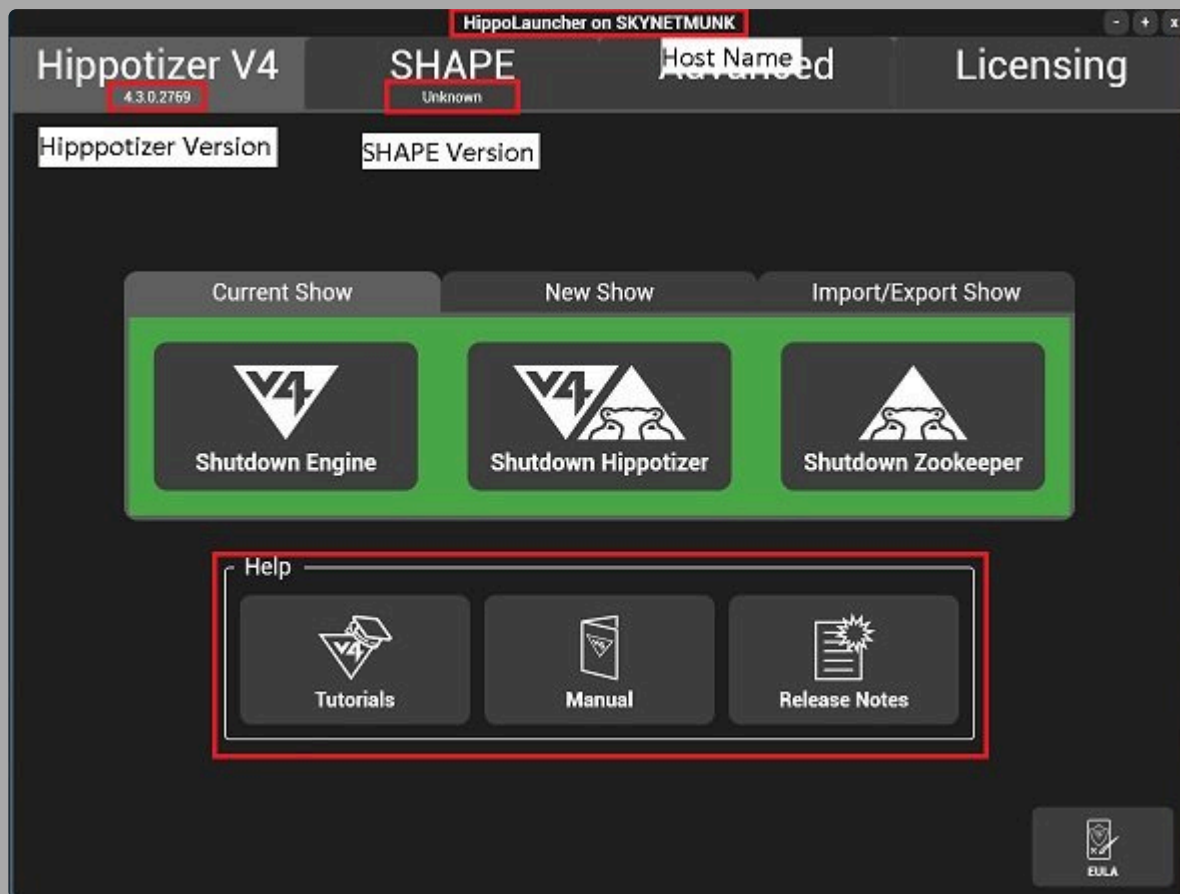


On a Hippotizer machine Hippolauncher will startup by default once the system completes boot-up.

## Hippolaunch contains four or five tabs:

- [Hippotizer V4 Tab](#)
- [Compatibility Mode Tab](#)
- [SHAPE Tab](#)
- [Advanced Tab](#)
- [Licensing Tab](#)

## Hippolaunch also contains important information about versions



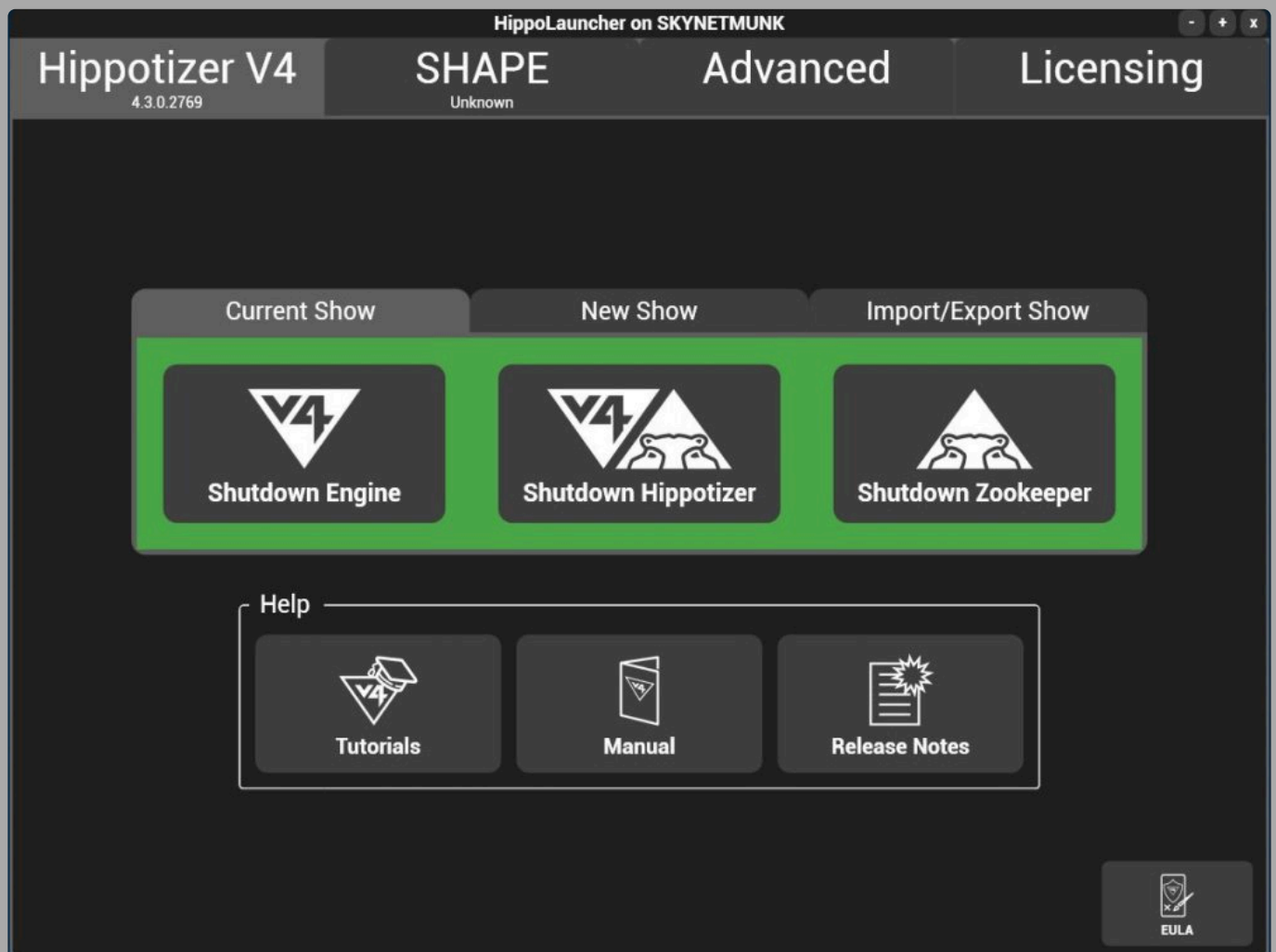
### Hippotizer V4 Version

The version of Hippotizer installed. **4.3.1.2844** corresponds to Version 4.3.1 build 2844.

### SHAPE Version

The version of SHAPE installed. If this must match that of Hippotizer. If it does not, navigate to the SHAPE tab and install from the **Copy Shape Installer** button.

# Hippotizer V4 Tab



To start the currently installed Hippotizer V4 there are three options:

## [Current Show](#)

- Starts Hippotizer using the settings that were saved on the last shutdown.
- Use this option to 'pick up where you left off'

## [New Show](#)

- Starts Hippotizer with clean settings.
- Existing settings are deleted.
- Use this option when starting a new project or show.

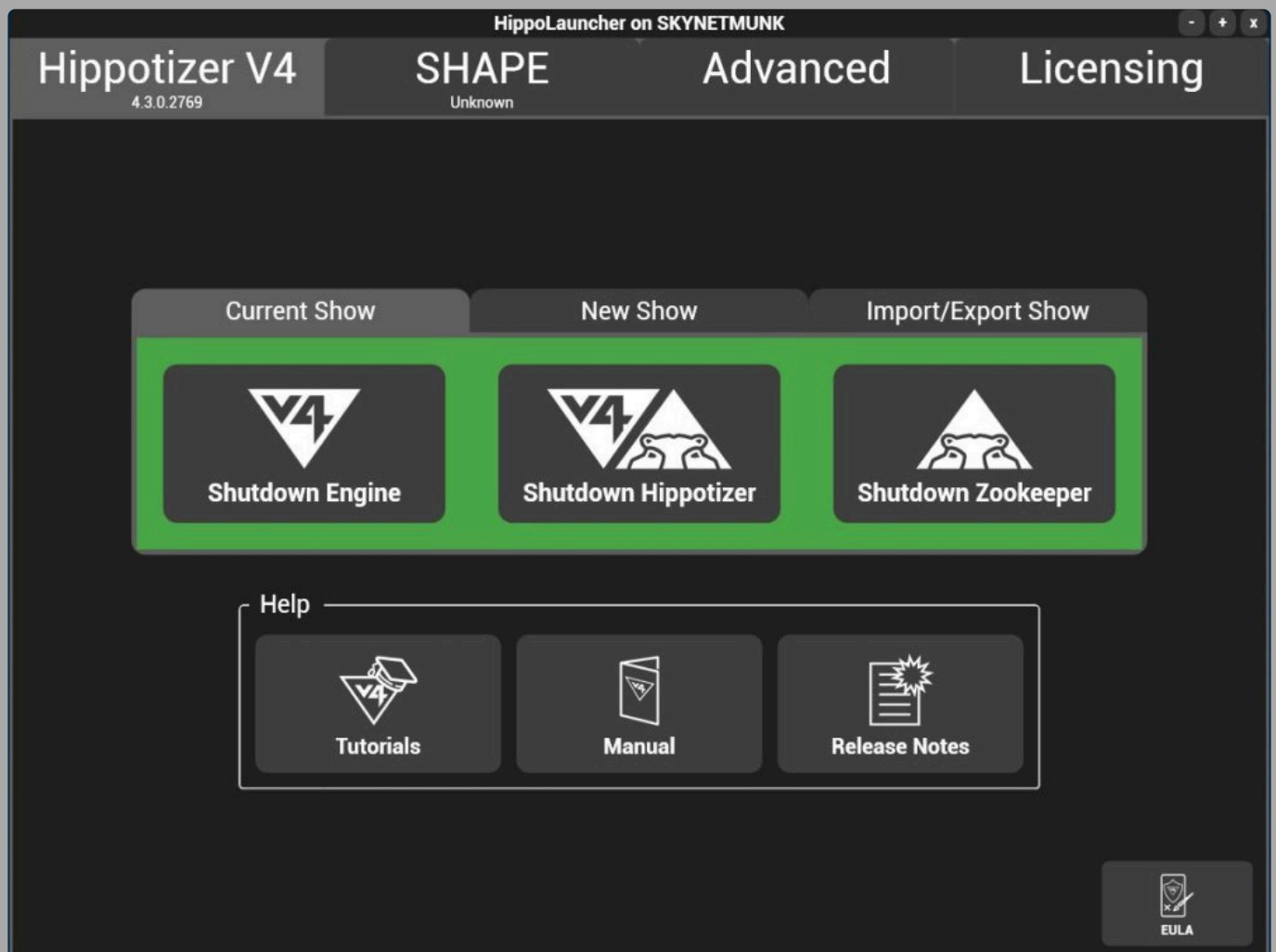
## Import Export Show

- Groups the component settings into a single folder for saving or loading.
- Use this to quickly load or save all the settings of a system.
- Only works for the local host.

## Help

Hippolauncher also provides links to the Green Hippo tutorial Youtube channel, the manual and release notes.

# Current Show



**Starts Hippotizer with the settings that it had on last shutdown.**

## Start Engine only



Start the Hippotizer Engine Application only; allows rendering, receiving DMX and control over the network.

## Start Zookeeper Only



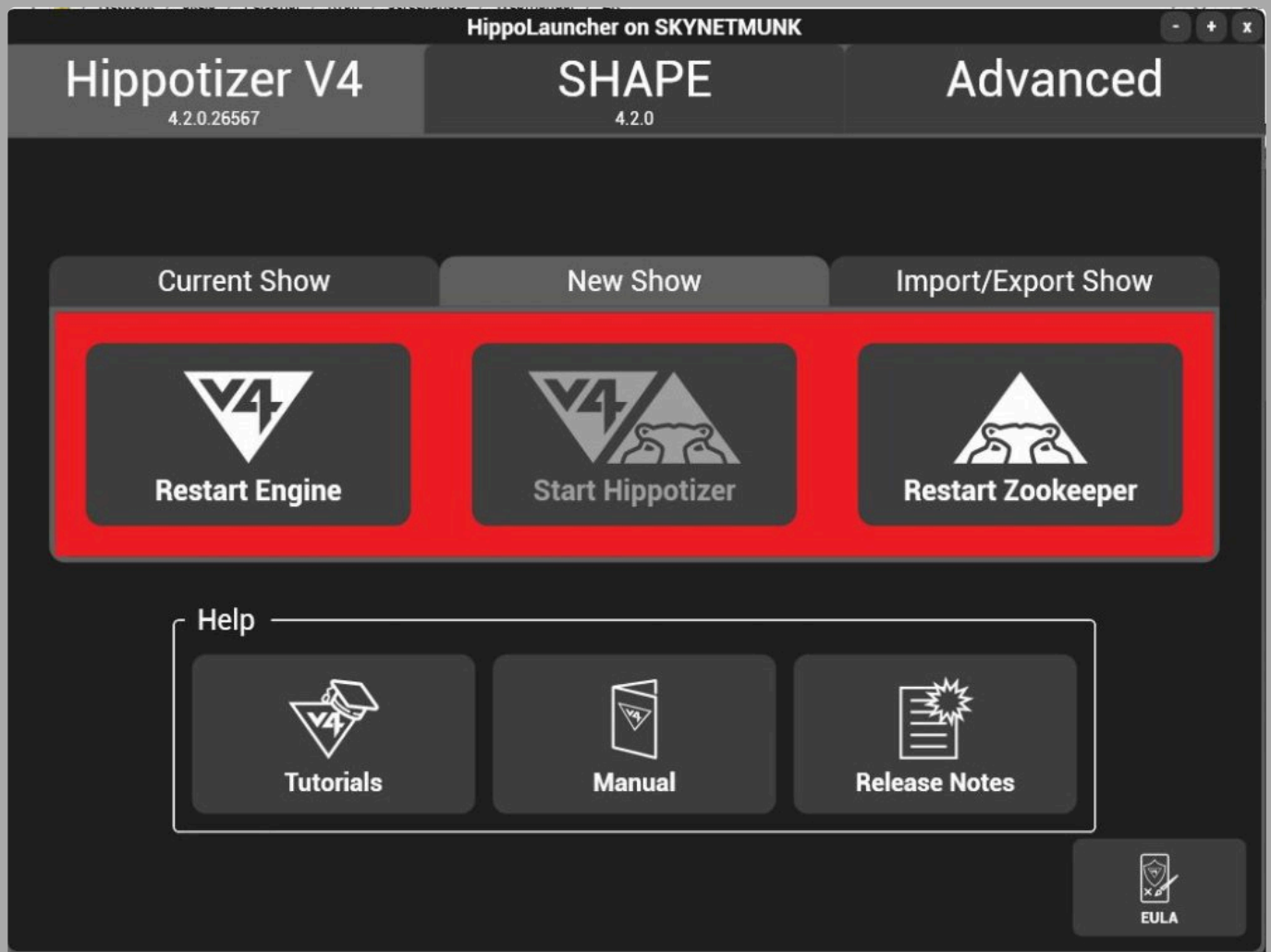
Starts Zookeeper for remote control from computers that are not outputting video.

## Start Zookeeper and the Engine



Starts both the Hippotizer Engine and Zookeeper

# New Show



There are three options in new show:

## Reset the Engine



Resets the settings of all components and starts up.

The following settings are reset:

- Engine (host) network assignment
- DMX Patch
- Live masks are deleted
- Macromanager is reset and all macros deleted
- The Media Manager STRATA Path is reset to the default for the system type



- All Multicontroller settings and patches are deleted
- The output configuration is reset to 1 mix and 1 viewport.
- All Pin bridges are deleted.
- All Pixel maps are deleted and the Pixelmapper patch is reset
- All Presets are deleted
- All Screen Warps are deleted
- Sync Manager settings are reset
- All Timelines are deleted
- All Video maps are deleted.

**Following reset, the system will start with the basic components running including:**

- Engine
- Media Manager
- Preset
- LED
- Output Manager

## Reset Zookeeper



Deletes all Zookeeper settings and then Starts Zookeeper

**The following settings are reset:**

- Zookeeper network assignment
- Custom Pinboards are deleted
- Visualiser settings are reset
- Default pinboards reset

## Reset Zookeeper and the Engine

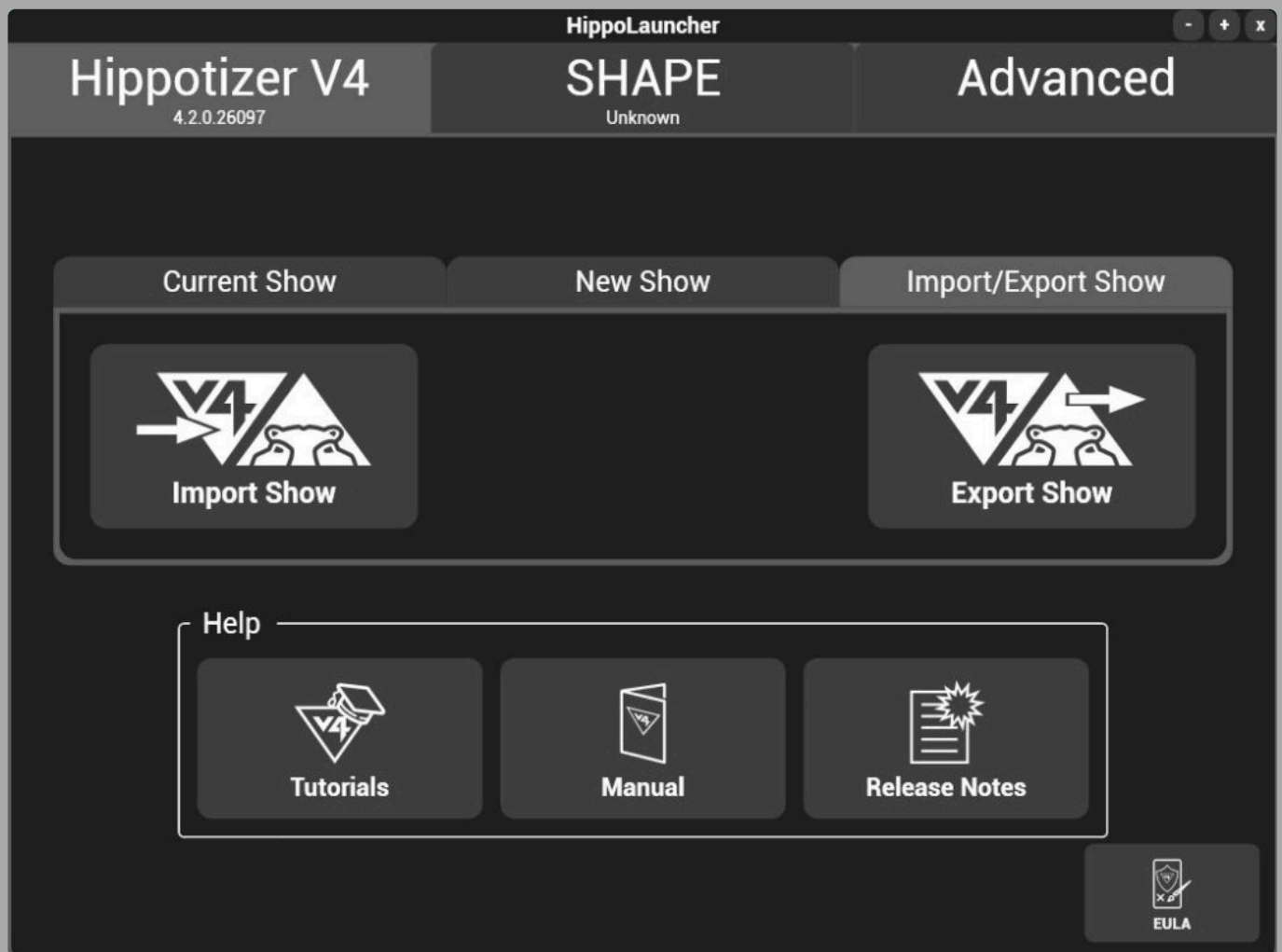


Starts both the Hippotizer Engine and Zookeeper

**Resets both the Engine and Zookeeper before starting.**

- Carries out all operations above of resetting the Engine
- Carries out all operations above of resetting the Zookeeper
- Starts both the Engine and Zookeeper.

# Import Export Show



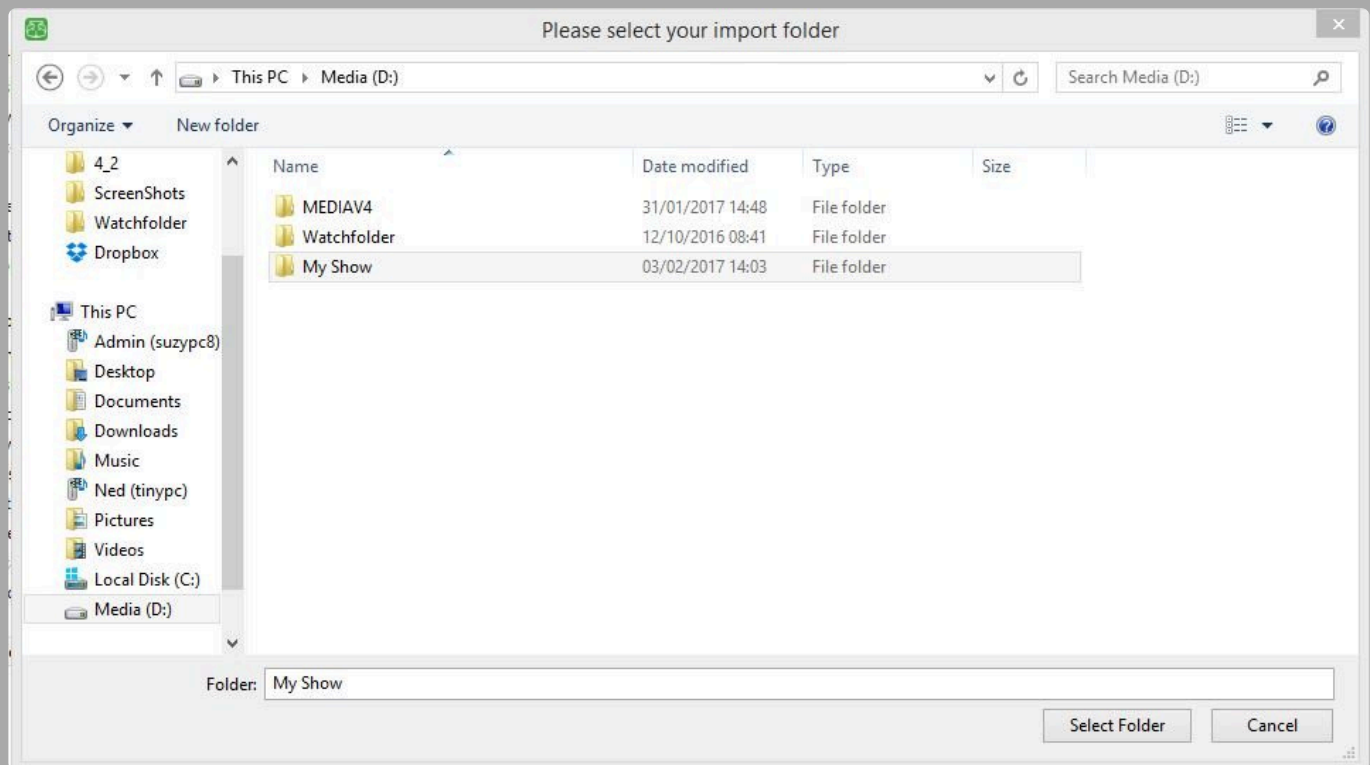
## Import Show

Import show starts and loads all components from a folder at once.

Individual components can also be imported through the component import in Zookeeper's configuration.

[Saving and Loading Components from Zookeeper](#)

Selecting import show will shut down Zookeeper (if it is running) and launch ask for the directory containing the show.



Shows are a collection of component exports in a folder. Importing the folder is the same as importing each component separately.

## Export Show

A show can be exported from HippoLaunch or from the component settings of Zookeeper.

[Saving and Loading Components from Zookeeper](#)

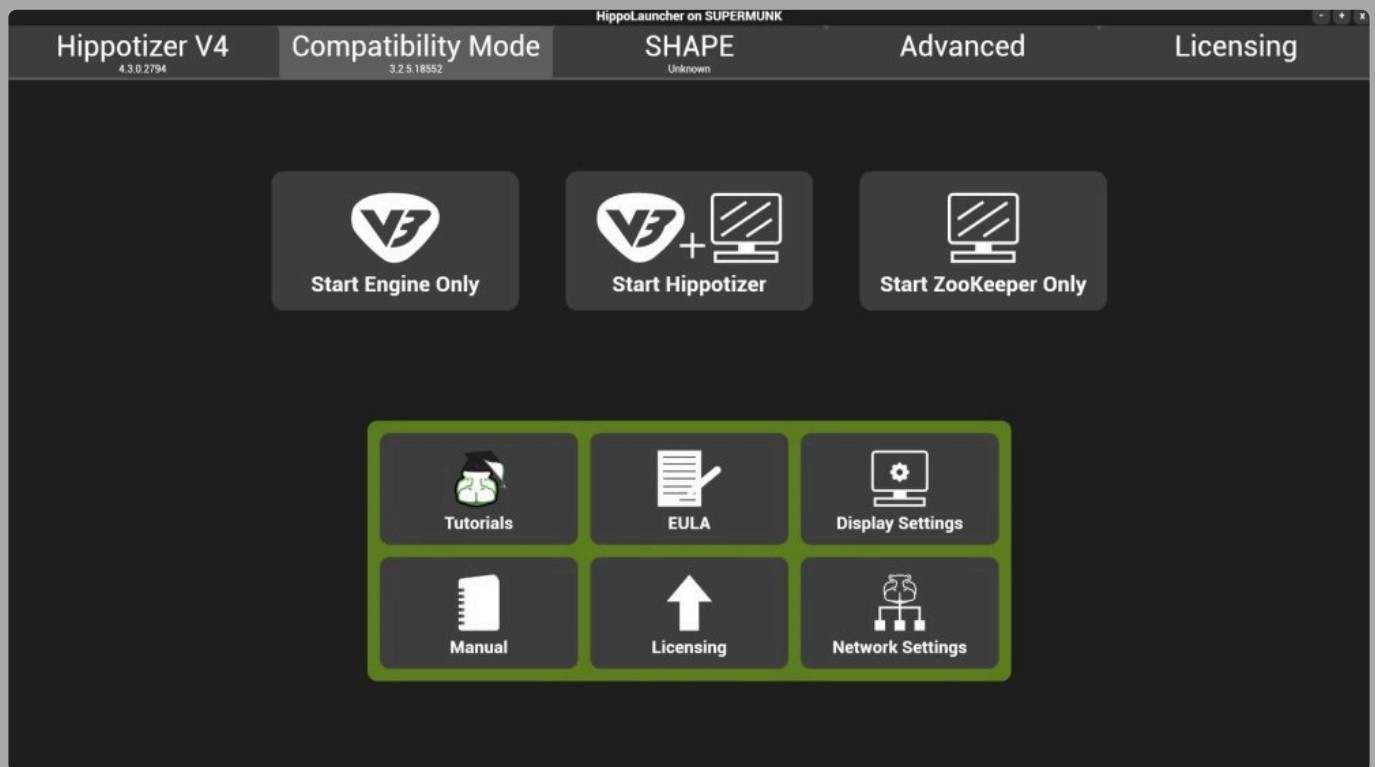
## To Export Show:

- Close Zookeeper
- In Hippolaunch choose export show
- Select Which components to export
- Choose the destination folder



**Note:** Media Manager exports can be very large and take significant time to export. Take care there is enough space on the target drive for a media manager export.

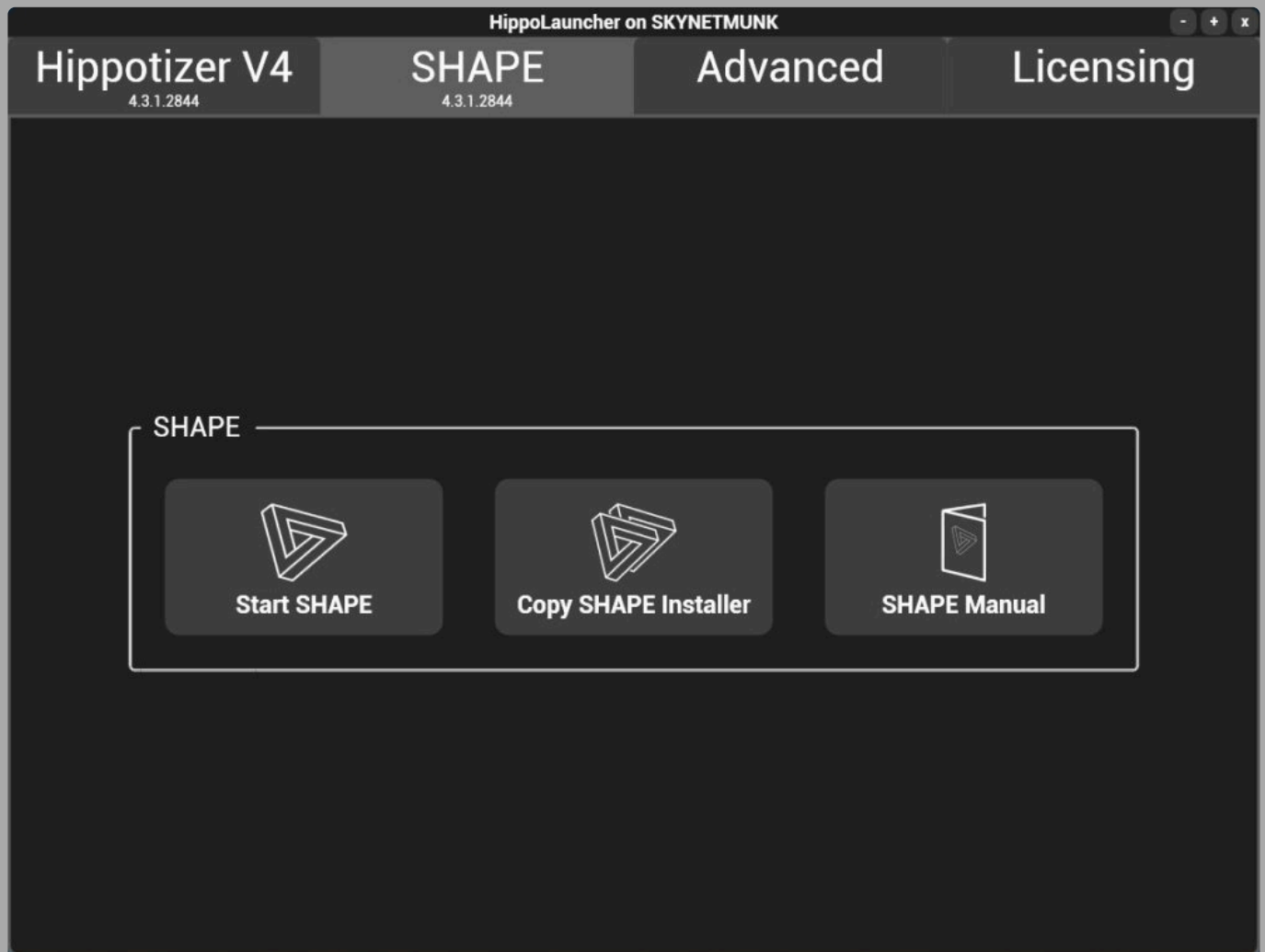
# Compatibility Mode Tab



Compatibility mode starts V3 Hippotizer on a V4 machine.

! Compatibility mode is available only for Hippotizer V4 systems and not V4+.

# SHAPE Tab

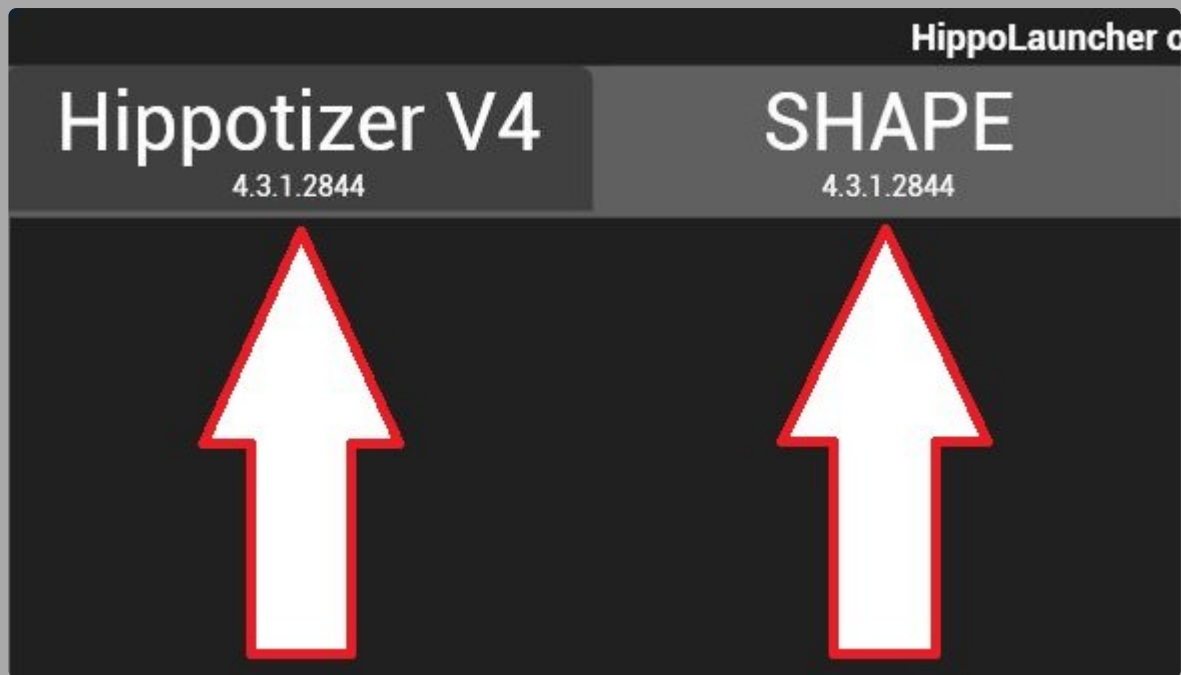


## Start / Install SHAPE

- If SHAPE is not already installed, the Install SHAPE button will show. Press this to Install SHAPE.
- If SHAPE is already installed then the option to Start SHAPE is shown.



Take care that the SHAPE version always matches the Hippotizer V4 version.



### Copy SHAPE Installer

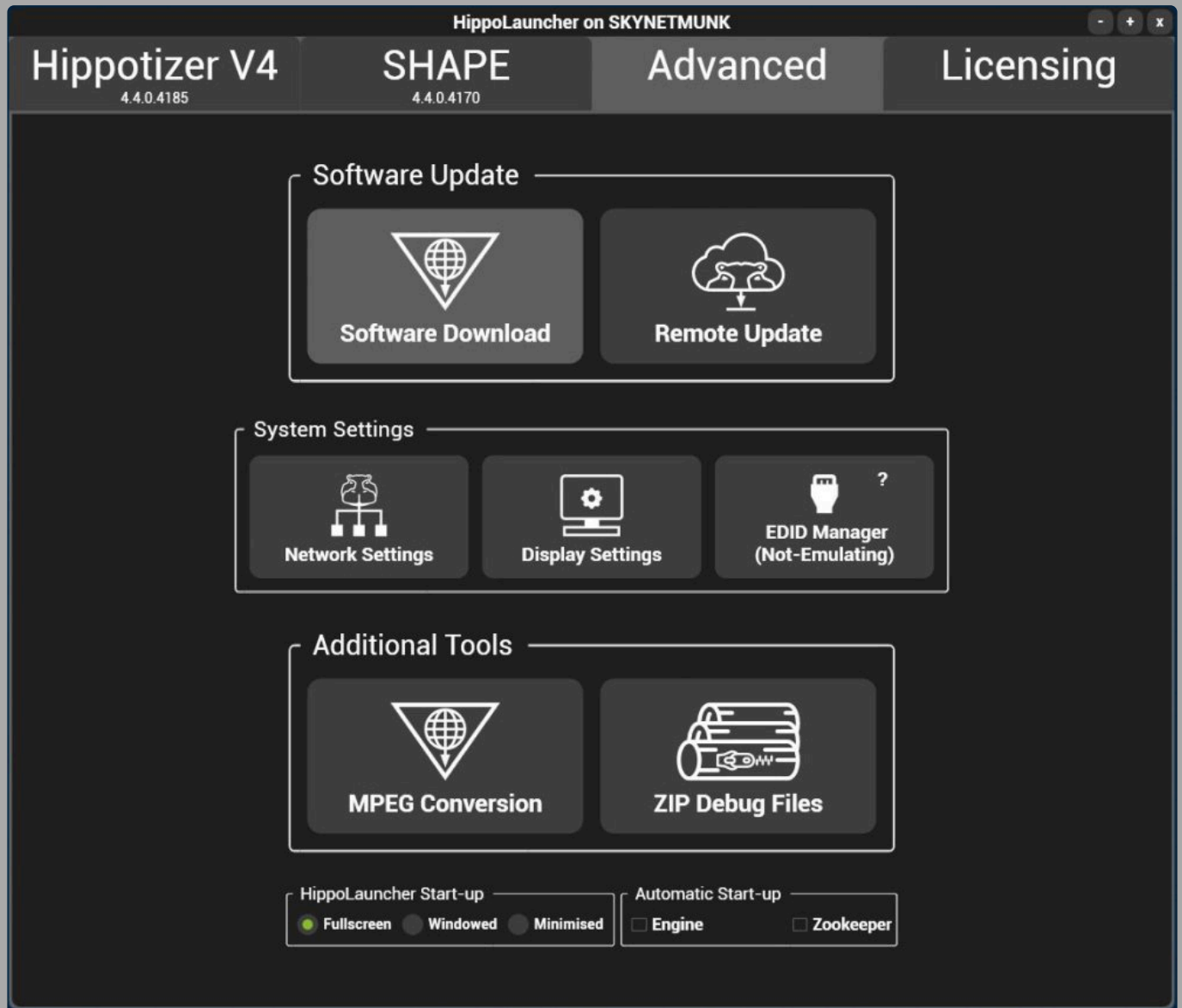
- Opens a file browser with the SHAPE installer selected so it can be quickly copied to a new location.
- Use this function to install the correct version of SHAPE on remote machines.

### SHAPE Manual

- Opens a local copy of the SHAPE Manual

# Advanced Tab

HippoLauncher's Advanced tab contains tools to make system setup easier



HippoLauncher's advanced functions are intended to be used only when the Engine and Zookeeper are not running.

## Software Update

### [Remote Update](#)

Install new software remotely on other Hippotizers on the local network.



### [Software Download](#)

Link to the Hippotizer software download website

## **System Settings**

### [Display Settings](#)

Opens the windows display settings dialogue. This is the recommended method for configuring outputs before starting the engine.

### [Network Config](#)

Opens the windows network settings dialogue.

### [EDID Manager](#)

Loads and unloads software EDID on supporting hardware.

## **Additional Tools**

### [Mpeg Conversion](#)

Opens the mpeg converter tool to automatically transcode mpeg based media libraries to FlexRes.

### [Zip Debug Files](#)

Opens a file explorer to collate and compress all log files. Hippotizer support may request log files as part of diagnostic procedures.

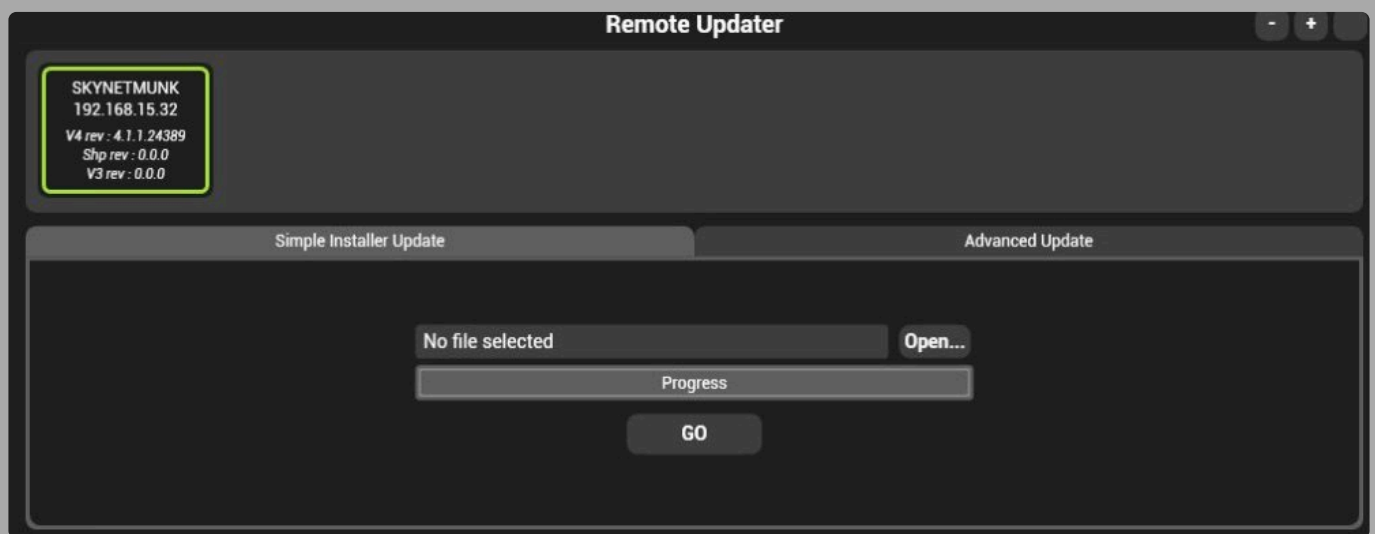
# Remote Update

The launch application includes the ability to remotely update other Hippotizer systems on the network. This is accessed from the advanced tab of the launch app.

Note: In order for Remote update to function, Hippo Launch must be running on all target machines.

The remote update button will launch a separate application to set up and process the network updates.

## Simple Installer Update

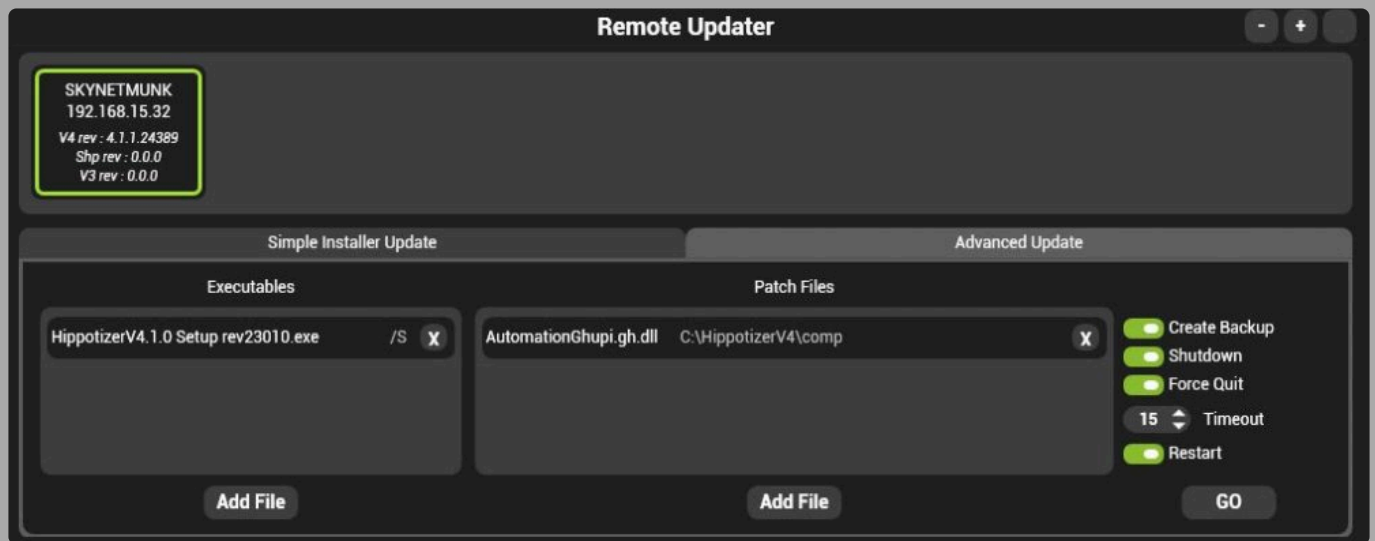


To quickly update remote machines to a new Hippotizer version, simple update is the best way.

To update:

- Select the target machines in the top bar
- Select the installer to use for update
- Press Go

## Advanced Update



Where patches need to be applied, advanced update allows for other files to be specified with the upload.

### Create Backup

Copies Hippotizer directory to a backup directory before updating

### Shutdown

Stops Hippotizer and Zookeeper on target machines they are running (required for update to occur)

### Force Quit

Will kill the Hippotizer Application if it does not shut down (may result in data loss)

### Timeout

How long to wait (seconds) before killing the application after requesting shutdown

### Restart

Restart the application after updating

# Software Download

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Hippotizer V4 software is updated constantly, with a new release frequently available two or three times per year. The software download option will launch a web browser to Green Hippo's update site.

[Update Site](#)

## Software Versioning

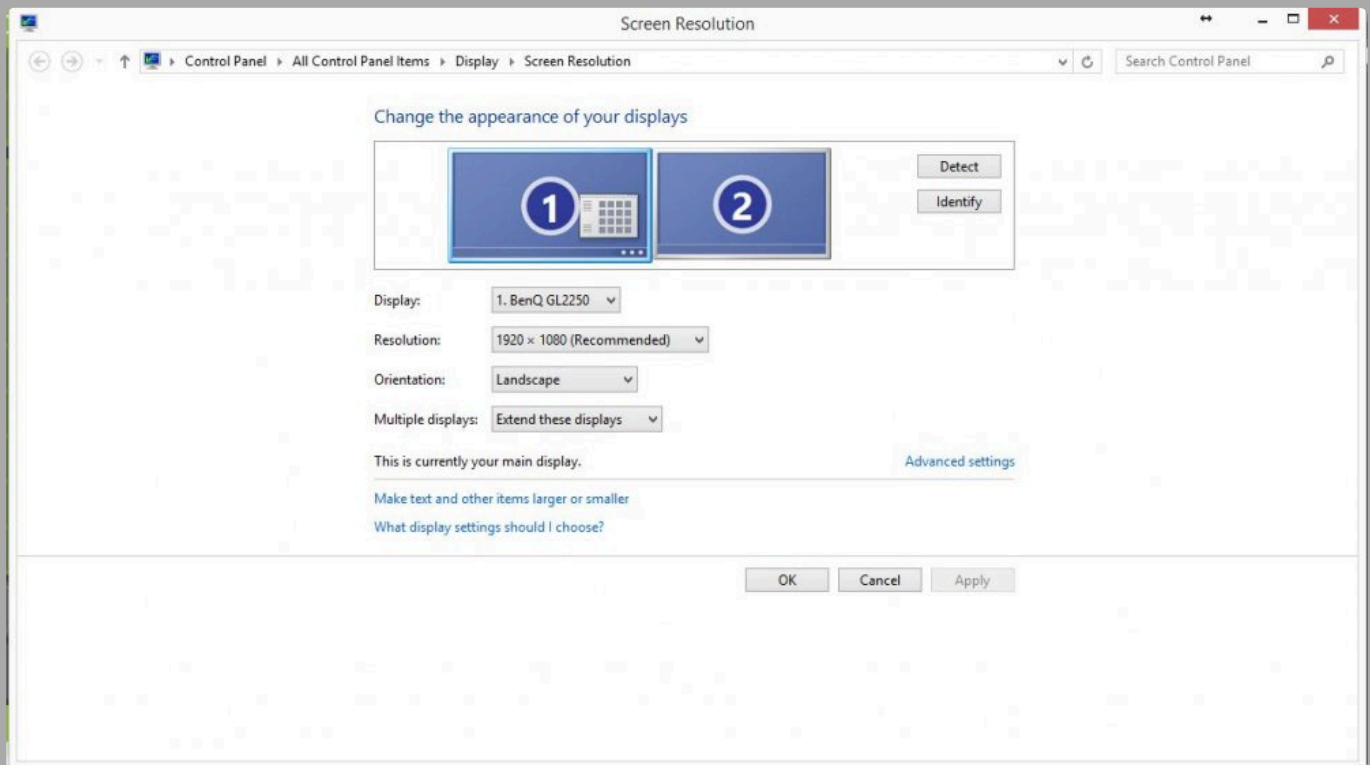
Each software version has a unique number in the format of **W.X.Y.Z**

- **W** = Product Number: indicating what product version the software is compatible with.
- **X** = Major Version Number: indicating that new features and fixes have been added to the software.
- **Y** = Minor Version Number: indicating that only fixes have been applied to the software.
- **Z** = Revision Number: used for debug and beta builds primarily, the revision number tells Green Hippo technical staff precisely when the software was created.

**For example: 4.1.0.23010**

- Installs onto Hippotizer Version 4 Hardware
- Is Major Version 1 indicating that new features were added from the previous 4.0 version.
- Is the first Minor version in 4.1
- Is Revision 23010.

# Display Settings

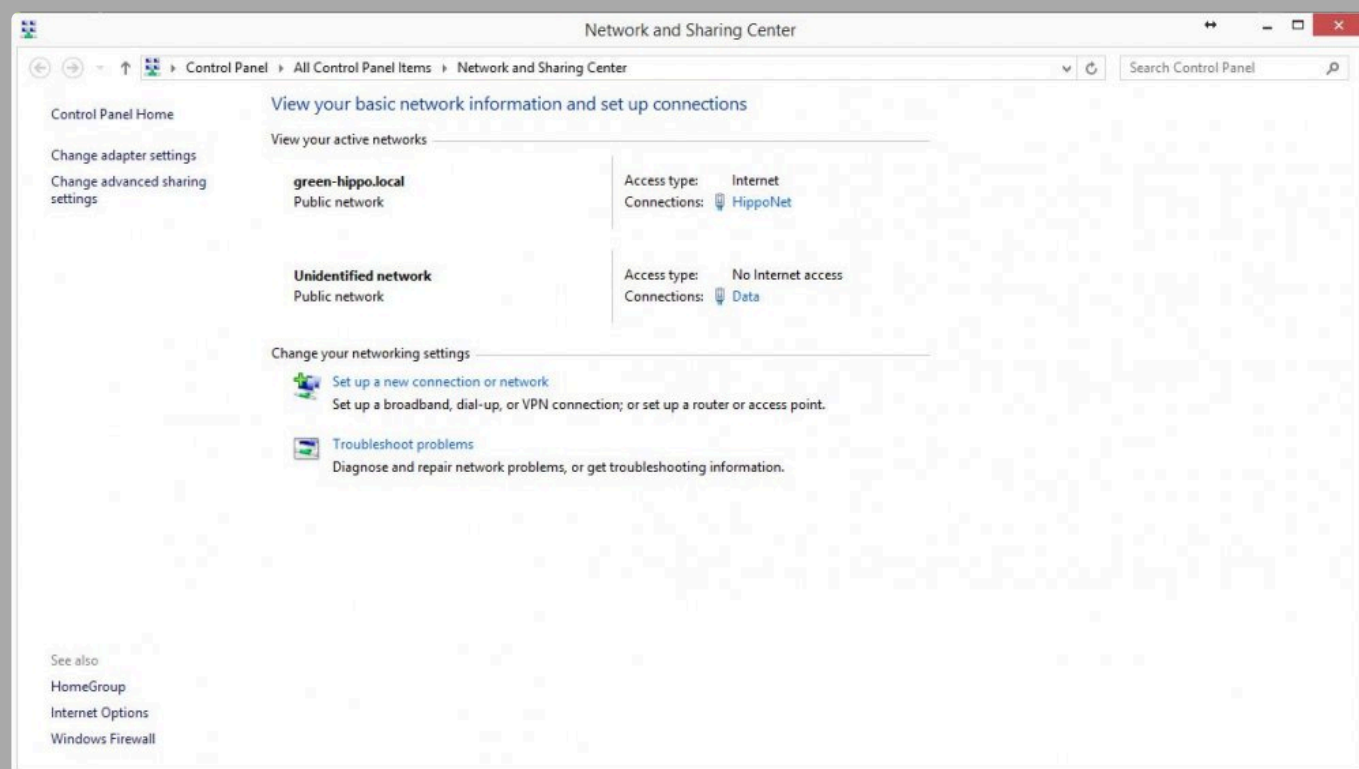


Opens the Windows dialogue for display settings.

Before starting Hippotizer, it is important to ensure the displays are correctly configured.

The Zookeeper display should be the Primary, and it should be placed to the left of all other displays.

# Network Config



Opens the Windows Network Dialogue.

[More information about Networking and Hippotizer Can be found here.](#)

# Zip Debug Files

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# EDID Manager

## The EDID Manager loads and clears software EDID Emulation

Note: The EDID Manager works with Hippotizer V4+ systems fitted with FirePro Graphics cards only.

## Systems that support EDID Manager

### V4

- None

### V4+

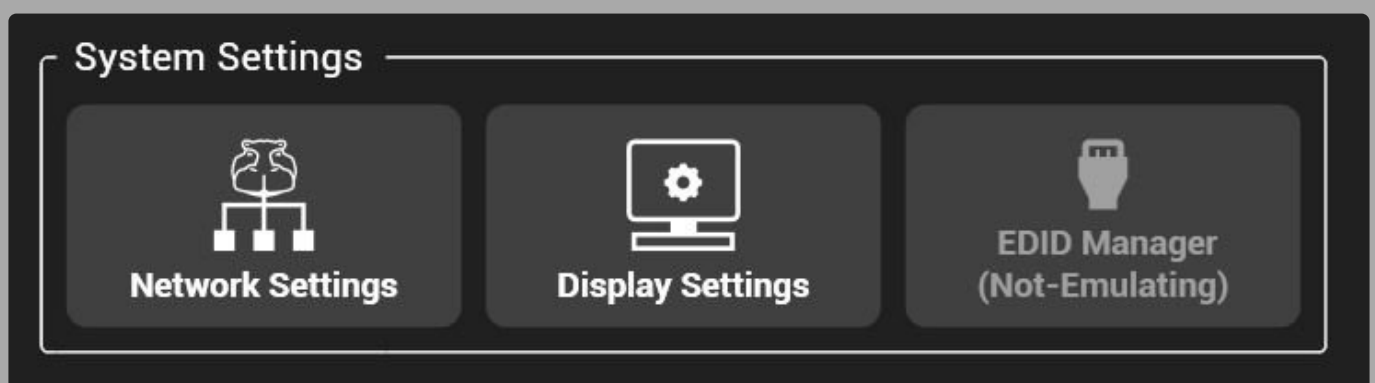
- Karst SDI
- Karst DP
- Boreal (All Types)
- Taiga (All Types)

## Using EDID Manager

The EDID Manager communicates with the AMD Firepro Graphics drivers; changes made in EDID Manager can be viewed in the EDID Emulation section of the graphics drivers.

The EDID manager can be in three different states:

### Not Emulating

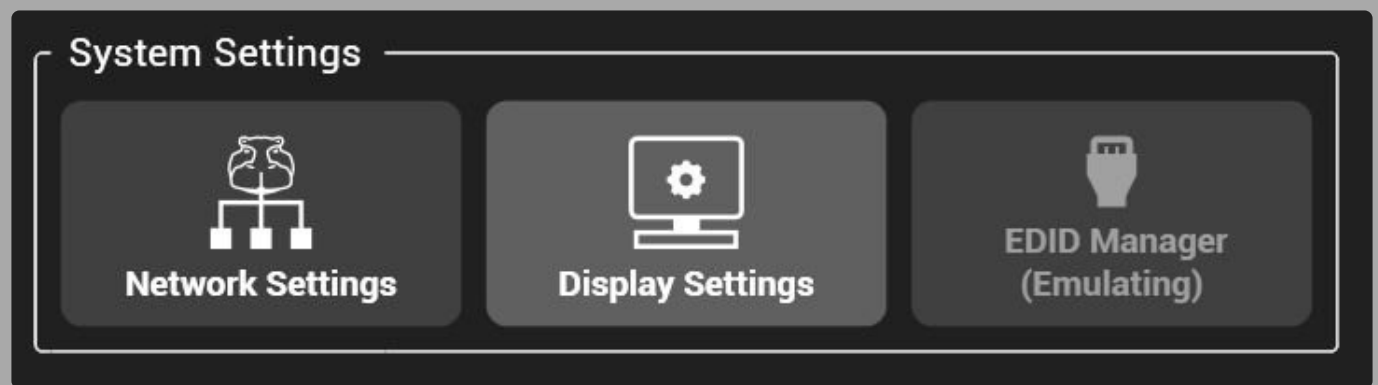


EDID emulation is disabled. Clicking the button will open a menu to allow an EDID to be loaded.

EDID files are text files that can be created from Fire Pro control centre. [For more info, please see here.](#)



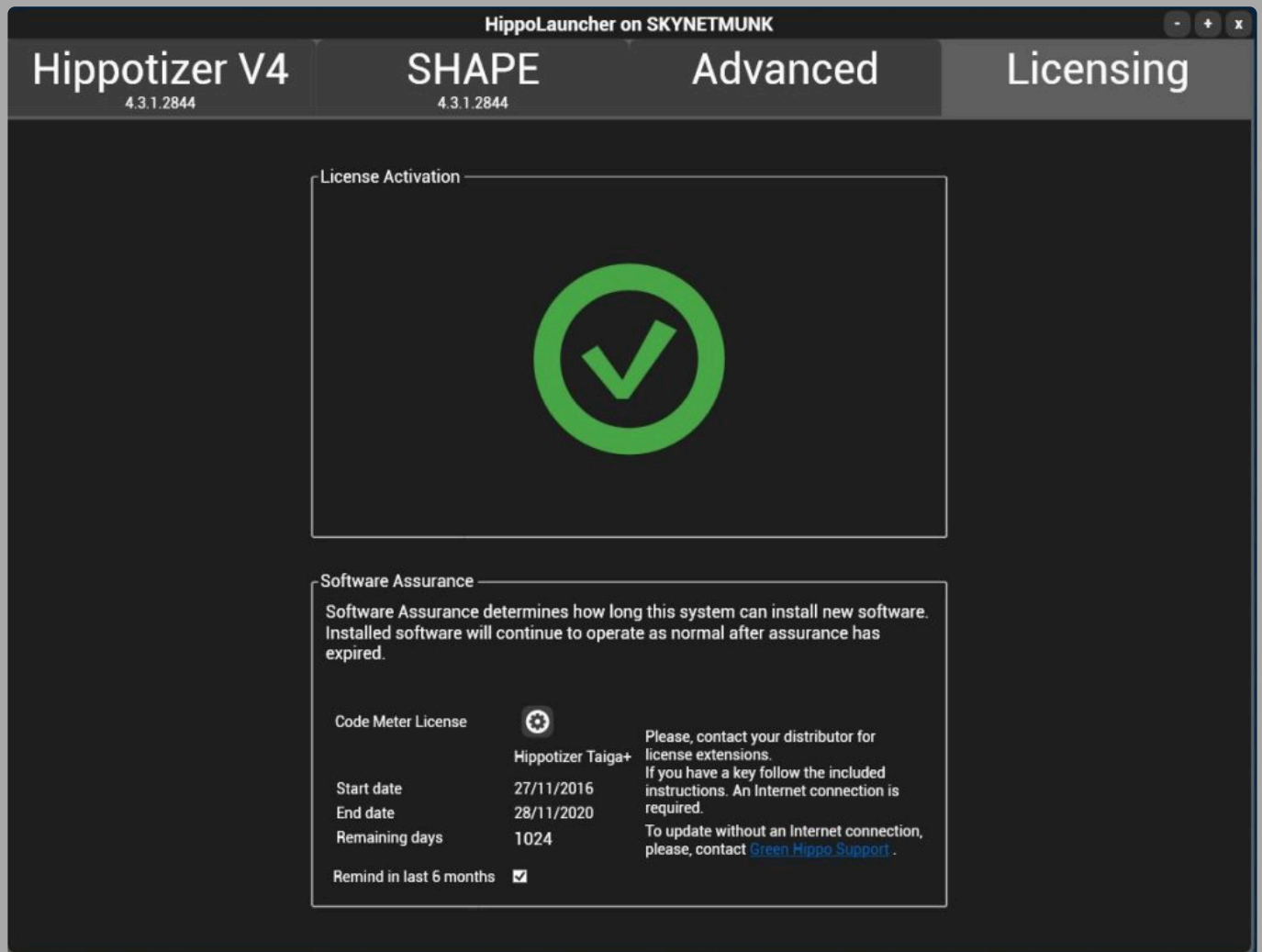
## Emulating



EDID emulation is running. Clicking the button will open a menu to remove emulation.

# Licensing Tab

The licensing tab details the system information and Software Assurance state of the system



Hippotizer uses either a software based or dongle based licensing system.

- All new units ship from the factory fully licensed and ready to use.
- The license is not transferable. If drastic hardware changes occur, the Hippotizer software will cease functioning. Please contact Green Hippo for more details.

## Hippotizer V4

Hippotizer V4, Compatibility mode and Play use a software based licensing system. [For more](#)

[information, please see here.](#)

## Hippotizer V4+

Hippotizer V4+ and Prep use a dongle based licensing system.

### Software Activation.

New systems ship de-activated and must be activated before first use. This is instant and does not require an internet connection. [For more information please see here.](#)

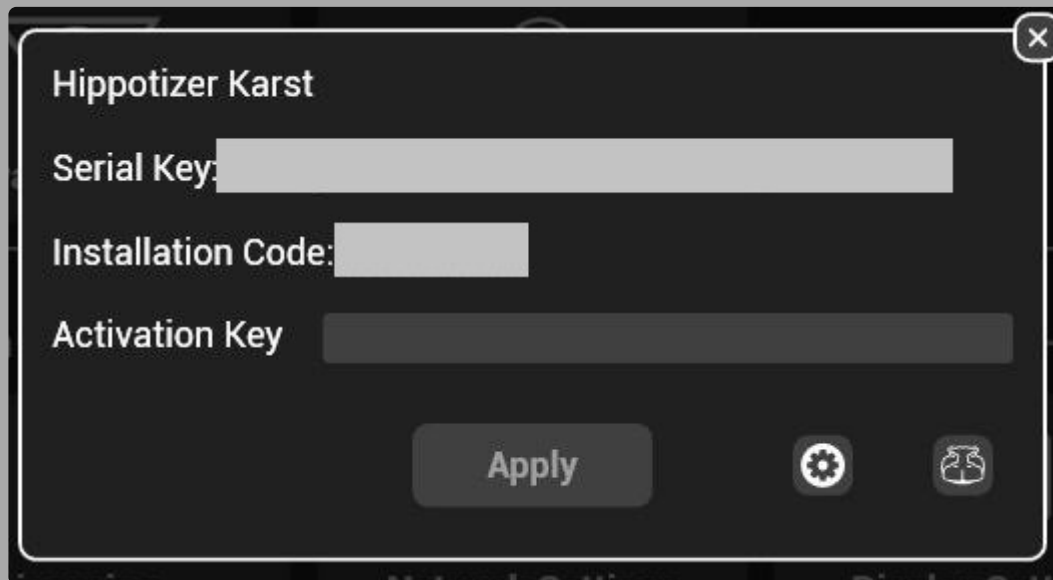
### Software Assurance

Software Assurance determines how long a system can install new software. Installed software will continue to operate as normal after assurance has expired.

[For more information about Software Assurance please see here.](#)

# Software Licensing

Hippotizer V4 uses a software based Licensing system. Under normal circumstances there is no user action required; the license is not affected by changes to the Hippotizer software or a system restore.



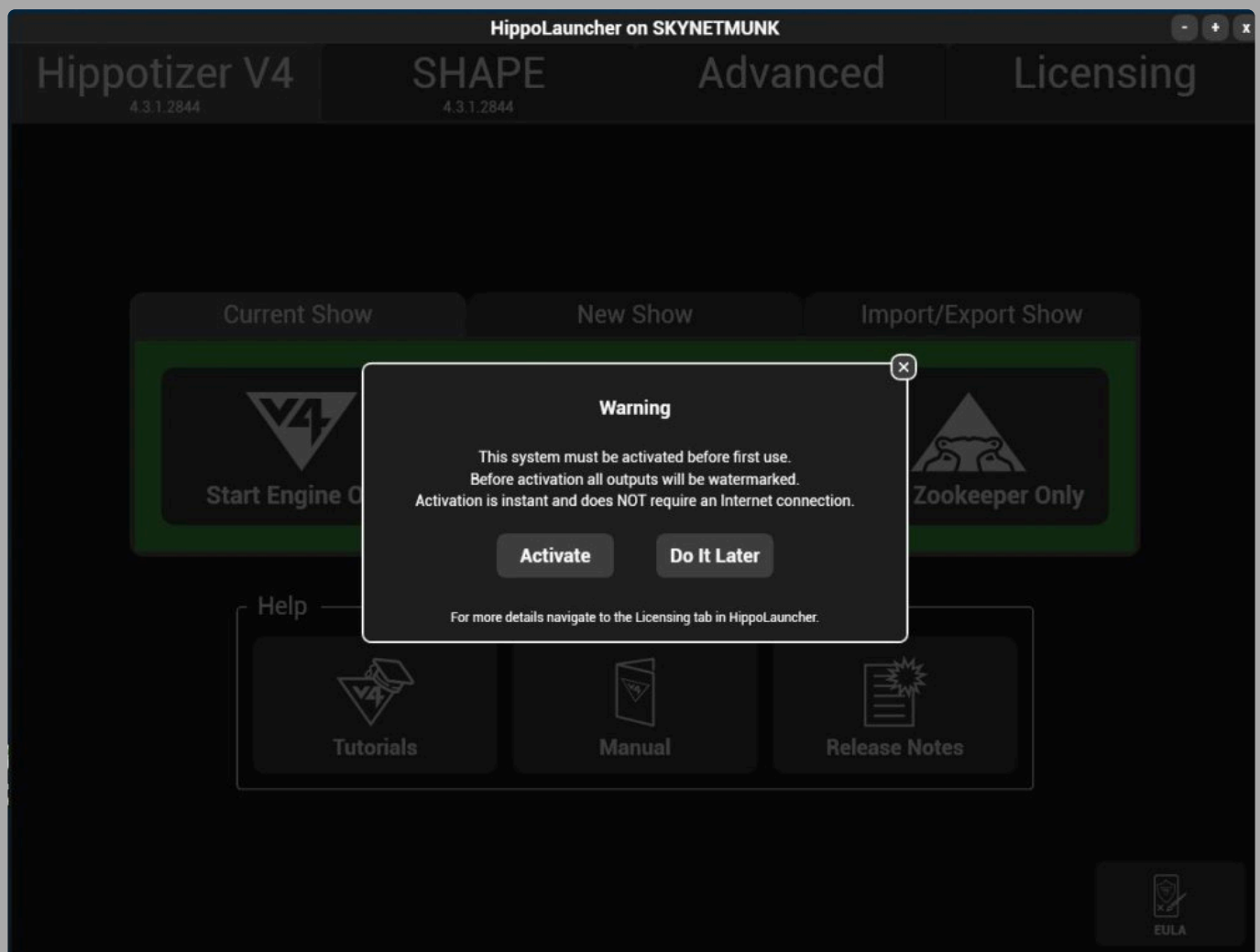
If required, Green Hippo may ask to see the Licensing diagnostics window which is accessed by pressing the settings cog in the licensing window.

- ! The license locks the Hippotizer software to the specific computer hardware that it was installed on to. Drastic changes to the hardware (such as a new motherboard) may cause licensing to stop the Hippotizer software from working. It is important to consult Green Hippo Support before attempting hardware changes on a Hippotizer machine. On a non-Hippotizer machine (such as for Zookeeper or Play) a hardware change may require a re-install of Hippotizer software to repair.

# License Activation

## License Activation

New V4+ systems will arrive with a de-activated license:



While the system is de-activated it will have watermarks on all outputs.

To activate the Hippotizer, simply click activate when prompted as Hippolaunch starts or navigate to the licensing tab and click where indicated.



Activation is instant, does not collect any personal information and does not require an internet connection.

# Whats New In Version 4.4.5

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## Hippotizer Version 4.4.5 improves the performance and stability of Hippotizer V4 and V4+ systems using Version 4.4.

- Systems currently running 4.4.X can install 4.4.5 as an update; all programming and settings will be preserved.
- Systems currently running 4.3.X or older software must clean install 4.4.5; all existing programming and settings will be lost.

### 4.4.5 Fixes two key issues in 4.4.4

- Aspect Mode would not work correctly
- The engine would not shut down on certain hardware.

Green Hippo recommends upgrading to 4.4.5 as soon as possible.

## 4.4 New Features (Features added since 4.3)

### Added Frame Based Workflow

- [Added default frame rate Setting to Sync Manger](#)
- Added ability to set in and outpoints in frames
- Added ability for Timeline to set in and outpoints in frames
- Added indication of frame rate in timecode readouts

### Added Cross-Fade on Layer

- [Cross-fade on layer has been added.](#)
- [Added X-Fade controls to layer and mix presets](#)

### Additional new features

- The behaviour of **Overlay** and **Softlight** Mix-modes has changes: they now show lower layers beyond the layer bounds instead of showing black.
- [Added support for HAP Quality Alpha to Media Manager](#)
- [Added input resolution options to Videomapper on Layer](#)
- [Added compact view of Performance meter](#)
- [Added Temperature and Fan status control to Zookeeper](#)
- [Key on Layer has been added](#)

- [Videomapper on layer has been added](#)
- [Inner loop points have been added](#)
- [Added advanced Media Sync](#)
- [Tap Sync Beat counter](#)
- [Added 2nd input, hot block re-load and Timecode input to Notch](#)
- Added 2nd effect engine to the mix.
- [Added HippoNet Advanced UI Item](#)
- [Added ability to set videomapper's resolution and interpolation quality.](#)
- [Added support for Elgato Stream Deck to Multicontroller](#)
- [Added highlight to Timeline window to indicate when space bar will pause / play a timeline.](#)
- [Added Factory DMX personalities for Mix and Viewport with Presets.](#)
- Added ability for PREP users to set the output to have no borders.
- Added Kinesys K2 Automation Protocol to MultiController

## Improvements

In addition to bug fixes, Green Hippo strives to strengthen areas of Hippotizer with each release.

- [Performance counter now shows each media layer's playback performance.](#)
- [DMX Monitor is easier to read](#)
- [DMX profile creation and editing is faster and defaults to correct settings](#)
- [Media Player User Interface simplified](#)
- [Relay select no longer changes with layer/mix configuration.](#)
- NDI Sending Performance has been improved
- [NDI Source management has been improved.](#)
- Engine Smoothness with 60FPS content improved
- Engine performance with Alpha mix mode improved
- Reference Lighting Desk personalities are deployed with the installer.
- [Extended Macro manager API to control timelines component start/stop.](#)
- The speed of loading media libraries in Media manager has been improved.
- sACN support has been updated to allow control from ETC and MA2 lighting desks.

**Note:** DMX personalities for version 4.4 have changed and are not backwards compatible.

[For a complete list of changes to the DMX personalities, please see here.](#)

[For a complete list of changes to this version, please see the release notes.](#)

[Before using Notch please see the additional information.](#)



## Important Installation Notes

4.4 introduces significant changes; **migrating existing shows from older software will require reprogramming.**

- Uninstall all previously installed Hippotizer versions before installing 4.4.
- DMX Personalities have changed — pre-4.4 personalities will not work.
- Component exports are not backwards compatible. Timeline, Presets, Macros and DMX from pre-4.4 cannot be imported to 4.4.

## 4.4.5 Release Notes

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Hippotizer is continuously being developed and improved; please read these notes carefully to understand the changes and limitations with each version.

### Release Date: 01-Nov-2018

All V4 and V4+ systems with Software Assurance valid as of **01-Nov-2018** can install 4.4.5. Software Assurance determines what version of Hippotizer will install and run on a system. Once installed, software will continue to function indefinitely.

### 4.4.5 Fixes two key issues in 4.4.4

- Aspect Mode would not work correctly
- The engine would not shut down on certain hardware.

**Green Hippo recommends upgrading to 4.4.5 as soon as possible.**

### Improvements in 4.4.4

- The behaviour of Overlay and Softlight Mixmode has changed: they now show lower layers beyond the layer bounds instead of showing black.

### Features added in 4.4.3

- [Added highlight to Timeline window to indicate when space bar will pause / play a timeline.](#)
- [Added Factory DMX personalities for Mix and Viewport with Presets.](#)
- Added ability for PREP users to set the output to have no borders.
- Added Kinesys K2 Automation Protocol to MultiController
- Added ability to clear LUA memory management to Macro Manager

### Features added in 4.4.2

- Added ability to disable Windows Firewall and defender to HippoLaunch.

### Features added in 4.4.1

- Added support for HAP Quality Alpha to Media Manager
- Added input resolution options to Videomapper on Layer
- Added compact view of Performance meter
- Added Temperature and Fan status control to Zookeeper
- Improved the number of shapes Livemask can contain

## Features added in 4.4.0

- Added Cross Fade on Layer
- Added Key on Layer
- Added Video Mapper on Layer
- Added Inner Loop playmode
- Added advanced Media sync to Media Manager
- Added controls for 8 Channel Audio in the Media Player
- Added ability to clear and load EDID emulation to Hippo Launch
- Added 2nd input and timecode input to Notch
- Added ability to set a default timecode frame rate in Sync Manager.
- Added frames dropped counter to the performance counter.
- Added support for sACN to Videomapper's colour blocks.
- Added 2nd effect engine to mix
- Added HippoNet Advanced UI Item
- Added ability to set videomaps to 16K resolution limit.
- Added Stream Deck Support to Multicontroller

## SHAPE Features Added in 4.4.0

- Added the ability to edit model UV's in real time.
- Added a Visibility controller.

## Functionality changes in 4.4.0

Existing aspects of Hippotizer have been updated as part of this software release.

- DMX personalities for Layer, Mix and Viewport have been changed.
- The Media Player has been tabbed to allow for more controls to fit into a smaller space
- The Media Player now handles in and outpoints in frames, not time.
- The Matte Mix Mode has been removed and replaced by Key on Layer.
- Sync Manager has been changed to better reflect local or network timecode.
- The personality editor in DMX has been simplified and made faster.
- The representation of the media player in timeline has been updated to reflect new controls
- The logic in Output Manager uses to discover and reconnect displays has been updated and improved.
- Key on Layer is now saved as part of the Source filter in layer presets
- The Playhead pin is no longer drag-able from the media player interface
- The layer Preset select pin has been moved into a new group pin under layer
- The method for Watchfolders has been changed: it now polls in every case. The option for polling has therefore been removed.
- NDI source detection has been improved: new sources will not change the index of previously

detected ones.

- The NDI capture button has been renamed 'refresh list' to better reflect it's function
- Relay select is now two pins instead of one.

## Hippotizer Fixes

### Fixes in 4.4.4

- Fixed an issue where the drop downs in Key on layer would not populate on startup
- Fixed an issue where the output could become distorted when the last layer of a composition was zoomed in Overlay or Softlight Mixmode
- Fixed an issue in Multicontroller where action mappings would not correctly display the target host.
- Fixed an issue in the Installer where a hyphen could not be typed into the license field.
- Fixed an issue in Pixelmapper where removing a Fixture from a group could lead to a Zookeeper Crash
- Fixed an issue in Timeline where symbols such as ',' and '/' could not be entered.
- Fixed an issue in Media Manager where the component status would not update correctly after a media sync or encode.
- Fixed an issue where the Engine would not shut down on some systems.
- Fixed an issue in Zookeeper where the layer selector in Kiosk mode would not always display correctly.
- Fixed an issue in Timeline where moving the play head would deselect the Timeline
- Fixed an issue in the Installer where a Zookeeper license could be applied in an aborted installation.
- Fixed an issue in Media Manager where syncing media with proxies would fail
- Fixed an issue in Output Manager where importing an export with SHAPE patch would not load correctly.
- Fixed an issue in Output Manager where resetting the component did not remove SHAPE.
- Fixed an issue in Media Manager where media with a proxy would not sync.
- Fixed an issue in Multicontroller where switching between automation mappings could change their values.

### Fixes in 4.4.3

- Fixed issue where multiple timeline windows on a single machine would not always connect. *17010 , 16780*
- Fixed issue where certain image sequences would encode upside down. *17007*
- Fixed issue where non-ASCII characters in DMX personality names did not work. *17336*
- Fixed potential memory leak when taking Hippo-Snaps. *16898*
- Fixed issue where the manual was not searchable. *17361*
- Fixed issue where the Media Manager API commands in Macro Manager did not work. *17479*
- Fixed issue where FlexRes lossless and FlexRes Quality always encoded Alpha *17364*

- Fixed issue where special characters such as / or . into fields in Multicontroller. 17330 , 17331
- Fixed Zookeeper crashes deleting interpolators and changing IP adaptors in Multicontroller. 17470 , 17466 , 17487
- Fixed an issue on Portamus where only the last added Viewport would render correctly. 17443
- Fixed an issue in VideoMapper where colour blocks would not work correctly on first startup. 17412
- Fixed issue where the remote updater could fail to stop the fan controller service and then fail to update. 17593
- Fixed an issue where layer presets would save the livemask XML, potentially restoring deleted masks. 16752
- Fixed an issue where sACN from ETC lighting desks would flash values. 17333
- Fixed an issue where sACN in videomapper would not work if running in DMX. 17580
- Fixed an issue in output manager where PLAY laptops would not show the local screen. 16366
- Fixed an issue where the viewport keystone would not be saved on engine restart. 17304
- Fixed an issue where applying a non-source preset would cause playing media to skip several frames. 17513
- Fixed memory leak in fan control service. 17652
- Fixed an issue in DMX where Zero to Int max setting of DMX personalities was not duplicated.
- Updated MA2 stock personalities to correctly set outpoint to end of clip.

## Fixes in 4.4.2

- Improved system performance by reducing the load of bypassed layers. 17045
- Fixed issue where some controls could not be dropped into containers in Zookeeper. 17085
- Fixed issue where SHAPE projects would not load into future 4.4.X Versions. 17181
- Fixed issue where it was not possible to set in/out and loop points in timeline by Frames 16968
- Fixed issue where the time controls of timeline viewer could not be set. 17081
- Fixed issue where the track filter in timeline did not work. 17078
- Fixed issue where the clip offset could not be set to 0 in Timeline. 17079

## Fixes in 4.4.1

- Added scrollbar to Stream deck pages window in Multicontroller. 16427
- Fixed issue where the Zero to Int Max setting of a DMX personality was not saved. 16448
- Fixed issue where the Timecode offset in Timeline would not recognise the default Timecode format. 16438
- Fixed a Timeline interface crash when the window extents of a long timeline were brought close together. 16474
- Fixed issue where presets would not crossfade in certain circumstances. 16473
- Fixed an issue where the Key on Layer relay source UI would not populate on the first run. 16415
- Fixed an issue where the default clip selection of Timeline was Bank Zero, Clip 1 instead of 0,0. 16503
- Fixed an issue where the output would flash when switching between a still image and a clip on

the media player. 16449

- Fixed an issue where the accuracy of float pins (faders) would decrease using the mouse's scroll wheel 16462
- Fixed an occasional engine crash when enabling PosiStageNet in Multicontroller. 16476
- Fixed the re-map of Action Mappings into Multicontroller on component import. 13211
- Removed the Generator level pin from Timeline. 16467
- Set the responsiveness of the layer and mix volumes to be the same. 16451
- Fixed an issue where the layer geometry's UI would show the incorrect aspect ratio. 14318
- Fixed an issue in Videomapper where the accuracy of panning would decrease with increased zoom. 7302
- Fixed a Zookeeper crash when importing background images in Videomapper greater than 1920×1080 16428
- Selection a clip in the media selector now will react on mouse up. 16397
- Fixed issue where the UI would not update to reflect Livemask name changes. 15853
- Fixed issue where presets would revert changes to Livemask. 16752
- Fixed issue where advanced media sync would not read the folder structure of remote systems 16500
- Fixed an engine crash when renaming a host with non-ASCII characters. 16881
- Fixed issue where locked videomap tiles would still rotate. 16917
- Fixed potential engine crash when importing settings into multicontroller. 16981
- Added a check to Pixelmapper to block creating fixtures greater than a single universe. 16835
- Fixed Livemask UI Crash when editing a mask feather. 16779
- Fixed issue where the UI of Float pins under DMX control would not update correctly. 16724
- Fixed an issue where the Timeline Playback position pin was not visible in pin selectors. 17005
- Fixed a Zookeeper crash when the smoothing pin from Pinbridge was dragged out. 16878
- Fixed an issue where adding Sync Manager on a Karst+ could stop audio output from working. 16813

## Fixes in 4.4.0

- Fixed issue where content encoded to HAP-Alpha would show Alpha as false. 15801
- Fixed issue where deleting the first fixture of a DMX patch would delete the entire patch
- Fixed issue where audio files encoded as .wav would not transcode to allowed bit-rates on ingest
- Removed the option for "Any IP" for MA-Net in DMX component as it did not work
- Fixed issue where components would report failure on import incorrectly. 14381
- Fixed issue where mix presets would not play back on a different type of mix. 15957
- Fixed issue where media could be dropped into Bank 0, slot 0. 15937
- Fixed issue where new personalities in DMX would try to patch invalid pins.
- Fixed issue where the 'h' key could trigger HippoNet window to open or close. 15131
- Fixed issue where on V4+ machines the Output manager could fail to show any available outputs. 15935 and 15364
- Fixed issue where disabling interframe blending on 60FPS clips would decrease performance.

**15964**

- Fixed issue where the command line show importer would fail. 15724
- Fixed issue where the output could flash when switching to images with Alpha. 15795
- Fixed issue where the installer would not update Code meter if it was previously installed. 15661
- Fixed issue where imported Multicontroller exports would not re-map actions. 15904
- Fixed issue where a sub-folder in Media Manger was not created when importing a folder. 15906
- Fixed issue where the pinboard could fail to be edited after an aborted drag and drop. 15896

**14942**

- Fixed issue where replacing presets quickly could crash Zookeeper. 15744
- Fixed issue where media with more than 10 consecutive numbers in its name would crash Zookeeper 15885
- Fixed issue where rotation controllers in Multicontroller did not understand wrapping 15791
- Fixed a potential engine crash when deleting the Timeline component. 15665
- Fixed issue where sync bus would not pass speed of zero 15807
- Fixed potential zookeeper crash when a visualiser source is on the pinboard. 15654
- Fixed issue where the contents of Tabs would not restore with default layouts. 15717
- Fixed an issue where Sync Manager did not pass timecode over SyncBusLink. 16076
- Fixed a series of issues that could stop Output Manager from showing attached outputs in Windows 10. 15975
- Fixed issue where Sync offset was not being saved in Mix presets.
- Fixed issue where changes to the media folder tree on remote systems that changed STRATA path would not appear. 16009
- Fixed issue in Output Manager that stopped SHAPE from re-patching between mixes. 16239
- Fixed engine crash while creating proxy media for HAP files. 16113
- Fixed issue where many unusable pins were added to Timeline 16216
- Fixed issue where pause and rewind on dark were not included in Timeline Source controls.
- Fixed issue where timeline UI would crash when inserting a new event before the 1st key frame.
- Fixed issue where Output manager would not show configuring correctly sometimes. 14433
- Fixed issue where on import, timeline would show an empty system field. 15751
- Fixed issue where mouse scroll wheel was not working to change number boxes 16286
- Fixed issue where auto-tiling could fail on V4+ systems; for 4K+ resolution clips on V4+ systems encoded on pre-4.4 software, a re-encode may yield better performance. 16246
- Fixed issue where double clicking the circle of an item in the Hipponet menu did not open a UI. 15519
- Fixed issue where the Midi timecode source in Sync Manager could sometimes go blank 16333
- Fixed issue where resize media into Lossless 4:2:0 would fail. 13552
- Fixed issue where proxy media creation would fail. 13552

## SHAPE Fixes in 4.4.1

- Fixed transparent objects on output.
- Fixed crash in 2D viewer when a objects instead of projectors is selected and focused on.

- Fixed blue art artefacts in masking on some hardware.
- Fixed locking crash in the scene tree.
- Fixed close-spline tick box undo redo loop.
- Fixed controller stacking rotation angle.
- Fixed crash in parenting using the top object of scene tree.
- Fixed shape is crashing on start up on some hardware.
- Fixed shape version pin.
- Fixed problem where shape master is not always at the first viewport.
- Import .C4D now imports lens shift.

## SHAPE Fixes in 4.4.0

- Fixed issue where forward data pin was not smooth if both SHAPE and Hippotizer were connected to the same controller
- Fixed issue where texture mappers would not correctly composite overlapping mixes
- Improved overall performance

## Installation Notes

- **4.4 Makes significant changes to the structure of Hippotizer; DMX Personalities, Timelines and presets made on previous versions will not work in 4.4**
- When moving between feature version (eg. 4.3 to 4.4) always uninstall the previous version before installing new software.
- The minimum supported Datapath capture driver has changed. At least version 7.17.14 must be installed.
- 4.3 Is the minimum version of software supported by V4+ hardware .
- From version 4.2 On wards the Hippotizer data is stored in new locations to comply with Microsoft Windows security guidelines.
- The binaries (executable files) are stored in: C:\Program Files\GreenHippo\HippotizerV4
- The settings are stored in: C:\Users\\AppData\Local\GreenHippo\4\_4
- The Media folder by default on Portamus and Play is: C:\ProgramData\GreenHippo\MediaV4
- The Media folder by default on all other V4 and V4+ systems is D:\MediaV4

## SHAPE Project file compatibility

- Project files created in SHAPE 4.3 are compatible with SHAPE 4.4
- Project files created in SHAPE 4.3 are compatible with SHAPE 4.3.1.
- Project files created in SHAPE 4.2 or 4.2.1 are compatible with SHAPE 4.3.1
- Project files created or edited in SHAPE 4.3.1 will **not** load in older versions of SHAPE.



## Current Codec Support

### Resolution restrictions by Codec:

Codec	Width	Height	Max Height	Max Width	Min Height	Min Width
<b>FlexRes Performance</b>	Divisible by 4	Divisible by 4	16,384	16,384	64	64
<b>FlexRes Quality (All Colour spaces)</b>	Divisible by 4	Divisible by 4	16,384	16,384	64	64
<b>FlexRes Lossless 4:2:0</b>	Divisible by 4	Divisible by 4	16,384	16,384	64	64
<b>FlexRes Lossless 4:2:2</b>	Divisible by 4	Any	16,384	16,384	64	64
<b>FlexRes Lossless 4:4:4</b>	Divisible by 4	Any	16,384	16,384	64	64

[Content that does not fit within these restrictions can still be encoded through resizing.](#)

**Version 4.2.1 Removes Support for MPEG-2 Playback; please re-encode all content to FlexRes.**

### Video File Types

The following codecs and wrappers have been tested for their compatibility with Hippotizer's built in transcoding system.

On encode, the content is converted to the FlexRes codec chosen.

Codec	Extension	Status
Mpeg2	.mpg	Does Not Work
Mpeg2	.m2v	Works
Mpeg4	.mp4	Works
Mpeg4	.m4v	Does Not Work
ProRes422	.mov	Works
ProRes420	.mov	Works
ProRes444	.mov	Works*
ProRes4444	.mov	Works*
FlexRes	.fxr	Works
AVI	.avi	Works
Animation RGB	.mov	Works

Animation RGB + Alpha	.mov	Works
h.264	varies	Works
HAP	.mov	Works**

## Image File Types

Codec	Extension	Status
Tiff	.tiff	Works
PNG	.png	Works
Jpeg	.jpg	Works
Targa	.tga	Works

## Image Sequences

Codec	Extension	Status
Tiff	.tiff	Works
PNG	.png	Works
Jpeg	.jpg	Works
Targa	.tga	Works

## Audio Encoding

Codec	Channels	bit depth	Status
Wav	1	16b	Works
Wav	2	16b	Works
Wav	4	16b	Works***
Wav	6	16b	Works***
Wav	8	16b	Works***
Wav	2	24b	Works***
Wav	2	32b	Works***
.mp3	Any	Any	Does Not Work
.aif	Any	Any	Does Not Work
.mpa	Any	Any	Does Not Work
.wma	Any	Any	Does Not Work

## Notes

- **\*Content encoded from ProRes 444 may show a slight colour shift compared to the original due to an issue in the 3rd party media encoder. The ProRes 444 family also has limited support in Windows so it is best to test the specific codec and resolution when establishing a content workflow.**
- **\*\*As of Version 4.2, HAP content can be ingested without transcode.**
- **\*\*\*Audio files with more than two channels can be encoded if they are part of an image sequence (in the same folder as the image sequence with the same name, or are separated from the video file before encode. Place the audio file in the same path as the media to be encoded and ensure they have the same name and same length.**

## Martin P3-PC compatibility

Hippotizer can send video directly to the Martin P3-PC application running on the same machine, this requires a P3 Dongle.

The version of P3-PC and Hippotizer is important to ensure correct operation:

Hippotizer Version	P3-PC Version
4.1	4.2
4.2	4.2.2
4.2.1	4.2.2
4.2.2	4.2.2
4.3	4.3.1
4.3.1	4.3.1
4.3.2	4.3.1
4.3.3	4.3.1
4.4	4.3.1
4.4.1	4.3.1

## Current CITP Support

CITP (Capture Interface Transport Protocol) is an open network protocol to allow visualisation software and lighting desks to exchange thumbnails and streaming previews from media servers. Green Hippo works to ensure CITP is working correctly with as many 3rd party applications as possible. Here is a list of currently tested systems against this version.

Desk or Software	Version Tested	Thumbnail Exchange	Streaming Previews
Grand MA2	3.3.4.3	Works	Works

<b>MA-3D</b>	3.3.4.3	N/A	Works
<b>MSD</b>	3.2.2.3	N/A	Works – Inverted about Y Axis
<b>Martin M-PC</b>	3.50.645.641	Works	N/A
<b>Capture Argo</b>	21.1.30	N/A	Works
<b>Hog 4</b>	3.2.5 (Beta)	Works	N/A
<b>Avolites</b>	Titan (9/10)	Works	N/A
<b>WYSIWYG</b>	R38	N/A	Does not Work
<b>Chamsys</b>	1.7.8.1	N/A	Works

## Current Datapath Drivers

- If using Dual DVI, Dual SDI or AV-SDI capture cards, we recommend Datapath Driver version **7.17.14**
- If using Quad SDI and Dual DP capture cards we recommend Datapath Driver version **7.17.14**

Capture drivers are available for download here: <https://green-hippo.box.com/v/44datapathdrivers>

## Current Display Drivers

Hippotizer Media servers use one of several type of graphics card, which are tested with current and former display drivers.

<b>V4 System</b>	<b>Driver</b>
<b>V4 Taiga (All Types)</b>	FirePro 15.201
<b>V4 Boreal (All Types except Boreal DVI)</b>	FirePro 15.201
<b>V4 Boreal DVI-SL</b>	Radeon 15.7.1
<b>V4 Karst SDI or DP</b>	Firepro 15.201
<b>V4 Karst DVI</b>	Radeon 15.7.1
<b>V4 Amba (S/N: 240037 or Greater)</b>	Fire Pro 15.201
<b>V4 Amba (S/N: 240000 – 240036 )</b>	Radeon 15.7.1

V4 Drivers are available for download here: <https://green-hippo.box.com/v/44v4drivers>

<b>V4+ System</b>	<b>Driver</b>
<b>V4 Taiga+ (All Types)</b>	Radeon 17 Q4.1
<b>V4 Montane+ (All Types)</b>	Nvidia 387.92
<b>V4 Boreal+ (All Types)</b>	Radeon 17 Q4.1

V4 Karst+ SDI or DP	Radeon 17 Q4.1
V4 Karst+ DVI	Radeon 17.7.2
V4 Amba+	Radeon 17.10.1

V4+ Drivers are available for download here: <https://green-hippo.box.com/v/44v4plusdrivers>

! Drivers for V4+ Systems are extremely specific and will result in system instability if listed versions are not adhered to. **Do not deviate from the recommended drivers.**

## DMX Personalities

### Current Layer Personality: 4.4 Layer

! Major changes to the layer mean that it will be faster to use the new 4.4 Layer personality then it will be to change an older personality to work in 4.4.

#### Changes from 4.3 Layer

[Please see the manual section on DMX Changes](#)

### Current Mix Personality: 4.4 Mix

#### Changes from 4.3 Mix:

- Added Second Effects Engine
- Changed name of first effects engine

### Current Viewport Personality 4.4 Viewport

#### Changes from 4.3 Viewport

- No functional changes. (Code changes were made to accommodate the new DMX settings system)

## Known Limitations

- Adding Notch parameters with the text file does not work. If more parameters are required use either 4.3.3 or 4.5 Notch Mix.
- Crossfade on Layer and non-source presets (ie. Geometry only) does not work.
- Syncbusses do not support Crossfade on Layer

- Layers under sync bus control do not playback audio correctly.
- The DMX personality editor cannot correctly address mappable integer pins. There are two: Layer/Source/Mediaplayer/Mediaoffset and Mixcontrols/TimecodeShift. The default 4.4 personalities have these correctly set up. If building a new personality from scratch copy the XML from the default personalities.
- Zookeeper navigation and pinboard editing can be unpredictable if the zookeeper window is not full screen or screen scaling is enabled. Always use in full screen with no scaling.
- The capture hardware de-interlace (located in the configuration section of Zookeeper) setting will not work while capturing. To change de-interlace setting disable the capture by not using it on any layer, and then set the de-interlace. This limitation does not affect the software de-interlace controlled on each media layer.
- Recalling Presets and Timeline with Notch parameters may not work on first application due to the delay in loading a block. Load the Notch effect and bypass it to reduce subsequent loading times.
- When using more than 4 × 4K (4096 × 2160) outputs always ensure they are arranged in Windows such that the total area in any axis does not exceed 16,000 Pixels.
- Presets are always saved with a playback position of 00.00.00:00. If it is desired to play a clip back from a different position than the beginning use the in-point instead of play-head position.
- Deleting profiles from the Pixelmapper profile library does not work.
- Pressing Delete in string fields in pixelmapper (such as fixture name) will delete two characters at a time.
- Audio playback quality will degrade at speeds greater than 200%.
- The name of the network monitor in HippoNet is shown as host manager.
- Audio files with greater than 2 channels must be encoded alongside a video
- SHAPE on V4+ must run with Virtual Viewports enabled

## 4.4 DMX Personality Changes

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Version 4.4 introduces significant changes to DMX personalities from 4.3.



Using pre 4.4 DMX Personalities with 4.4 **will not work**. Green Hippo strongly suggests using the default personalities supplied with the software.

A full list of changes can be found here:

- [4.4 Layer DMX Changes](#)
- [4.4 Mix DMX Changes](#)

## 4.4 Layer DMX Changes

---

### 4.4 Layer changes.

This is a list of changes that were made to 4.4 layer personalities compared to 4.3 layer.

[Updated DMX Charts are here.](#)

#### Geometry/Aspect Mode

- Mapping has changed to the standard Step25.

#### Source/Sourcetype

- Mapping has changed to the standard Step25.

#### LiveMask/MaskLevel

- Added. Float with centre.

#### Relay Select

- The relay select pin has been split to two different pins: Relayselect/mix and Relayselect/layer
- Relay Select mix selects mix (1-127) or Viewport (1-128)
- Relay Select Layer selects layer 1 – 16, visible or hidden.
- If relay select layer is set to 0 (Master) the mix or viewport set in relayselect/mix will be used.

#### Source/MediaPlayer/Inpoint

- Has changed from a 16bit control (2 Channel) to a 24bit control (3 Channels)
- Each step is now 1 Frame, before each step was 1 frame at 25FPS (40ms) 1 frame is now in context of the current clip frame-rate
- If the lighting desk does not support 24bit controls, use 2 channels for a maximum inpoint of 65535 frames. (36 Minutes at 30FPS)

#### Add the source/mediaplayer/inlooppoint

- use the same logic and mapping as the inpoint

#### Source/MediaPlayer/Outpoint

- Has changed from a 16bit control (2 Channel) to a 24bit control (3 Channels)
- Each step is now 1 Frame, before each step was 1 frame at 25FPS (40ms) 1 frame is now in context of the current clip frame-rate
- If the lighting desk does not support 24bit controls, use 2 channels for a maximum outpoint of 65535 frames. (36 Minutes at 30FPS)



- Setting the value to 0 will set the outpoint to the end of the clip therefore the default of this pin should be zero\*

#### Add the source/mediaplayer/outlooppoint

- use the same logic as the outpoint

#### Audio controls on the media player have been moved pin path:

- Source/MediaPlayer/Volume is now **Source/MediaPlayer/Audio/Volume**
- Source/MediaPlayer/Audiobalance is now **Source/MediaPlayer/Audio/Audiobalance**
- Source/MediaPlayer/Synclevels is now **Source/MediaPlayer/Audio/Synclevels**

#### Sync controls have moved to a group, changing the pin path:

- Source/MediaPlayer/Timecode/Offset/Hours is now **Source/MediaPlayer/sync/Timecode/Offset/Hours**
- Source/MediaPlayer/Timecode/Offset/Minutes is now **Source/MediaPlayer/sync/Timecode/Offset/Minutes**
- Source/MediaPlayer/Timecode/Offset/Seconds is now **Source/MediaPlayer/sync/Timecode/Offset/Seconds**
- Source/MediaPlayer/Timecode/Offset/Frames is now **Source/MediaPlayer/sync/Timecode/Offset/Frames**
- Source/MediaPlayer/Timecode/Offset/FlywheelEnabled is now **Source/MediaPlayer/sync/Timecode/Offset/FlywheelEnabled**

#### Controls for X-Fade on layer and Videomapper on layer have been added.

#### NDI Capture has been changed to Refresh List

- NDI Select is based solely on the selected NDI source. Refresh list rebuilds the detected sources list.

#### Bank and Clip media offset has been updated to go negative

- The 16bit channel of Media and Clip offset has been centred at 50. Allowing an offset of +/- 127 Banks.

Note: The DMX UI does not currently support setting integer pins to negative values. The changes must be made in the GHP file. It is best to copy the factory personality to correctly map this pin.

## 4.4 Mix DMX Changes

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### 4.4 Mix Changes

This is a list of all changes that were made to 4.4 mix personalities compared to 4.3 mix.

[DMX charts for the 4.4 mix personality are here.](#)

#### Effect 1 has been renamed to Effects 1

- The pin paths have changed.

#### Second effect engine added to mix.

- Effect engine added directly after the first
- Adds seven channels. (Select, level and 5 parameters)

#### Re-ordered parameters to place presets at the end

- Placed pixelmapper controls directly after the 2nd effect engine

#### Updated the pin-path to mix volume.

- The new mix volume pin path is: **Audio/MixVolume**

# Special note about Notch

## Using Notch in Hippotizer requires specific considerations: please read this warning carefully.

Notch is a 3rd part tool allowing for ground breaking generative and real-time effects.

To accomplish this, Notch utilises the Hippotizer's graphics card to calculate and render video in real time.

**! Rendering Notch effects can be extremely computationally heavy, and may lead to system instability including render failure at show time. Green Hippo strongly recommends thoroughly testing all Notch effects and cueing before use.**

All effort has been taken to ensure system stability, though the flexible nature of Notch makes any guarantee impossible. For this reason Green Hippo strongly recommends the following:

- Notch effects running within Hippotizer have the ability to disrupt or stop video rendering. Carefully plan the use of Notch and avoid switching blocks rapidly.
- Fully test all Notch effects and blocks before use in a live environment.
- Carefully plan and test Notch usage regarding performance; a single Notch effect can dramatically slow even the fastest system.
- Do not load new blocks during show time as it will effect the output. Pre-load all blocks. If multiple blocks are to be used, use cached resources.
- In the event of a Notch Crash, **Restart the entire machine before continuing use**. Where the graphics drivers have crashed, a full system restart is the only way to continue regular operation.

[More information about Notch in Hippotizer can be found here.](#)

[More information about the Notch application can be found here.](#)

## Hippotizer V4 and V4+ Notch Performance

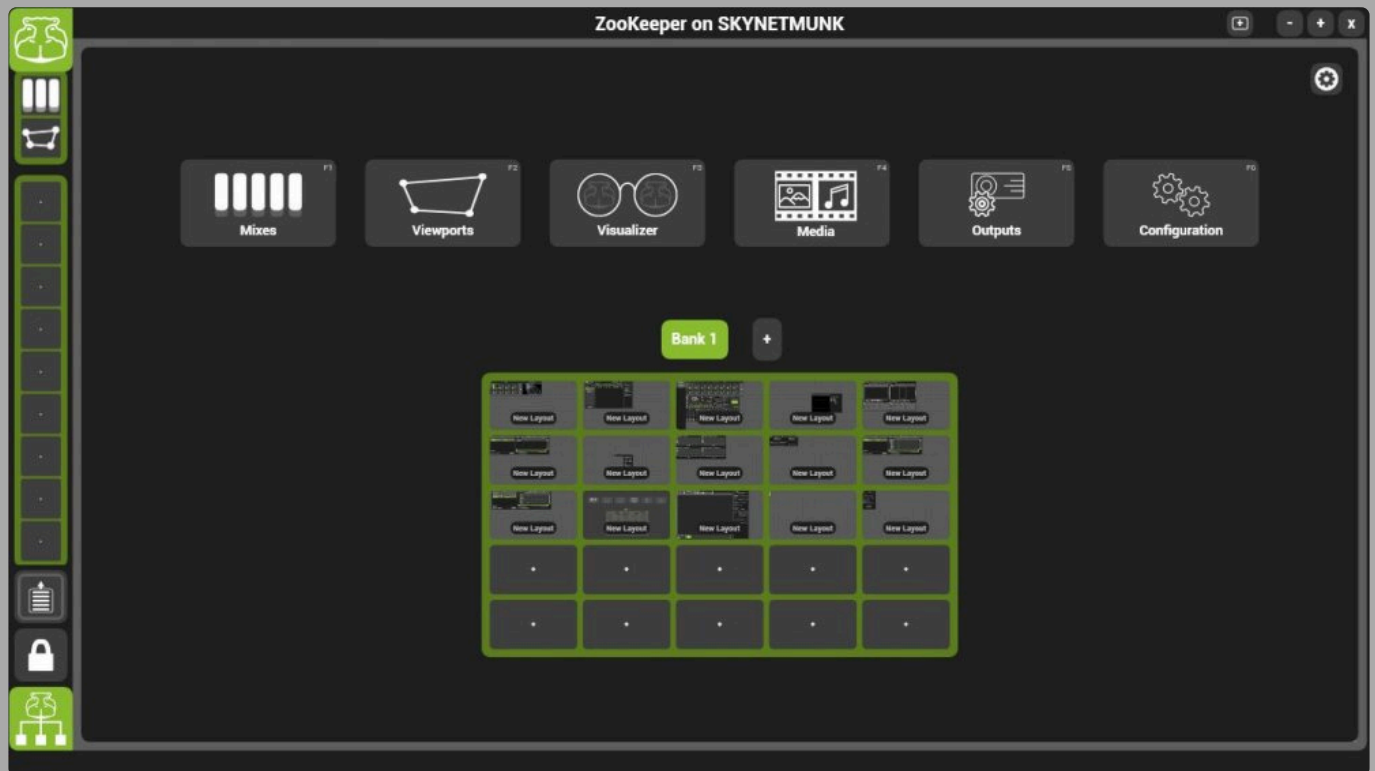
Notch Marks	V4	V4+
Amba	3300	3700
Karst	8600	12500
Boreal	9500	15000
Taiga	10300	17000

Montane	NA	27300
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Note: Use only the latest version of Notch when creating blocks for Hippotizer V4. **For Hippotizer Version 4.4, Notch Version 0.9.2.0 has been tested.**

# Zookeeper

Zookeeper is the interface to Hippotizer; it allows for real-time control of the engine and all of it's components, communicating with all Hippotizers on the local network.



The home screen offers the six most common actions as fixed buttons:

## [Mixes Page](#)

Opens the default layer and mixes page

## [Viewports Page](#)

Opens the default viewports page.

## [Visualizer Page](#)

Opens Zookeeper's built in 3D Visualiser.

## [Media Page](#)

Opens Media Manager. Use this to upload media, manage the media map and synchronise media

between systems.

### [Outputs Page](#)

Opens Output Manager. Use this to configure how many mixes, layers and outputs are used.

### [Configuration Page](#)

Opens the host manager. Use this to start and stop components.

#### **Additional Zookeeper Functions**

- [Advanced Startup options](#)
- [Customizing the Interface](#)
- [Layer Controls](#)
- [High Performance Mode](#)

## Installing Zookeeper

Zookeeper is installed automatically on every Hippotizer and Play system. It is also possible to use Zookeeper only, for free, on many Windows 8 and 10 computers. Simply run the Hippotizer installer and do not enter a license key when prompted to install Zookeeper.

Note: Zookeeper installations can be upgraded to Play after install by entering a license key.

# Mixes Page

The mixes page is where layers and mix master controls are accessed.



The mixes page is a **default layout** that can be reset from within [Zookeeper Settings](#)

## The mixes page is comprised of four main sections:



### Mix Selector

The mix selector chooses which set of layers are shown in the layer selector. By default, the local mix will be selected if one is present. If no local mix is present then no mix will be selected.

### Layer Selector

The layer selector chooses which layer the layer controls below are shown.

### Mix Master

The mix master contains controls such as Pixelmapper and Master Presets that are applied to the entire mix.

More information about the [Mix Master is here](#).



## Layer controls

The layer contains controls such as media players, geometry and effects that are preset on each media layer.

More information about the [Layer Controls are here](#)

# Layer Controls

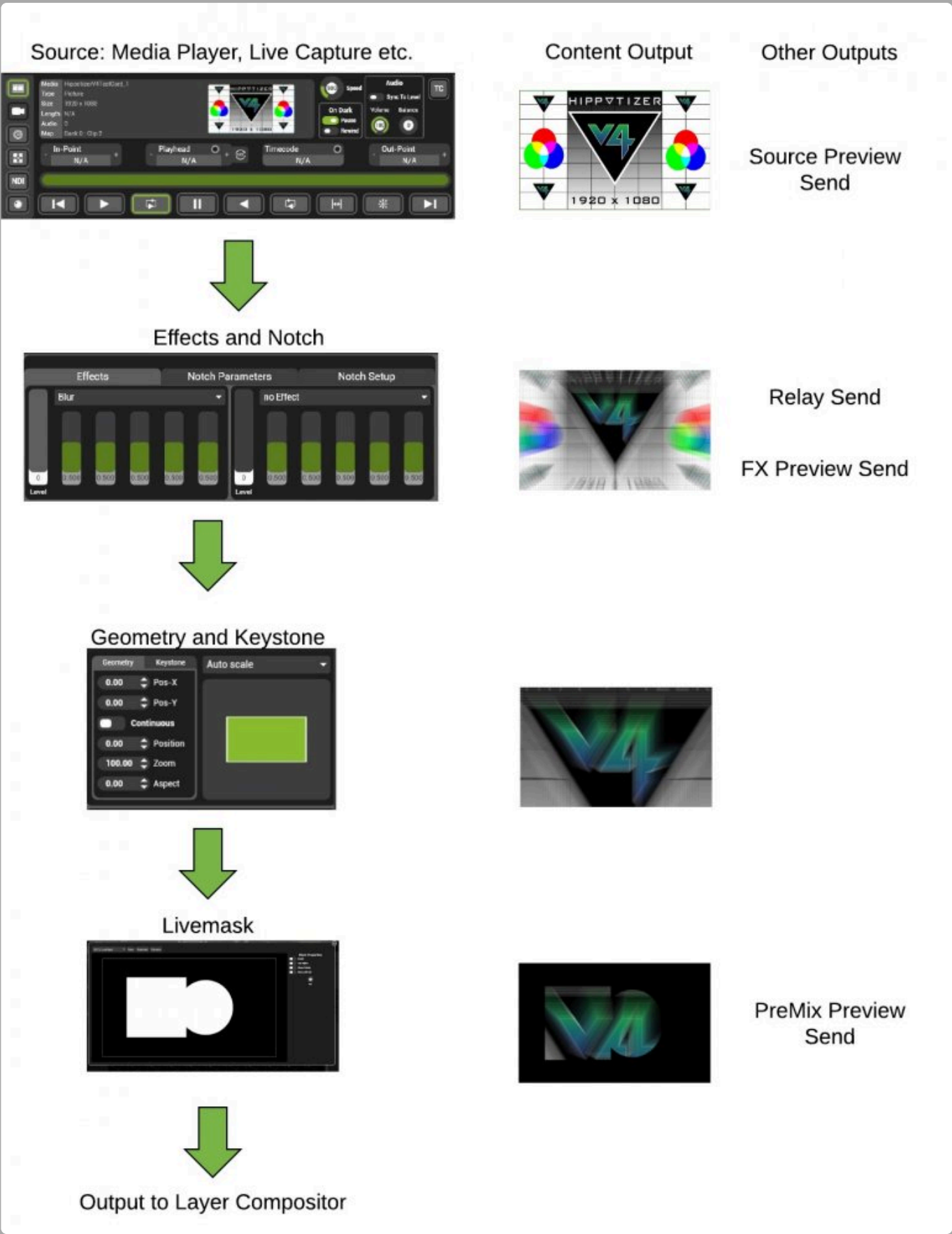
The heart of the Hippotizer Media Server is the layer controls; here media is played, colour and geometry can be manipulated and effects are applied.



Each media Hippotizer runs mixes comprised of layers; this configuration is set in [Output Manager](#).

## Layer Signal Flow

Each layer is an independent video processing system that is then composited by the mixer. The flow through that processor is described below.



## Relay sends

As shown above, Relays are sent just before Geometry, Keystone and Masking, but after effects. The result is relays can have unexpected behaviour, which is by design:

- Geometry (Including Keystone on layer) has no bearing on the relay send
- Relays are sent pre-layer level – so if media playback is required with the level down pause on dark must be disabled.
- Livemask will not affect relay sends. If a relay with masking is required use the mask effect.

Other components of Hippotizer that rely on relays as a source (such as SHAPE's inputs 2-8) must consider the details of relays.

## The parts of the layer are discussed in detail here

- [The Source](#)
- [Geometry](#)
- [Notch](#)
- [Mixer](#)
- [Effects](#)
- [Livemask](#)
- [Colour](#)
- [Media Select](#)

# The Source

The source originates audio and video for the media layer.



To choose what the layer will use, choose the source type:



A source can play media stored locally, display video captured from an input card, generate effects, relay video from another layer or use display video from the network.



## [Media Player](#)

Plays video, audio or images from the Media Manager



## [Live Capture](#)

Displays video captured from a hardware capture card.



## [Relays](#)

Displays video from other layers, mix or viewports on the same system



## [Generators](#)

Creates video based on generative effects.



## [NDI](#)

Displays video from a network source based on Newtek's NDI protocol.



## [Spout](#)

Displays video from other programs on the same machine using the Spout interface.

# Media Player

The Media Player represents an independent playback engine for each layer in Hippotizer.



Each media player is capable of playing movies, images and audio files.

Any content to be played by the media player must first be encoded in [Media Manager](#)

**Basic Media player controls include:**

- [Transport Controls](#)
- [Media Info](#)
- [Playback Display](#)

**Additional Functionalities of the Media Player are in tabs**



- [Media Tab](#)
- [Audio Tab](#)

- [Sync Tab](#)



# Transport Controls

The Transport Controls dictate the playmode of audio and video clips in the media player



## Media Player Controls

The media player controls determine how a layer responds to timecode as well, that behavior is noted below.



**In Frame** Plays the first frame of the clip only. Use this play-mode to pre-load a clip before it is required.

**Timecode:** With Timecode, the clip will remain on the In-Frame.



**Play Forward** Plays from In to Out-Point and stops at the Out-Point.

**Timecode:** The clip will play to timecode. If Timecode exceeds the Out-Point the clip will hold on the out-frame.



**Play Forward Loop** Plays the clip forward and loops when it hits the out-frame.

**Timecode:** The clip will play to timecode and play to multiples of the clip length if Timecode exceeds the Out-point. For example, on a 5 minute clip a timecode value of 9 minutes will place the play-head at 4 minutes.



**Pause:** Stops playback at the current position.

Note: Pause can be triggered automatically when Pause on Dark is enabled which can clash with DMX. It is therefore advisable to either not use Pause from DMX (and use speed set to 0 instead) or set it to update only in the personality. Update only is the default setting in factory personalities.

**Timecode:** When paused the clip will hold at the play-head position. When un-paused it will jump to the current timecode value.



**Play Backward** Plays the clip from the Out-Point to the In-Point stopping at the In-Point

**Timecode:** Plays in time with timecode from the Out-Point to the In-Point.



**Play Backward Loop** Plays the clip from the Out-Point to the In-Point looping back to the Out-Point.

**Timecode:** Plays in time with timecode from the Out-Point to the In-Point looping at the In-Point.



**Ping Pong** Plays forwards to the Out-Point then backwards to the In-Point and repeats.

**Timecode:** Plays in time with timecode bouncing at the In-Point and Out-Point.



**Random** Plays random frames from between the In-Point and Out-Point.

**Timecode:** Plays random frames while receiving time code.



**Out Frame** Plays the Out-Point frame and holds on that frame.

**Timecode:** With Timecode, the clip will remain on the Out-Frame.



**Inner Loop**

Inner Loop playmode is a second set of loop points for a clip, commonly used to separate an intro or outro sequence from a repeating section.



**Inner Loop In-Point** Plays in-point frame of the inner loop.



**Inner Loop Play** Plays from the inner loop in-point to the inner loop out-point and loops.



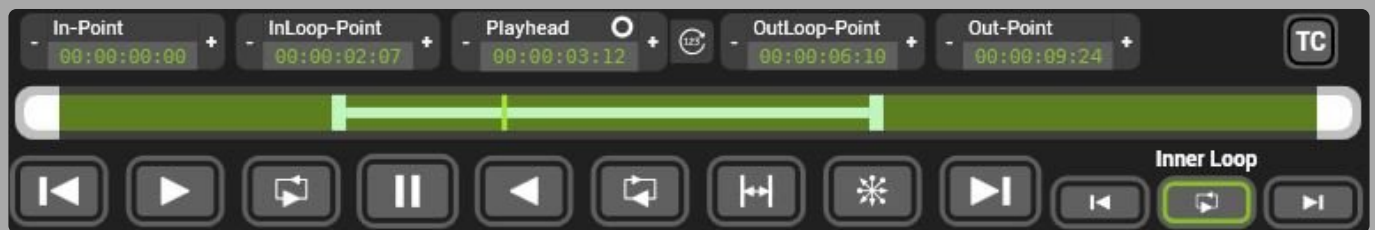
**Inner Loop Out-Point** Plays the out-point frame of the inner loop.

## Using Inner Loop Play Mode

To use Inner Loop Playmode, first set the playmode to inner loop in-point and move the in-point to the beginning of the repeating section of content. Next, set the playmode to inner loop out-point and move the out-point to the end of the repeating section of content, choosing a frame that closely matches the inner loop in-point.

Now, play the clip from the beginning by selecting in-frame playmode and then choosing Inner Loop Play. This will play from the beginning and then loop endlessly between the inner loop points.

To complete the clip select play forward once playmode.

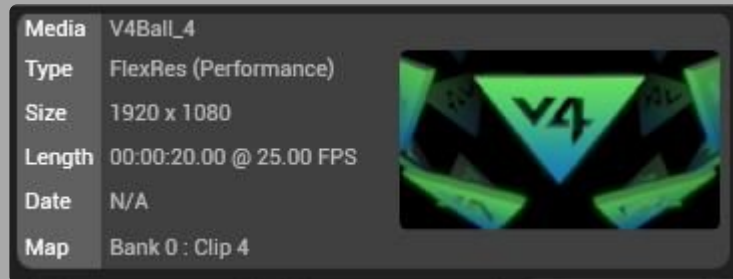


The inner loop in and out-points can be changed by either dragging the play bar handles or setting the values in the indicator boxes.

# Media Info

---

Media Info provides details of the currently loaded clip



- **Media:** The Name of the clip loaded

Tip: Hovering the mouse over the media name will provide the whole folder path.

- **Type:** The codec the media is encoded with
- **Size:** The resolution of the media
- **Length:** The length and frame-rate of the clip

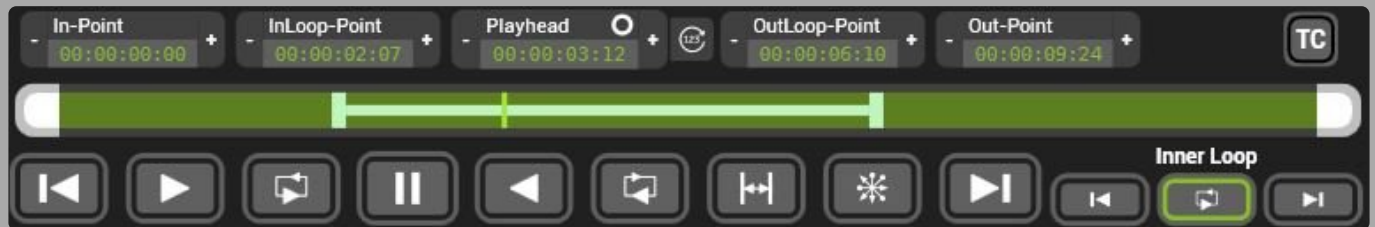
Note: Hippotizer automatically handles clips of different frame rates. The media frame rate does not need to match the output frame rate.

- **Date:** Date the content was encoded.
- **Map:** The media map location.

Tip: To quickly locate the playing media, press the **F** Button in the media select panel.

# Playback Display

The Playback display indicates the current state of the media player.



Each layer's media player is an independent playback engine with it's own set of controls:



## Frames or time

From version 4.4, all playback controls by default work in **Hours:Minutes:Seconds:Frames** and work by frame number instead of time.

Previously, playback controls were defined by time: the outpoint for example was set to 34 seconds, and the corresponding frame number was deduced. If (as was common at 30 FPS) the calculation yielded a non-integer (not a whole number) then the frame displayed would be blended from the two adjacent frames. This approach made it very difficult to play a clip from specific frames: a workflow that is becoming more common.

To address this, the system has been changed to work from frames to derive time. The user specifies a frame number and the media player calculates time from it. In Zookeeper there is little difference as the calculations are carried out automatically and the displays can show either frames or time. For external controllers however this represents a significant change. All in and out-points are now defined by frame number instead of time on a single integer pin.

The frame rate of a clip is defined at encode; the media player will always play a clip back at its intrinsic frame rate independent of the frame rate of the engine, other media players or timecode received.

The time of the playback controls is a function of the frame rate of the clip; for example, at 25 FPS, a 1,000 frame clip would be 40 seconds long. The same 1,000 frame clip played at 30 FPS would be 33.33

seconds long. Setting the outpoint of these two clips to the same frame will correctly result in different lengths.

## DMX and external controllers

In DMX, the out-point pin indicates frame number. The pin can either be controlled as a 16-bit pin yielding a maximum of 65,535 (18 minutes at 30 FPS) or 24-bit for a maximum value of 16,777,216 (or over 24 hours at 60 FPS).

For the out-point, and inner loop out-point setting the value to 0 moves the outpoint to the end of the clip.

## Playback Controls

### In-Point

The frame the clip will start from and loop to.

### InLoop-Point

The frame the clip will start from in inner loop in Frame, and will loop to in inner loop play mode

### Playhead

The current location of the play head.

Note: The play-head is somewhat unique in that it is a pin you should not control from DMX or any other external controller as by it's nature it constantly changes. If a specific starting point for the playhead is desired, use in frame play mode and set the in point to that frame number.

### OutLoop-Point

The frame the clip will return the inner loop in-point when in inner loop playmode.

### Out-Point

The frame the clip will stop playing on with play once, or loop on in play and loop.

## Playbar



The playbar is a visual representation of the Playback controls. All controls in the playbar be dragged around as an alternative to setting values in the playback controls.

## Timecode Status

Timecode on layer indicates it's status with one of three colours:



The layer is not listening to timecode



The layer is locked to timecode



The layer is waiting for timecode

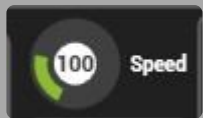
## [Transport Controls](#)

# Media Tab

The media tab contains all basic controls for the media player



## Media Speed



The playback speed can be set from 0 (Paused) to 400 (4x Speed).

| Note: The default speed of 100 may not fall onto a whole number for DMX personalities. See [here](#) for details |.

## Pause on Dark

Pauses media playback when the layer level is set to zero.

- **Disabled** When the layer level is set to zero the clip will continue to play.
- **Enabled** The default. When the layer level goes to zero the clip will pause. Rewind on dark takes precedence over the layer pause — toggling pause when the layer level is set to zero will have no effect.

## Rewind on Dark

Sets the media play-head to the In-Point when the layer level is set to zero.

- **Disabled** The default. Setting the layer level to zero has no effect on the play head position.
- **Enabled** Setting the layer level to zero moves the play head to the in-point.



## Fly Wheel

Determines media player behaviour in the event that timecode it is following stops.

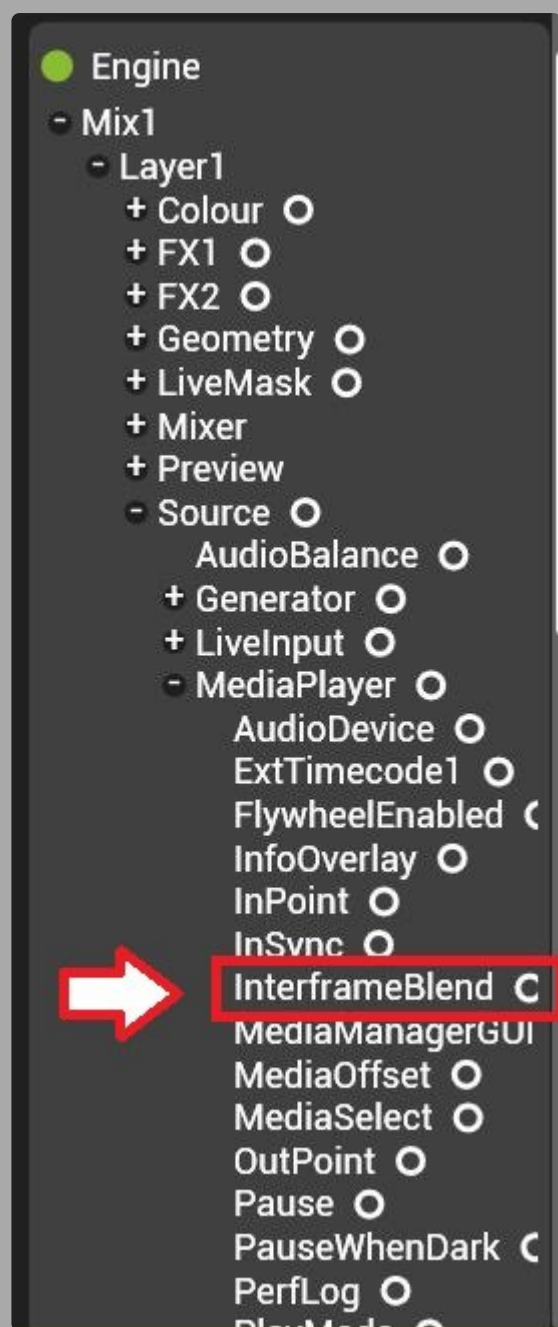
If the media player is not receiving timecode the fly wheel setting has no effect.

- **Disabled** The default. When timecode stops, the media player will also stop. Due to smoothing, there will be a delay between loss of timecode and playback stopping of up to several seconds.
- **Enabled** When timecode stops, the media player will continue playing using an internal clock. If timecode resumes the media player will transition back to timecode.

## Interframe Blending

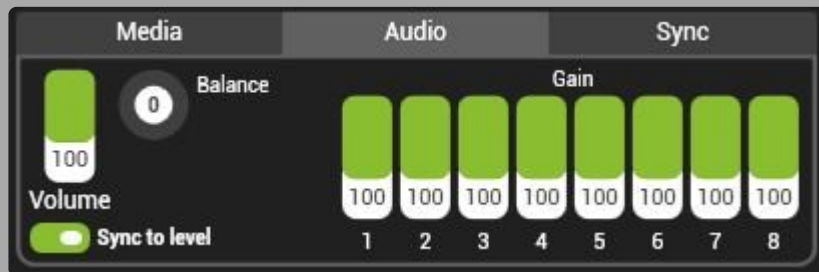
The media player will by default always render a new frame for each render loop of the engine. This means that if the engine is running at 60 frames per second (FPS) and the media player is playing 30 FPS content, it will interpolate every other frame by blending the two adjacent frames, a process called interframe blending. In most cases this is desirable; content will look smoother especially when played at slow speed. However, there are cases where interframe blending is not ideal, such as when media frame rate matches engine frame rate.

Interframe blending is controllable on each layer with a pin:



# Audio Tab

The Audio tab controls advanced aspects of audio playback



Each Media player is capable of playing stereo or multi-channel audio.

## Volume

Sets the overall audio level of the clip.

## Gain 1 – 8

Sets the gain (relative volume) of each audio channel of an audio clip

## Sync To Level

Synchronises the layer level with it's volume.

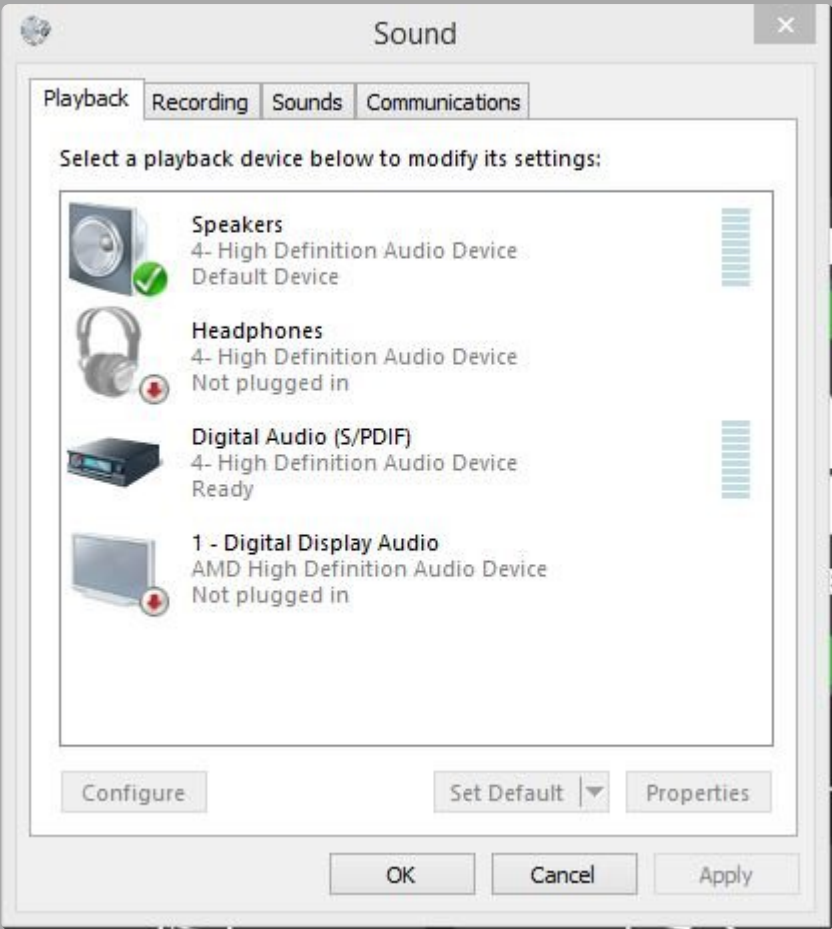
- **Disabled** Volume control is independent of layer level.
- **Enabled** The Default. The volume control will follow layer level.

Note: When the volume is linked to layer level and controlling from DMX, it is advised to set the volume to update only.

## Audio Output

All Hippotizer V4 systems are fitted with stereo audio outputs on either XLR or 1/8" mini jack. For multi-channel audio, an output interface is required. Hippotizer supports most common Windows 8 compatible interfaces. Green Hippo recommends the [Motu 828x](#)

Hippotizer uses the Windows default playback to output audio. This is configured from within the Windows audio control panel;



# Sync Tab

The Sync tab contains timecode and synchronisation controls for the media player



## Inter-Layer Sync

The layer sync system controls how a media player receives **timecode** and sends **sync packets** including **time** and **sync state**.

[For a more detailed discussion of time and timecode in Hippotizer please see here.](#)

## Sync In

Sets the source of time or timecode for the media player.

- **Internal** uses the media player's built-in clock. Each player has it's own clock so two media players started at the same instant will naturally drift over time.
- **Sync Bus 1-16** sets the media player to use the sync state of the bus number selected. Two layers connected by sync bus are said to be in frame-lock and can be expected to be playing the same frame at the same time.
- **Timecode 1 or 2** sets the media player to use time from the designated Timecode bus. Timecode buses are generated in the [Sync Manager](#) and can either be from an external source or generated locally. A media player under timecode control is said to be in frame-lock and can be expected to be playing the same frame at the same time

## Sync Out:

The media player can also send time and sync state for other media players to use — this is called Sync Out.

There are 16 channels, or busses, to carry the information.

- **None** No information is sent
- **Sync Bus 1-16** sets the media player send to the selected bus. Each bus should have only one sender, but it can contain multiple receivers.

## Time Only

Sets the media player to ignore the sync state if it is listening to a Sync Bus.

- **Disabled** The default. The media player will use time and sync state if listening to a sync bus.
- **Enable** The media player will use only time when listening to a sync bus.

## Media Offset

When the media player is listening to a sync bus as a source and time only is disabled, the Media Offset provides an offset of clip selection. That is, if the source clip was Bank 2, Clip 2 and an offset of Bank = 1, Clip = 100, then the local media player will select Bank 3, Clip 102.

The offset is applicable to the target or slave media player; set the desired offset on media players receiving sync.

# Live Capture

Live capture brings external video sources into Hippotizer using a hardware capture card.

Live video from external sources such as cameras or computers may be brought into Hippotizer and used as a video source. A capture card is required.

## Before using Live Capture

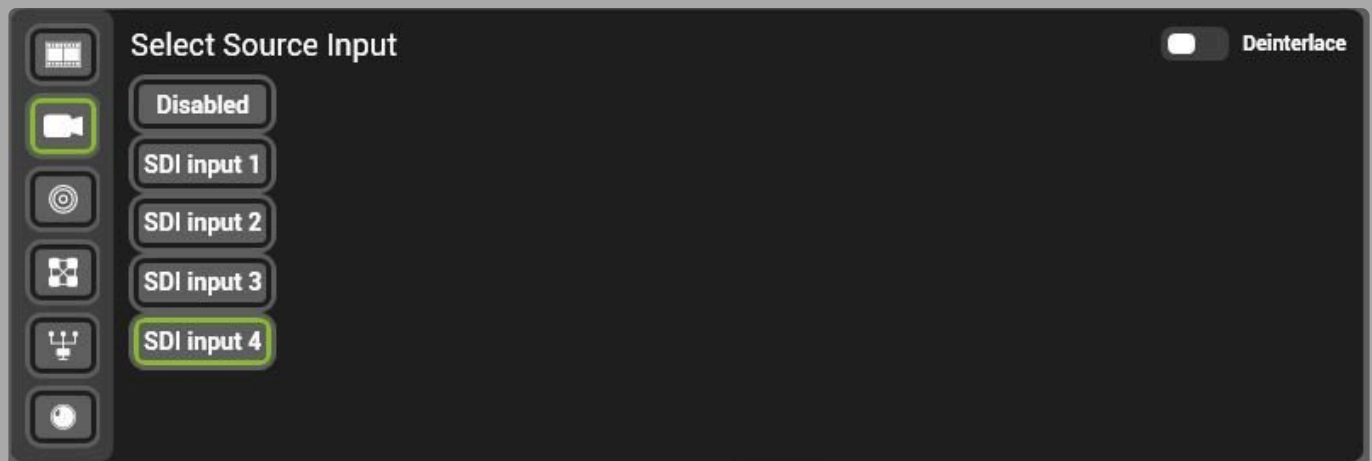
Before using live capture, it is important to ensure the card has been properly detected by Hippotizer. This information is best accessed within the Live Capture Tab in the configuration page of Zookeeper.



In the above image an SDI capture card has been detected.

Note: If an installed capture card is not detected, this is commonly due to a driver issue. To fix it, stop the engine and Zookeeper and re-install the Datapath drivers. See the Hippotizer release notes for the currently supported driver version.

Once detected, live capture inputs will appear as a list of buttons in layer source.



## De-interlace

The De-interlace setting in Live Capture settings triggers the **Hardware De-Interlace** built into the capture card. This system uses frame doubling to combine each pair of interlaced frames into a single progressive frame.

- **Disabled** The default. No changes are applied to captured signals.
- **Enabled** Interlaced signals are converted to progressive adding one frame of latency.

## Using Live Capture

Acquiring a capture stream will take some time (several frames). For this reason, we recommend capturing onto a dedicated mix and using relays to send captured video around the system.

## Delay in Live Capture

It is often desired to have as little latency in live capture as possible. Properly configured, Hippotizer will add 4-5 frames of delay.

For best practice guidelines please see the [section on reducing live delay](#)



# Relays

Relays allow video from one layer, viewport or mix to be sent to other layers as a source on the same machine.



To access relays, select the relay icon in the Source of the desired layer.

Relay Select is two integer pins.

Note: The relay select pin has changed from Hippotizer Version 4.4 from one pin to two.

## Mix / Viewport

A layer can use any local layer, mix or viewport as a video source.

0: **Disabled** Not relay source used

1: **Mix 1** If master is set on the Layer Relay pin, Mix 1 will be used.

2: **Mix 2** If master is set on the Layer Relay pin, Mix 2 will be used.

...

127: **Mix 127** If master is set on the Layer Relay pin, Mix 127 will be used.

128: **Viewport 1** If master is set on the Layer Relay pin, Viewport 1 will be used.

129: **Viewport 2** If master is set on the Layer Relay pin, Viewport 2 will be used.

255: **Viewport 128** If master is set on the Layer Relay pin, Viewport 128 will be used.

## Layer

0: **Master** Use the Mix or Viewport selected on the Mix/Viewport pin

1: **Layer 1 (Visible)** Use Layer 1's visible layer

- 2: **Layer 1 (Hidden)** Use Layer 1's hidden layer
- 3: **Layer 2 (Visible)** Use Layer 2's visible layer
- 4: **Layer 2 (Hidden)** Use Layer 2's hidden layer
- ...
- 32: **Layer 16 (Visible)** Use Layer 16's visible layer
- 33: **Layer 16 (Hidden)** Use Layer 16's hidden layer

## Relay Rendering

### Relays do not carry geometry

Relays are located after the media player and effects, but before colour geometry and the layer level in the render sequence. Meaning a relay will convey clip information and effects but ignore colour, geometry and layer level.

### Relays are before X-Fade

Relays use layers as a source before the X-Fade engine. As a result, if the visible layer is used as a relay source the content will not fade — it will snap at the midway point of the X-Fade.

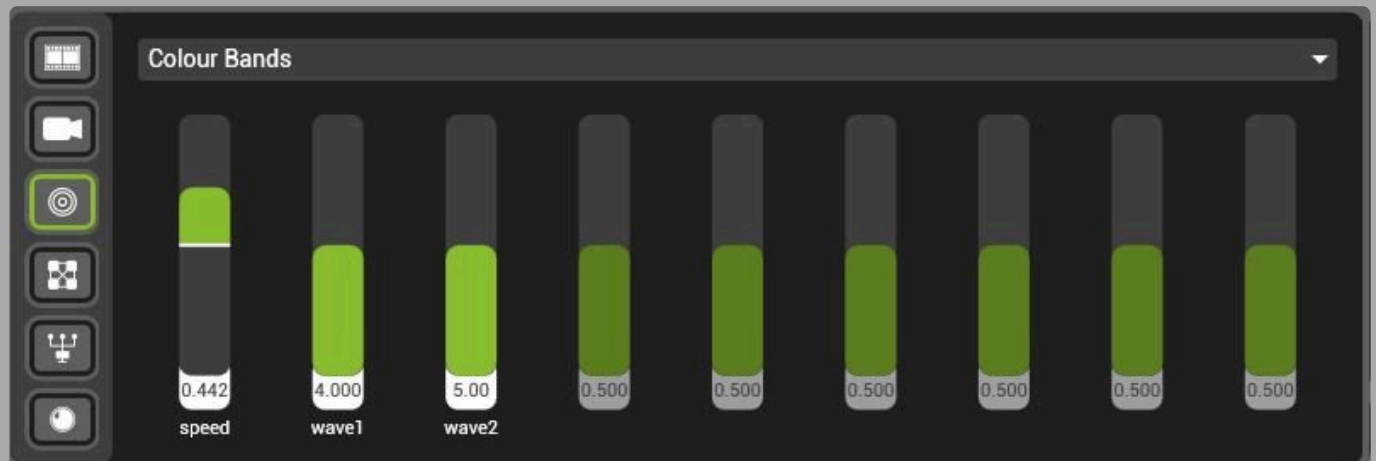
## Common uses for Relays:

- **Adding Effects to a Layer**
  1. On Layer 1, leave the level down and play a clip
  2. On Layer 2, set the Layer source to relay from Layer 1 and put the level up.
  3. Use Layer 1's media select and effects
  4. Use Layer 2's Geometry, colour, level and effects.
- **Sending a whole mix to a Pixelmapping mix**
  1. Start 2 Mixes, using one to output to the Pixelmapper only and the other outputting video to screen
  2. Set Layer 1 on the Pixelmapper mixes to relay from Mix the Mix Master of the output mix.
  3. Pixelmapper will now exactly follow the output and corrections can be applied to pixel mapper (Geometry, Colour, Level etc.)
- **Multiple Inputs into SHAPE**
  1. Patch SHAPE
  2. Navigate to the Viewports page of Zookeeper and click the SHAPE viewport
  3. Inputs 2-8 of SHAPE are relays and can be changed in real time.

[For more information about SHAPE in Hippotizer please see here.](#)

# Generators

Generators are effects that render video in realtime.



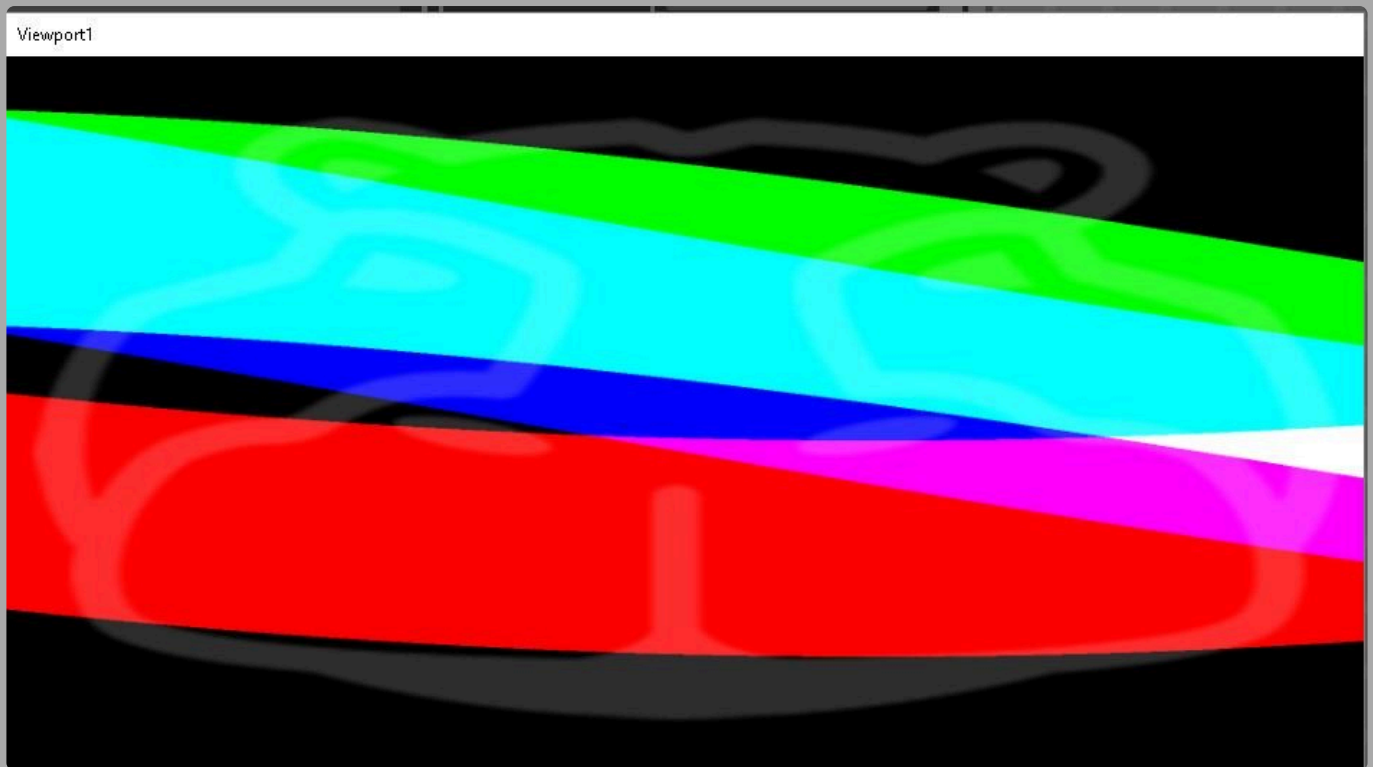
Generators range from simple colours to geometric patterns, clouds or wave forms.

To use a generator, choose generator in the source of the desired layer.



Each generator has up to nine attributes, shown as faders.

Using the generator **Colour Bands** yields the below output.



[A complete list of all generators is here.](#)

# NDI

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## The Network Device Interface (NDI) is a method of transferring video over the network.

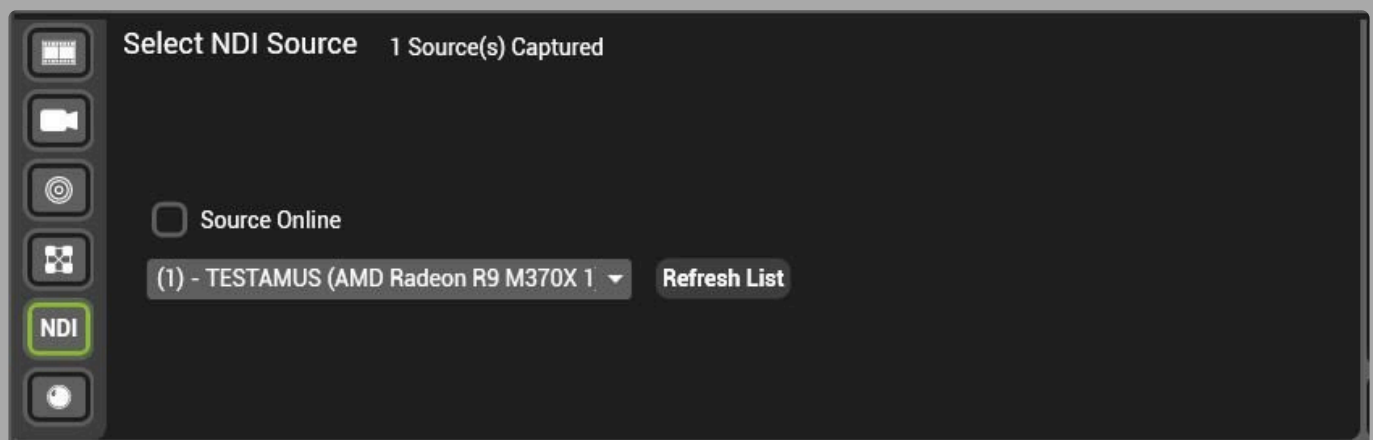
Developed by NewTek, NDI is a commonly used method to send video around a local network. NDI has a variety of tools freely available for download to send video from popular 3rd party applications such as Adobe Creative Cloud or the Unreal Engine.

Newtek offers many applications for download here:

<https://www.newtek.com/ndi/tools/>

[Below is information on receiving NDI. For more information about sending NDI please see here.](#)

## NDI on each layer



Receiving NDI has several settings:

### Refresh List

When pressed, the list of NDI sources detected on the network will be updated. The list is only updated when Refresh list is pressed.

In order to ensure consistent indexing, sources that are no longer online are not deleted on a list refresh. To reset the source list use the clean show option in Hippo Launch.

## NDI Source Dropdown



Displays an indexed list of the NDI Sources on the local network. Choosing a source on the list will begin capturing it.

### Source Online

When green, the selected source is sending video. If grey, the selected source is not sending.

## Replacing Screen Thief.

NDI offers superior performance and a wider variety of supporting platforms than screen thief did. Though there are many NDI sender applications available that offer similar functionality to screen thief. Green Hippo has tested, and recommends **NDI Scan Converter** available for free download as part of Newtek's NDI Tools.

<https://www.newtek.com/ndi/tools/>

## Audio

Audio over NDI is not currently supported.

# Spout

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Spout is a realtime video sharing framework for Windows, enabling a media layer to receive video from a supporting application running on the same machine.

Commonly used for integrating sound-reactive visuals with a Hippotizer, Spout offers enormous creative potential by combining innovative visual software with Hippotizer seamlessly.

## To use Spout:

- Install the supporting 3rd party application onto the Hippotizer machine
- Start the Hippotizer and 3rd party application
- Enable Spout sharing in the application
- In Hippotizer, select Spout as a layer source and choose the stream.

Note: Running untested 3rd party software on your Hippotizer system is intrinsically risky; always test planned setups completely before using in a live environment.

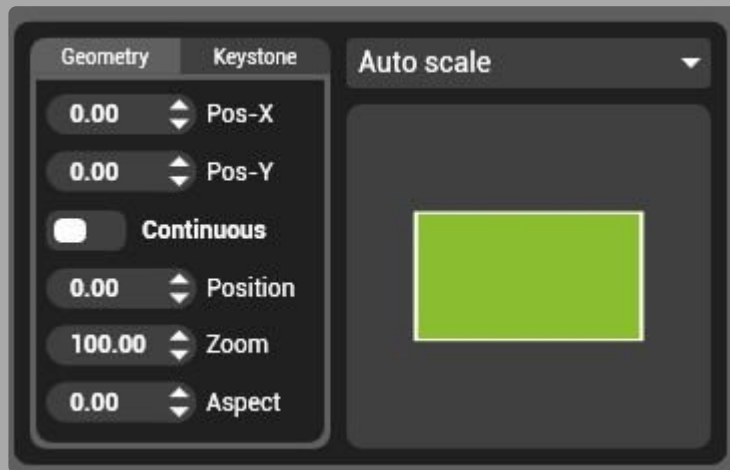
Spout is a widely adopted application; for a full list of supporting software visit their website:

<http://spout.zeal.co/>

# Geometry

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## Each layer has independent Geometry controls



The basic Geometry controls place media onto the layer:

### Pos-X

The 'X' or right to left position of the media.

### Pos-Y

The 'Y' or up and down position of the media.

### Continuous

Switches the rotation control from **Position** to **Speed**. With Continuous disabled, rotation is similar to indexing a Gobo in a moving light.

### Position / Speed

The position (or Index) or speed of rotation of a clip. This control is affected by the Continuous switch above.

### Zoom

Zooms the content from 0 to 200% size on the layer.

Note: If additional zoom is required the mega zoom effect should be used.



## Aspect

The aspect changes the aspect ratio of the media.

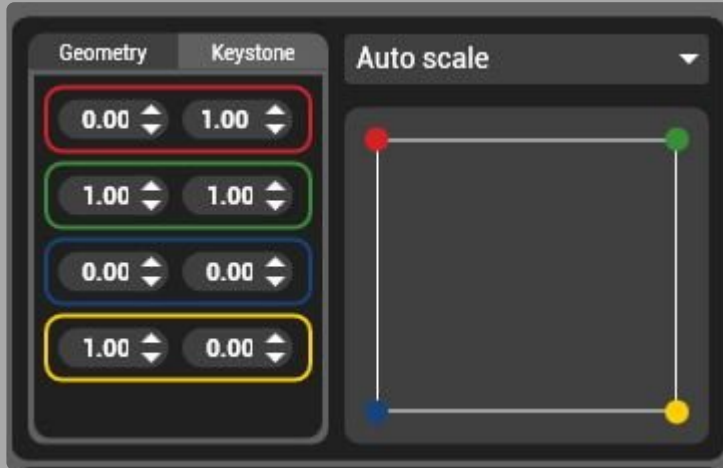
## Additional Geometry controls

- [Keystone on Layer](#)
- [Aspect Mode](#)
- [Videomapper on Layer](#)

# Keystone on Layer

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Every layer in Hippotizer features an independent Keystone control



The Keystone is defined by four points, one for each corner.

Note: Keystone does not support concave shapes. In the event a concave keystone is created an un-keystoned image will be shown

The Keystone occurs after geometry controls in the signal chain so it is best to avoid using geometry on layers with keystone.

# Aspect Mode

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The Aspect Mode determines how media of different resolutions fit to the mix resolution.

## Auto Scale

Stretches or shrinks the content to fit to the layer without changing the aspect ratio. The content will be stretched or shrunk until one dimension of the media resolution aligns with the layer resolution. If the media has a different aspect ratio to the layer this will result in black bars on either the top and bottom or the sides of the media.

- Preserves Aspect Ratio
- Will not crop
- Will result in black borders if media aspect ratio is different then the mix.

## Pixel 1:1

Content is played without any size change.

Pixel 1:1 is recommended where pixel accuracy is important, such as with UV mapped content.

- Preserves Aspect Ratio
- Will result in cropping if media resolution is larger than the mix
- Will result in black borders if media resolution is smaller than the mix.

## Fill

Stretches or shrinks the content to fit to the layer on both axis; can change the aspect ratio.

- Will change Aspect Ratio to match the media to the mix.
- Will not crop
- Will not result in black borders

## 4:3

Sets the content to a 4:3 aspect ratio and stretches or shrinks it to fit completely on the layer.

- Will force the Aspect Ratio of the media to 4:3.
- Will not crop
- Will result in black borders if the mix resolution is not 4:3

## 16:9

Sets the content to a 16:9 aspect ratio and stretches or shrinks it to fit completely on the layer.

- Will force the Aspect Ratio of the media to 16:9.
- Will not crop
- Will result in black borders if the mix resolution is not 16:9

## 16:10

Sets the content to a 16:10 aspect ratio and stretches or shrinks it to fit completely on the layer.

- Will force the Aspect Ratio of the media to 16:10.
- Will not crop
- Will result in black borders if the mix resolution is not 16:10

## 1:1

Sets the content to a 1:1 aspect ratio and stretches or shrinks it to fit completely on the layer.

- Will force the Aspect Ratio of the media to 1:1.
- Will not crop
- Will result in black borders if the mix resolution is not 1:1

## Auto Fill

Preserves aspect ratio and stretches or shrinks the media to fit the layer resolution such that there is no borders.

- Preserves Aspect Ratio
- Will crop to fill the entire mix if media has different aspect ratio to the mix
- Will not result in black borders

## Fit to Width

Clamps the media to the width of the mix changing the height to preserve aspect ratio

- Will not change Aspect Ratio
- Can lead to cropping
- Can lead to black borders

## Fit to Height

Clamps the height of the media to the mix changing the width to preserve aspect ratio.

- Will not change Aspect Ratio
- Can lead to cropping
- Can lead to black borders

Note: Aspect mode affects all other geometry controls. It is prudent to set aspect mode first, then modify geometry.

# Videomapper on Layer

Videomapper on Layer adds the functionality of video maps and colour blocks to each layer.

Videomapper forms part of the Geometry section of the layer controls:



## Render Order

Videomapper on layer is rendered after effects but before layer geometry.

To move content around within the video map use an effect such as scroller.

To move the video map around within the mix use layer geometry.

## Resolution

As with conventional videomapper, a video map does not have it's own resolution.

The output resolution of Videomapper on Layer is always set to the mix it belongs to.

The input resolution can either be the layer or mix, as determined by the drop down resolution menu.

**When the Resolution field is set to Layer, the video map assumes the resolution of the source which depends on the source type:**

- **Media Player** Uses media resolution
- **Live Capture** Uses capture resolution.
- **Generator** Uses the mix resolution

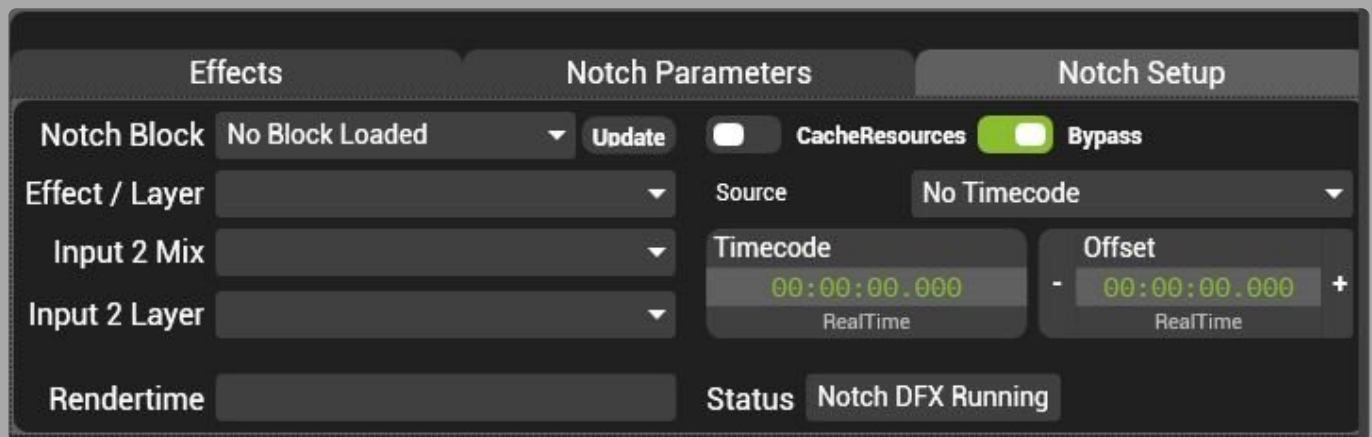
- **Relay** Uses the relay source layer resolution
- **NDI** Uses the NDI sender resolution
- **Spout** Uses the Spout sender resolution

**When the Resolution is set to Mix, the video map will use the resolution of the mix.**

# Notch

Notch is 3rd party realtime, generative content creation and rendering software. Hippotizer V4 supports Notch playback with the correct software licenses.

Notch is presented on each Hippotizer layer in tabs behind the layer selector.



Notch is comprised of two tabs: Notch Setup and Notch Parameters

- [Notch Setup](#)
- [Notch Parameters](#)

To add or edit the order of Notch blocks, please see below.

- [Adding and managing Blocks](#)

The licensing of Notch is described in depth here:

- [Notch Licensing](#)

The recommended Notch workflow:

- [Notch Workflow](#)



# Notch Licensing

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**Notch is a 3rd party application with a separate licensing system to Hippotizer, there are different levels of licenses to consider.**

## **Hippotizer V4 Systems**

- Cannot play Stock V4+ effects
- Requires a Notch dongle to play other blocks

## **Hippotizer V4+ Systems (excluding Montane+)**

- Can play Stock V4+ effects
- Requires a Notch dongle to play other blocks

## **Hippotizer Montane+ Systems**

- Can play Stock V4+ effects
- Includes two-year Notch Playback dongle.

# Notch Setup

The screenshot shows the 'Notch Setup' tab of a software interface. It features several controls: a 'Notch Block' dropdown menu currently set to 'No Block Loaded' with an 'Update' button; a 'CacheResources' toggle switch that is turned on; a 'Bypass' toggle switch that is turned off; 'Effect / Layer', 'Input 2 Mix', and 'Input 2 Layer' dropdown menus; a 'Rendertime' input field; a 'Source' dropdown menu set to 'No Timecode'; a 'Timecode' display showing '00:00:00.000' with a 'RealTime' label; an 'Offset' display showing '00:00:00.000' with a 'RealTime' label and a range from - to +; and a 'Status' dropdown menu set to 'Notch DFX Running'.

## Notch Block

Notch effects are grouped into **Blocks**, this pin chooses which block is loaded.

! Loading a Notch Block is extremely resource intensive and will temporarily stop all rendering. Only load blocks outside of live environments. If changing blocks live is required consider using multiple layers and bypass, or cached resources.

The order and naming of Notch blocks on the block select pin is determined by the naming and is described [here](#).

## Effect / Layer

Selects which Notch Effect is loaded.

The order and naming of Notch layers is determined inside the Notch application. To edit this a Notch Builder license is required.

## Update

Updates the Block select pin by scanning the Notch folder for new blocks; press update to add newly added blocks to the list.

! Update unloads and reloads all blocks. Only use update when video output disruption can be tolerated.

## Video Input

A Notch effect can have up to two video inputs. Input one is always the layer source (normally the media player or live capture). Input 2 can be any other layer, mix or viewport on the local system using a relay.

### Resolution

The resolution of the block is set by the mix resolution it is loaded onto. Any inputs into the block should match the mix resolution .

### Input 2 Mix

Selects the mix/viewport source for the 2nd input of Notch

### Input 2 Layer

Selects the layer source for the 2nd input of Notch

## Resource management

Notch can use a lot of processing resources. There are several tools to assist with using and Notch in Hippotizer.

### Cached Resources

Leaves all Notch blocks stored in memory even after they are de-selected in order to make switching to them again much faster.

- **Enable** Resources are cached. Once a block is loaded it will be saved so subsequent navigation to that block is nearly instant.
- **Disable** The default. Blocks are deleted from memory once they are de-selected. Navigating back to a previously loaded block will be slower and may interrupt the output.

### Bypass

Bypasses the active Notch block without unloading it from memory. Use bypass to quickly turn Notch on or off on a layer.

- **Enable** The default. The block is loaded but not rendering.
- **Disable** The block is rendering normally.

## Rendertime

The real time measure of how long each frame is taking to render through Notch. At 60FPS, a render time of above 15ms will slow the engine down.

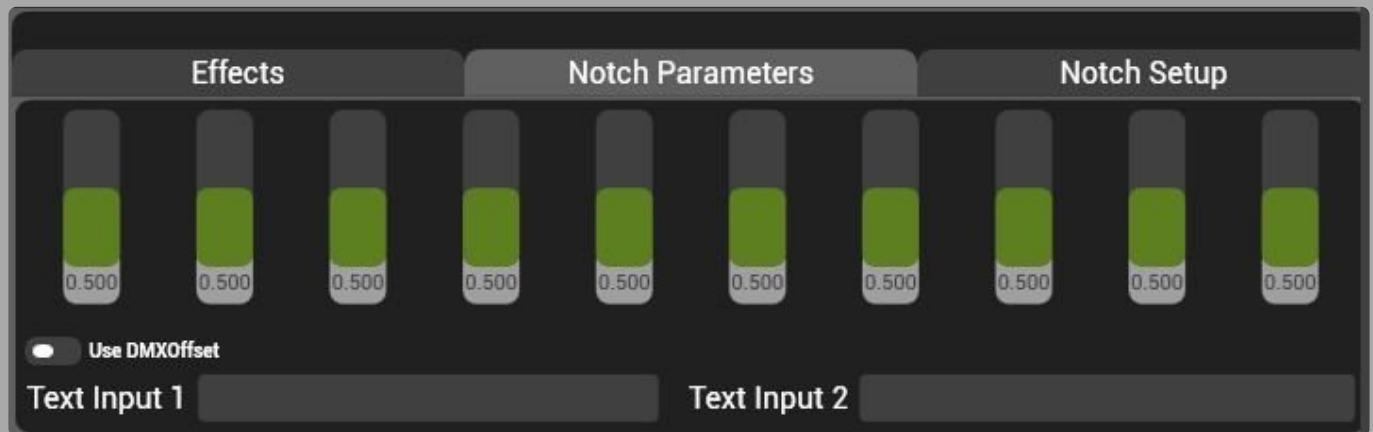
## Status

An indication of the Notch status.

- **No Notch Block Loaded** No Block selected
- **Effect loaded OK** Normal run state when Notch is loaded and operating
- **Loading Notch Block** A new block is loading. The whole system output will stop while this is happening.

# Notch Parameters

Notch controls are exposed as pins for control by Hippotizer



By default, there are 10 float and 2 string pins for the loaded Notch effect.

Each float control is 16bit internally, but may be controlled as 8 or 16bit by DMX as required.

If more parameters are required, the number of channels can be changed by adding a text file to the Notch Block folder:

- Shut down the Engine and Zookeeper
- On the Hippotizer, navigate to Documents/Green Hippo/Notch
- Create a text document and name it **Params.txt**
- Open the text document and add two lines:

```
numtextparams=5  
numfaderparams=20
```

- Save the text file and close it
- Restart the engine

The variables to consider when editing the number of parameters of Notch:

## Text Parameters

- 2 by default
- No Limit to how many can be created

## Fader Parameters (Floats)

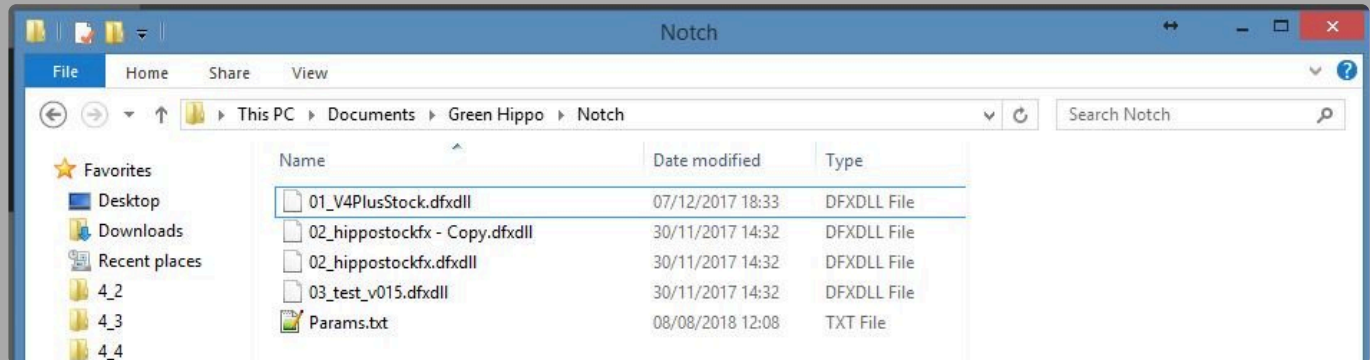
- 10 by default
- No limit to how many can be created

## The Pin tree

Additional parameters are exposed as pins in Hippotizer. The engine must be restarted to changes to take place. New pins are added in the group **RefTree** on each mix, with the layers inside the RefTree.

# Adding and managing Blocks

Notch blocks are stored as files with the extension `.dfxdll`



## Adding Blocks

To add blocks to Hippotizer, save them to the path:

`C:\Users\Hippo\Documents\Green Hippo\Notch`

Each block name must be preceded with a unique number, followed by an underscore. The number will determine the order blocks are chosen.

For example `01_V4PlusStock.dfxdll` will appear first in the list as `V4PlusStock`

In the image example above, only one of the two `hippostockdfx` blocks will be visible in Hippo as they have the same index number.

## Updating the Block select pin

When blocks are added or removed the **Capture** button must be pressed once on a layer of that system to refresh the block list.

The blocks select pin is also updated on engine restart.

# Using Notch

To avoid output disruption, Green Hippo strongly recommends the following workflow.

- Always use cached resources.
- load and test all Notch blocks before every show
- Notch blocks that are not used should remain loaded on the layer. Use the bypass switch to disable Notch.
- Plan the layers that will use Notch. **Use as few layers with Notch as possible.**

Effects		Notch Parameters		Notch Setup	
Notch Block	No Block Loaded ▾	Update	<input type="checkbox"/>	CacheResources	<input checked="" type="checkbox"/> Bypass
Effect / Layer	▾	Source	No Timecode ▾		
Input 2 Mix	▾	Timecode	Offset		
Input 2 Layer	▾	00:00:00.000 RealTime	- 00:00:00.000 + RealTime		
Rendertime	▾	Status	Notch DFX Running		

## Managing Resolution

The resolution of a Notch effect is determined by the resolution of the mix it is loaded onto. Reducing the resolution will improve performance. Always use the lowest resolution possible for best performance.



# V4+ Stock Effects

---

## V4+ Systems include free Stock Notch effects.

**Note:** V4 Systems do not support stock Notch effects as they do not have the correct license and generally lack the performance to run them well. Should you wish to license a V4 system to run V4+ stock effects please discuss this with Green Hippo.

# Mixer

---

The Mixer controls how layers interact with each other.



There are two controls for the mixer:

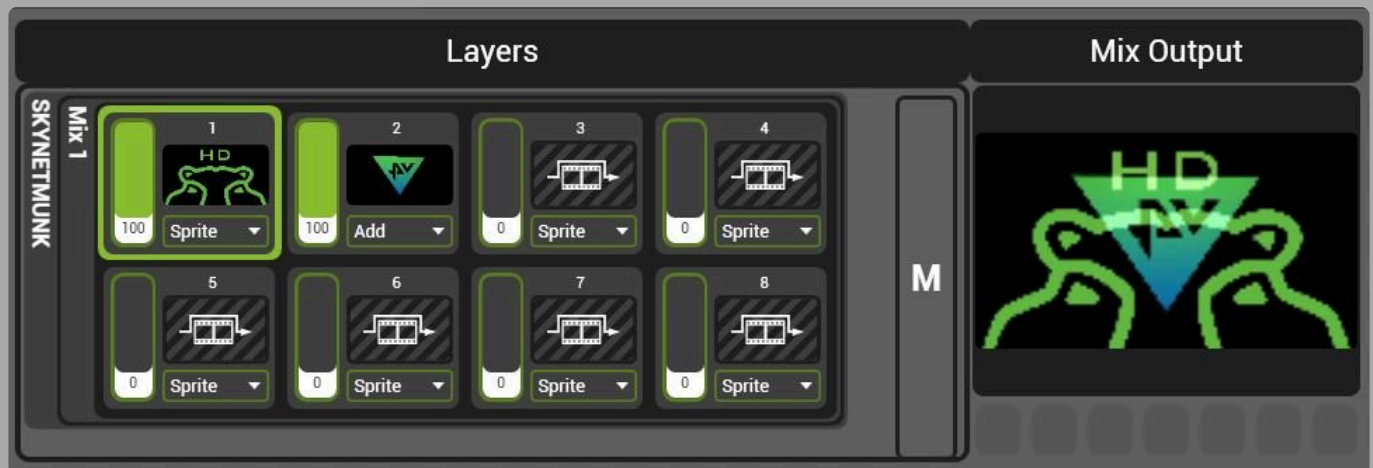
- [Mix Mode](#)
- [Layer Level](#)

# Mix Mode

---

# Add Mode

Add Mix Mode sums the current layer with all those below it.

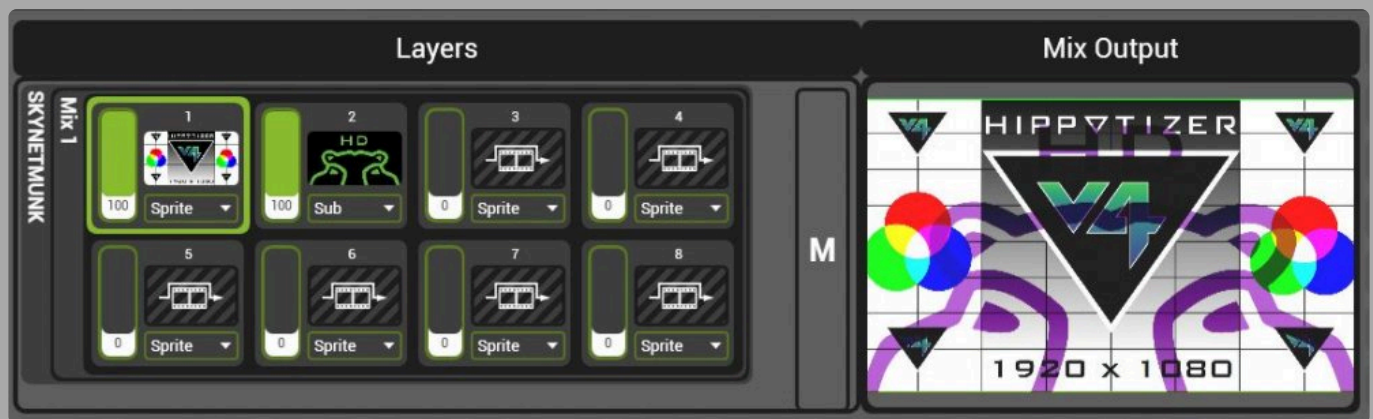


## Considerations with Add Mode

- Pixel Colour values are simply added together
- The Alpha Channel is not considered, though full alpha is rendered as black so adds nothing to the composition and appears transparent
- The Area outside the layer's raster is rendered as black and is also transparent.

# Subtract Mode

Subtract Mix mode deducts the colour of the layer from all those below it.



## Subtract Mix Mode Considerations

- The Alpha Channel is not considered, though full alpha is rendered black so has no effect
- Areas outside the layer raster are black so do not change the colour values

# Darken Mode

---

# Lighten Mode

---

# Softlight Mode

---



# Softlight Inverse Mode

---

# Hardlight Mode

---

# Overlay Mode

---

# Difference Mode

---

# Multiply Mode

---

# Screen Mode

---

# Opaque Mode

---

# Sprite Mode

---



# **LumaKey Mode**

---

# Matte Mode

---

# Alpha Mode

---

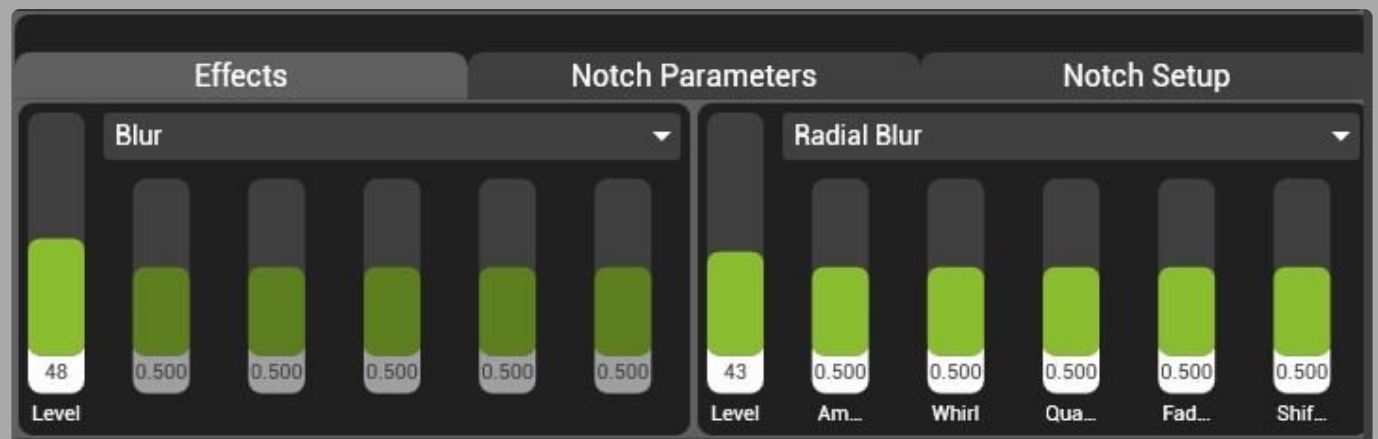
# Layer Level

---

Each layer has an intensity control

# Effects

Each layer contains two effect engines



An effect engine contains a collection of video effects useful for a variety of applications.

As an effect selection is made, the five parameter faders will change to reflect the specific effect. Some effects such as **Blur** require only a level fader, while others such as **Radial Blur** use all five faders.

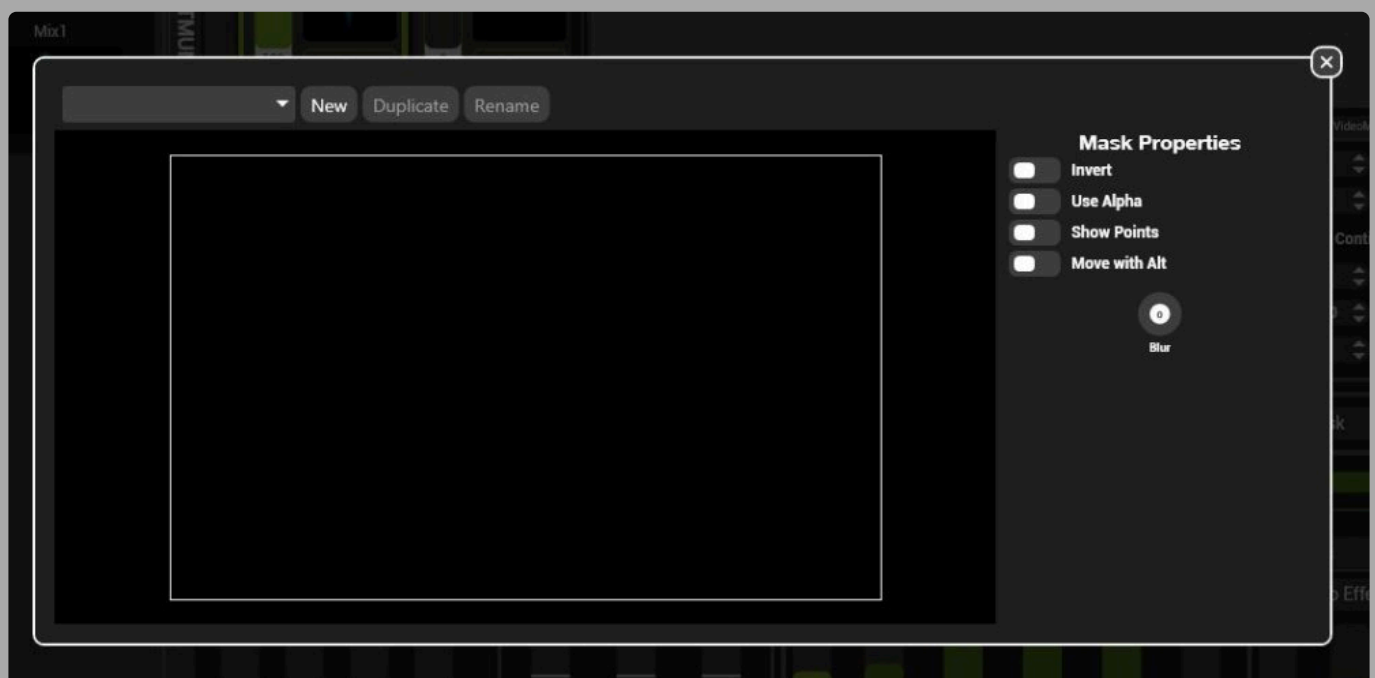
# Livemask

Livemask allows masks to be created and edited on each layer.



## Creating Live Masks

Press the **Edit** button to open the mask editor



Press the **New** button to create a new, blank mask.

## Mask Properties

### Invert

Toggles the mask from being clear shapes to clear background with opaque shapes

- **Enable** The background is transparent and shapes mask
- **Disable** The Default. The background is a mask and shapes are transparent.

## Use Alpha

Toggles the mask being alpha transparent or black

- **Enable** The mask is rendered as alpha. Layers beneath it will show through in alpha mix modes.
- **Disable** The Default. The mask is rendered as black

## Generic Properties

### Show Points

Toggles nodes and mouse position being drawn on the output

- **Enable** The position of the mouse and nodes is shown on the output
- **Disable** The Default. Only the mask is show on the output

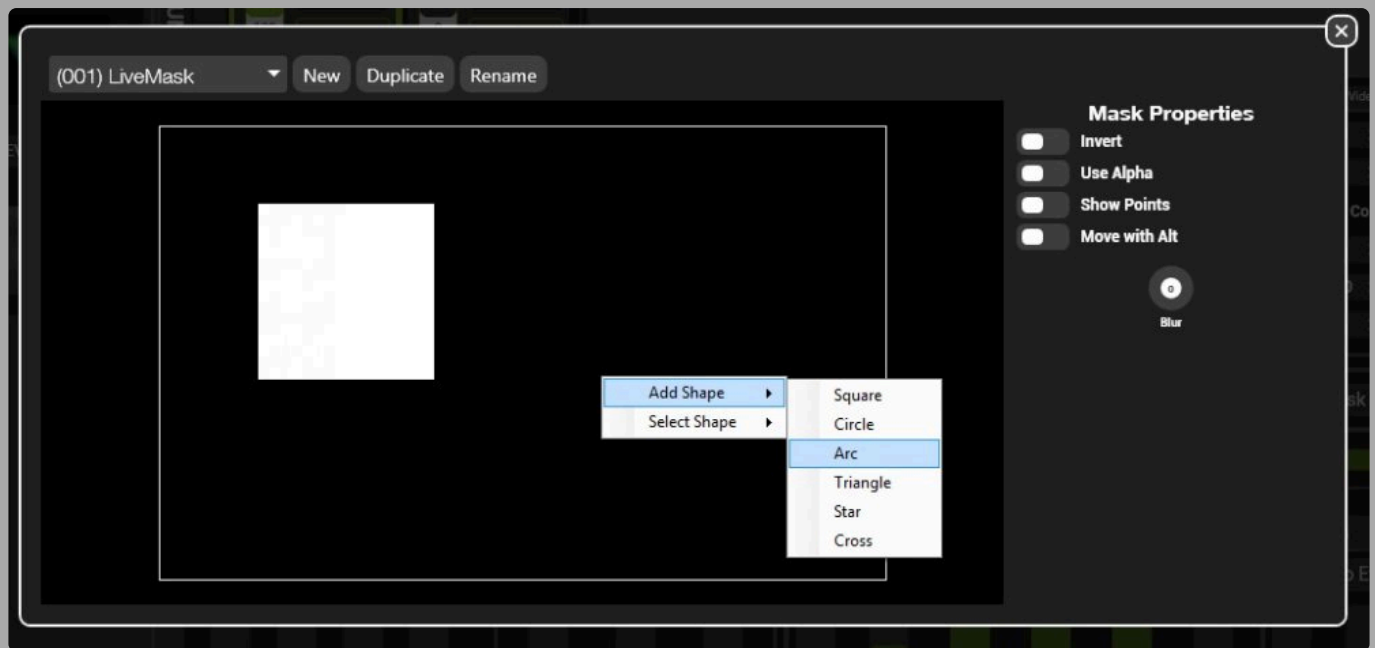
### Move with Alt

Disables mouse dragging of shapes.

- **Enable** Shapes can only be moved with mouse dragging when ALT is held down.
- **Disable** Mouse dragging is enabled.

## Creating shapes

Right click inside the central area to create a new mask shape.



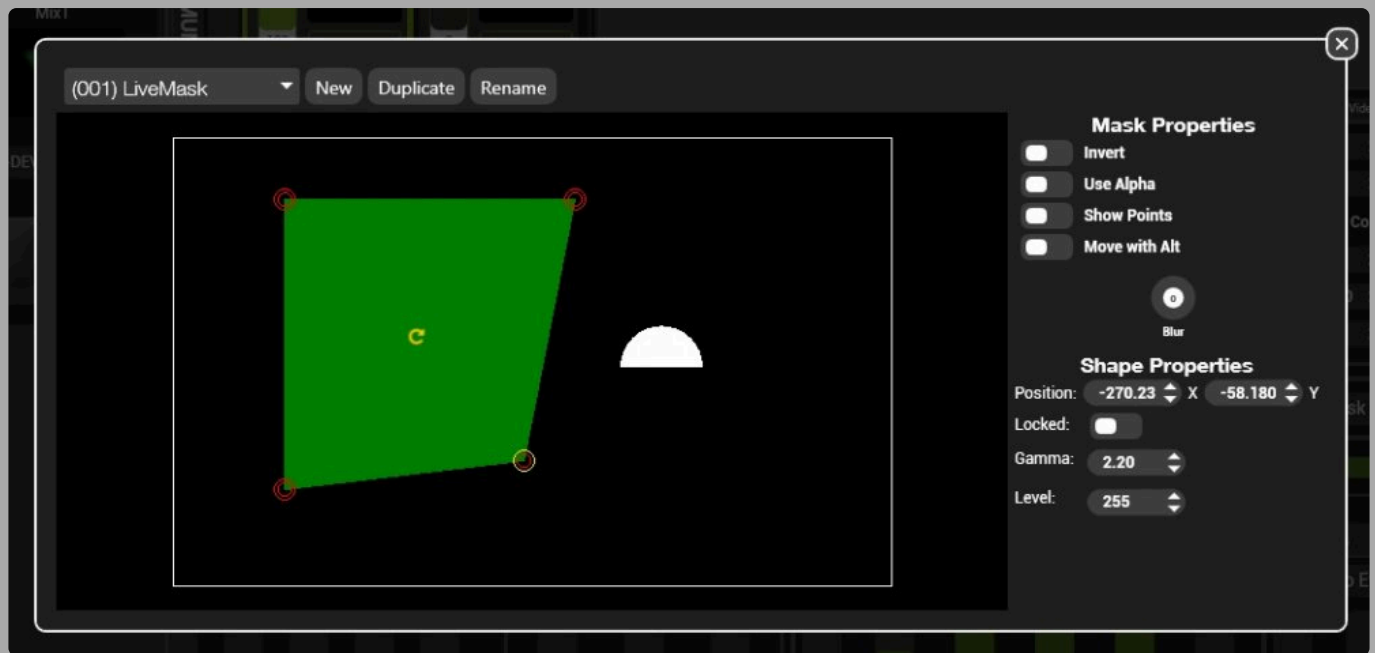
Many basic shapes can be added including:

- Square
- Circle
- Arc
- Triangle
- Star
- Cross

## Editing shapes

To edit a shape, left click into it.





## Moving the Shape

There are several ways to move shapes

- Left click and hold over the shape and drag (holding SHIFT while dragging switches to fine control)
- Select the shape and edit the position in the Shape properties panel on the right side.
- Select the shape and use the arrow keys to move the shape. (Holding SHIFT while pressing the arrow keys will move the shape 1/10 as fast).

## Editing a Shape



To rotate the shape left click the rotate symbol and drag the mouse



The corners (or node) of shapes can be moved by selecting the shape and dragging the desired node

- Right click over the shape for additional options.
- The mouse wheel zooms the selected shape in and out
- Hold CTRL while moving the mouse wheel to feather the edges of the shape.

# Colour

---

# Media Select

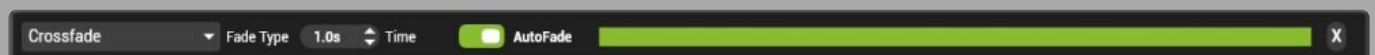
---

# Xfade

## Cross Fade on layer automatically transitions between looks on a layer



Cross Fade on Layer is present on every layer of Hippotizer by default.



## Basic function

Crossfade on layer is designed to be easy to use. Simply choose a new clip or look and the layer will fade to it automatically. If crossfading is not desired, set the mode to bypass and the layer will operate as normal.

Crossfade on layer operates by pairing each media layer with an invisible, hidden layer. To create a

fade, the hidden layer is set to the new values and the intensities of the visible and hidden layers are faded as set by the fade mode.

Unlike previous versions of Hippotizer, all layers can be switched to crossfade at any time and all layer modes support crossfade.

## Concepts

### Visible and Hidden Layer

Every Hippotizer layer is actually comprised of two media layers; a hidden and a visible.

The visible and hidden layers switch automatically with each crossfade so the output is always either only the visible layer, or during a fade, a combination of both.

A cross fade is comprised of a sequence of events:

- The visible layer renders to the output
- When crossfade is enabled, new values are applied to the hidden layer (depending on Autofade mode)
- The layers fade by reducing the intensity of the visible layer while increasing the intensity of the hidden layer
- Once the fade is complete, the hidden and visible layers synchronise and the hidden layer is ready for new values.

## Fade Type

The Crossfade mode enables and disables crossfade and sets the style of fade.

### Bypass

By default, Cross fade is set to bypass for every layer. When bypassed, the crossfade engine is disabled to save resources.

### Crossfade

Fades the visible layer down as the back layer is fading up.

### Fade through Black

Fades the visible layer down to zero then fades the hidden layer up.

## Fade up first

Fades the hidden layer up before fading the visible layer out completely.

## Fade Time

The time a fade will take to complete. The default setting is 1 second.

## Autofade

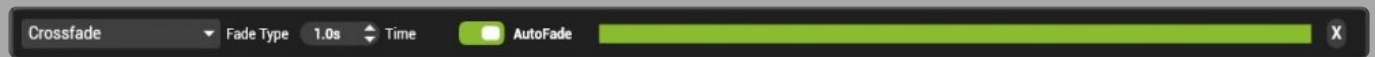
Autofade determines when a crossfade is started.

- [Autofade](#)

# Autofade

## Autofade determines when a crossfade begins

### Autofade Enabled (default)



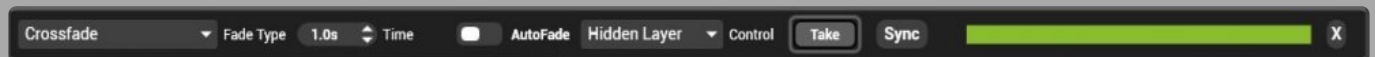
With autofade enabled, a fade will start whenever a change to the source has been made.

Any changes to settings outside of the source will not trigger a fade. So, changing the Geometry or colour of a layer will not trigger a fade while changing the clip will.



Autofade mode is designed primarily for operation from a DMX lighting desk where fading values such as geometry is easier to control from the desk, while media fades are best handled from the Hippotizer.

### Autofade Disabled.



Disabling autofade sets crossfade to a fully manual mode — a crossfade is started by pressing the take button.

Use this mode to set a complete state before applying it.

Disabling autofade creates a series of new controls:

#### Control

In manual mode, the layer controls will affect either the hidden layer, the visible layer or both depending on the control setting.

#### Take

Take starts a fade. Once started, a fade cannot be reversed.

#### Sync

Synchronises the visible layer to the hidden layer.

# Key on Layer

Key on Layer replaces Matte Mix mode to use any other layer as key source



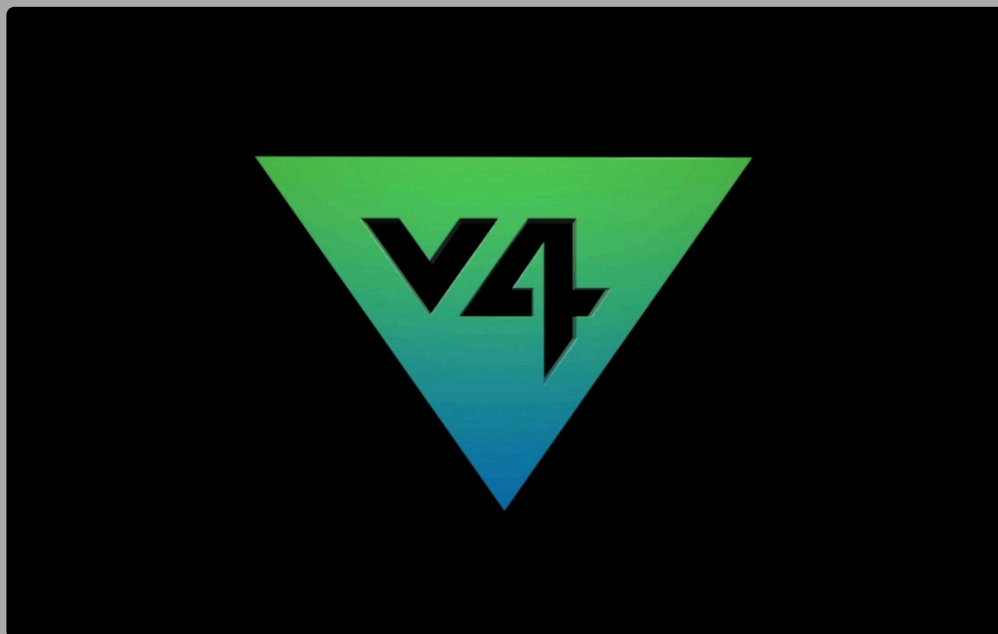
Keying is commonly used in broadcast applications to composite a live feed onto a background.

Often times, the key source is presented as two live feeds a **Key Cut** and a **Key Fill** which is mixed onto a **Background**.



## Example Media:

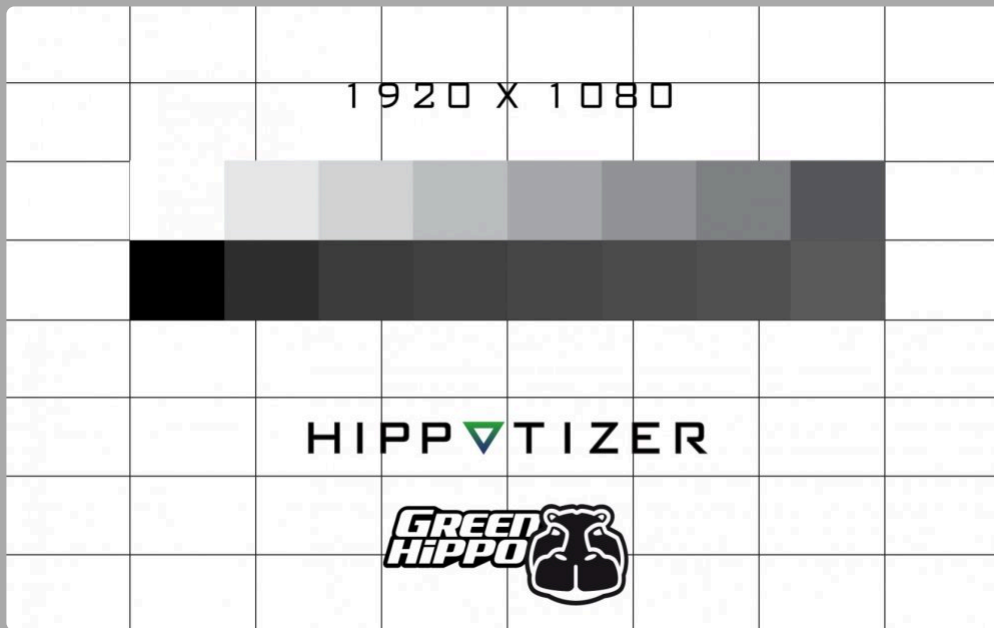
### Key Fill



### Key Cut



## Background



## Using Key on Layer

Compositing these three feeds will require four layers on two mixes.

- Capture the Key Fill and Key Cut feeds on an external mix. Best practice is to capture live feeds onto a separate mix (ideally mix 1 to reduce latency) and to leave that mix capturing at all times.
- In this example, on the capture mix, Layer 2 is the Key Cut, Layer 1 is the Key Fill
- On the output mix layer 2, play the background clip and use inverse key from Mix 1, Layer 2. Set the layer to mix mode alpha.
- On the output mix, set source to relay and use layer 1 from the capture mix as the source



The result will be that layer 1 of the output mix will be visible through the cutout of the key on layer 2.

# Mix Controls

The mix controls or mix master page contains controls common to all layers on that mix



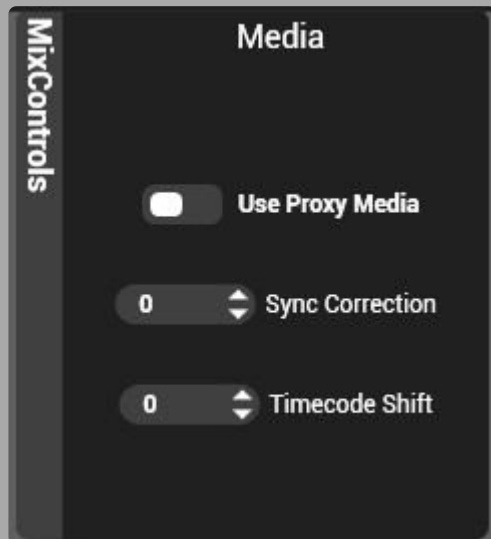
There are several section to mix controls

- [Media Mix Controls](#)
- [Pixelmapper](#)
- [NDI Send](#)
- [Mix Presets](#)

# Media Mix Controls

---

Media Controls are global settings for all media players within that mix.



## Use Proxy Media

When enabled, if proxy media has been encoded, all media players in that mix will use proxy media.

## Sync Correction

A correction factor for the delay (in milliseconds) in passing synchronisation data between media players. The default of zero works in most cases.

## Timecode Shift

A global shift (in milliseconds) applied to all timecode being sent into the media players on that mix. Use this setting to compensate for distance delay between mixes.

# NDI Send

---

Each Mix can send an NDI feed over the network.



## Enable

Turns NDI Send on and off

- **Enable** NDI is sent from the selected mix
- **Disable** The Default. NDI is not sent from the selected mix.

Note: Sending NDI does incur computational load, especially at greater than HD resolution. Always test the performance of a system before using in a live situation.

## FrameRate

Sets the desired refresh rate of the NDI sender.

Receiving a slower framerate than is set by the sender can indicate an overloaded network, sender or receiver.

# Viewports Page

The Viewports Page is where viewport controls are contained.



The Viewports Page is a **default layout** that can be reset from within [Zookeeper Settings](#)

## The Viewports Page is comprised of two main sections:



### Viewport Selector

All Viewports on the local network are displayed in the selector.

The high lighted viewport's controls will appear in the viewport controls panel to the right of the selector.

### Viewport Controls

The viewport controls are a collection of effects and components are commonly needed to correctly display video on a wide range of projection and display technologies.



# SHAPE Viewport

The SHAPE Viewport controls the 3D plugin in the Hippotizer Engine.



## Enable SHAPE

Turns the 3D plugin on and off

- **Enable** The default. The 3D plugin is rendered
- **Disable** The 3D plugin does not render. Video is passed through as a simple 2D texture.

## Enable Network

Turns network control on.

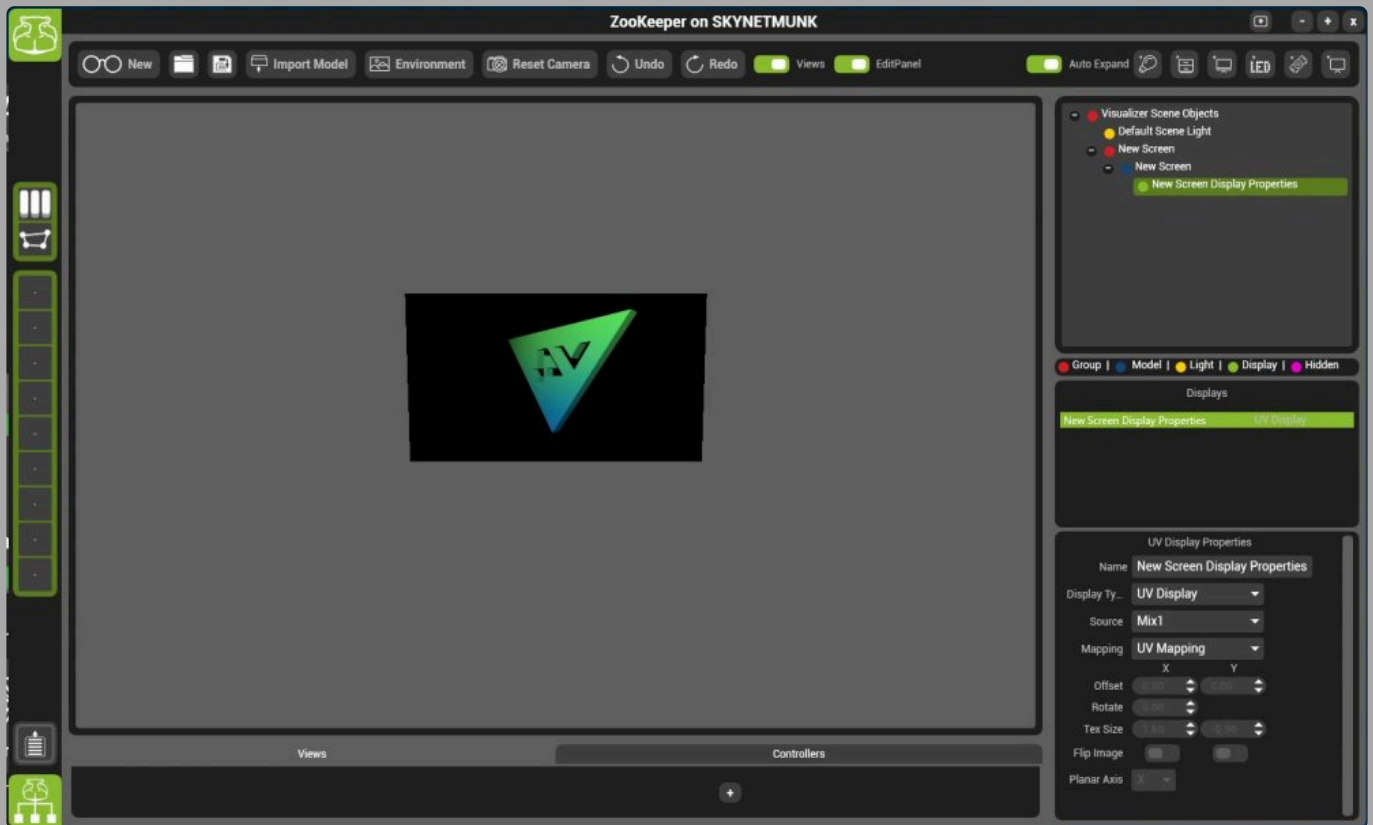
- **Enable** The default. SHAPE Applications can connect to and control the 3D plugin over the

network.

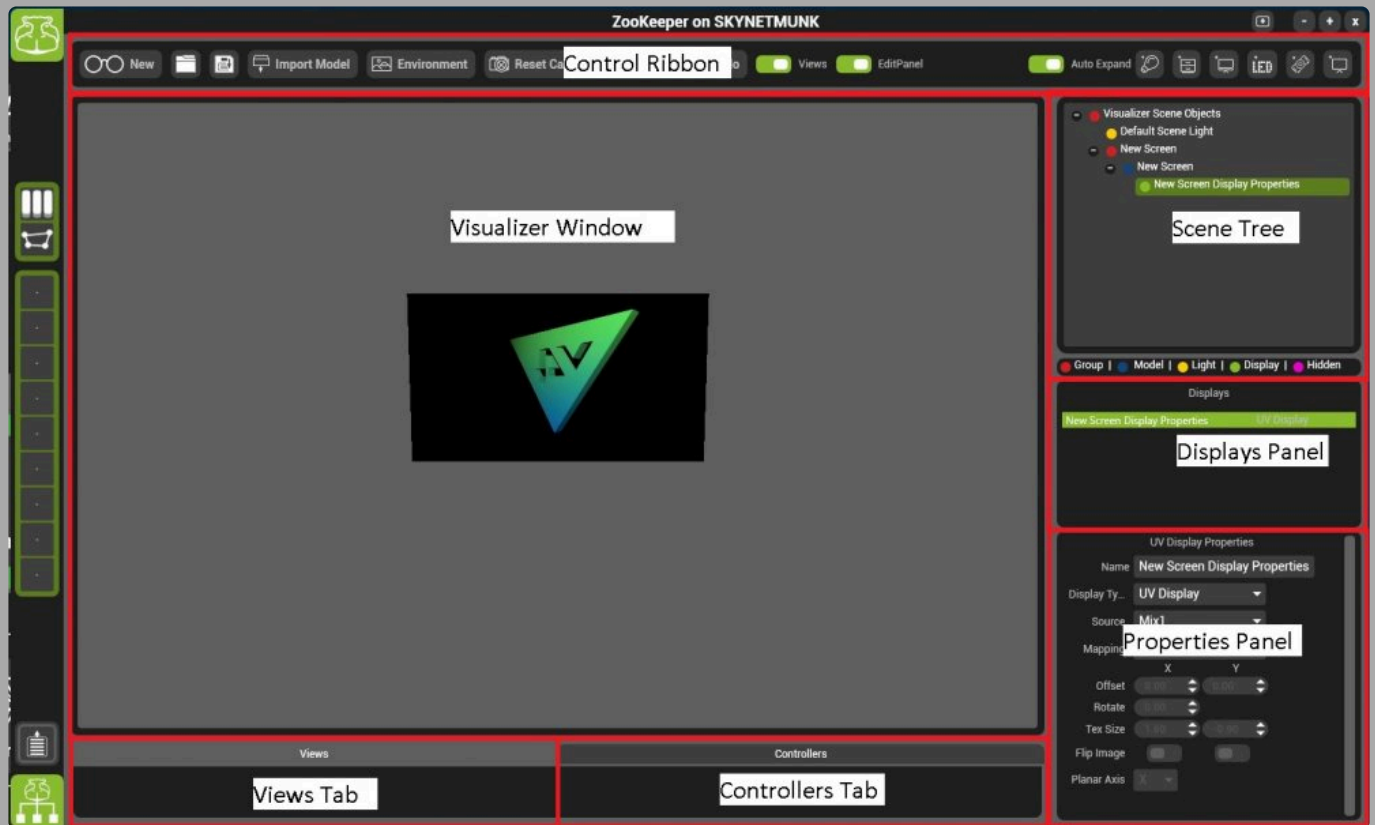
- **Disable** SHAPE applications cannot connect to the 3D plugin. The 3D plugin will continue to render a chosen project file without network control.

# Visualizer Page

The Visualizer is a built in 3D video visualisation system.



## The Visualizer is comprised of seven main sections:



### Control Ribbon

The control ribbon houses many of the basic controls for Visualiser

### Visualizer Window

The visualizer window displays the 3D environment.

### Scene Tree

All objects in the visualizer window are show in the scene tree.

### Displays Panel

All objects within the scene that have nominated as displays are shown in the displays panel.

### Properties Panel

The selected object or display's settings are shown in the properties panel.

## Views Tab

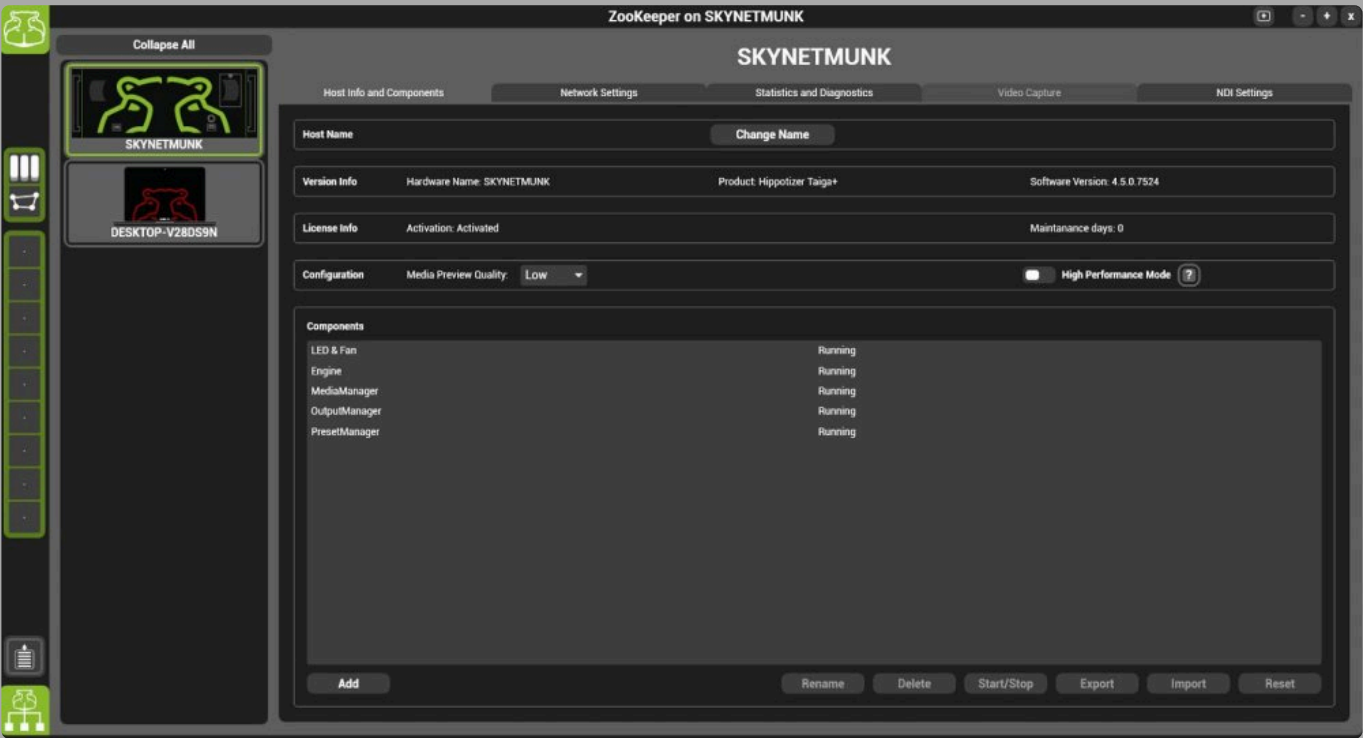
Lists saved views for rapid recall.

## Controllers Tab

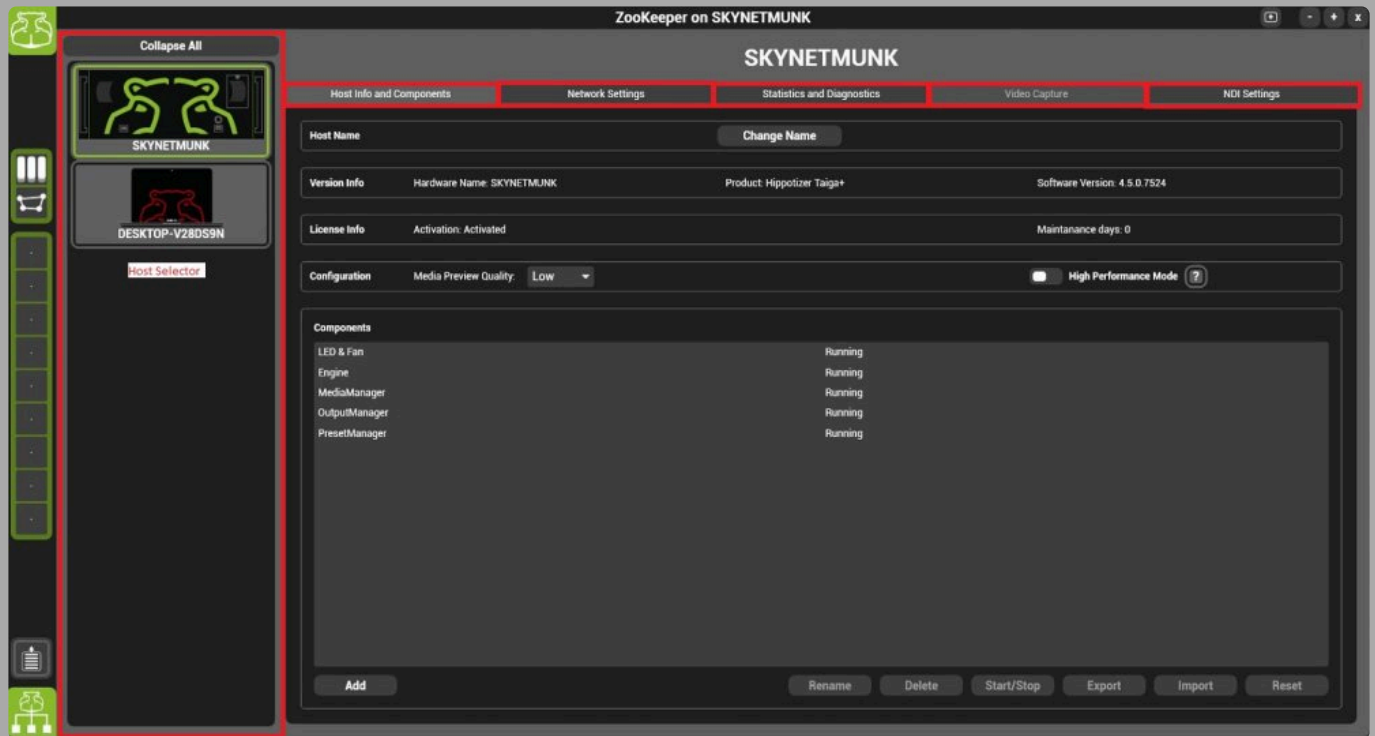
Lists all controllers in the scene.

# Configuration Page

The Configuration Page contains general controls of Hippotizer.



## The Configuration Page has six main sections:



### Host Selector

Displays all hosts on the local network. The highlighted host's settings are displayed to the right of the selector.

### Host Info tab

The Host information tab is where components are started and stopped among other important functions.

#### [Starting and Stopping Components](#)

#### [High Performance Mode](#)

#### Change Name

Allows the host name to be changed. After a change is made, Hippotizer must restart for the new name to take effect.

### Network tab

The Network Tab selects which adaptor the engine host uses.

## Diagnostics Tab

The diagnostics tab shows live log outputs of all the components as well as HippoNet statistics.

## Capture Tab

The capture tab enables on systems with capture card(s) installed. It displays the detected cards and controls hardware de-interlace.



# High Performance Mode

Hippotizer output performance can be further improved by enabling High Performance Mode.



## High Performance Mode

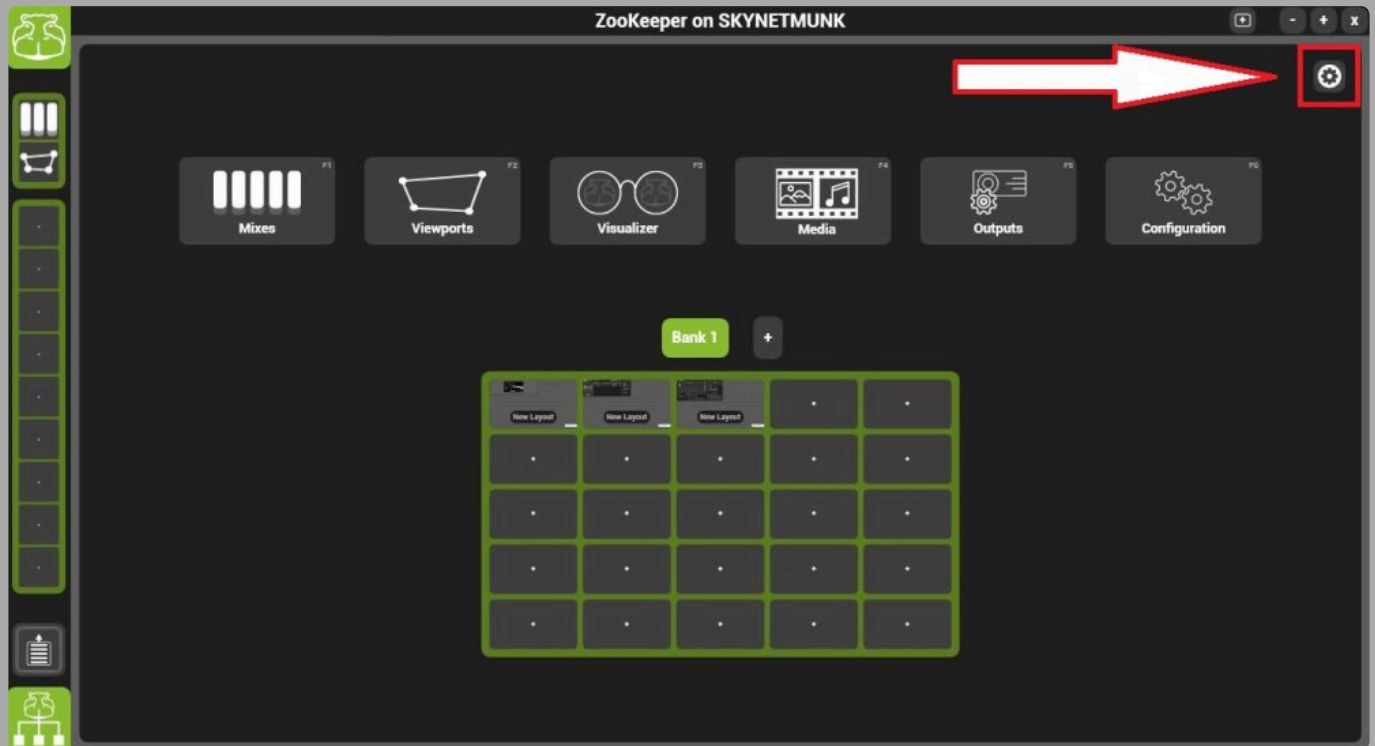
High performance mode disables previews and the visualiser to save resources. Using High Performance Mode is especially effective on systems with multiple mixes and/or 4K and above resolutions.

- **Enable** Previews and the visualiser are shut down.
- **Disable** The default. Previews and visualiser are enabled.

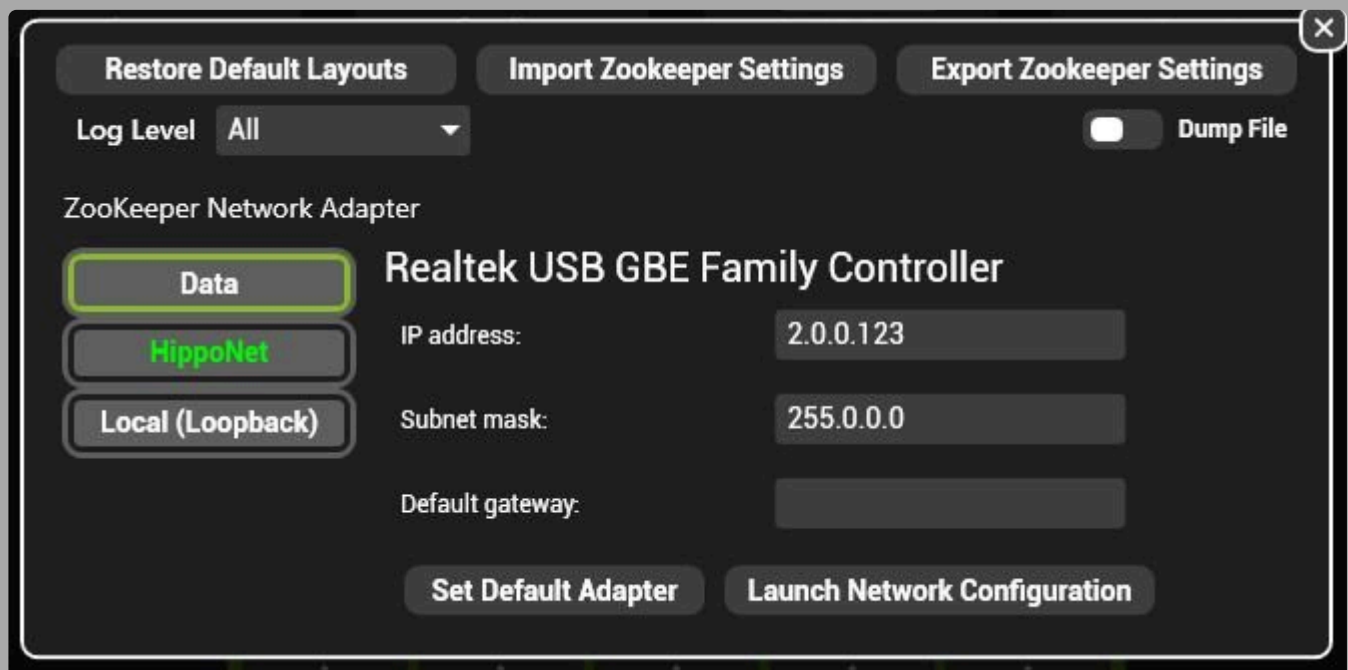
For situations with higher workloads and larger texture sizes (4K and above) it will also improve playback to enable High Performance Mode. This disables previews and also shuts down a texture sharing sub-system. When high performance mode is enabled, the Visualizer will not work.

# Zookeeper Settings

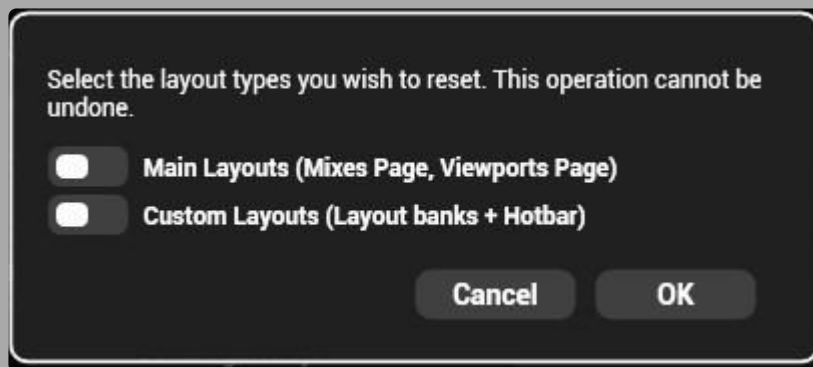
The settings of Zookeeper are accessed from the main page.



This opens Zookeeper's advanced menu:



## Restore Default Layouts



### Main Layouts:

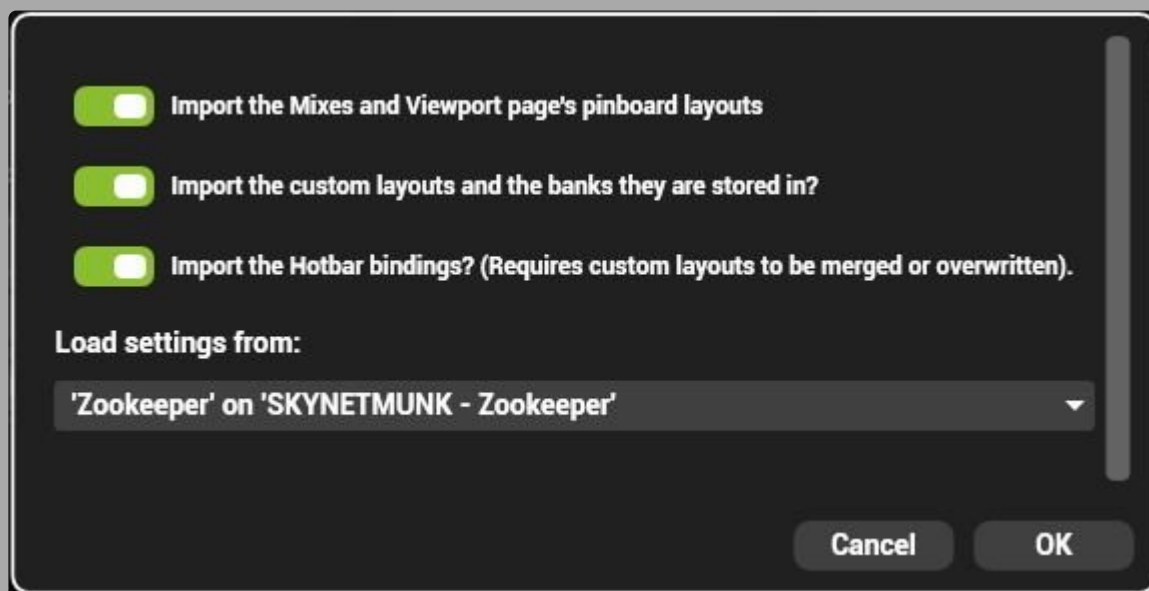
Resets the Mixes and Viewports page to the default state

### Custom Layouts

Deletes all user created layouts

## Import Zookeeper Settings

Loads layouts from a specified file.



### Import the mixes and viewports

Overwrites the mixes and viewports pages

### Import custom pinboards

All custom layouts will be imported, overwriting the existing ones.

### Import Hotbar bindings

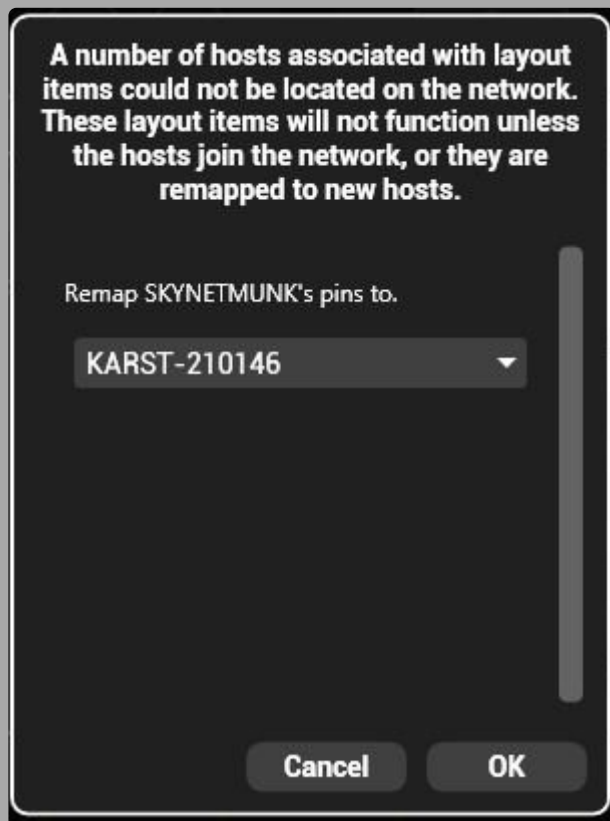
Imports the associations of layouts to the quick access tab

### Load Settings from

Choose the zookeeper to load from. Most often there is only one option

### Remapping Components

Each component item in zookeeper is associated with a specific host on the network. If that host is not present on import, it must be remapped.



Choose the hosts that replacing those that are missing.

### Zookeeper Network Adaptor

Choose which Network adapter Zookeeper uses to communicate with the engine.

The network adapter with green text is currently in use. (Hippo-Net in the above example)

If the Loop-back adapter is used the local system will not be visible to other Hippotizer's on the network.



The network adapter of the Engine and Zookeeper must match if controlling a local engine.

[A more in depth discussion of Networking in Hippotizer is here.](#)

# Customizing the Interface

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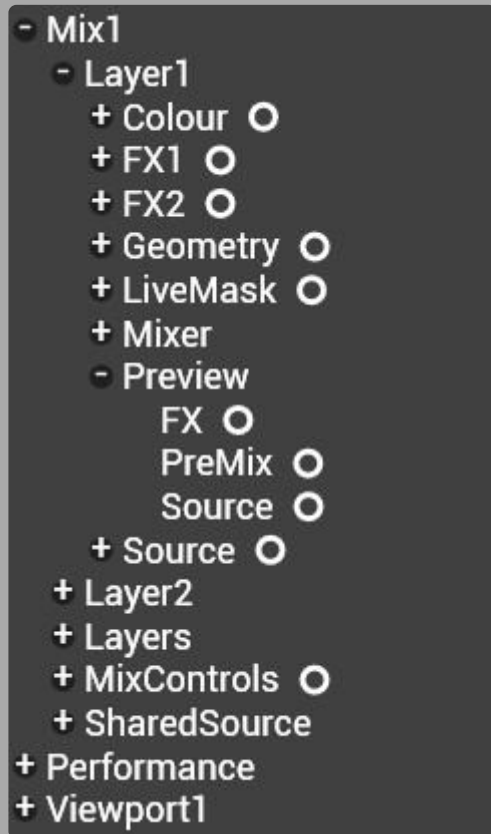
Creating a custom Zookeeper interface is among the most popular features of Hippotizer V4. The building blocks for the interface are:

- [Pin Boards](#)
- [Adding Elements to a Pin Board](#)
- [Previews](#)
- [Selectors](#)
- [Tabbed Selector](#)
- [Performance Meter](#)

# Adding Elements to a Pin Board

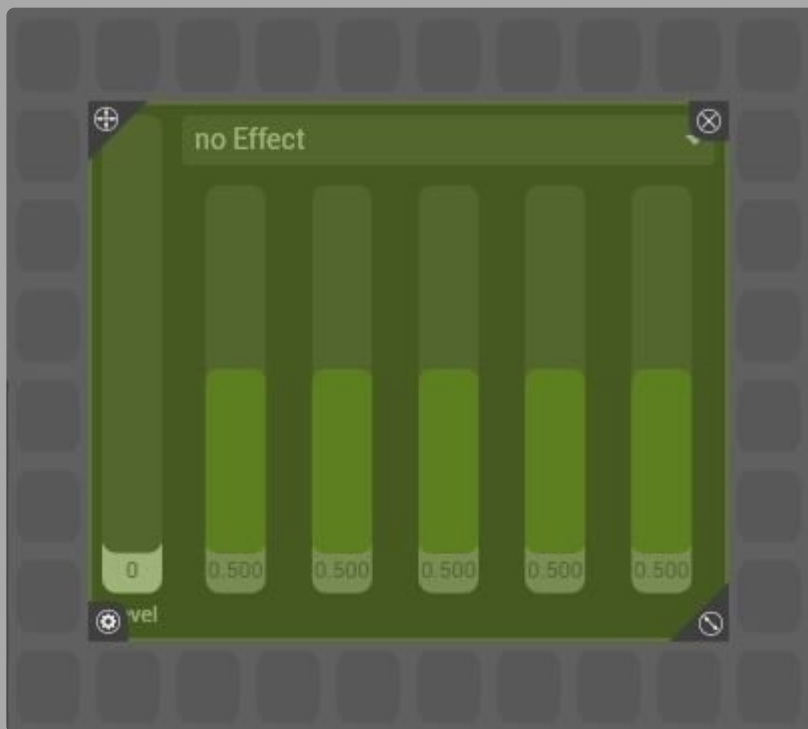
---

Every item in the pin tree with a circle after the name can be added to a pin board.



To add it, click into the circle and drag it into the pin board to the desired location.

Elements will draw show red if the position to be dropped collides with existing controls and green if not.



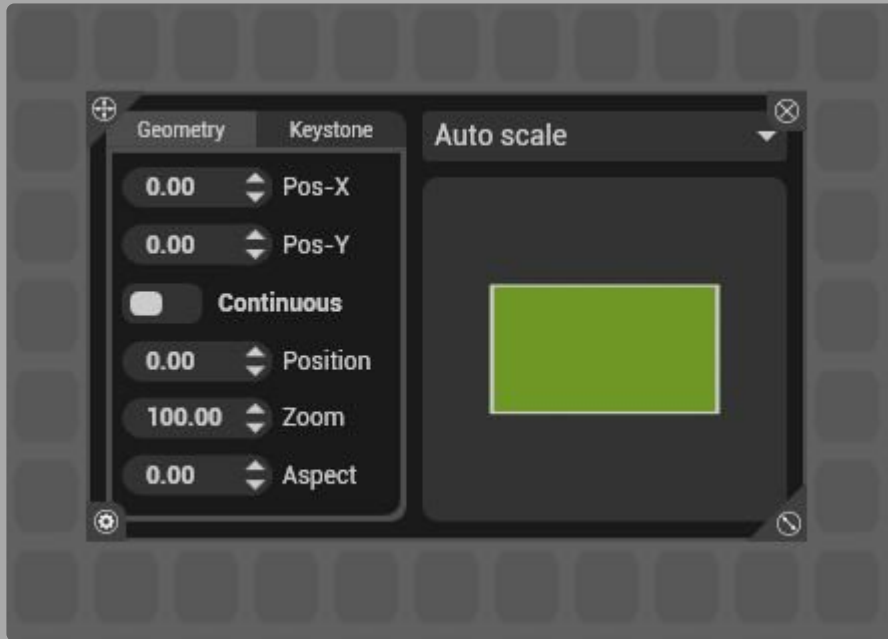
Elements on the pin board can be moved, resized and deleted when the pin board is **unlocked**.

To unlock the pin board, click the lock in the bottom left corner of Zookeeper.





Each pin Item now will show four buttons to modify it:



Deletes the pin board item



Click and drag to move the pin board item around the layout



Click and drag to make the item larger or smaller. Many controls have a minimum size.



Click to show the item's settings.

## Pin Item Settings



### Show Label

Displays the pin name of the item.

## Item Type

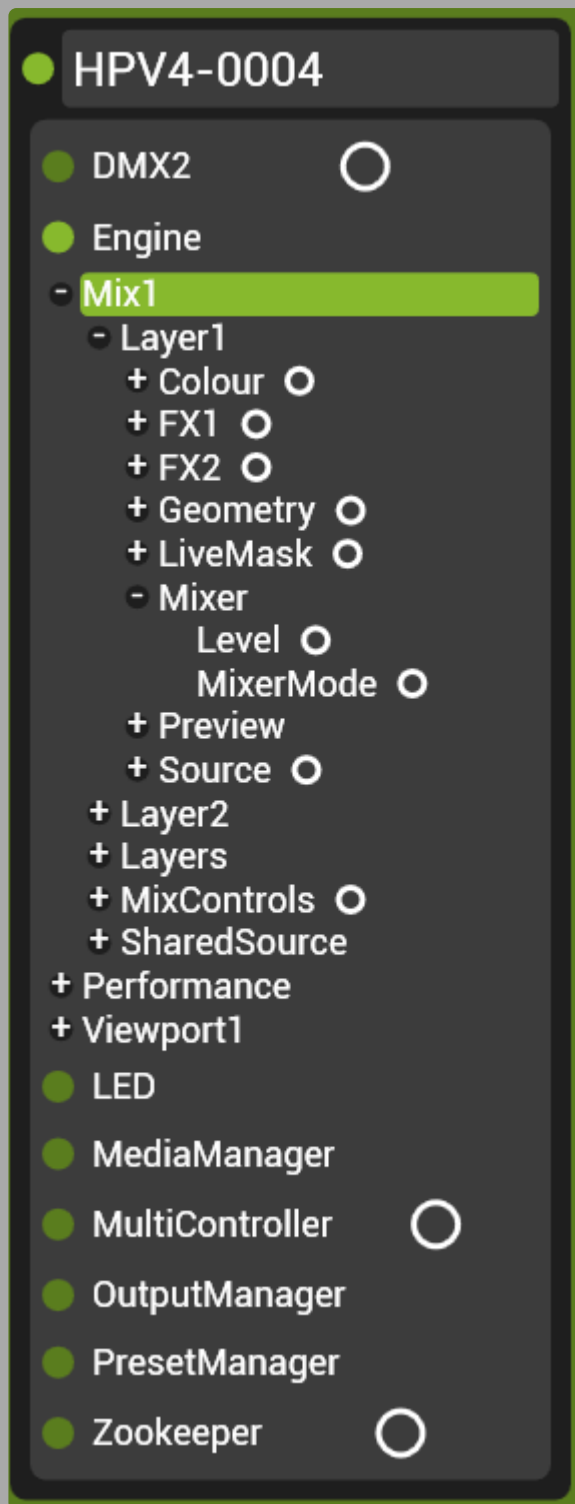
Switches between different options for the pin item based on what the item is. For example Float Pins can be shown as sliders or dials. Some items such as the layer selector has options on how many mixes to show. .

# Hippo Net

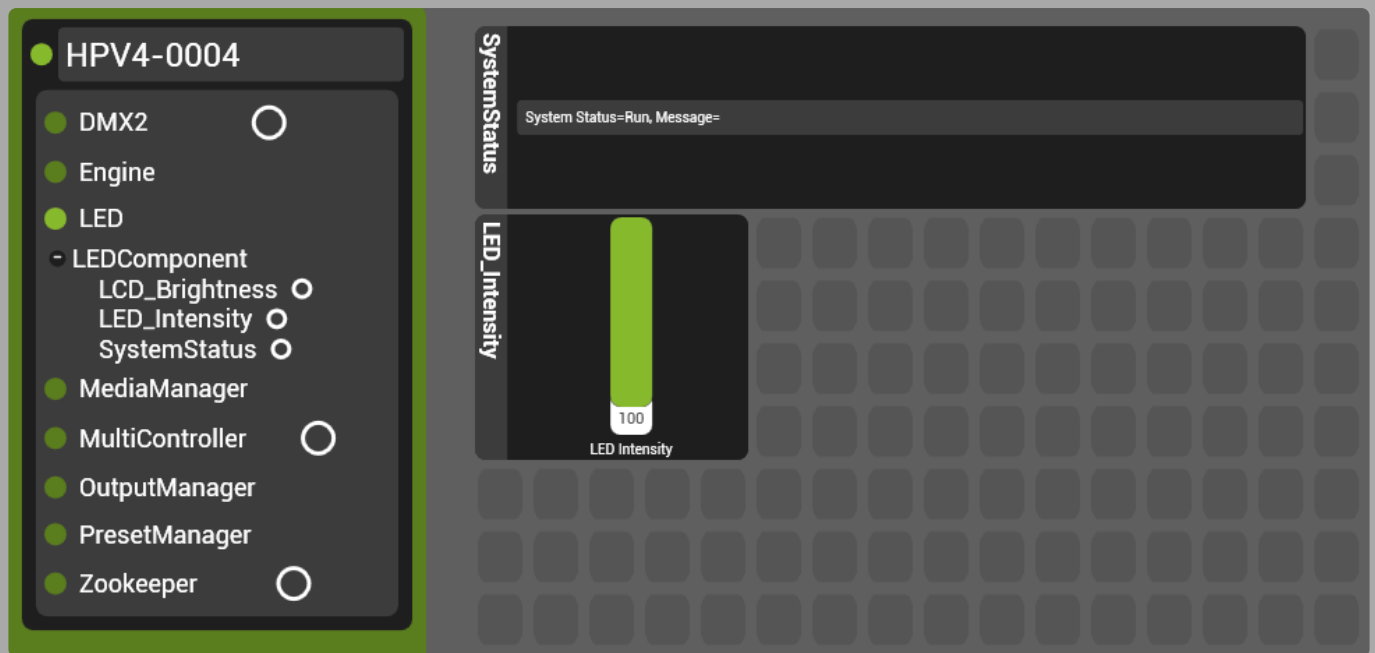
---

The **Hippo Net** is the collection of network based controls that make up Hippotizer. Each control is referred to as a **Pin** and are the way that engine can be communicated with. The Pins collectively are called the Pin Tree in reference to their hierarchical nature.

Each Hippotizer engine appears in the HippoNet window of Zookeeper with the components running on that system listed



Each component contains Pins based on its function; click on the component to view it's pins.



In the above example, the LED Component has been opened to show that it has a Pin controlling the LED and LCD Intensities as well as a status pin. The LED intensity has been dragged out as well as the status.

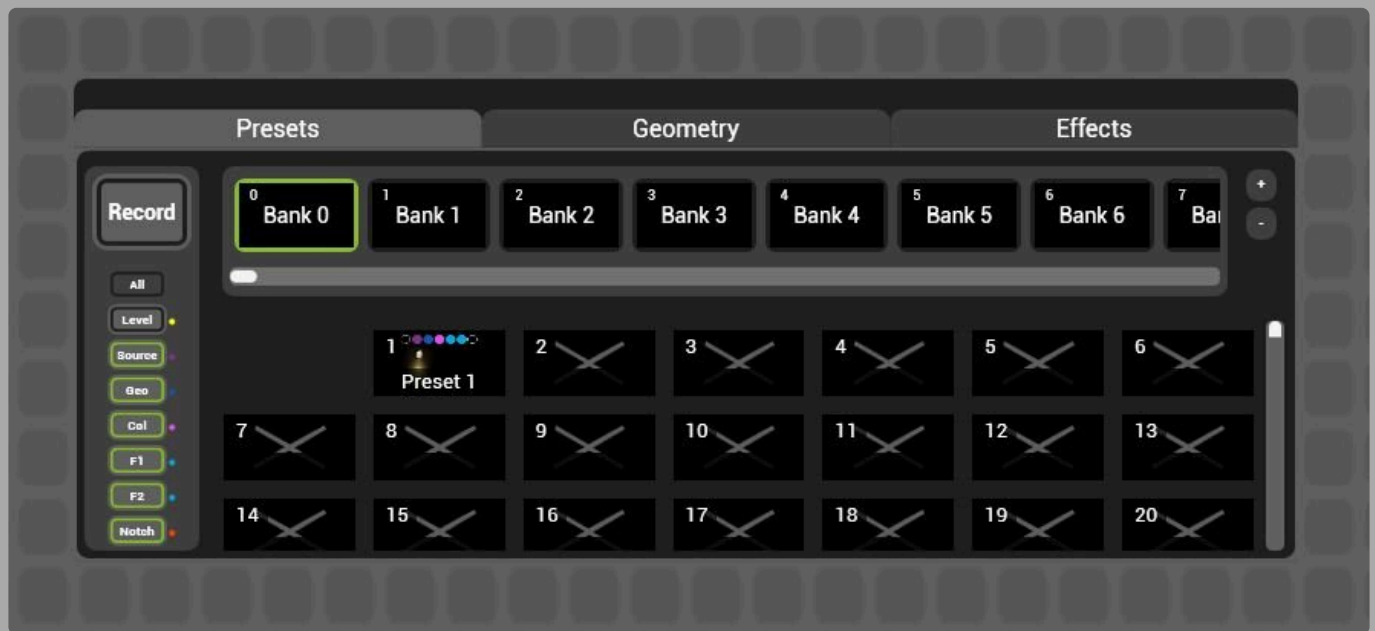
Some components, such as the Engine, will have a much more complex Pin Tree while others have none at all.

The organisation of the Pin Tree is important when controlling Hippotizer from external protocols such as OSC or TCP. Items that are shown only by unfolding the tree are said to be the children of that item. For example, in the LED Component above, the address or **Pin Path** for SystemStatus is expressed as:

LEDComponent/SystemStatus

Tip: The Pin Path of any item on the pin board can be seen quickly by hovering the mouse over it's name

# Tabbed Selector



Tabs are a good way to stack controls for rapid access.

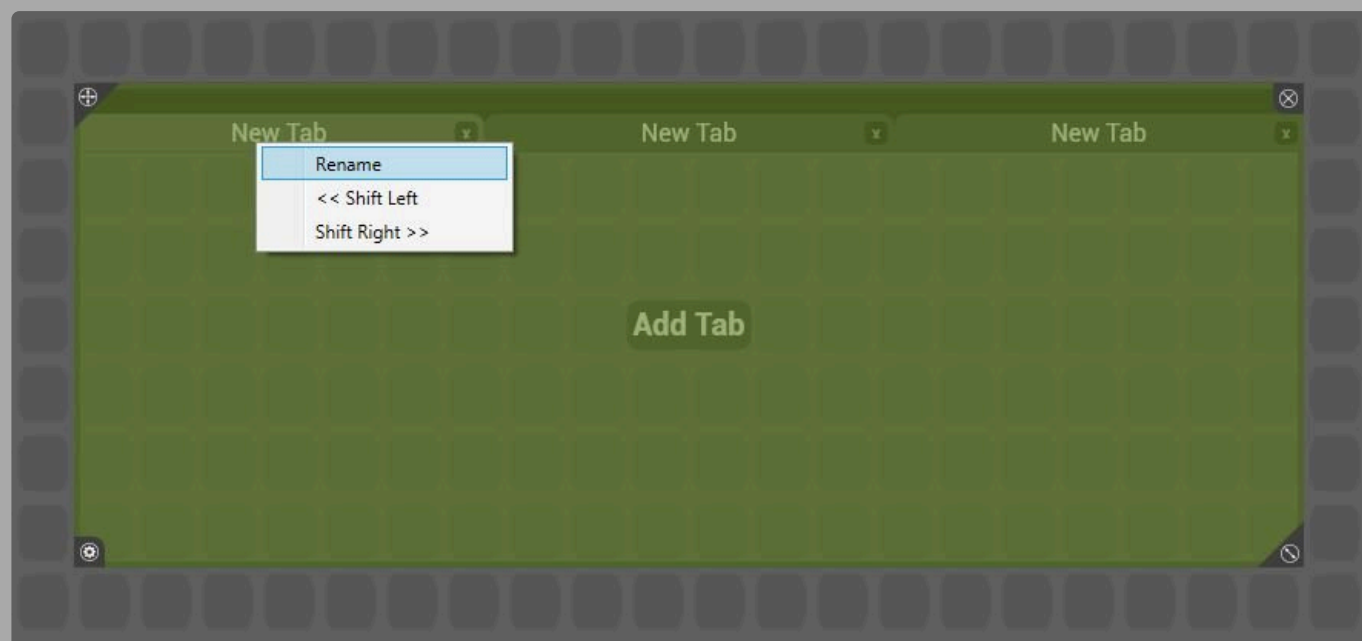
Tabs are similar to pinboards; they retain the hierarchy and rules of a standard pinboard.

## Creating a Tab

To add a tabbed selector, drag it out from the HippoNet menu with the pinboard unlocked.



The selector can be resized and moved when the pinboard is unlocked.



### Rename

Names the tab. Tabs can also be renamed with the pinboard locked by right clicking and selecting rename.

### Shift

Moves selected tab

# Element Tray

---

The Element Tray is where non-Pin UI items are stored



Some items such as selectors, groups and labels are not pins. To add these to the pin board, open Hippo Net and unlock the board.

Each icon indicates a different UI item that can be dragged on to the pinboard.



**Layer Selector**



**Mix Selector**



**Viewport Selector**



**Host Selector**



**Visualiser Window**



**Label**



**Clock**





**Group**



**Tabbed Window**



**Beat Counter**



**HippoNet Advanced**

# Beat Counter

---

The beat counter is a quick way to determine tempo



Click the **Tap** button in time with the beat of music and the Beats Per Minute (BPM) will be displayed.

# HippoNet Advanced

HippoNet Advanced is a Diagnostic tool for the pin tree



HippoNet Advanced is primarily used as a development tool for Green Hippo.

Unlike other pin tree views, HippoNet Advanced does not filter what is shown; all pins are displayed.

## Hosts and Components

Displays all hosts and components on the network. Some hosts (such as Zookeeper) will contain meaningless information.

## Details

All pins and pin groups within the selected host or component.

## Pin Info

Many pins contain data that is passed along with the pin value throughout HippoNet. This is known as Pin Info. The information is shown for the selected pin if it exists.

Pin info determines what information is shown in the Zookeeper interface, including the pin default and values for

## Hide Flags

Some pins are hidden as they are not useful to the user. There are several different filters that a pin can have to hide it from certain views and components, these are known as Hide Flags. The flags include:

- **ePHFNone** Not hidden
- **ePHFDMX** Hides from the DMX component's pin selector for personality creation
- **ePHFTimeline** Hides from timeline so tracks are not created for these pins
- **ePHFGUI** Hides it from the standard HippoNet view.

## Class Tree

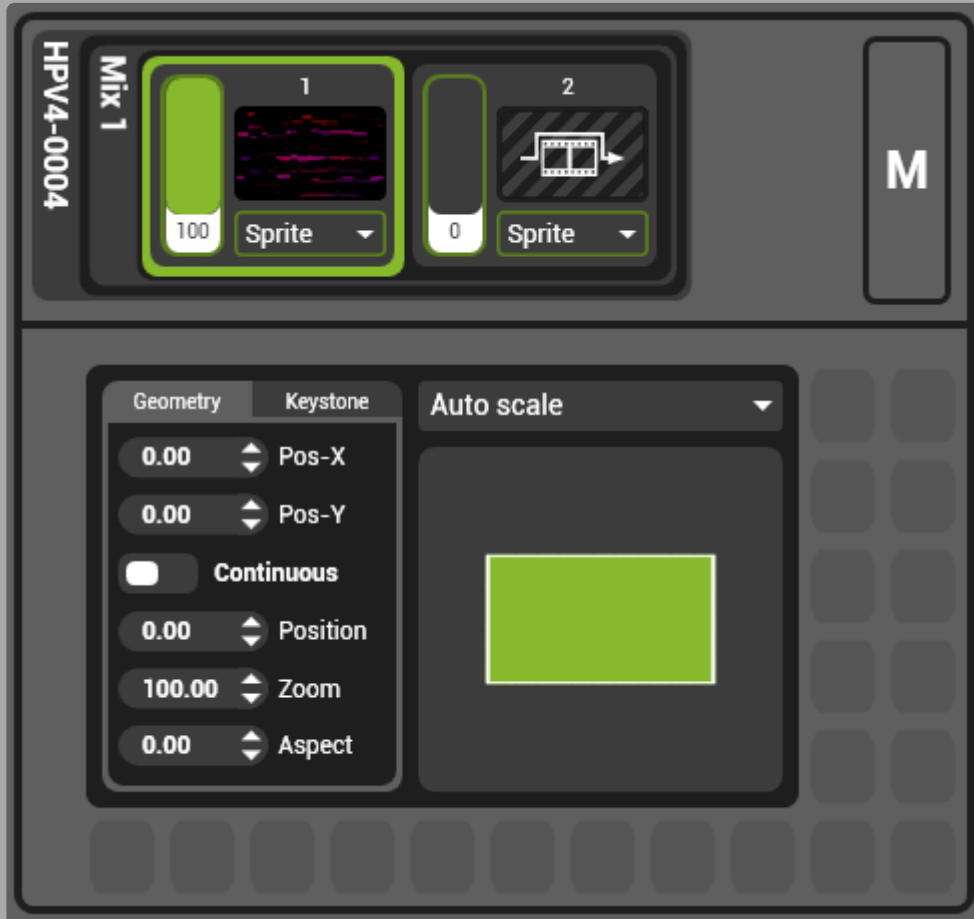
Shows how the Pin Class is derived from it's parent group pin.

Hovering over the **GUID** symbol will display the Pinclass Globally Unique ID (GUID).

# Selectors

It is often not enough to place static items on the board, usually controls need to switch in context with a selection.

A **Selector** automatically sets all items within it to refer to the selected item.



In the above image, the layer geometry has been placed inside a Layer selector. Click on layer two would automatically show layer two's geometry.

There are different types of selectors.

## Adding a Selector to the Pinboard

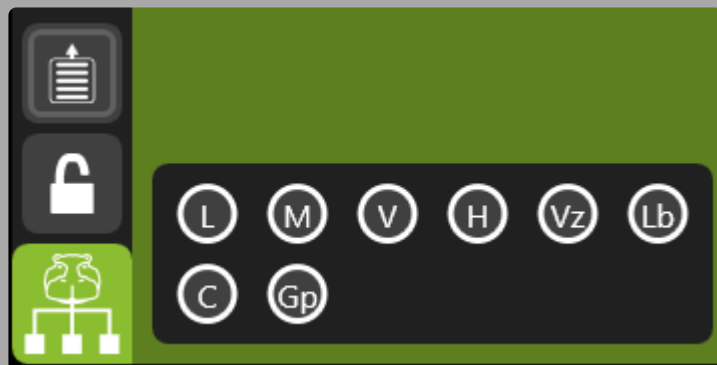


- Unlock the pin board by clicking the lock



- Then expand Hippo net by clicking the Hippo Net Icon

The selectors are part of the the list of special Pin Items:



Layer Selector



Mix Selector



Viewport Selector



Host Selector

The default mix view has a good example of this.



The mixes page is actually a Mix selector with a layer selector nested inside.

## Editing selectors.

From version 4.3, the concept of a selected UI item when editing has been introduced.

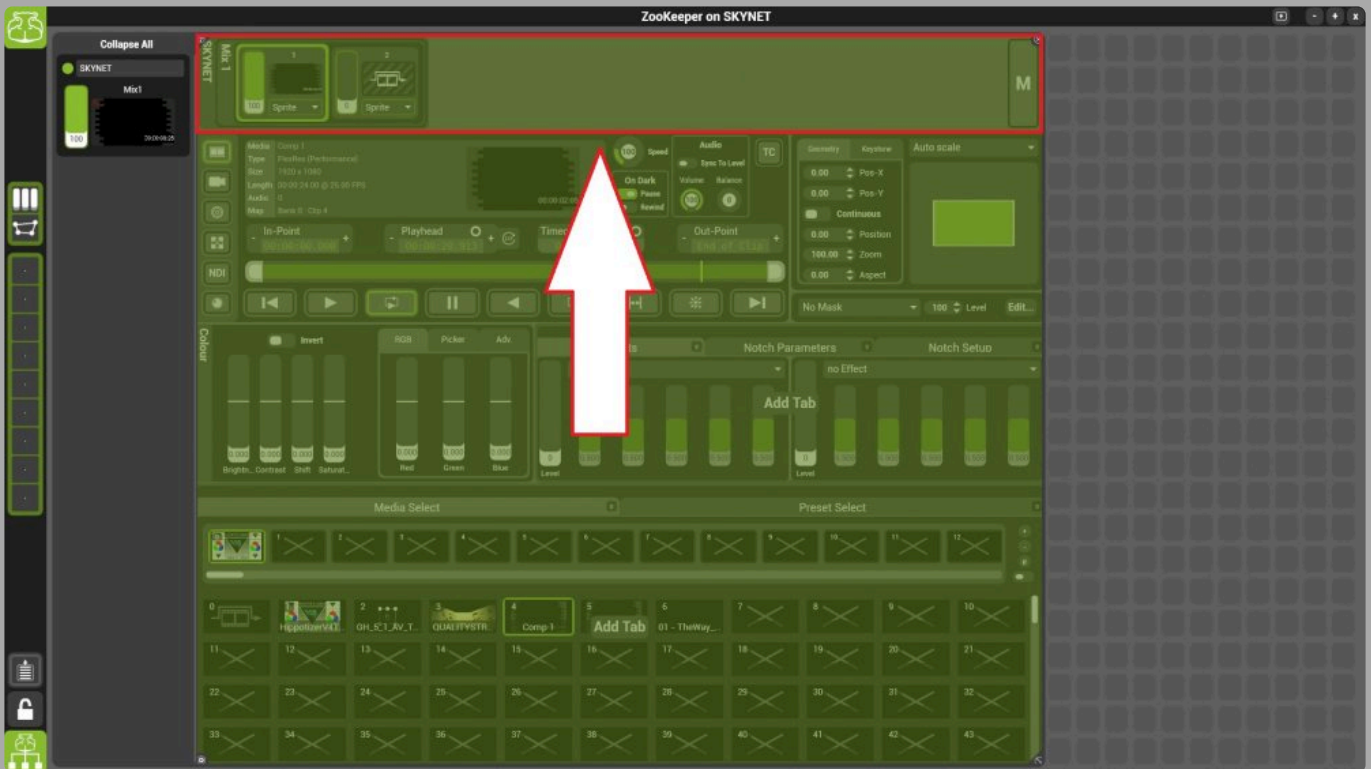
With the pinboard unlocked, clicking on a UI item will select it for editing.



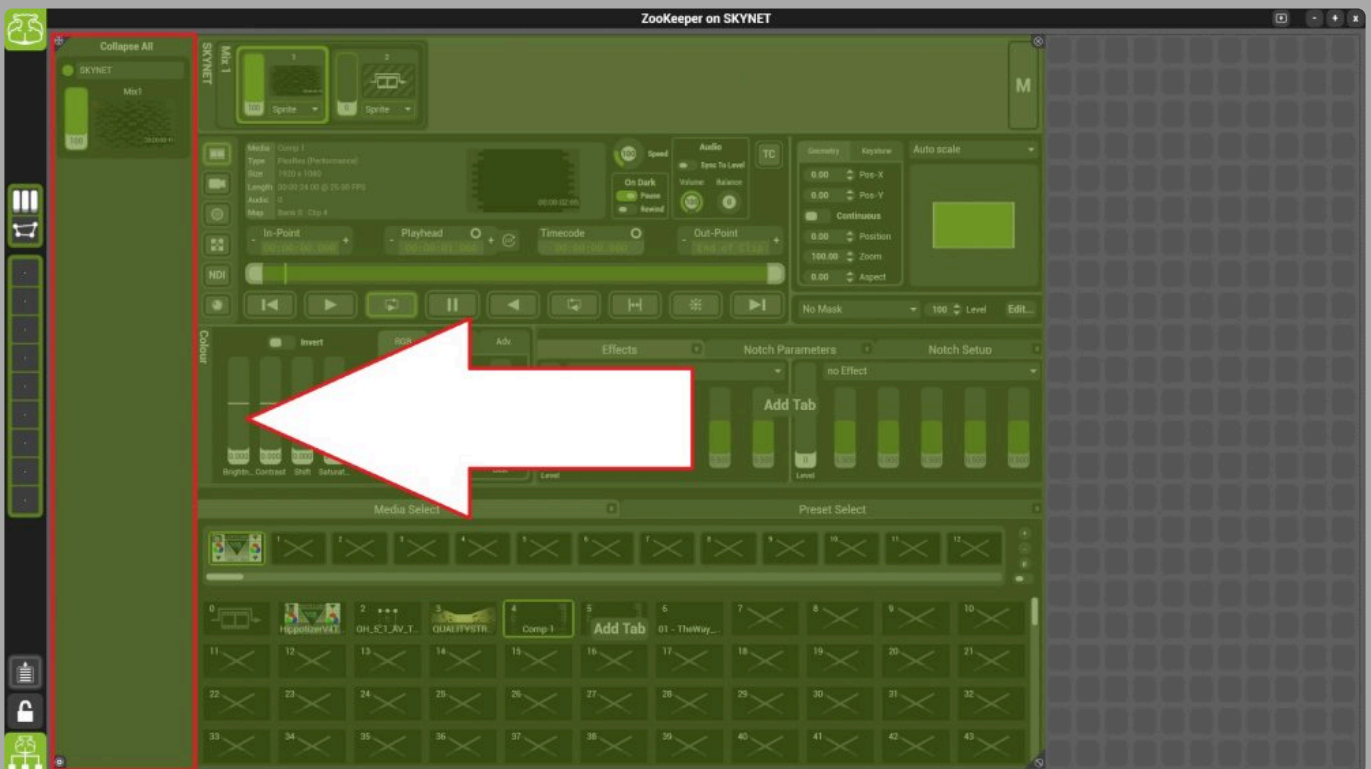
Choosing to edit a selector requires specific areas to be clicked.



For the Layer selector click where layers are shown



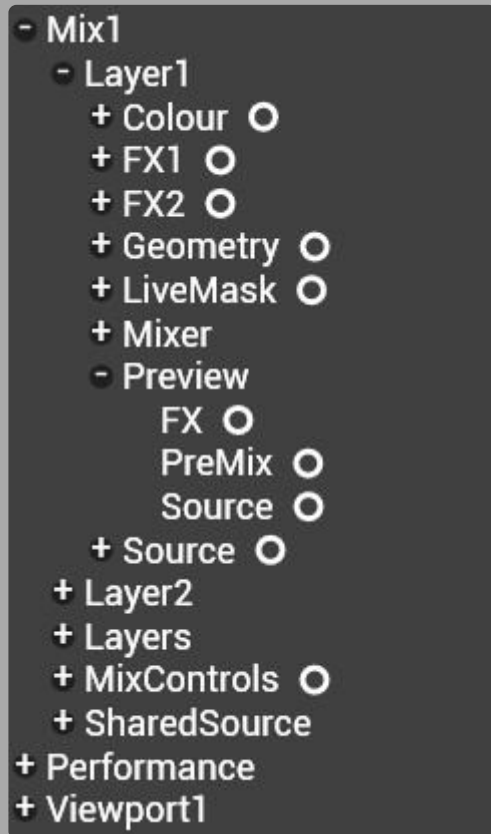
For the Mix Selector click where mixes are shown



# Previews

---

A video preview item can be added to the Pinboard.



Each layer, mix and viewport has previews that can be used.

In the layer and mix, there are three options of previews:

- **Source:** Shows what is playing in the source only (Media player, Generator etc.)
- **FX:** Previews the post-effects result.
- **PreMix:** Previews post Geometry and colour.

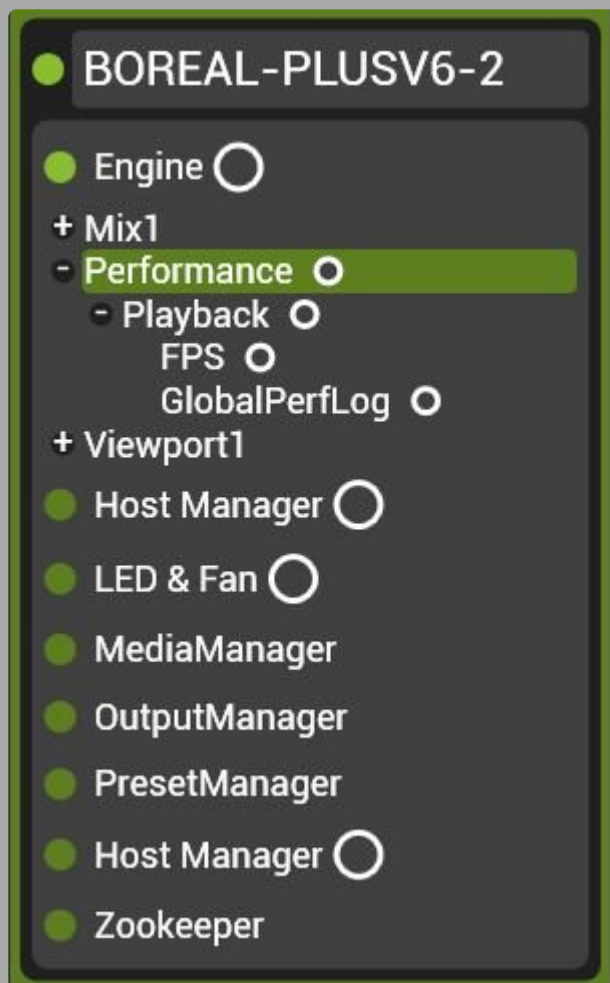


# Performance Meter

---

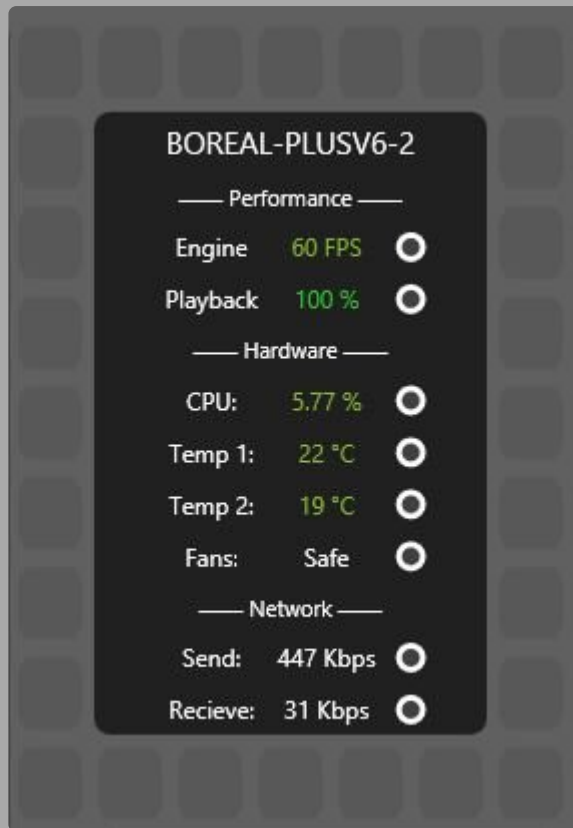
There are a number of tools in Hippotizer to view and monitor the performance of a system.

The basic Performance Meter provides an overview of system utilisation and temperature and is added by dragging out the **Performance** group from the Pin tree.



## Performance Meter

The Performance Meter is a computationally light-weight way of observing the status of Hippotizer.



## Performance

### Engine

Engine Frame Rate is a measure of how fast Hippotizer's engine (The Render Component or RC) can complete a render loop. Each loop processes all layers, mixes, effects and plugins. The engine will render as fast as it can up to the frame-rate of the output (commonly 50 or 60 FPS). If the engine is rendering slightly below 60FPS it does not necessarily mean that output will be un-smooth; all it means is that the render loop is taking longer then the desired frame-rate will allow.

Note: The time it takes to show captured video (the latency) will become longer as the engine frame-rate decreases. Capture delay is a set number of frames ( 4 Frames ), which at 60 FPS implies a delay of 66ms. A longer render time per frame will increase the latency.

### Playback

This is a trailing average indicating what percentage of frames in the last 2 seconds have been rendered. Under normal circumstances, a media player will render 100%.

## Hardware

### CPU

The percentage utilisation of the computer's Central Processing Unit (CPU). Consistent readings above 70% will likely lead to degraded performance. Much of the processing is done on the Graphics Processing Unit (the Graphics card or GPU) but some work resides on the CPU including:

- Media Encode and Transcode
- Some media decode such as FlexRes Quality
- Windows background programs

### Temp 1 and Temp 2:

Note: Amba and Amba+ have a different temperature control system which does not report back to Zookeeper.

Provides reading from two temperature sensors mounted inside the case. Temperatures of 35 degrees and below are considered normal.

The fan speeds will increase automatically with the system temperature depending on the chosen profile.

**Normal** *The Default* Fans will always run at a basic level and ramp up with temperature increases.

**Quiet** Fans will run at a very low speed and ramp up only as the system gets above 30 Degrees.

**Safe** Fans will run at a higher speed at all times.

Green Hippo recommends Normal fan profiles for most applications. Where noise is an issue, Quiet mode is advised. In permanent installations Safe Mode is suggested.

## Network

### Send/Receive

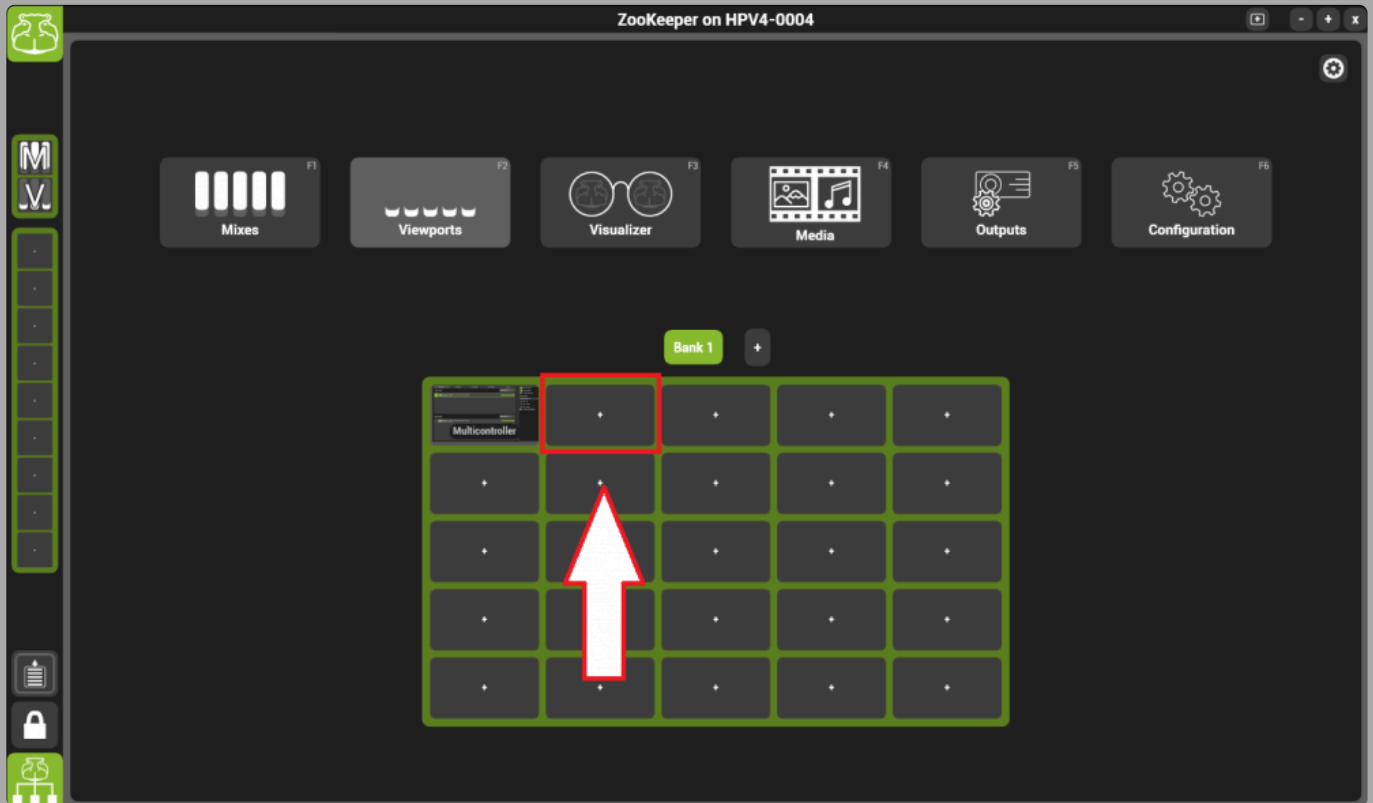
Displays the volume of traffic on the HippoNet network connection.

# Zookeeper Functions

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# Pin Boards

A **Pinboard** is the window on which controls are placed to create a layout. Zookeeper has banks of 25 pinboards available from the main page.



To create a new layout, double click on an empty Pinboard to open it.

Elements are added to the Pinboard by dragging items out of the Pin Tree.



Open the Pin tree by pressing the HippoNet button:  at the bottom left corner of the window.

Once open, any item that can be added to the Pinboard has a small circle to the right of it. Drag the circle onto the pinboard to create a layout.





[The order and layout of the pin tree is explained in depth here.](#)

# Quick Access Buttons

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On the left side of Zookeeper are two factory and nine user configurable quick access buttons.



To add a Layout to quick access, drag it from the Zookeeper main page onto the desired button.

# Components

---

Hippotizer is based around a series of plugins called **components** each adding functionality.

Managing components is an important part of setting up the Hippotizer system.

[Information about the basics of components can be found here.](#)

## Components in Hippotizer:

### [CITP](#)

Enables the transfer of thumbnails and previews between Hippotizer and lighting desks or visualisation software.

### [DMX2](#)

Enables Hippotizer to be controlled from DMX Lightning desks over ArtNet, MA-Net or sACN.

### [Engine](#)

**Runs by default** renders the video output.

### [HippoSnapper](#)

Allows a still image to be taken of a mix or layer and saved to the media map.

### [LED Component](#)

**Runs by default:** operates the LED indicator lights on the front of Hippotizer systems.

### [MacroManager](#)

Enables scripts (or Macros) to be written to customise Hippotizer functionality.

### [MediaManager](#)

**Runs by default:** organizes and encodes media into Hippotizer.

## [MultiController](#)

Sends and receives data from external controllers such as MIDI and TCP devices.

## [Output Manager](#)

**Runs by default:** configures the number and resolution of mixes and places outputs on displays.

## [PinBridge](#)

PinBridge allows functions to be grouped together and controlled by a single pin.

## [PixelMapperV4](#)

Allows Hippotizer to control lights over ArtNet, KiNet or sACN.

## [Preset Manager](#)

**Runs by default** saves and recalls sets of pin values for Layers, Mixes and Viewports.

## [ScreenWarp Manager](#)

Creates warps and blends for use on viewport.

## [SHAPE](#)

SHAPE is the 3rd dimension of Hippotizer to enable projection mapping, object tracking and advanced projection tools.

## [Sync Manager](#)

Manages time synchronisation between systems including receiving timecode from external devices.  
(LTC and Midi Timecode)

## [Timeline](#)

Allows the playback of sequences of values for show recall from video-editor based timelines.

## [VideoMapper](#)

Transposes pixels from input to output textures for the mapping of complex output configurations.  
Frequently used for mapping video tiles.

# Component Basics

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Each component in Hippotizer adds functionality. Some components run by default and should not be stopped, others can be enabled or disabled as required.

! Starting or stopping a component can be a disruptive action as the pin tree will change, potentially affecting every Hippotizer on the network. Do not start or stop components in a live environment.

- [Starting and Stopping Components](#)
- [Saving or loading a component](#)

The Hippotizer software runs a **host** within which each component operates.

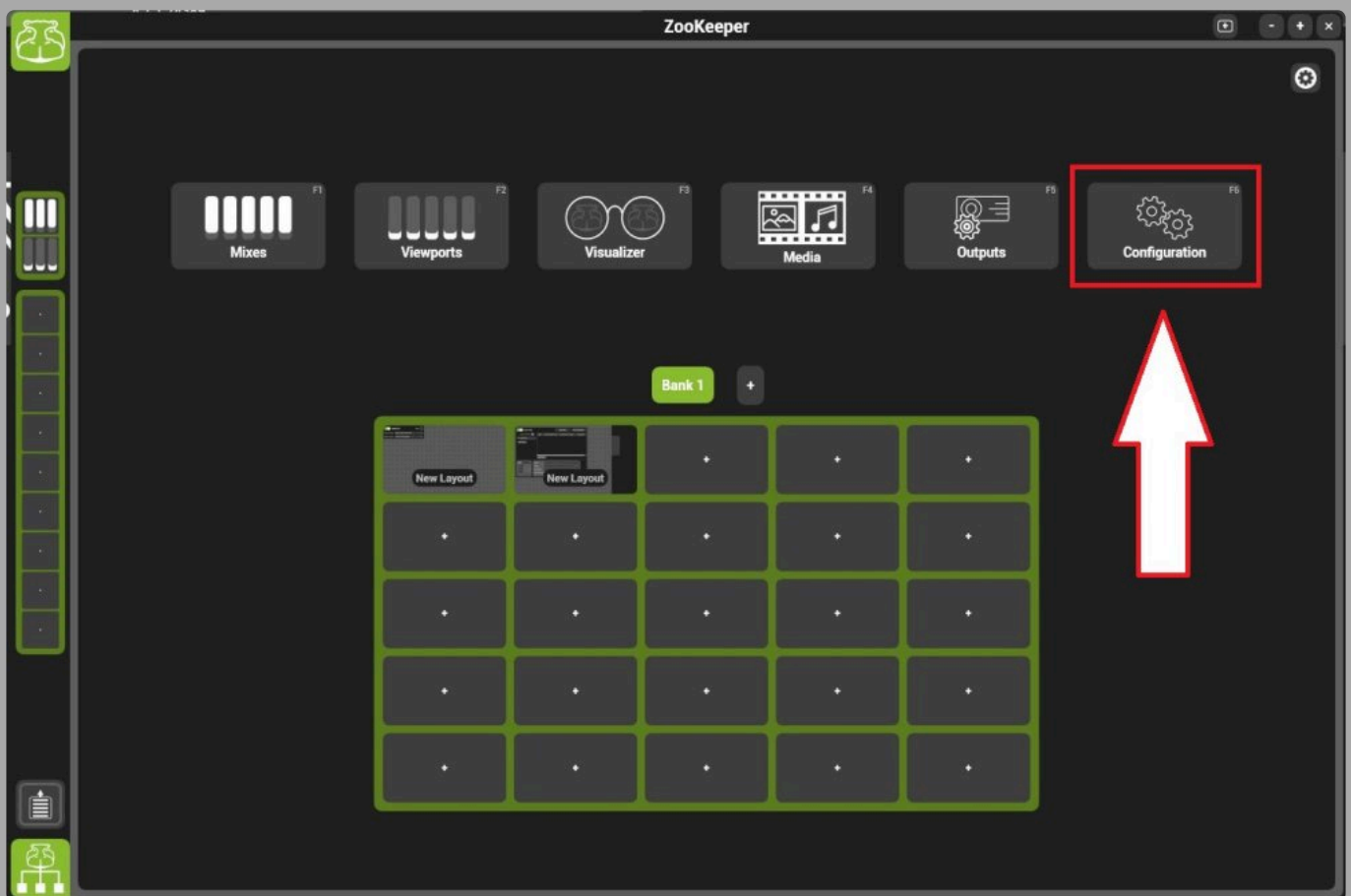
Note: The words host, engine and HFW (Hippotizer FrameWork) are sometimes used interchangeably. In reality, Hippotizer operates on several levels; HFW is the overall container which runs Hosts. Zookeeper and the Engine run their own Hosts. Components run within a Host however only the engine host can start components.

# Starting and Stopping Components

Hippotizer V4 starts up by default with a few components which are required for basic operation. In order to enable additional functionalities, it is necessary to add the relevant component.

## To start a new component:

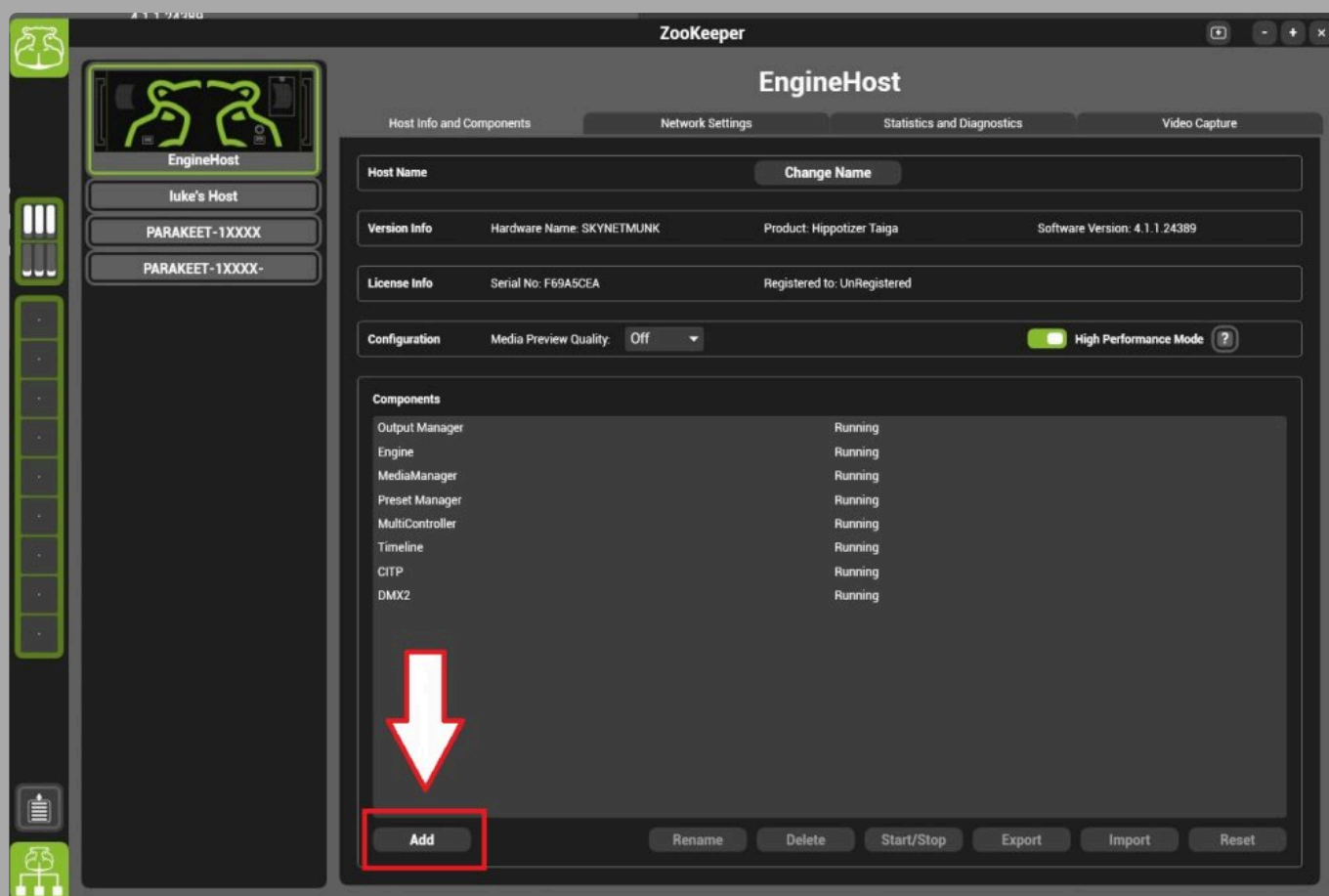
Go to the Configuration page of Zookeeper



By Default, the configuration window will show a list of all components currently added to the system

**Note:** Once components have been added to the system they can be running or stopped. A stopped component retains it's settings by will not function. Deleting a component will erase all of it's settings.

To add a new component, press the add button and select the desired component from the list.



To stop or delete a component, select the component and select the operation from below list.

# Saving or loading a component

Many components have information that can be saved or imported.

## Exporting a component



### To export data from a component:

- Choose the Component from the list in Zookeeper Configuration
- Select the Component
- Click Export
- Choose a location to save it

Component exports are saved as the component name .ghp. Each export is specific to the type of component, so it is best to leave the type of component clear in the name.



## Importing a component



### To import data to a component:

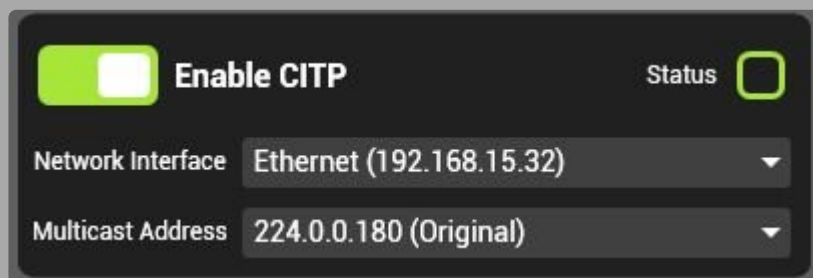
- Choose the component from the list in Zookeeper Configuration. If the component is not in the list, add it.
- Click Import
- Locate the file to import from

# CITP

CITP is network based protocol for the transfer of information from a Media Server to a lighting console or Visualizer. CITP can transfer thumbnails and media names, as well as low resolution streaming previews to select lighting consoles and Visualization software.

**Note:** CITP can add significant load to the network and may negatively affect performance of the Hippotizer or other network systems. We do not advise therefore using CITP during a live show situation. Instead, it should be viewed as a programming aid only.

To use CITP, start the CITP component and add it to a Pinboard.



## Enable CITP

Enables / Disables the CITP

## Network Interface

Choose which Network port that CITP will use to send data.

**Note:** It is considered best practice to use the data port to carry CITP to avoid congestion on the HippoNet Network

## Multicast Address

Choose which multicast grouping address CITP uses. Most of the time this does not make a difference as many applications support both the old and new standard.

## What works with CITP in 4.4.5?

[Please see the release notes](#)

Setting CITP up can be a challenge, each combination of manufacture can have

**a unique trick. The following specific combinations are known to have a ‘trick’:**

#### **Avolites**

The Avolites desk must see the CIP component start up on Hippotizer to work. The easiest way to do this is set everything up and then turn the CIP component on Hippo off and on again to allow the desk to see layers.

# DMX

The DMX Component receives network data to control Hippotizer.

The DMX Component uses ArtNet, MA-Net or sACN to enable Hippotizer to be controlled from a lighting desk.



## Getting started

[Please see the Quick start guide to get up and running fast.](#)



## DMX Component sections

### 1: DMX Component On/Off

When enabled, DMX component will take control of all mapped pins.

DMX Component can be edited, imported and exported while it is enabled or disabled.

### [2: Auto Patch](#)

A rapid patching utility that will quickly patch layers, mixes and viewports.

### 3. Universes

Manual tools to add or edit universes.

## 4: Universe patch

A listing of all patched universes.

## [5: Personality Editor](#)

A tool to create and edit personalities.

## [6: DMX Settings](#)

Component defaults and network card assignments

## [7: Patch Tab](#)

Lists the fixtures patched to the selected universe

## [8: Fixture / Universe Properties](#)

Lists the settings of the selected Fixture or Universe

## [9: Monitor Settings](#) Options}

Options for how the Monitor displays

## [10: Monitor Tab](#)

Shows the raw DMX data coming into the selected Universe.

## [11: Fixture Toolbar](#)

Options to add or re-patch fixtures

## [12: Fixture Patch](#)

Lists the fixtures patched to the selected universe.

# Quick Start – DMX

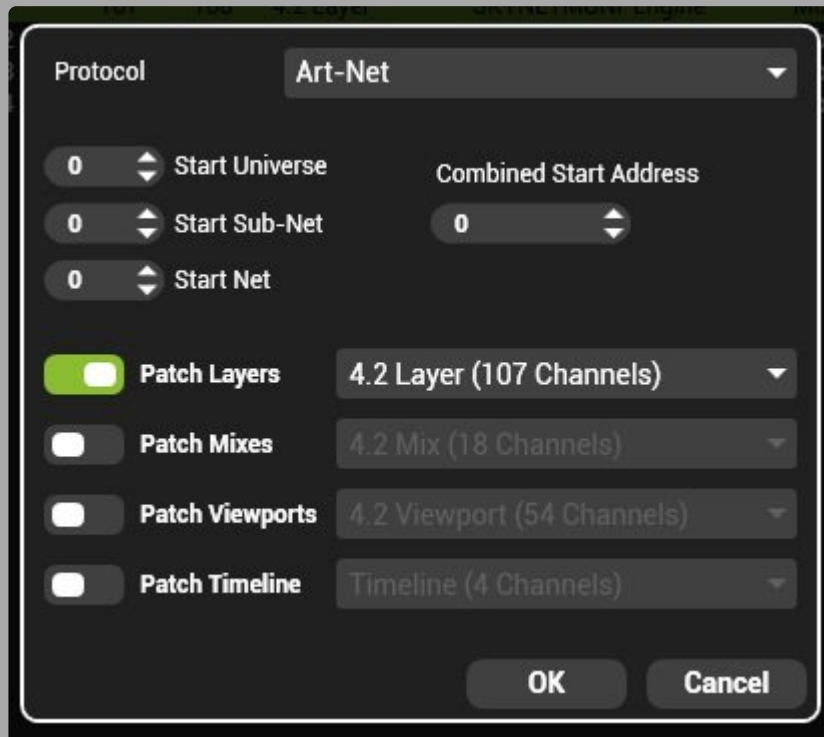
---

1. Configure the network
2. Set up the mixes and layers
3. Autopatch

# Auto Patch

---

The Auto Patch utility quickly creates a default patch.

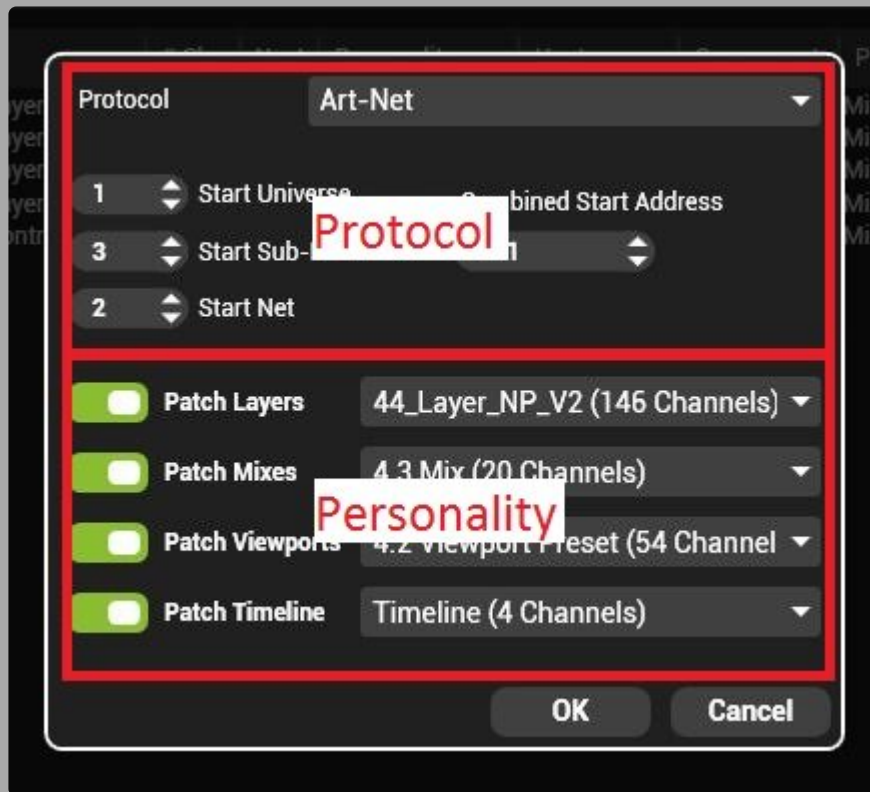


The screenshot shows the 'Auto Patch' dialog box with a dark theme. At the top, the 'Protocol' is set to 'Art-Net'. Below this, there are three rows of controls for 'Start Universe', 'Start Sub-Net', and 'Start Net', each with a numeric input field set to '0' and a 'Combined Start Address' label. Further down, there are four rows of patch types, each with a toggle switch and a dropdown menu: 'Patch Layers' (checked, 4.2 Layer (107 Channels)), 'Patch Mixes' (unchecked, 4.2 Mix (18 Channels)), 'Patch Viewports' (unchecked, 4.2 Viewport (54 Channels)), and 'Patch Timeline' (unchecked, Timeline (4 Channels)). At the bottom right, there are 'OK' and 'Cancel' buttons.

Control	Value
Protocol	Art-Net
Start Universe	0
Start Sub-Net	0
Start Net	0
Patch Layers	4.2 Layer (107 Channels)
Patch Mixes	4.2 Mix (18 Channels)
Patch Viewports	4.2 Viewport (54 Channels)
Patch Timeline	Timeline (4 Channels)



Auto Patch has two sections:



## Protocol

Choose which protocol to Auto patch to.

- **Art-Net:** The starting universe, Sub-Net and net. The combined starting address calculates the resulting universe number.
- **Ma-Net** The starting universe number. The session number is set in [DMX settings](#)
- **sACN** The starting streaming Architectural Control network universe number.

## Personalities

Choose which personality is used for layers, mixes and viewports.

By default, the patch order will be:

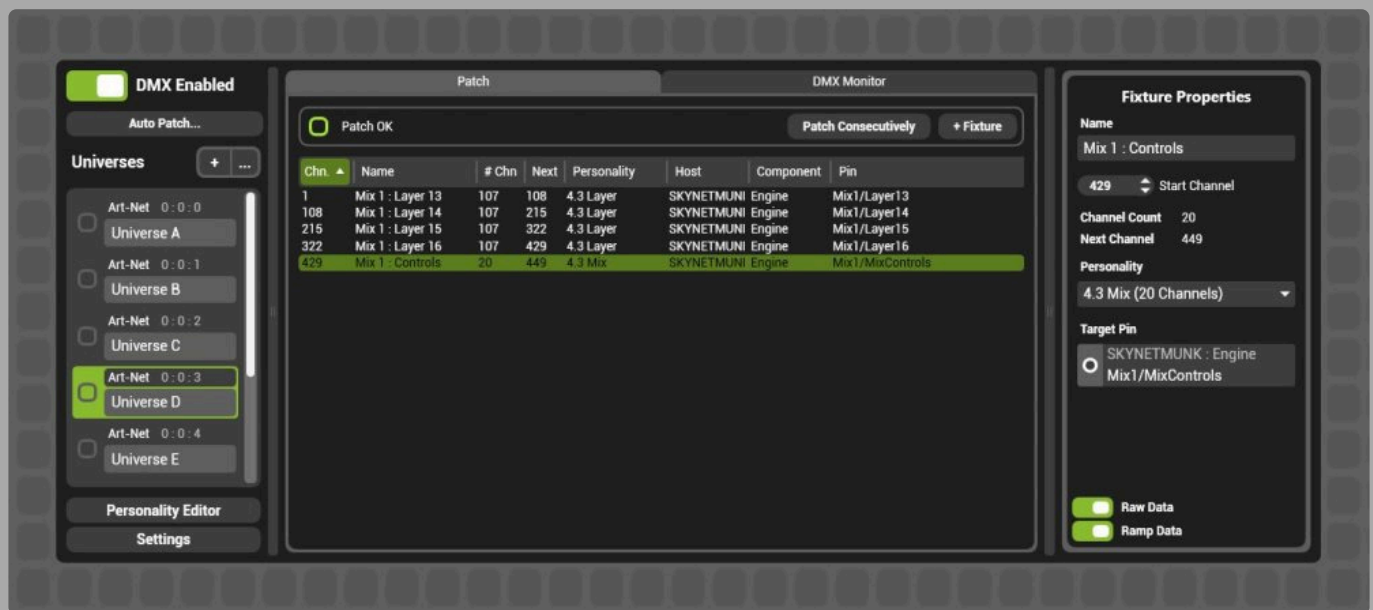
- Mix 1, Layer 1-16
- Mix 1 Controls
- Mix 2, Layer 1-16
- Mix 2 Controls
- ...
- Viewport 1

- Viewport 2
- ...

Note: Auto patch will delete the existing patch.

# Fixture Patch

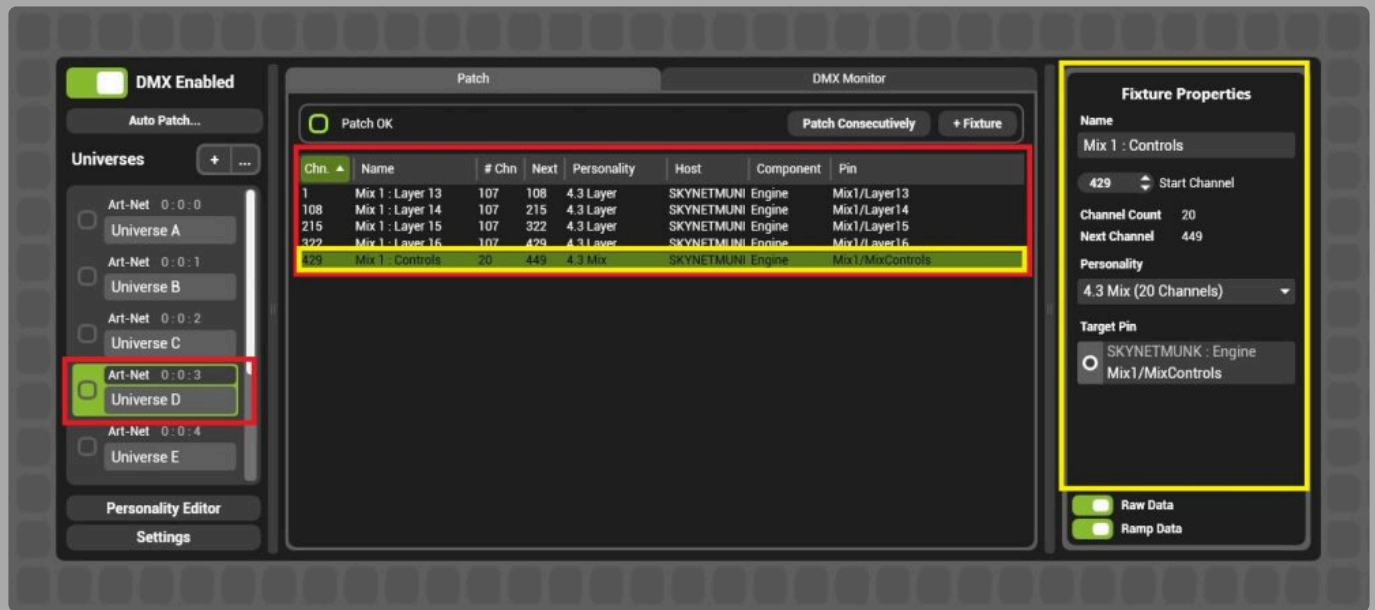
The fixture tab displays everything patched to the selected universe



Each fixture has key attributes:

- **Chn.** The starting channel.
- **Name** The name of where the fixture is targeting. This can be edited in the fixture properties panel.
- **# Chn** The number of DMX channels used by the selected personality
- **Next** The next free address after the fixture.
- **Personality** The personality patched in the fixture
- **Host** The target system of the patch.
- **Component** Which component within the system is patched. For layers, mixes and viewports the component will be the engine.
- **Pin** The path to the pin targeted by the patch.

## Universe and Fixture Selection



The fixture patch displayed is that of the selected universe in the universes list.

If a fixture is selected [highlighted green], then it's properties are displayed in the right-side panel under **Fixture Properties** where the name, start address and personality used may be edited.

If no fixture is selected, then the right side panel will display **Universe Properties** where the name, protocol and starting address may be edited.

# DMX Settings

107 108 4.2 Layer SKYNETMUNI Engine Mix1/La

☒ Automatically Enable DMX on Component Start

☐ Smoothing 200 ms Amount

5 Hz Monitor Frequency

**Art-Net**

☒ Use Host Network Adapter

Network Adapter Any (0.0.0.0)

☒ Accept Data From Any IP Address

255 . 255 . 255 . 255 Source IP 1

255 . 255 . 255 . 255 Source IP 2

**MA-Net**

☒ Use Host Network Adapter

Network Adapter

1 Session Id

## Automatically Enable DMX on Component Start

When **On**, the DMX component will receive DMX immediately on Engine startup.

When **Off** the DMX component will not receive DMX on Engine startup.

## Enable Smoothing

When **On** Float pins (pins that go from 0-1 eg Layer Level) will fade based on the smoothness time. (0-500 milliseconds). This function is used to compensate for uneven control signals or slow Art-Net refresh rates.

## Monitor Frequency

Determines how often numbers are re-drawn the DMX monitor window.

## Art-Net

Contains settings for receiving Art-Net.

### Use Host Network Adaptor

When **on** Art-Net will be read from the same network interface as the host [Engine].

When **off** a network adaptor must be specified.

Note: Art-Net requires a 2.xxx.xxx.xxx or 10.xxx.xxx.xxx IP address to function.

### Accept Data from any any IP Address

When **on** data from any source IP address will be used.

When **off** only data from specified sources will be used.

The default of receiving data from all IP addresses is the most common case; specifying sources is usually used on only the most complex networks.

## MA-Net

Hippotizer will listen to MA-Net data as a passive node. It will consume parameters as a normal fixture. Hippotizer supports Grand MA 2 version 2.9 software and above.

### Use Host Network Adaptor

When **on** MA-Net will be read from the same network interface as the host [Engine].

When **off** a network adaptor must be specified.

Note: MA-Net frequently uses very similar IP addresses to Hippotizer, take care to always separate MA and Hippo Networks physically and in addressing.

### Session ID

Specify which MA Session to listen to.

# Terminology

---

The DMX component uses a lot of specific terms which often overlap with lighting desks.

## Art-Net

A network based protocol to carry DMX information, Art-Net is widely adopted by lighting controllers. Hippotizer V4 supports Art-Net versions 1, 2 and 3. Each new version extends the maximum number of universes by adding address space (Net, Sub-Net and Universe).

## Auto Patch

Frequently the fastest way to set up the system; this automatically patches each layer, mix and viewport with the desired personality.

## Channel

Each universe is comprised of 512 Channels. Fixtures then patch a personality to a channel and universe.

## Group Pin

Pins are organised in a hierarchy, (the pin tree) where similar pins are children of the same **Group Pin**.



In the above example, Rotation is a group pin with Continuous, Rotation and Speed as it's children.

A DMX personality can only associate to a group pin; it cannot be made to a terminal pin such as speed.

The reason for this restriction is due to an invisible piece of information carried by each pin called the **pin class**. The pin class tells every aspect of Hippotizer how to handle a given pin. For example, the pin class of the Geometry group pin tells the interface to create a geometry control and not just a collection of float pins when the Geometry pin is added to the user interface. DMX relies on the same information to know which personalities can be patched to a given pin. The pin class of a terminal pin such as geometry/aspect is of it's type (in this case an Integer) which is too generic to be helpful for patching a personality. In order to create a DMX personality for a single terminal pin (such as rotation/speed) the parent group pin must be chosen.

## Fixture

A fixture is the assignment (or patch) of a Personality to a channel and universe within the DMX component. Each fixture represents a unique patch.

## MA-Net

A proprietary network protocol to MA Lighting enabling Grand MA Version 2 lighting consoles to communicate directly with Hippotizer V4.

## Monitor

Shows a real-time view of received DMX values on the selected universe.

## Patch

The assignment of a personality to a group pin and fixture.

## Pin

Every attribute to be controlled by DMX in Hippotizer is a pin. There are three types of pins controllable from DMX:

- **floats** (0-1) such as level faders,
- **integers** (1,2,3,4...) most commonly seen in selectors such as FX select
- **Boolean** (on or off) used to enable functions such as colour invert.

Note: There are controls in Zookeeper that are not pins and cannot therefore be controlled by DMX, Preset filters are an example of this.



**Personality**

**sACN**

**Smoothing**

**Universe**

**Update Only**

# DMX Monitor

A live indication of DMX values being received can be seen in the **DMX Monitor**

Each universe has it's own monitor and can be quickly accessed by clicking the monitor tab.



Each channel in the monitor is represented by a green or red box.

Red indicates that the channel is set to 0, green indicates that a non-zero value has been received.

# Monitor Options



## Raw Data

Toggles whether the value on each channel (0-255) is displayed

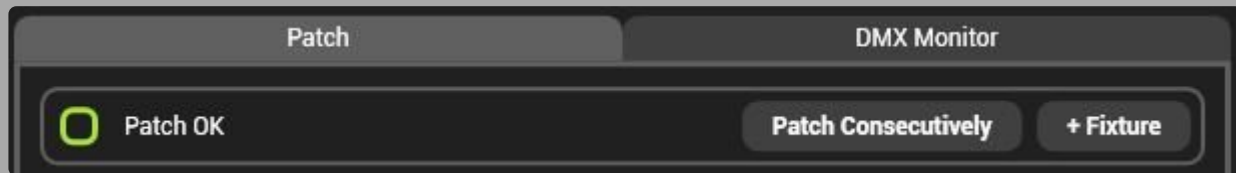
## Ramp Data

Toggles the visual indication of relative layer intensity.

# Fixture Toolbar

---

The Fixture Toolbar contains the status of the patch



## Patch Status

- Green Indicates no fixtures overlap
- Red Indicates fixtures overlap.

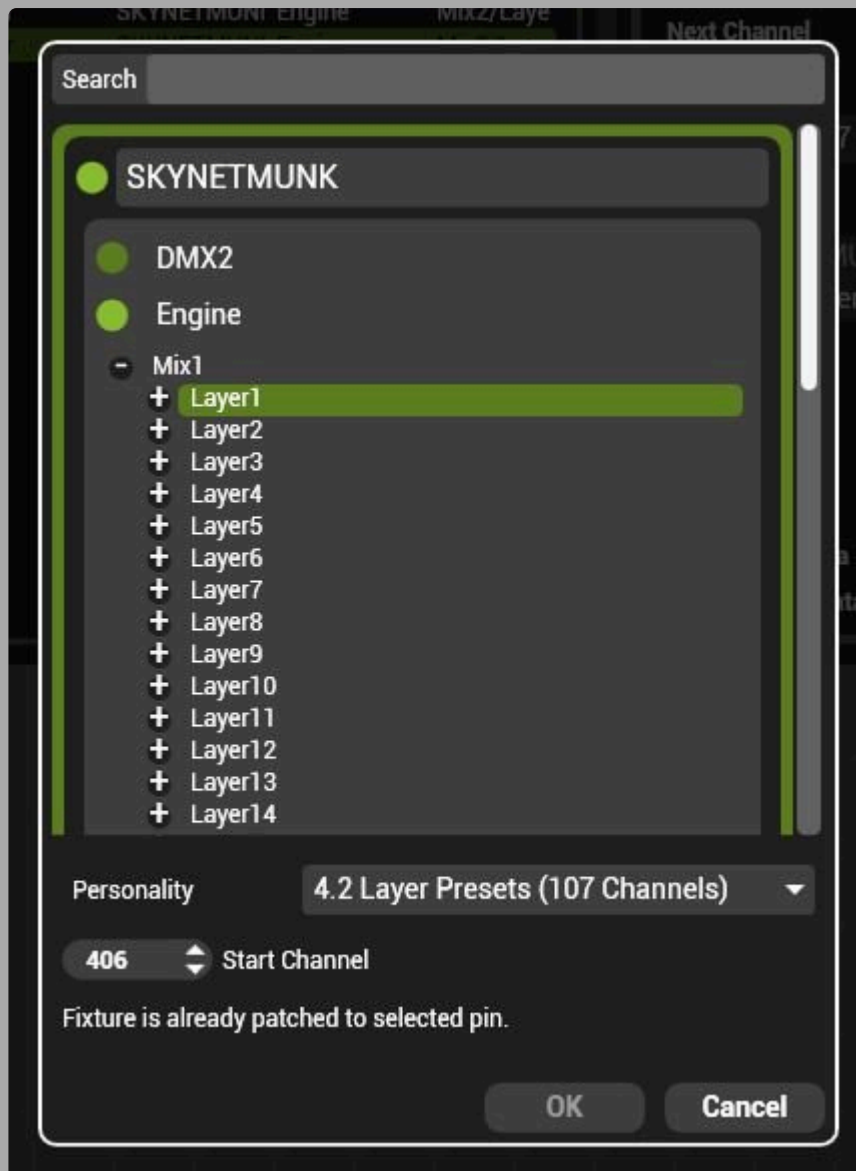
## Patch Consecutively

Automatically re-patches the fixtures on the selected universe to eliminate gaps and overlaps.

## + Fixture

Opens the add fixture dialogue. Use this to add single fixtures to a patch.

Note: Patching an entire systems is frequently faster with auto patch.



The first step to adding a fixture is to select a target pin. What pin is selected defines which personalities may be patched to it.

[See the manual discussion of the Pin Tree for more information on Pin Classes.](#)

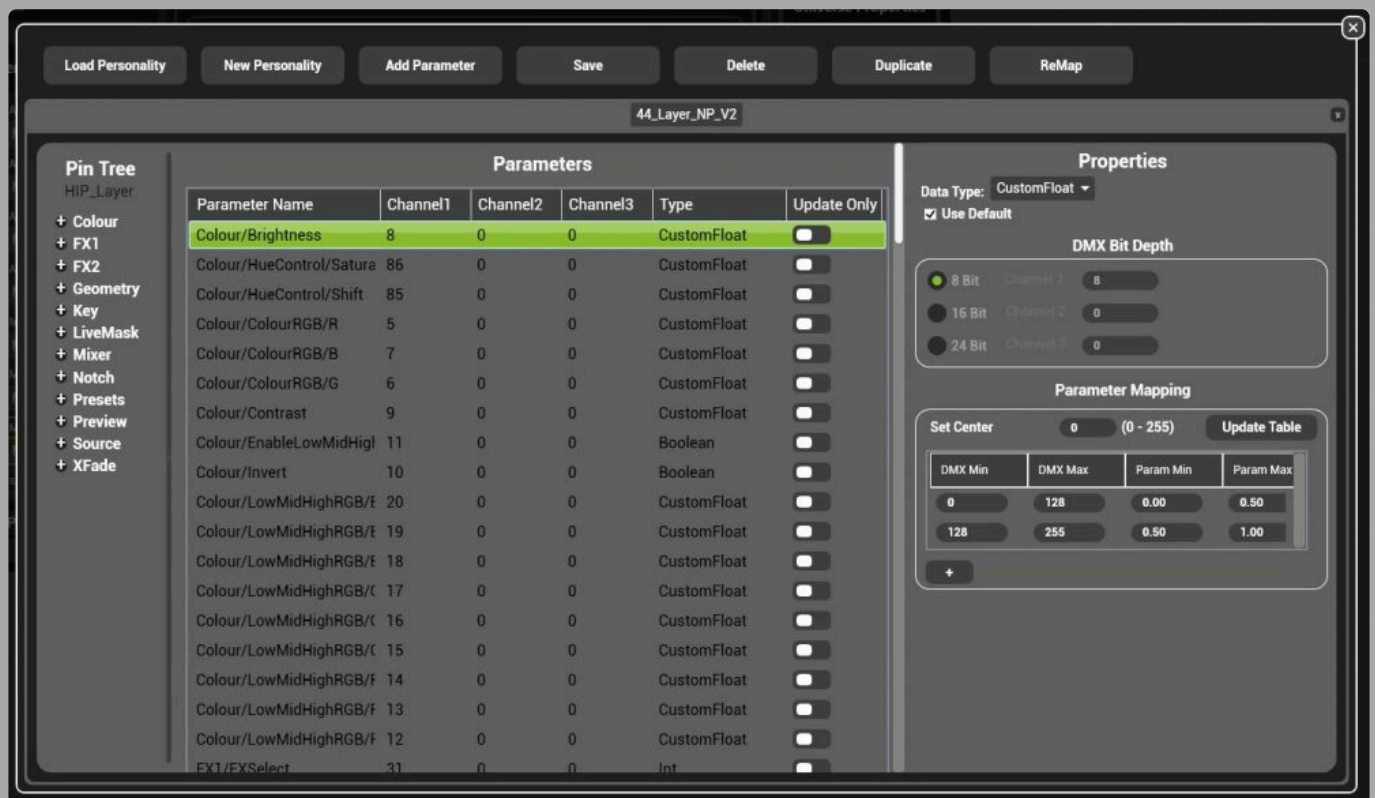
By default, only Layers, Mixes, Viewports and the timeline will have personalities defined for them. Other personalities may be imported or created with the personality editor.

**To add a fixture:**

- Select the target pin (Mix1/Layer1 for example)
- Choose the correct personality to use from the drop down list
- Choose the start channel
- Press OK to patch.

# Personality Editor

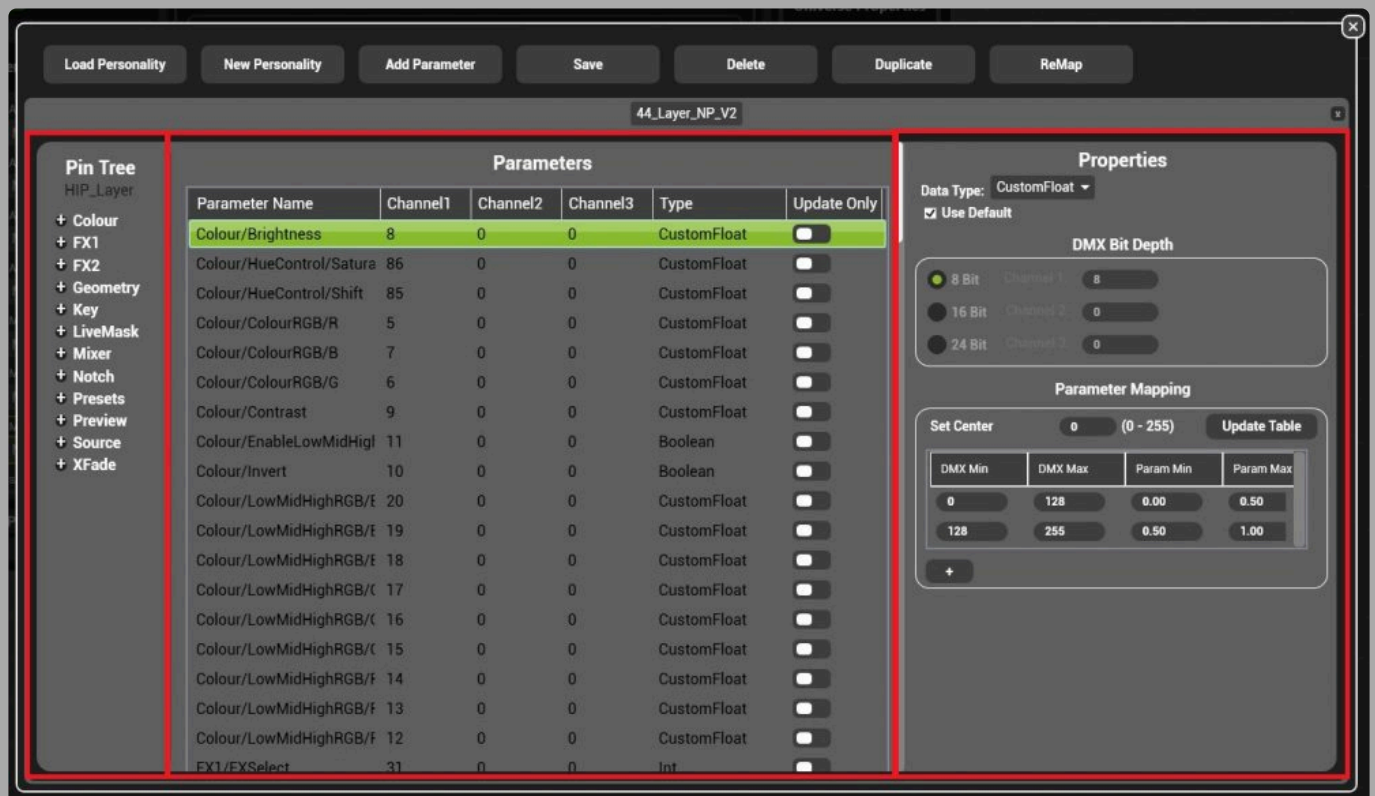
The personality editor is where DMX profiles can be created or modified



Basic operations are:

- Viewing or editing an existing personality
- Creating a new Personality
- Duplicating or deleting existing personalities.

## Personality editor structure.



## Pin Tree

The pin tree filters the parameter view without modifying the personality. To see all parameters again click the top level (Hip\_Layer in this example).

## Parameters

Lists all parameters in the personality.

- **Parameter Name** The pin path of the parameter.
- **Channel1** The first channel used by the parameter.
- **Channel2** The second channel used by the parameter, only for 16 or 24 bit parameters.
- **Channel3** The third channel used by the parameter. Only used for 24 bit parameters.
- **Type** The data type of the parameter.

## Update Only.

- When enabled, the parameter will only assert control on changes of DMX.
- When disabled, the parameter will constantly assert control of the pin

## Properties.

The settings of the selected Parameter.

- **Data Type** Sets the default mapping of the parameter
- **Use Default** Locks editing of the parameter mapping and DMX bit depth.
- **Channel 1/2/3** Sets the DMX address for each parameter.
- **Parameter Mapping** Defines how incoming DMX is mapped to a parameter.

## Types of Mappings

Depending on the pin type, there are different mappings available.

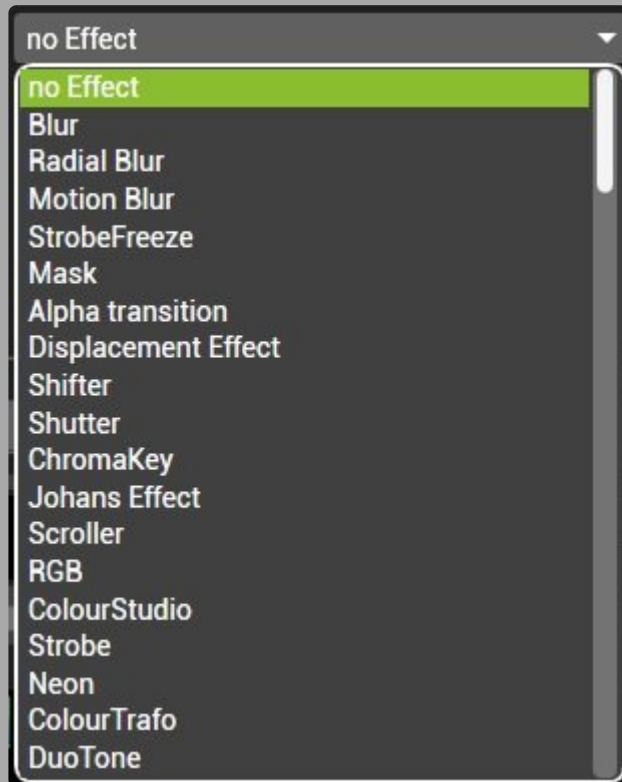
- [Integer Pins](#)
- [Boolean Pins](#)
- [Float Pins](#)



# Integer Pins

## Integer Pins are those that count whole numbers.

Integer Pins (or Int Pins) are most commonly used to select between items in a list:



Alternatively, integers can also be represented by lists of buttons such as the transport controls for the media player:



In both cases, the lists represent different integer values for a single pin.

There are five different types of mappings in use in Hippotizer:

### Mapping types for Integer Pins with an example:

- **8 Bit, 255 Step:** Effect select
- **16 Bit, 65,535 Step:** Media Select
- **8 Bit. 25 Step:** Source Type Select

- **16 or 24 Bit frame count.** Media Outpoint
- **8 Bit Custom X-Fade Fade Time**

## 8 Bit, 255 Step

Once set to 8bit, a channel with the Data type of Int, will create this mapping by default.

Uses a single DMX channel to yield 255 possible options.

The screenshot shows the Hippotizer V4 software interface. At the top, there are buttons: Load Personality, New Personality, Add Parameter, Save, Delete, Duplicate, and ReMap. Below these is a title bar for '44\_Layer\_NP\_V2'. The interface is divided into three main sections:

- Pin Tree:** A list of parameters on the left, including Colour, FX1, FX2, Geometry, Key, LiveMask, Mixer, Notch, Presets, Preview, Source, and XFade.
- Parameters:** A table listing parameters and their channel assignments. The first row, 'FX1/FXSelect', is highlighted in green.
- Properties:** A panel on the right showing settings for the selected parameter.

The 'Parameters' table is as follows:

Parameter Name	Channel1	Channel2	Channel3	Type	Update Only
FX1/FXSelect	31	0	0	Int	<input checked="" type="checkbox"/>
FX1/Parameter1	33	0	0	CustomFloat	<input type="checkbox"/>
FX1/Level	32	0	0	CustomFloat	<input type="checkbox"/>
FX1/Parameter2	34	0	0	CustomFloat	<input type="checkbox"/>
FX1/Parameter3	35	0	0	CustomFloat	<input type="checkbox"/>
FX1/Parameter4	36	0	0	CustomFloat	<input type="checkbox"/>
FX1/Parameter5	37	0	0	CustomFloat	<input type="checkbox"/>

The 'Properties' panel shows the following settings:

- Data Type:** Int (selected)
- Use Default:** ☒
- DMX Bit Depth:** 8 Bit (selected), Channel 1: 31, Channel 2: 0, Channel 3: 0
- Automatic Value Mapping:**
  - Linear with step: 0, Apply Step
  - Linear multiplied by: 0, Apply Mult
  - Special range: Start: 0, End: 255, Apply Spec
  - ☒ Map individual parameter values
- Parameter Mapping:** A table showing DMX Min, DMX Max, and Parameter Value mappings.

The 'Parameter Mapping' table is as follows:

DMX Min	DMX Max	Parameter Value
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5

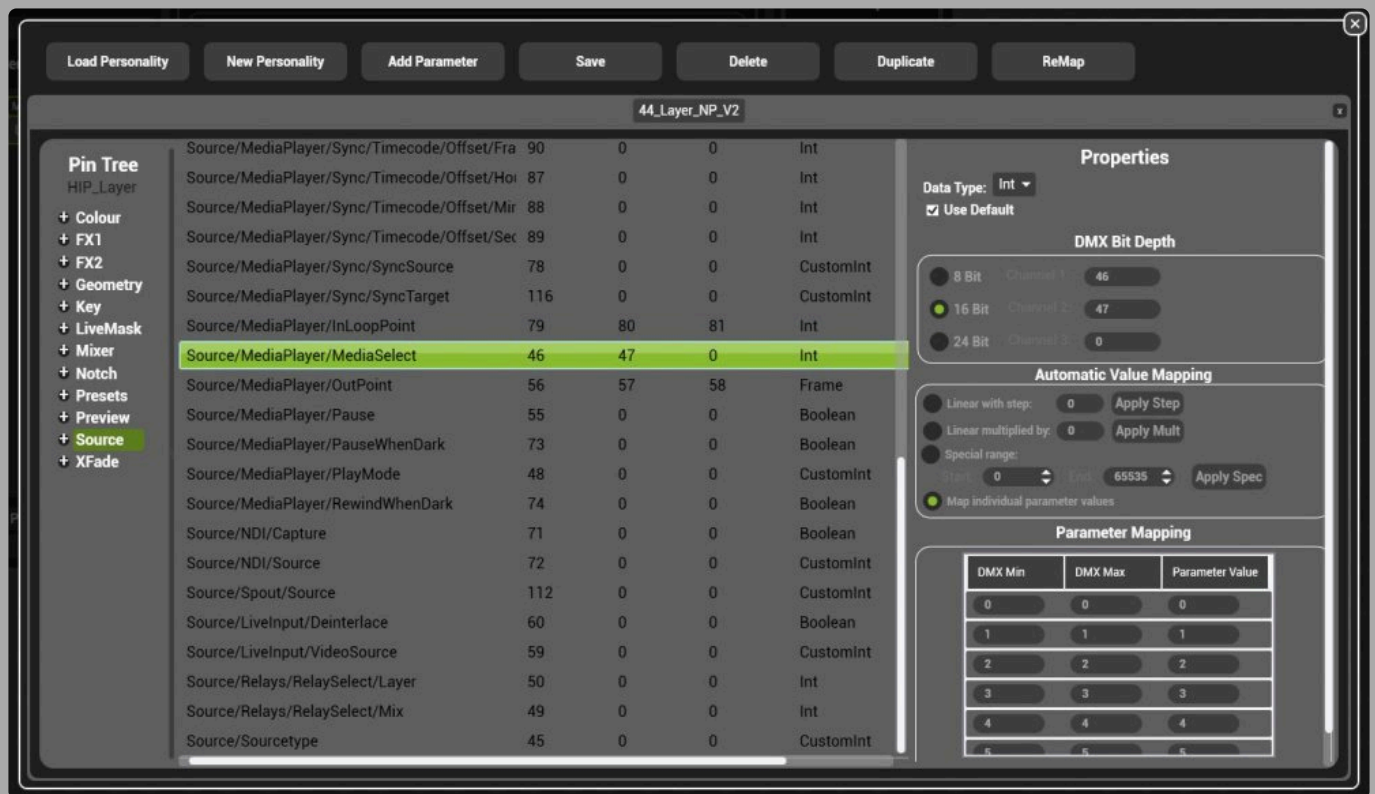
### Suggested usage:

- Lists of maps (such as live mask or video map select) where the number of maps could exceed 25.
- Effects select
- Relay (Mix and Layer) Select
- Timecode Offset (4 channels: Hours, Minutes, Seconds and Frames)

## 16 Bit, 65,535 Step

Uses two DMX channels to choose between 65,535 steps.

Once set to 16bit, a channel with the Data type of Int, will create this mapping by default.



Despite being a single parameter in Hippotizer, the 16 bit integer mapping is frequently addressed as two different channels by lighting desks. The first channel works out to a bank select, while the 2nd channel is the clip select.

#### Suggested usage:

- Media select. (Bank and Clip)
- Preset (Bank and Clip)
- Media offset (Bank and Clip)

#### 8 bit, 25 Step. Data Type:

Uses a single DMX channel to control smaller lists of up to 25 items. From Hippotizer Version 4.4 onwards, the mapping has been standardised; all 25 step parameters have the same assignments.

Once set to 8bit, a channel with the Data type of Step25, will create this mapping by default.

**44\_Layer\_NP\_V2**

**Pin Tree**

- HIP\_Layer
  - + Colour
  - + FX1
  - + FX2
  - + Geometry
  - + Key
  - + LiveMask
  - + Mixer
  - + Notch
  - + Presets
  - + Preview
  - + **Source**
  - + XFade

Source	Value	Offset	Target	Type
Source/MediaPlayer/Sync/Timecode/Offset/Fra	90	0	0	Int
Source/MediaPlayer/Sync/Timecode/Offset/Hoi	87	0	0	Int
Source/MediaPlayer/Sync/Timecode/Offset/Mir	88	0	0	Int
Source/MediaPlayer/Sync/Timecode/Offset/Sec	89	0	0	Int
Source/MediaPlayer/Sync/Source	78	0	0	CustomInt
Source/MediaPlayer/Sync/Target	116	0	0	CustomInt
Source/MediaPlayer/InLoopPoint	79	80	81	Int
Source/MediaPlayer/MediaSelect	46	47	0	Int
Source/MediaPlayer/OutPoint	56	57	58	Frame
Source/MediaPlayer/Pause	55	0	0	Boolean
Source/MediaPlayer/PauseWhenDark	73	0	0	Boolean
Source/MediaPlayer/PlayMode	48	0	0	CustomInt
Source/MediaPlayer/RewindWhenDark	74	0	0	Boolean
Source/NDI/Capture	71	0	0	Boolean
<b>Source/NDI/Source</b>	<b>72</b>	<b>0</b>	<b>0</b>	<b>CustomInt</b>
Source/Spout/Source	112	0	0	CustomInt
Source/LiveInput/Deinterlace	60	0	0	Boolean
Source/LiveInput/VideoSource	59	0	0	CustomInt
Source/Relays/RelaySelect/Layer	50	0	0	Int
Source/Relays/RelaySelect/Mix	49	0	0	Int
Source/Source type	45	0	0	CustomInt

**Properties**

Data Type: CustomInt

☒ Use Default

**DMX Bit Depth**

- ☒ 8 Bit Channel 1: 72
- ☐ 16 Bit Channel 2: 0
- ☐ 24 Bit Channel 3: 0

**Automatic Value Mapping**

- ☐ Linear with step: 0 Apply Step
- ☐ Linear multiplied by: 0 Apply Mult
- ☐ Special range: Start: 0 End: 255 Apply Spec
- ☒ Map individual parameter values

**Parameter Mapping**

DMX Min	DMX Max	Parameter Value
0	9	0
10	19	1
20	29	2
30	39	3
40	49	4
50	59	5

Suggested usage:

- Lists with less than 25 items such as Source Type

## 16/24bit Frame count

Uses two or three channels to set the in and outpoints of the media player in frames.



An additional option exists for the Outpoint and Loop Outpoint: **Zero to Int Max**.

When enabled, a value of zero will set the outpoint to 'end of clip': It will play to the end regardless of length.

Note: At 16 bit, there is a maximum outpoint of 65,535 frames, which equates to 36 minutes on a 30FPS clip. For longer clips, use 24bit.

### Suggested Usage:

- Media In and Outpoints
- Inner Loop in and outpoints.

## 8-Bit Custom

Used in limited cases to map large spreads of integer settings to a single channel.

Use the **Linear with step** to create the mapping. In the example below, setting 100 and pressing apply step will create the mapping.



Suggested Usage:

- X-Fade Fade Time.

# Boolean Pins

## Boolean Pins are on/off and toggle controls



Boolean Pins (or bool pins) are represented by single buttons.

Boolean DMX mappings simply set a midpoint, commonly 128:

The screenshot shows the Hippotizer V4 software interface. At the top, there are buttons: Load Personality, New Personality, Add Parameter, Save, Delete, Duplicate, and ReMap. Below these is a tab labeled "44\_Layer\_NP\_V2". The main area is divided into three sections:

- Pin Tree:** A list of pins on the left, including Colour, FX1, FX2, Geometry, Key, LiveMask, Mixer, Notch, Presets, Preview, Source, and XFade (which is highlighted).
- Parameters:** A table with columns: Parameter Name, Channel1, Channel2, Channel3, Type, and Update Only. The first row, "XFade/AutoFade", is highlighted in green and has a toggle switch in the "Update Only" column.
- Properties:** A panel on the right showing settings for the selected pin. It includes a "Data Type" dropdown set to "Boolean", a "Use Default" checkbox, a "DMX Bit Depth" section with a green circle and "8 Bit" label, and a "Parameter Mapping" section with a "Set Center" dropdown set to "128 (0 - 255)" and an "Update Table" button. Below this is a table with columns: DMX Min, DMX Max, and Value.

Parameter Name	Channel1	Channel2	Channel3	Type	Update Only
XFade/AutoFade	110	0	0	Boolean	<input checked="" type="checkbox"/>
XFade/FadeTime	109	0	0	Customint	<input type="checkbox"/>
XFade/FadeType	108	0	0	Customint	<input type="checkbox"/>
XFade/Take	111	0	0	Boolean	<input type="checkbox"/>

DMX Min	DMX Max	Value
0	128	<input type="checkbox"/>
129	255	<input checked="" type="checkbox"/>

The **Set Center** function will create the mapping based on the set centre value.

# Float Pins

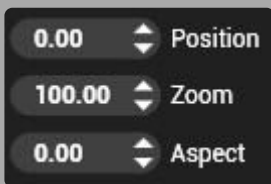
---

## Float Pins are controls that go from 0 to 1.

Float Pins are represented in Hippotizer most commonly as faders.



They can also be number boxes.



In both cases, the underlying pin is from 0 – 1 and the User Interface is converting the value into a more readable format.

As the DMX component connects directly to the pin, it must always map from 0-1 regardless of how the pin is displayed in the user interface.

## Bit Depth

Unlike Integers, Floats do not have a set bit depth (or number of DMX channels per parameter). Any float can be controlled with 1 DMX Channel (8-bit), 2 Channels (16-bit) or 3 Channels (24-bit). As the parameter will only ever go from 0 – 1, additional bit depth equates to more DMX steps so greater precision and smoother fades.

Note: Internally, Hippotizer uses greater than 24-bit precision for all Floats regardless of how they are controlled.

The decision of which bit depth to use for each parameter depends on what is being controlled. For the factory personalities, Green Hippo followed these rules:



- Intensities and colour (Layer, Effects etc.) are set at 8-bit as this matches the bit depth of underlying video colour channels. Any additional precision would not make a noticeable difference.
- Effect and Notch parameters are set to 8-bit. The primary reason was balancing benefit with the significant increase in channel count per layer.
- Geometry and Keystone controls are set to 16-bit to ensure high precision and smooth fades.
- No Floats presently are set to 24-bit by default.

These values can be modified in custom personalities as required.

## Center Point

For many controls the center point of the float is very important. For example, in Geometry/Position a float value of 0.5 is the default layer state.

In order to ensure the value of exactly 0.5 corresponds correctly to DMX, Green Hippo sets manual centre points in the personality.

This is important as there are 256 steps in a single DMX channel, therefore 0.5 would fall between two steps if it is not defined.

The screenshot displays the '44\_Layer\_NP\_V2' personality configuration window. The 'Parameters' table lists two parameters for 'Geometry/Position':

Parameter Name	Channel1	Channel2	Channel3	Type	Update Only
Geometry/Position/X	23	24	0	CustomFloat	<input checked="" type="checkbox"/>
Geometry/Position/Y	25	26	0	CustomFloat	<input checked="" type="checkbox"/>

The 'Properties' panel on the right shows 'Data Type' set to 'CustomFloat' and 'Use Default' checked. Under 'DMX Bit Depth', '16 Bit' is selected for Channel 1 (value 23), '16 Bit' for Channel 2 (value 24), and '24 Bit' for Channel 3 (value 0).

The 'Parameter Mapping' panel shows a 'Set Center' value of 0 (range 0 - 255). Below is a table mapping DMX values to parameter ranges:

DMX Min	DMX Max	Param Min	Param Max
0	32767	0.00	0.50
32768	32768	0.50	0.50
32769	65535	0.50	1.00

In the above example, the centre value of 0.5 has been exaggerated allowing for input values of 32767 – 32769.

## Floats with specific mappings.

In addition to setting a center point, some floats require additional special consideration.

Note: The default personalities include all specific mappings, Green Hippo strongly encourages copying an existing personality and editing it instead of starting from scratch.

- All colour / effects / Notch parameters have centers set.
- Geometry/Rotation combines rotation speed and the continuous bool pin into a single 16-bit DMX channel.
- Media speed is set with 0.25, 0.5 and 0.75 defined in the mapping.
- 16-bit floats in Geometry have exaggerated centre points.

# Engine

## The Engine Component handles the rendering of video.

As the engine is frequently run without a Zookeeper interface, it is represented by icons in the system tray of Windows.

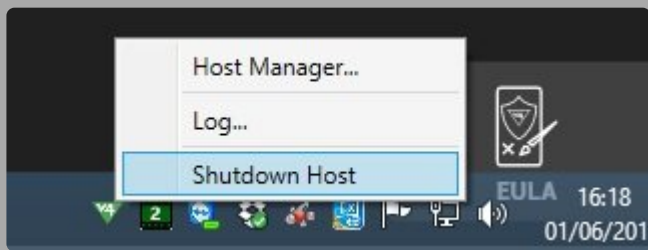


Shows the Engine is running this is called the **Engine Host**.



Indicates a **Mix** is running and denotes the layer mode of that mix.

## Right Clicking on the Engine Icon brings up options:



[Host Manager](#) is the basic local control of the engine component without using Zookeeper.

**Log...** Displays a live output of the Engine Host Log.

**Shutdown Host** Saves and shuts down the Engine Host.

There are no functions associated with clicking the mix icons.

**Additional Information:** The words **Engine** and **Host** are used interchangeably within the interface and documentation, though they are very different. The Engine Host is actually an umbrella application that runs all components, of which the Engine is one referred to as the Engine or Render Component. The Engine component itself carries only livemask information. Other components such as DMX or Media Manager also run within the Engine Host. Shutting down the Host automatically saves and shuts down all components contained within it. In most cases, shutting down the engine actually refers to shutting down the host. Zookeeper also runs it's own host, called the Zookeeper host.

# Host Manager

The Host Manager is the basic local control of the engine component without using Zookeeper.

There are three sections of the Host Manager shown as tabs:

## Components

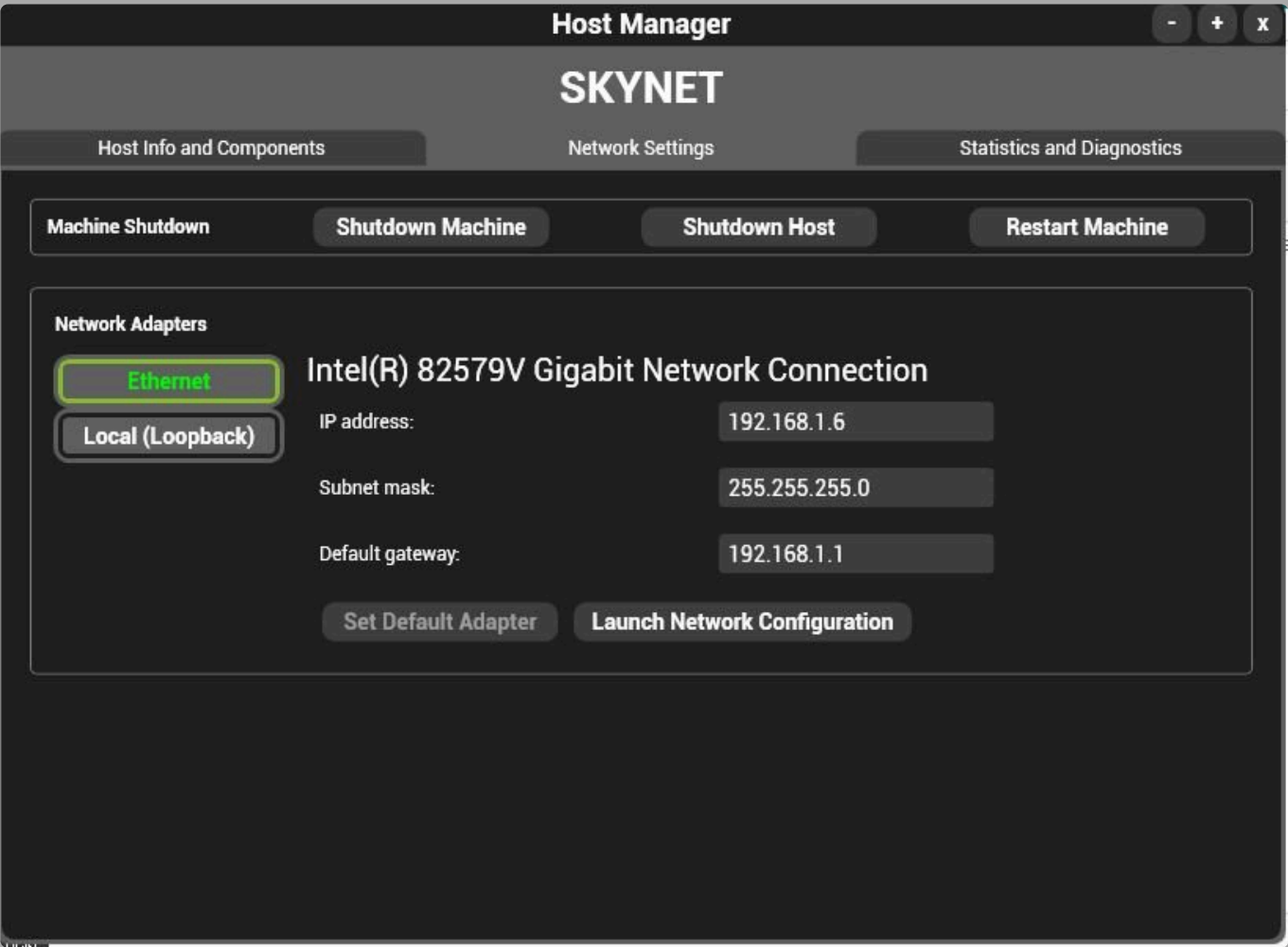
The screenshot shows the Host Manager interface for SKYNET. It has three tabs: 'Host Info and Components' (selected), 'Network Settings', and 'Statistics and Diagnostics'. The 'Host Info and Components' tab contains several sections: 'Host Name' with a 'Change Name' button, 'Version Info' showing Hardware Name: SKYNET, Product: Hippotizer Boreal, and Software Version: 4.2.0.26059, and 'License Info' showing Serial No: 7F3F94DD. The 'Components' section is a table with two columns: Component Name and Status. All components are listed as 'Running'. At the bottom of the Components section are buttons for 'Add', 'Rename', 'Delete', 'Start/Stop', 'Export', 'Import', and 'Reset'.

Components	
LED	Running
Engine	Running
MediaManager	Running
OutputManager	Running
PresetManager	Running
HippoSnapper	Running
MultiController	Running

Components can be added, removed and stopped. The Host name can also be changed from this prompt.

Note: When adding or removing components from Zookeeper, this is accessing the same list so it is not necessary to use the Host Manager when Zookeeper is running.

# Network



Selects which network adapter the Engine uses to communicate. This must match the network adapter used by Zookeeper.

## Diagnostics

Host Manager

SKYNET

Host Info and ComponentsNetwork SettingsStatistics and Diagnostics

### Statistics

HippoNet:

Local Components:	8
Total Components:	10
Hosts:	2

Network:

UDP bytes sent:	46040 (0 Kbps)
UDP bytes received:	0 (0 Kbps)
Broadcast UDP bytes sent:	18574 (0 Kbps)
Broadcast UDP bytes received:	20240 (0 Kbps)
TCP bytes sent:	180829 (1 Kbps)
TCP bytes received:	70653 (0 Kbps)

Refresh

### Diagnostics

Component	Log Level
LED	All
Engine	All
MediaManager	All
OutputManager	All
PresetManager	All

Change all log levels: All Apply

Sets log levels and shows network diagnostics.

# Hippo Snapper

---

Hippo Snapper takes a still image of a selected layer and saves it to the media map. This is commonly used to save a logo.



## Image Name

The name of the picture that will appear in the media map.

## Image Source

The Mix and Layer that the image will be taken from

## Resolution

The resolution of the image that will be created. For best results, this should be set to be the same as the source's resolution.

## Image Destination

The position in the media map where the image will be placed

## HippoSnap

Saves the image each time the button is pressed.



Saving an image with Hippo Snapper can cause the output to freeze momentarily.

All the controls of Hippo Snapper are pins so they can be accessed from DMX or a Timeline for automating tasks.



# LED

---

**The LED component controls the coloured Hippo head on Hippotizer V4 and V4+ hardware.**

The Hippo head colour reflects the state of the worst component on that system. So if any component is showing an error, it will be red. If all components are normal it will be green.

## Colour meanings and common causes

### Green

- Hippotizer is running normally

### Blue

- Media Manager is encoding or syncing content

### Yellow

- Output Manager is configuring outputs
- The Media drive has <10% free space

### Red

- The engine has stopped rendering due to an error
- Output Manager cannot start all viewports or outputs due to a conflict
- There is less <3% free space on the media drive.

### Purple

- The computer is running, but the Hippotizer applications have not been started.

The LED component has a Pin: "LED\_Brightness" that can be used to dim the front panel LED's if desired.

# Macro Manager

---

Macro Manager uses the Lua scripting language to automate functions within Hippotizer.

In addition to normal Lua scripting commands and syntax there is also Hippo specific functions and parameters; these are documented here.

- [Example Macros](#)
- [Hippotizer API](#)

For more information about Lua please see their website:

[www.lua.org/](http://www.lua.org/)



# Hippotizer API

The interface with Hippotizer's Engine and Components involves some specific parameters and functions.

Globals		
Properties		
Property Name	Return Data Type	Description
TriggerPinName	String	Returns the name of the UserPin that triggered this macro, or empty string if it was triggered by another method
TriggerPinMonitorName	String	Returns the name of the PinMonitor that triggered this macro, or empty string if it was triggered by another method
HippoNet	HippoNet Object	Returns The Global HippoNet object
PinMonitors	Lua Table [String, Object]	Returns a table of PinMonitor pin values indexed by the name of the PinMonitor value can be String, Bool or Number
UserPins	Lua Table [String, Object]	Returns a table of UserPin values indexed by the name of the UserPin, value can be String, Bool or Number

## There are a number of more specific APIs.

- [HippoNet API](#)
- [Host API](#)
- [Component API](#)
- [DMX Component API](#)
- [Pin API](#)
- [Engine API](#)
- [Mix API](#)
- [Layer API](#)
- [Media Manager API](#)
- [Media API](#)
- [Pin Bridge API](#)
- [Helper Functions](#)
- [Viewport API](#)

# HippoNet API

HippoNet contains all the pins and components of Hippotizer. Use this API to find components, host names and pin paths.

HippoNet			
Properties			
Property Name		Return Data Type	Description
LocalHost		Host Object	Returns the host object that this Macro Manager is running on
HostNames		Lua Table [Number,String]	Returns a table of all the HippoNet hosts found on the network, indexed by an increasing integer
Functions			
Function Name	Parameters	Return Data Type	Description
FindHost	(String HostName)	Host Object or Nil	Returns the host object called or Nil if it cannot find it
SearchHostNames	(String Pattern)	Lua Table [String,Host Object]	Returns a table of all the Host objects that have a name containing indexed by their Host Name
FindComponent	(String HostName, String ComponentName)	Component Object or Nil	Returns the Component object called running on Host called or Nil if it cannot be found
FindPin	(String HostName, String ComponentName, String PathFromRootPin)	Pin Object or Nil	Returns the Pin object at path on component running on Host or Nil if it is not found

# Host API

The Host contains references to local components and Engine commands.

Host			
Properties			
Property Name		Return Data Type	Description
Name		String	Returns the name of this Host
ProductName		String	Returns the string name of the product that the host is running on eg.
IpAddress		String	Returns a string representation of the IP address of this Host in the form of xxx.xxx.xxx.xxx
ComponentNames		Lua Table [Number,String]	Returns a table of the names of all the components running on this Host indexed by increasing integer
StoppedComponentNames		Lua Table [Number,String]	Returns a table of the names of all the components on this host that are not currently running indexed by increasing integer
Engine		Engine Component Object or Nil	Returns the Engine Component Object running on this host if it exists or Nil if it does not or is stopped
DMX		DMX Component Object or Nil	Returns the DMX2 Component Object running on this host if it exists or nil if it does not or is stopped
MediaManager		MediaManager Component Object or Nil	Returns the MediaManager Component Object running on this host if it exists or nil if it does not or is stopped
MacroManager		MacroManager Component Object or Nil	Returns the MacroManager Component Object running on this host if it exists or nil if it does not or is stopped
PresetManager		PresetManager Component Object or Nil	Returns the PresetManager Component Object running on this host if it exists or nil if it does not or is stopped
Timeline		Timeline Object	Returns the Timeline Component Object running on this host if it exists or nil if it does not or is stopped
AvailableComponents		Lua Table	This returns an indexed lua table of names of components available to be added to the host

Host			
Functions			
Function Name	Parameters	Return Data Type	Description
FindComponent	(String Name)	Component Object or Nil	Returns the Component Object called running on this host or Nil if it cannot be found
SearchComponentNames	(String Pattern)	Lua Table [Number, Component Object]	Returns a table of all the Components running on this host whose name includes indexed by increasing integer
ShutdownHostSoftware	()	Nothing	Attempts to shutdown Hippotizer software on this machine, returns nothing
ShutdownHostMachine	()	Nothing	Attempts to shutdown this machine and all the software running on it, returns nothing
RestartHostMachine	()	Nothing	Attempts to restart this machine , returns nothing
StartComponent	(String ComponentName)	Boolean	Attempts to start Component with name if it is stopped, returns True if successful or False if it failed
StopComponent	(String ComponentName)	Boolean	Attempts to stop Component with name if it is running, returns True if successful or False if it failed
AddComponent	()	String	This adds a new component to the host of type "XXX" with name of "XXX", respects component install limits.
DeleteComponent	()	String	This stops and deletes the first component that it finds on the host with the name "XXX", respects Component rules so you cannot delete reserved components such as Engine.

# Component API

The component API works across all components. Some components contain additional commands that are detailed separately.

Component (All Component Types)			
<b>Properties</b>			
Property Name		Return Data Type	Description
Name		String	Returns the name of this component
TypeName		String	Returns the Type of this component eg.
OwnerHost		Host Object	Returns the Host Object that this component is running on
OwnerHostName		String	Returns the name of the Host Object that this component is running on
AllPinPaths		Lua Table [Number,String]	Returns a table of the paths to all the pins in the pin tree of this component from the root pin indexed by increasing integer
RootPin		Pin Object (GroupPin)	Returns the topmost Pin Object in this components pin tree which is parent to all other pin objects
<b>Functions</b>			
Function Name	Parameters	Return Data Type	Description
FindPin	(String PathFromRoot)	Pin Object or Nil	Returns the Pin Object with a path of from the component Root Pin or Nil if it cannot be found
SearchAllPinPaths	(String Pattern)	Lua Table [Number,Pin Object]	Returns a table of all the Pin Objects with a path from Root that contains indexed by increasing integer
Stop	()	Nothing	Attempts to stop this component
Import	(String FilePath)	Boolean	Attempts to import a component settings file at location from disk, returns True is successful or False if it failed for any reason
Export	(String FilePath)	Boolean	Attempts to export this components settings to location on disk, returns True is successful or False if it failed for any reason

# DMX Component API

DMX Component		
<b>Properties</b>		
Property Name	Return Data Type	Description
Enabled	Boolean	Returns True if DMX is active or False if it is disabled, value can be read or set
Universes	Lua Table [String,DMX Universe Object]	Returns a table of all the DMX Universes used on this DMX component indexed by Universe Name
NetworkAdapters	Lua Table [Number,String]	Returns a table of all the IP addresses of the network adapters on the machine that DMX is running on indexed by increasing integer
LocalIp	String	Returns the IP address of the Network adapter being used to receive DMX and MANet data, this value can be read or set
MANetSessionId	Number	Returns the current MANet Session ID, this value can be read or set
DMX Universe		
<b>Properties</b>		
Property Name	Return Data Type	Description
Name	String	Returns the name of this Universe Object, this value can be read or set
Protocol	String	Returns the description of the protocol used on this Universe Object eg.
Fixtures	Lua Table [String,DMX Fixture Object]	Returns a table containing all the Fixture Objects patched in this Univers Object indexed by Fixture Object Name
Address	Number	Returns the universe number of this DMX Universe Object in the range 1 – 65535, this value can be read or set
DMX Fixture		
<b>Properties</b>		
Property Name	Return Data Type	Description
Name	String	Returns the name of this DMX Fixture Object, this value can be read or set
StartChannel	Number	Returns the start channel address of this DMX Fixture Object, this value can be read or set
TargetPinPath	String	Returns the full path to the target pin of this DMX Fixture Object



# Pin API

The Pin API is used to access and set Pin values.

Pin (All Types)			
Properties			
Property Name		Return Data Type	Description
Name		String	Returns the name of this Pin Object
Path		String	Returns the full path of this object from the Root Pin
ParentName		String	Returns the name of this Pin Objects parent or an empty string if this is the Root Pin
IsRootPin		Boolean	True if this is the Root Pin or False if not
OwnerComponent		Component Object	The Component Object that hosts this Pin Objects pin tree
ChildPinNames		Lua Table [Number,String]	Returns a table containing all the names of the direct children of this Pin Object indexed by increasing integer
ChildPinPaths		Lua Table [Number,String]	Returns a table of all the paths of the direct children of this Pin Object indexed by increasing integer
DescendentPinPaths		Lua Table [Number,String]	Returns a table of all the paths of all the children and descendents of this Pin Object indexed by increasing integer
Functions			
Function Name	Parameters	Return Data Type	Description
SearchChildNames	(String Pattern)	Lua Table [Number,String]	Returns a table of all the pin names of all the direct children of this Pin Object that contain in their name indexed by increasing integer
SearchChildPinPaths	(String Pattern)	Lua Table [Number,String]	Returns a table of all the pin paths of all the direct children of this Pin Object that contain in their path indexed by increasing integer
SearchDescendentPinPaths	(String Pattern)	Lua Table [Number,String]	Returns a table of all the pin paths of all the children of this Pin Object and their descendents that contain in their path indexed by increasing integer

<b>Pin (Value Pins – Boolean,String,Float and Integer)</b>			
<b>Properties</b>			
<b>Property Name</b>		<b>Return Data Type</b>	<b>Description</b>
PinType		String	Returns the type description of this PinObject eg.
Value		Object (String,Number,Boolean)	Returns the current value of this Pin Object, this value can be set which will in turn set the pin to that value
DefaultValue		Object(String,Number,Boolean)	The default value of this Pin Object
Info		Lua Table [String,Object]	Returns a table of info parameters for this Pin object indexed by parameter name:\n“DefaultValue” – (Object)The default Value of this Pin Object “Label” – (String) The Label of this Pin Object “QuickInfo” – (String) Basic description of this pin “ValueLabels” – (Lua Table [Number,String]) table of labels and values (Integer Pin Only) “TrueLabel” – (String) Display value for a true value (Boolean Pin Only) “FalseLabel” – (String) Display value for a false value (Boolean Pin Only) “DisplayMin” – (Number)Minimum display value (Float Pin Only) “DisplayMax” – (Number)Maximum display value (Float Pin Only)
<b>Functions</b>			
<b>Function Name</b>	<b>Parameters</b>	<b>Return Data Type</b>	<b>Description</b>
Reset	()	Nothing	Attempts to set this pin to it's default value

# Engine API

---

Used to query mixes and viewports on the specific Engine.

Engine Component			
Properties			
Property Name		Return Data Type	Description
MixCount		Number	Returns the number of Mixes running on this engine
ViewportCount		Number	Returns the number of Viewports running on this engine
Functions			
Function Name	Parameters	Return Data Type	Description
FindMix	(Number MixIndex)	Mix Object or Nil	Returns the Mix Object with index of or nil if is out of range
FindViewport	(Number ViewportIndex)	Viewport Object or Nil	Returns the Viewport Object with index of or nil if is out of range

# Mix API

Mix			
Properties			
Property Name		Return Data Type	Description
Index		Number	Returns the numerical index of this Mix
Path		String	Returns the full path of the Root Pin of this mix from the Engine Root Pin
LayerCount		Number	Returns the number of layers in this Mix Object
Layers		Lua Table [Number,Layer Object]	Returns a table of all the Layer Objects on this mix indexed by their layer index
Level		Number	Value between 0.0 and 1.0 that represents the level of the mix master on this mix, this value can be read or set
Functions			
Function Name	Parameters	Return Data Type	Description
FadeLevel	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this mix master in the background from a value of to a value of over Seconds, does not halt script execution
FadeLevel	(Number To,Number FadeTime)	Nothing	Fades the level of this mix master in the background from it's current value to a value of over Seconds, does not halt script execution
FadeLevelWait	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this mix master from a value of to a value of over Seconds, does halt script execution while in progress
FadeLevelWait	(Number To,Number FadeTime)	Nothing	Fades the level of this mix master from it's current value to a value of over Seconds, does halt script execution while in progress
SetPreset	(Number PresetIndex)	Nothing	Attempts to load a Mix Preset with index onto this Mix Object if the preset exists. , will set a fade time
Reset	()	Nothing	Resets the Mix and all it's Layers back to their default state

# Layer API

Layer			
Properties			
Property Name		Return Data Type	Description
Index		Number	Returns the numerical index of this Layer Object
Path		String	Returns the full path of the Root Pin of this Layer from the Engine Root Pin
Level		Number	A value between 0.0 and 1.0 that represents the level of this Layer Object, this value can be read or set
Pause		Boolean	Returns True if the media player on this Layer Object is paused, False if it is not, this value can be read or set
Position		Number	Returns the position of the mediaplayer playhead in milliseconds from the start of the media clip, this value can be read or set
InPoint		Number	Returns the position of the InPoint flag in milliseconds from the start of the media, this value can be read or set
OutPoint		Number	Returns the position of the OutPoint flag in milliseconds from the start of the media, this value can be read or set
PlayMode		String	Returns a string that represents the playmode of the mediaplayer from one of these values:\nforward\nbackward\nbackwardLoop\npingPong\nrandom\nin\nout\nThis value can be read or set
Functions			
Function Name	Parameters	Return Data Type	Description
FadeLevel	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this Layer Object in the background from a value of to a value of

Layer			
			over Seconds, does not halt script execution
FadeLevel	(Number To,Number FadeTime)	Nothing	Fades the level of this Layer Object in the background from it's current value to a value of over Seconds, does not halt script execution
FadeLevelWait	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this Layer Object from a value of to a value of over Seconds, does halt script execution while in progress
FadeLevelWait	(Number To,Number FadeTime)	Nothing	Fades the level of this Layer Object from it's current value to a value of over Seconds, does halt script execution while in progress
SetMedia	(Number MediaIndex,String PlayMode(optional),Number Position(optional),Number InPoint(optional),Number OutPoint(optional),Number MediaWait(optional))	Nothing	Attempts to load the media with an index of into the mediaplayer and set the playmode to , InPoint to Ms, OutPoint to Ms, Playhead to Ms and then wait for Seconds before proceeding with script
SetPreset	(Number PresetIndex)	Nothing	Attempts to load a Layer Preset with index onto this Layer Object if the preset exists
FindPin	(String PathFromRoot)	Pin Object or Nil	Returns the Pin Object with a path of from the Root Pin of this Layer Object
Reset	()	Nothing	Resets the Layer Object to it's default values

# Media Manager API

MediaManager Component			
Properties			
Property Name		Return Data Type	Description
MediaLibrary		Lua Table [Number,Media Object]	Returns a table of all the Media Objects contained in the mediaManager in no particular order indexed by increasing integer
MediaMap		Lua Table [Number,Media Object]	Returns a table of all the Media Objects in the MediaMap indexed by their MediaMap slot index, this value can be read or set
Functions			
Function Name	Parameters	Return Data Type	Description
SetMediaMap	(Lua Table [Number,Media Object] MediaMap,Boolean ClearExisting(optional))	Boolean	Attempts to place the medias in into the mediamap indexes contained in . If is set to True it clears the existing MediaMap first. Returns True if the action succeeded or False if it failed
SetMediaMapIndex	(Number MapIndex,Media Object(or Nil) Media)	Boolean	Attempts to place MediaObject into the mediamap at position . If is Nil then the slot at position is cleared. Returns True on success or False on failiure
SetMediaMapIndex	(Number MapBank,Number MapClip,Media Object(or Nil) Media)	Boolean	Attempts to place MediaObject into the mediamap at bank Clip . If is Nil then bank Clip is cleared. Returns True on success or False on failiure

# Media API

Media			
Properties			
Property Name		Return Data Type	Description
Name		String	Returns the name of this Media Object, this value can be read or set
Path		String	Returns the full folder path and Name of this MediaObject, this value can be read or set
FileType		String	Returns the description of the filetype of this MediaObject eg.
Duration		Number	Returns the duration in milliseconds of this Media Object
FileSize		Number	Returns the filesize in bytes of this Media Object
Width		Number	Returns the width in pixels of this Media Object
Height		Number	Returns the height in pixels of this Media Object
FPS		Number	Returns the Frames Per second of the clip
DurationFrames		Number	Returns the number of frames of the clip
Functions			
Function Name	Parameters	Return Data Type	Description
Delete	()	Boolean	Attempts to delete this Media Object , returns true is succeeded or false if the file is in use or locked
Equals	(MediaObject Media)	Boolean	Returns True if this Media Object is the same as or False if it is different



# Pin Bridge API

PinBridge Component			
Functions			
Function Name	Parameters	Return Data Type	Description
AddFloatBridge	(String BridgeName, Lua Table [Pin Object] Targets)	Nothing	Attempts to create a Float PinBridge with name and adds the Pins to that bridge
AddBoolBridge	(String BridgeName, Lua Table [Pin Object] Targets)	Nothing	Attempts to create a Boolean PinBridge with name and adds the Pins to that bridge
AddIntBridge	(String BridgeName, Lua Table [Pin Object] Targets)	Nothing	Attempts to create an Integer PinBridge with name and adds the Pins to that bridge
AddStringBridge	(String BridgeName, Lua Table [Pin Object] Targets)	Nothing	Attempts to create a String PinBridge with name and adds the Pins to that bridge

# Helper Functions

Helper Functions			
Functions			
Function Name	Parameters	Return Data Type	Description
scale	(Number Input,Number InputMin,Number InputMax,Number OutputMin,Number OutputMax,Boolean ClipToOutputRange(optional))	Number	Scales the value < Input> according to the ratio between – and – . Restricts the output to the stated output range if ClipToOutputRange is True
mediaIndex	(Number Bank,Number Clip)	Number	Converts a and to a media index
mediaClip	(Number MediaIndex)	Number	Returns the Clip portion of a media index
mediaBank	(Number MediaIndex)	Number	Returns the Bank portion of a media index
time	(Number Hours,Number Minutes,Number Seconds,Number Milliseconds(optional))	Number	Returns and as total milliseconds
timecode24	(Number Hours,Number Minutes,Number Seconds,Number Frames)	Number	Returns a value that represents the entered timecode as total milliseconds based on a timecode format of 23.98 fps
timecode25	(Number Hours,Number Minutes,Number Seconds,Number Frames)	Number	Returns a value that represents the entered timecode as total milliseconds based on a timecode format of 25 fps
timecode30NonDrop	(Number Hours,Number Minutes,Number Seconds,Number Frames)	Number	Returns a value that represents the entered timecode as total milliseconds based on a timecode format of 30.00 fps Non Drop
timecode30Drop	(Number Hours,Number Minutes,Number Seconds,Number Frames)	Number	Returns a value that represents the entered timecode as total milliseconds based on a timecode format of 29.97 fps Drop Frame
sleep	(Number Milliseconds)	Nothing	Forces the script execution to pause for Milliseconds
regexMatch	(String Input,String Pattern,Boolean IgnoreCase(optional))	Boolean	Returns True if the string < Input> matches the regex pattern , false if it does not match
regexReplace	(String Input,String Replacement,String Pattern)	String	Returns a new String where the string < Input> is modified with string according to the regex string

Helper Functions			
ping	(String IP,Number TimeOut)	Boolean	Returns true if a response is received to a network ping to address before the timeout of Milliseconds
udpSend	(String Data,String IP,Number Port,String LocalIP(optional))	Boolean	Attempts to send the String using UDP to target IP on port using the local network adapter with IP Address . Returns true if data was sent to target, false if there was an error
tcpSend	(String Data,String IP,Number Port,String LocalIP(optional),Number TimeOut(optional))		Attempts to send the String using TCP to target IP on port using the local network adapter with IP Address . Returns true if data was sent to target within Milliseconds, false if there was an error or it took too long
httpGet	(String Address)	String	Performs an Http Get request to address <i>and returns the message received back as a string</i>
httpPost	(String Address,String Data	String	Performs an Http Post request to address <i>including the added data and returns the message received back as a string</i>

# Viewport API

Viewport			
Properties			
Property Name		Return Data Type	Description
Index		Number	Returns the numerical index of this Viewport
Path		String	Returns the full path of the Root Pin of this viewport from the Engine Root Pin
Level		Number	Value between 0.0 and 1.0 that represents the level of the viewport master on this viewport this value can be read or set
Functions			
Function Name	Parameters	Return Data Type	Description
FadeLevel	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this viewport in the background from a value of to a value of over Seconds, does not halt script execution
FadeLevel	(Number To,Number FadeTime)	Nothing	Fades the level of this viewport in the background from it's current value to a value of over Seconds, does not halt script execution
FadeLevelWait	(Number From,Number To,Number FadeTime)	Nothing	Fades the level of this viewport from a value of to a value of over Seconds, does halt script execution while in progress
FadeLevelWait	(Number To,Number FadeTime)	Nothing	Fades the level of this viewport from it's current value to a value of over Seconds, does halt script execution while in progress
SetPreset	(Number PresetIndex)	Nothing	Attempts to load a Mix Preset with index onto this Viewport Object if the preset exists
Reset	()	Nothing	Resets the Viewport and all it's Layers back to their default state

# Timeline API

The Timeline API contains specific commands for the Timeline Component and Timelines it contains.

Timeline			
Properties			
Property Name		Return Data Type	Description
Timeline.Timelines		Lua Table [Number,String]	This returns a table of Timeline objects indexed by timeline name, individual timelines can be accessed by the format Timelines["My Timeline"]
Timeline.TimelinesByID		Lua Table [Number, String]	This returns a lua table of Timeline objects indexed by their ID, only timelines with a valid ID will be included, timelines can be accessed using the format TimelinesByID <sup>5</sup>
Functions			
Function Name	Parameters	Return Data Type	Description
StopAll	()	Returns Nothing	stops all components
PlayAll	()	Returns Nothing	Starts all timelines playing
RewindAll	()	Returns Nothing	rewinds all timelines without changing the play mode (so if timelines were playing they will continue playing but from start)
MuteAll	()	Returns Nothing	Mutes all timelines, returns nothing
UnMuteAll	()	Returns Nothing	UnMutes all timelines, returns nothing
Play	()	Returns Nothing	Plays the Timeline
Stop	()	Returns Nothing	Stops the Timeline
Pause	()	Returns Nothing	Pauses the Timeline
Rewind	()	Returns Nothing	Rewinds the Timeline
Mute	()	Returns Nothing	Mutes the Timeline

Timeline			
UnMute	()	Returns Nothing	UnMutes the Timeline
GotoCue	(cuenumber)	Returns Nothing	jumps playhead to specific cue with cuenumber (cuenumber can be decimal ie. 4.5)

## Timeline object

The Timeline objects referenced in the above tables have the following parameters:

- **Name** name of timeline – can be read or set
- **ID** unique ID of timeline as integer – can be read or set
- **Start** time of first event in timeline in milliseconds – read only
- **End** time of last event in timeline in milliseconds – read only
- **Position** position of playhead in milliseconds – can be read or set
- **TimecodeEnabled** state of timecode enabled, can be read or set

# Example Macros

---

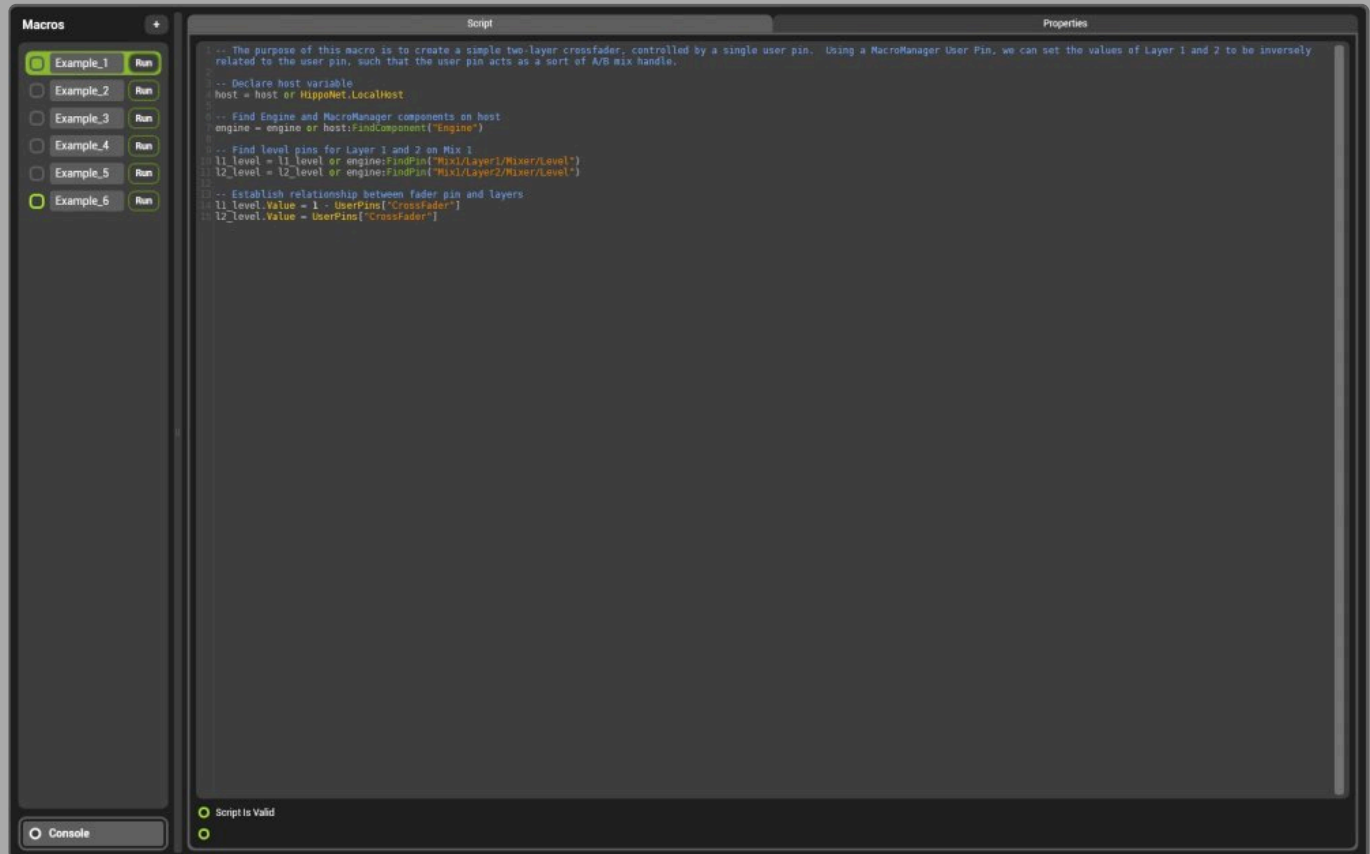
The easiest way to learn Macro Manager is to use examples:

- [Fading Layer Level](#)

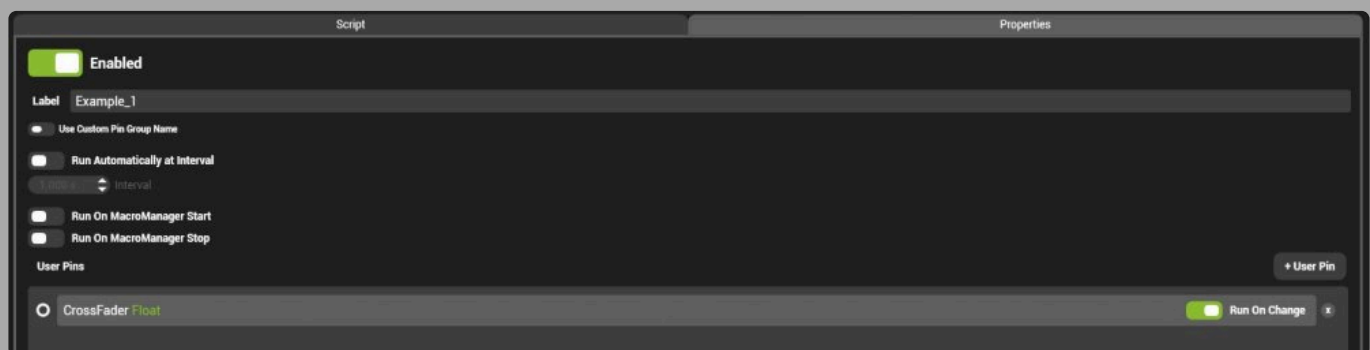
[Additional Examples are available for download as a Macro Manager export](#)

# Fading Layer Level

## A two layer cross fade



## A user pin must also be created



## The code for this macro is below

```
-- The purpose of this macro is to create a simple two-layer crossfader, controlled by a single user pin. Using a MacroManager User Pin, we can set the values of Layer 1 and 2 to be inversely related to the user pin, such that the us
```



er pin acts as a sort of A/B mix handle.

```
-- Declare host variable
host = host or HippoNet.LocalHost

-- Find Engine and MacroManager components on host
engine = engine or host:FindComponent("Engine")

-- Find level pins for Layer 1 and 2 on Mix 1
l1_level = l1_level or engine:FindPin("Mix1/Layer1/Mixer/Level")
l2_level = l2_level or engine:FindPin("Mix1/Layer2/Mixer/Level")

-- Establish relationship between fader pin and layers
l1_level.Value = 1 - UserPins["CrossFader"]
l2_level.Value = UserPins["CrossFader"]
```

# Memory Management

Memory in Macromanager must be managed to avoid possible leaks and instability.

The following is the best practice when creating macros.

## Use local as opposed to global variables

Global variables are not cleaned up by LUA's automatic memory management.

Use the local scope where possible. For example, to declare a variable 'Test' to nil locally use;

```
local Test = nil
```

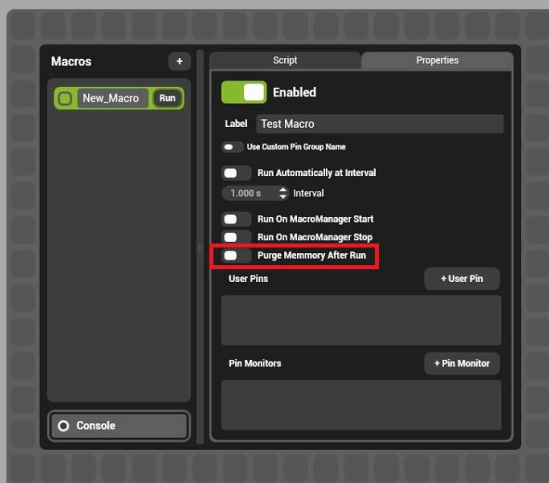
Variables that are created without a scope are global.

## When global Variables are used, set them to nil at the end of the script

Global variables that are set to nil are cleaned by LUA automatically after the script runs.

## Run automatic clean up at the end of a script

The Properties of each macro contain a setting to automatically purge the memory of the macro:



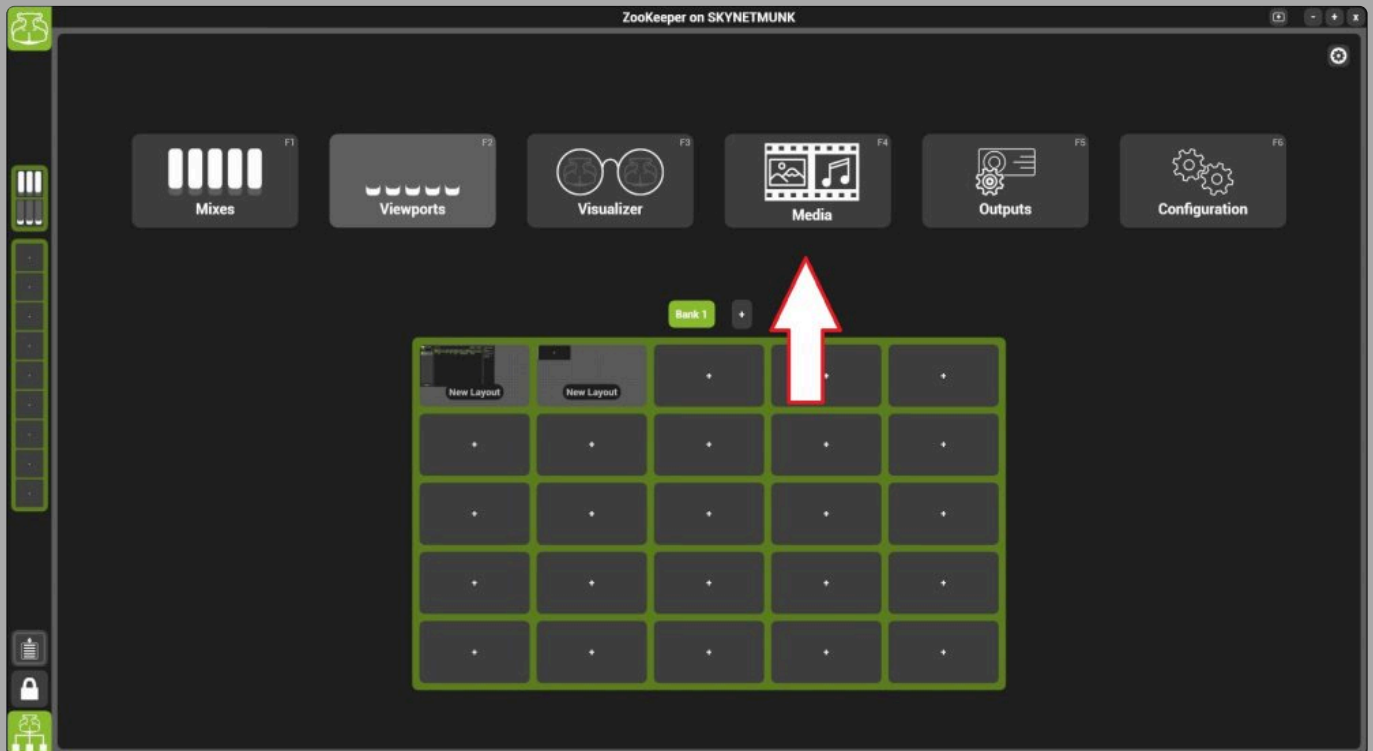
When enabled, Purging Memory will automatically destroy all variables created in that script.

Note: Purging Memory may prove too computationally heavy on scripts that run at a high frequency. (many times per second).

# Media Manager

Media Manager is a complete content organisation system built into Hippotizer V4. Handling the encode, storage and playback of all video and audio files, Media Manager is an integral part of the Hippotizer.

To open Media Manager, click the media tab in Zookeeper's home screen.



Media Manager is critical for the normal operation of Hippotizer. The component should not be stopped or deleted.

## Sections of Media Manager

- [Basic Layout](#)
- [Encoding Media](#)
- [Media Manager Settings](#)
- [Tags and Notes](#)

# Basic Layout

Media Manager stores and encodes all movies, images and sound files in the Hippotizer system.



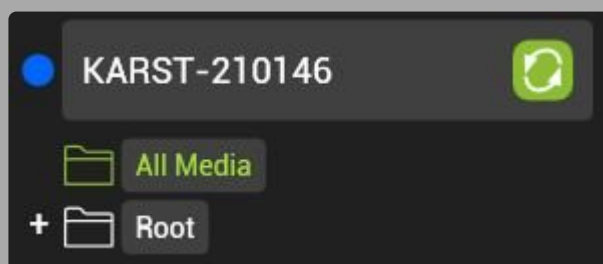
## Media Manager has different sections

Media Manager follows the convention that a Host Selector on the left of the screen chooses which media manager is shown on the right.

### Host selector

Displays each system on the network.

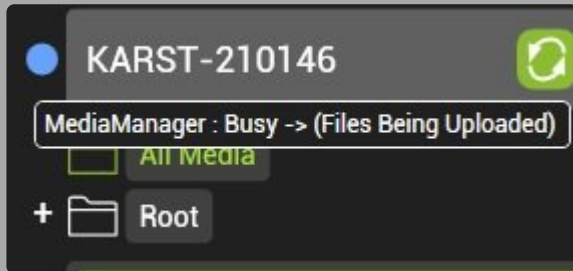
Clicking the circle to the left of the host will show or hide the folder tree of that host.



The circle's colour indicates the status of the media manager on that host.

- **Green:** Normal operation.
- **Blue:** Media manager on that host is busy either uploading or encoding content.
- **Yellow** Caution: Free Space on the media drive is at 10% or less.
- **Red** Error: Media Manager has an error or drive space is below 3%.

Hovering the mouse over the circle will show the details of the status.



The arrow icon to the right of the host name indicates if the system is configured for sync.



If the host has never had sync configured the icon will be grey

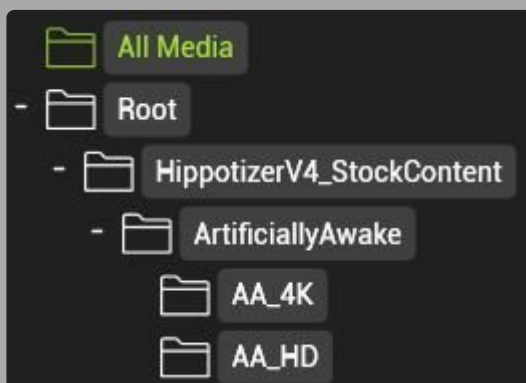


If the host has been configured for sync then the icon will be green.

Clicking the green icon will sync the host to the previously configured targets.

## Folder Tree

Media is organised into virtual folders in each Media Manager.



The **All Media** and **Root** folders are created by default and cannot be deleted.

- The root is the folder at the base of the folder tree.
- The All Media folder displays all the media in the Media Manager regardless of what folder they

are in.

## Selected Folder's Media

Once a folder is selected, its media will display in the main pane of the interface.















Displays each clip as it's thumbnail.



Displays media as a list with details.

Media in either thumbnail or detailed view can be selected to add it to the media map.

<div>    <div>Strata Disk Space: 160 GB Free of 238 GB</div> <div>  Clean Media Folder            Upload Files...            Upload Folders...         </div> </div>											
Image	Name	Type	Resolution	Duration	FPS	Aud Ch	Alpha	Notes	Tags	Encode	FileSize
	09AA_TRUSS_REVOLVING_LADDER_00000	FlexRes (Performance)	3840 x 2160	00:00:07.500	30.00	0	False			0s	481.5MB
	08AA_SPEAKER_SPIROGRAPH_00000	FlexRes (Performance)	3840 x 2160	00:00:13.100	30.00	0	False			0s	730.5MB
	02AA_PLEXUS_INTHE_ROUND_00000	FlexRes (Performance)	3840 x 2160	00:00:14.967	30.00	0	False			0s	463.6MB
	05AA_BLACK_MORPHING_HELIX_00000	FlexRes (Performance)	3840 x 2160	00:00:14.967	30.00	0	False			0s	495.3MB
	03AA_HALO_HULAHOOP_00000	FlexRes (Performance)	3840 x 2160	00:00:14.967	30.00	0	False			0s	992.9MB
	Artificially_Awake_4K_Header	Picture	3840 x 2160	00:00:00.000	0.00	0	True			0s	2.7MB

- Left mouse click will toggle selection for each clip
- Holding CTRL while clicking will add to the current selection
- Holding SHIFT while clicking will toggle all clips between the selection
- A number will appear as clips are selected to indicate the order that they will be added to the media map.
- To add a selection to the media map, drag and drop it on a bank to add it from slot 0, or drop it directly onto a clip.



h4. [Shows Media Manager Settings. Please see encoding media for more information.](#)

## Disk Usage

Disk Usage indicates how much space is used on the drive containing the strata folder.



- At 10% free space the Media Manager component will be set to a yellow caution state.

- At 3% free space the Media Manager component will be set to a red error state and will refuse to encode additional media.

## Media Upload

Uploading media chooses external movie and audio files to be encoded into Hippotizer.



- Upload Files allows for single files to be chosen
- Upload Folders allows for whole folders to be encoded.
- When uploading image sequences and using the upload file option, choose a single image from the sequence to encode the entire sequence.

[Please see the section on Encoding media for more information.](#)

## Media Map

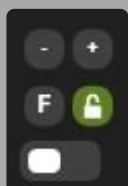
The media map is the reference that Hippotizer uses to play media.



- In order to play a piece of media it must first be encoded and then added to the media map
- A single piece of media can be in multiple locations in the media map
- Any changes to the media map take effect immediately

## Media Map Options

Display options for the media map are shown to the right of it.



Increases and decreases the number of clips shown per line.





When green, the media map can be edited. Click to lock, which shows red, and blocks editing the map until unlocked.

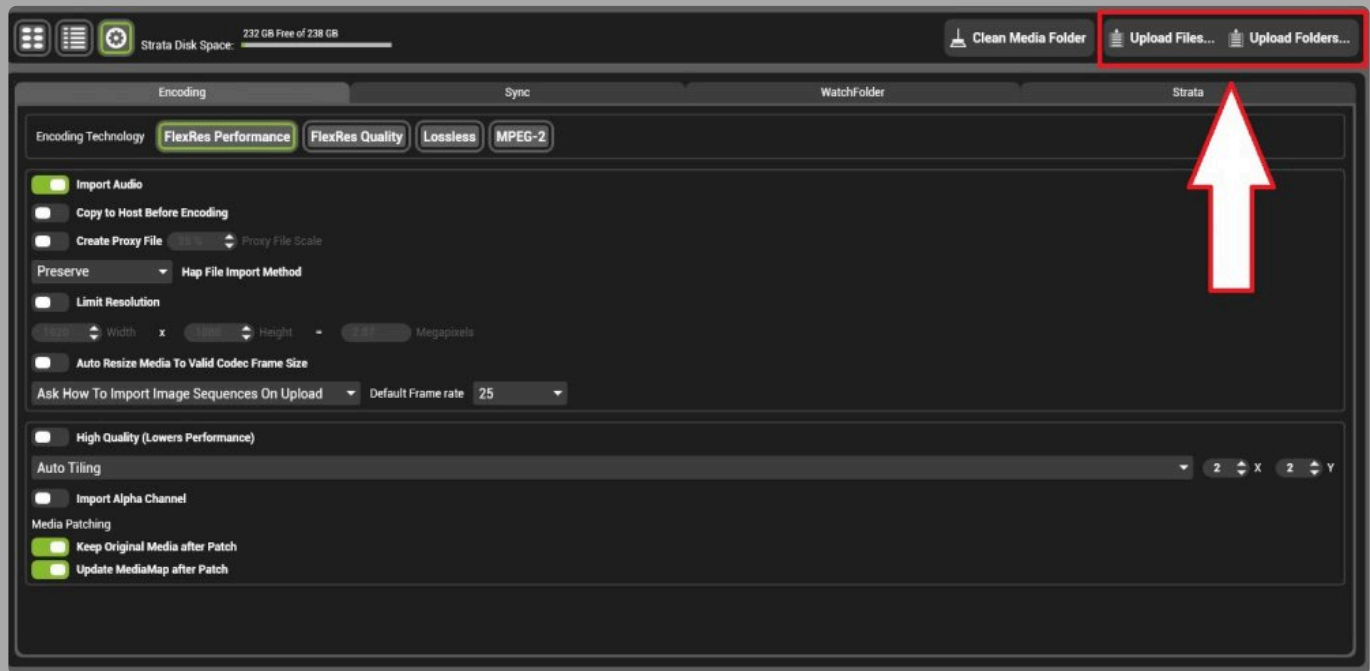


Enable to show Tags instead of media. [See the Notes and Tags section for more information.](#)

# Encoding Media

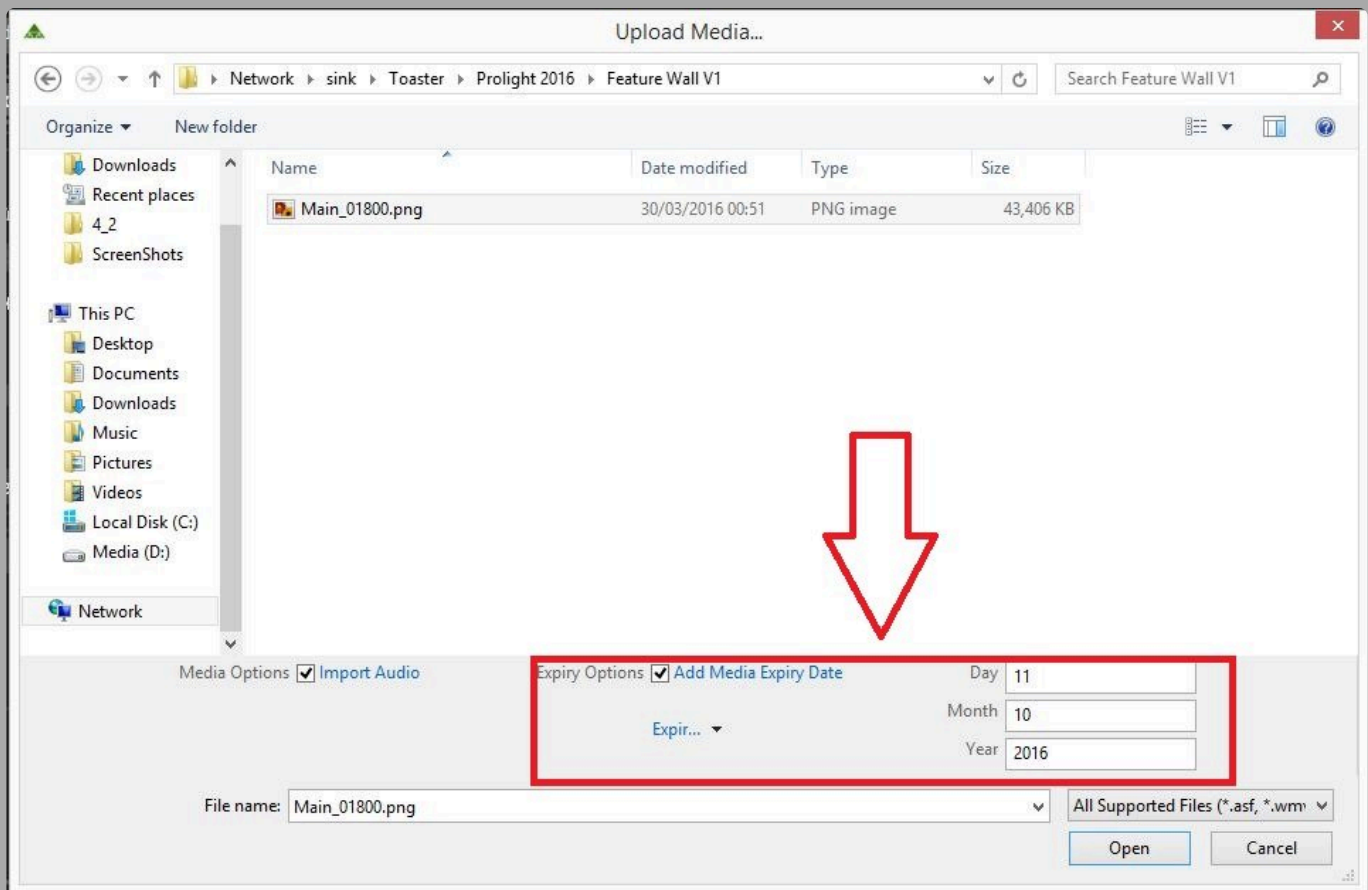
Media Manager automatically converts external video files into the selected internal codec.

To Encode media, choose either the option to upload a file or folder from the Media Manager's main window.



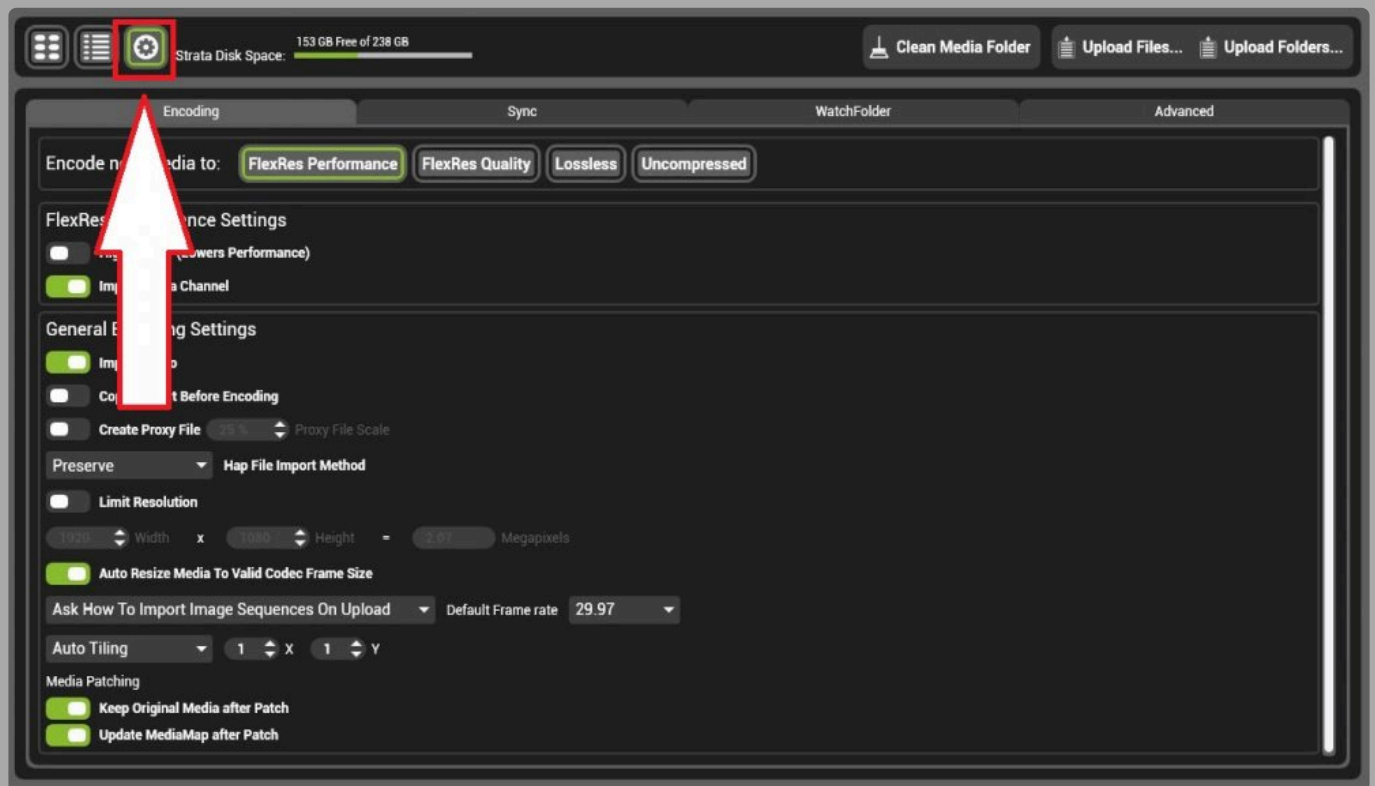
Use **Upload Files...** to choose individual clips within a folder and use **Upload Folders...** to select an entire folder for encoding.

The selection dialogue box also contains an option for **media expiry**.



If this is enabled, the media will not play after the expiration date.

# Media Manager Settings



Media Manager's Settings control how media is encoded, where it is stored as well as other important functions.

In the settings menu, there are four main areas:

- [Encoding](#)
- [Sync](#)
- [Watchfolders](#)
- [Advanced](#)

# Encoding

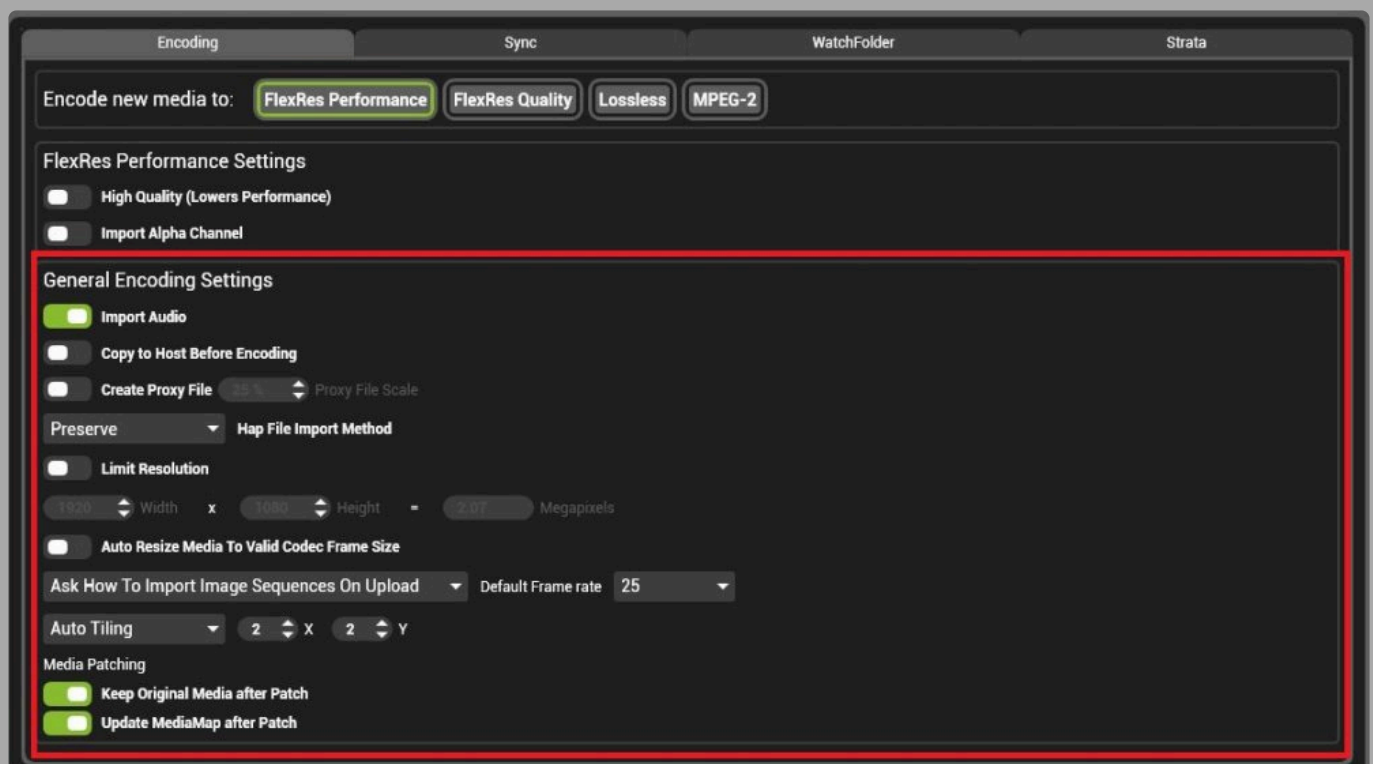
All movie files are converted automatically to a format that Hippotizer can play back. This process, called **Transcoding** is handled by media manager. Clips are converted to one of four internal Codecs:

- [FlexRes Performance](#)
- [FlexRes Quality](#)
- [Lossless](#)
- [Uncompressed](#)

Each codec offers strengths and weaknesses; it is best to consider the specific requirements of the production when choosing which codec to use.

## General Encode Settings

Many settings in Media Manager apply to all content regardless of which Codec is selected:



### Import Audio:

If enabled, audio attached to clips will be encoded as well. If the source is an image sequence and an audio file is present in the folder with the same name as the sequence, then the audio file will be attached to the encoded clip.

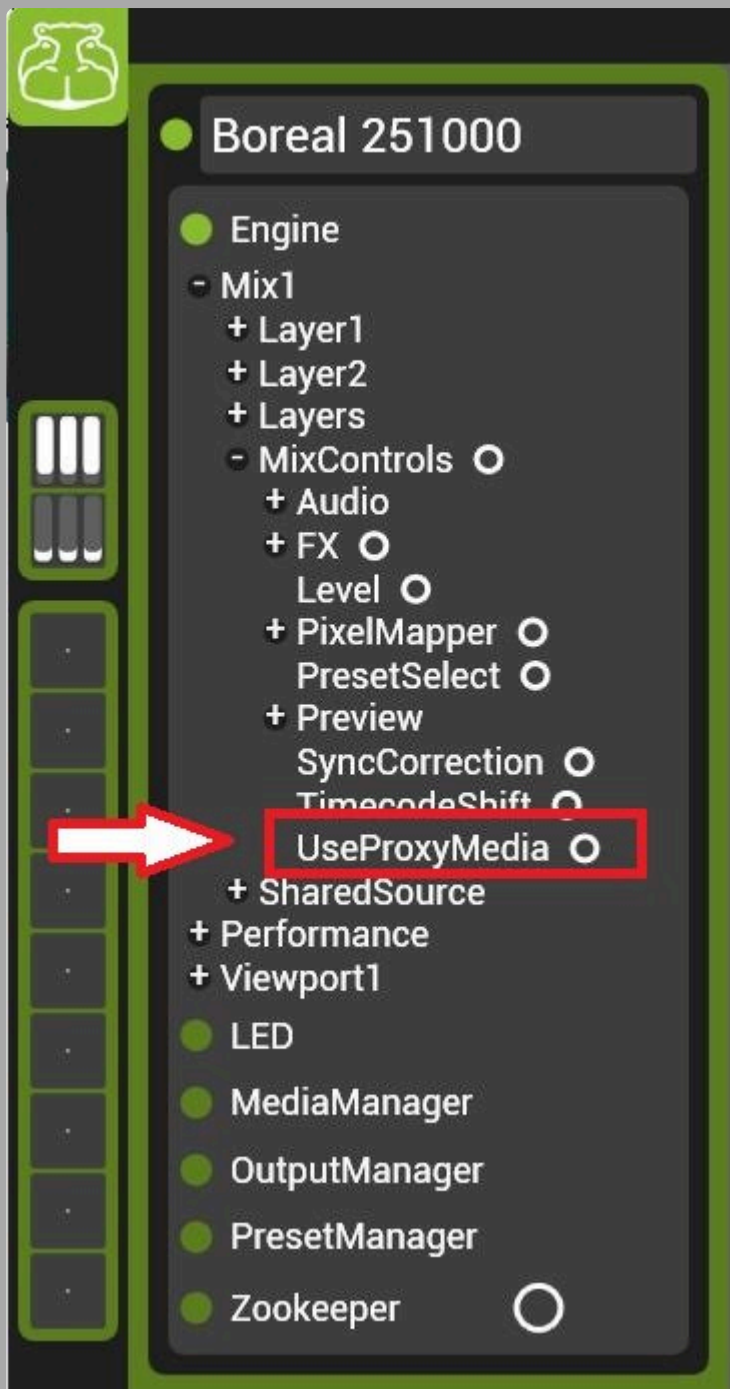
**Please Note:** Separate audio clips can be associated with image sequences to do this, place the audio file in the same folder as the target image sequence when it is encoded. Take care to ensure the resulting video clip is the same length as the audio file.

## Copy to host before Encoding:

If enabled media is copied to the local machine before encode. This is not recommended as it will create an extra copy operation and consume drive space.

## Create Proxy

If enabled a smaller version (a proxy) of each media file will be created and saved in addition to the full resolution media. Proxy media is useful when using a visualiser to simulate larger multi-Hippotizer systems. Each mix can be set to use proxy or full resolution content with the pin UseProxyMedia under mix controls.



## HAP File Import method

Files encoded directly to HAP can be encoded to Hippotizer with little or no transcode saving significant time in media ingest. To do this, files must be rendered directly to HAP.

**Please Note:** Rendering to HAP can itself be a slow process, especially in QuickTime. If you are using PC based AfterEffects or Nuke it will be faster to use FlexRes plugins to render directly to FlexRes.

Any HAP files that are then encoded will follow the chosen transcode method:



Only HAP, HAP-Alpha and HAP-Quality is supported. HAP-Quality Alpha is not supported.

**Preserve:** The fastest method: files are copied straight to the media library.

**Repack:** Files are re-wrapped but not transcoded. This is still fast, but may improve playback compared to normal HAP files.

**Transcode:** Files are re-encoded with the FlexRes wrapper applied.

## Limit Resolution

If enabled will downscale all encoded media to the desired resolution. The limit resolution values must respect the limits of the target codec; so for FlexRes Performance it must be divisible by four in height and width.

## Auto Re-size media to valid codec size

If enabled, content that is not within the resolution limits of the selected codec will be automatically resized to work. Otherwise the content will fail to encode.

**Please Note:** Content will be cropped to fit. So a clip that was originally 1922 × 1080 would encode to 1920 × 1080. This slightly changes the aspect ratio so may not be desirable.

## Ask how to Encode Image sequences

When files in the same folder to be encoded are detected as a series of images with sequential numbers in the name, Media Manager will assume they are image sequences and act accordingly. By default, it will ask the user to confirm that it is an image sequence instead of a series of discrete images to be encoded.

## Default Frame Rate

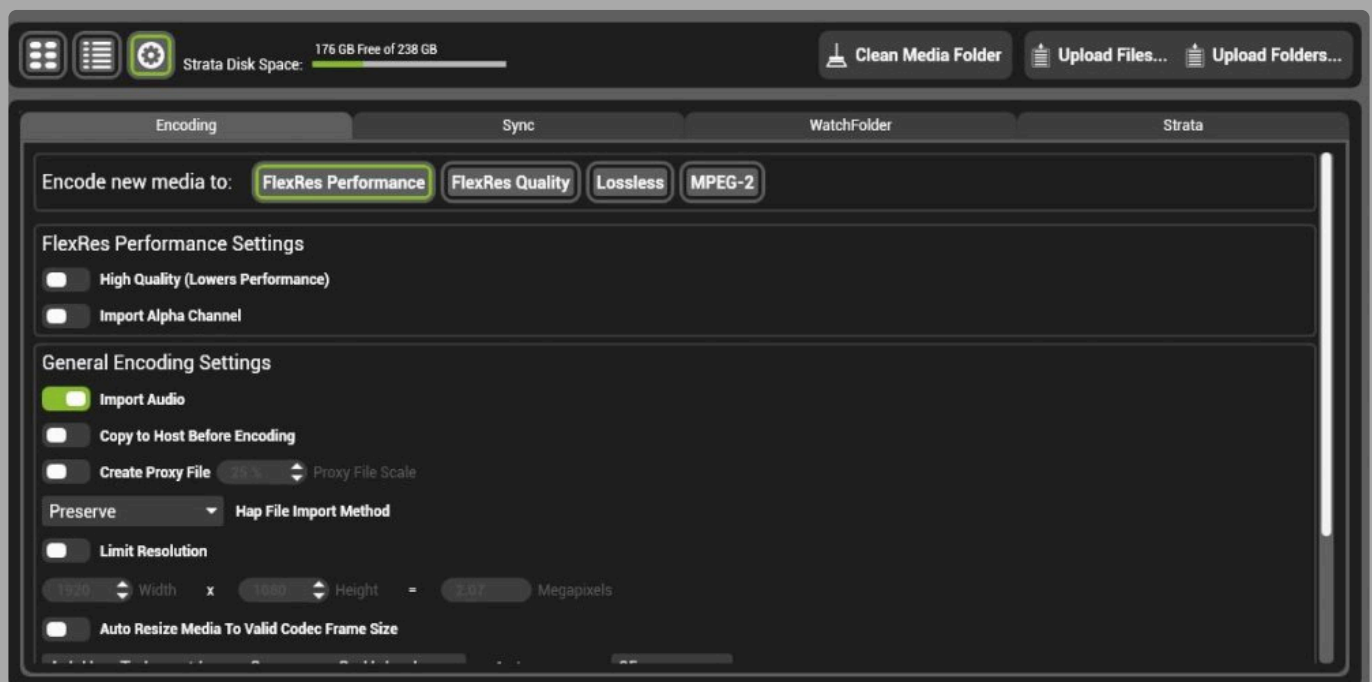
The frame rate of the resulting clip when an image sequence is encoded.



# FlexRes Performance

Building on the widely used HAP family of codecs, **FlexRes Performance** offers very low playback load with reasonable visual quality. The HAP codec uses GPU based decoding (the graphics card) to playback video which generally results in better overall system performance. HAP typically has a lower compression ratio than FlexRes Quality so encoded media can take up more space on disk and requires greater disk read performance.

To encode to FlexRes Performance, select it Media Manager's settings.



## Strengths

- Very low playback overhead

## Weaknesses

- Reduced colour space can result in banding especially with colour gradients.
- Colour sub-sampling carried out in 4×4 pixel blocks can make diagonal lines appear 'steppy'.
- Low compression ratio results in large files on disk

Tip: Applying noise to generated content with colour gradients can help to reduce the visibility of banding.

## Resolution Limits

- Height and Width must be divisible by four.

- Max Resolution: 16,384 × 16,384
- Minimum Resolution: 64 × 64

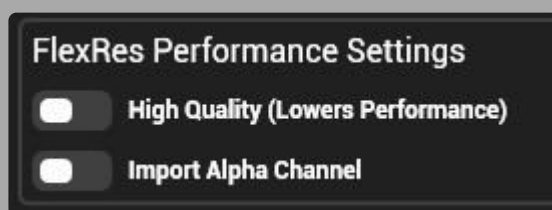
## Frame Rates Supported

- Up to 60 FPS

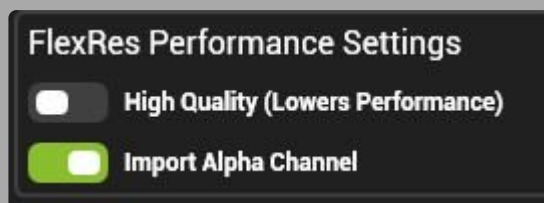
## Alpha Support

- Yes, in FlexRes Performance Alpha only

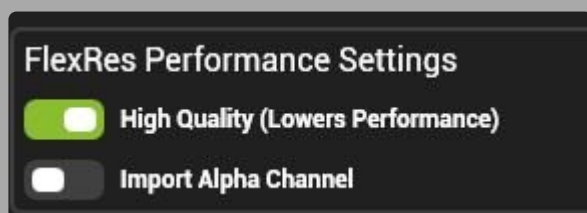
## FlexRes Performance offers four encoding options:



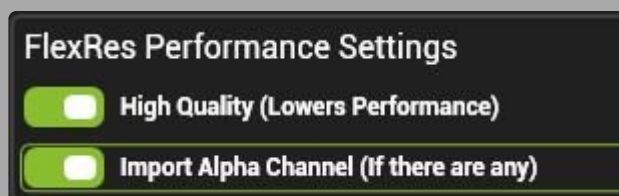
**Performance** Uses basic HAP; Offers the lowest data rate with the most compression. Visual artifacts are most noticeable on high contrast diagonal lines (where it will appear as steps) and in colour gradients: especially in warm colours.



**Performance Alpha** Uses HAP-Alpha; adds alpha transparency support to HAP. Due to the extra data of the alpha channel, media file size and playback load is higher than that of normal HAP.



**Performance High Quality** Uses HAP-Q: offers improved image quality with a similar data rate and load as HAP-Alpha. Does not support alpha transparency.



**Performance High Quality Alpha** Uses HAP-QA: offers improved image quality and Alpha with a

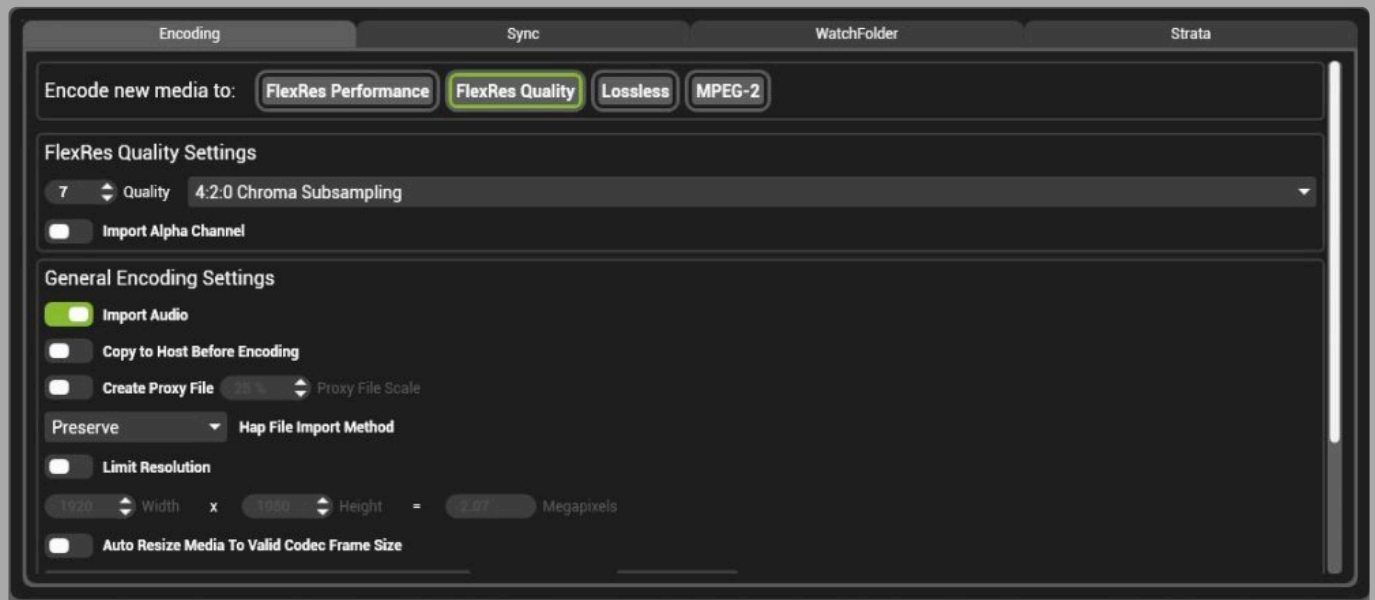
slightly higher load to that of HAP-QA.

## **Tiling**

- Tiling is an internal method that Hippotizer uses to optimise playback of greater than HD clips. It is best to leave this set to automatic.

# FlexRes Quality

**FlexRes Quality** uses a codec developed by Green Hippo to combine low playback overhead with better visual quality.



## Strengths

- Choose what quality and colour sub-sampling is required
- 4:2:0 Quality 7 has comparable quality as FlexRes Performance with a smaller size on disk in most circumstances. (better compression)
- Good at encoding live (not rendered) content

## Weaknesses

- Higher Quality and colour spaces can dramatically increase playback load.
- Relies partially on the computer's CPU for decoding
- Computer generated content with gradients and uniform colours do not compress well

## Resolution Limits

- Height and Width must be divisible by four.
- Max Resolution: 16,384 × 16,384
- Minimum Resolution: 64 × 64

## Frame Rates Supported

- Up to 60 FPS

## Alpha Support

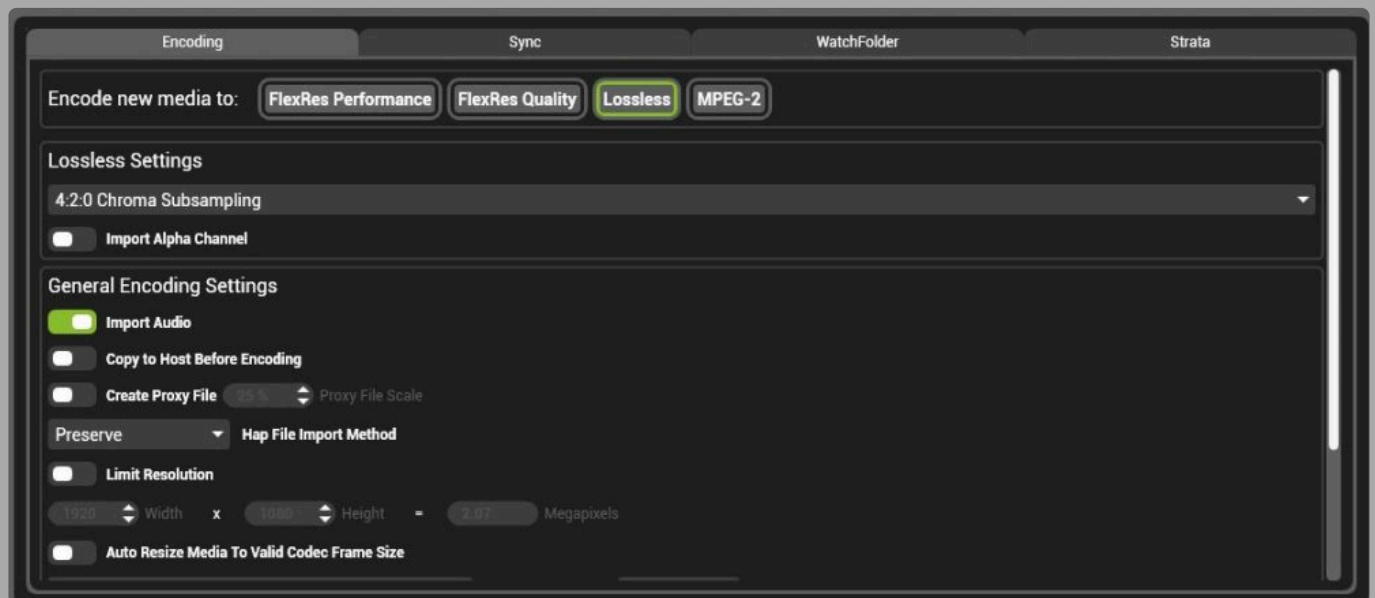
- Yes

## FlexRes Quality has three encoding settings:

- **Chroma Sub-sampling** One method of image compression reduces the colour space of the video by only encoding certain colour channels for each  $2 \times 2$  pixel block of video. The specifics of this process extend beyond the scope of this manual. In brief, 4:2:0 is encoding only half as much colour information as 4:4:4 which does not compress the colour data at all. The most visible artifact from colour compression is banding in colour gradients (as similar colours are rounded together forming a band) and steppy diagonal lines in areas of high contrast.
- **Quality** In addition to colour, FlexRes Quality also carries data out compression per frame. The degree of this compression is user configurable with 10 being visually lossless and 1 being very highly compressed.
- **Tiling** Tiling is an internal method that Hippotizer uses to optimise playback of greater than HD clips. It is best to leave this set to automatic.

# Lossless

FlexRes **Lossless** uses a compression method that allows the source data to be perfectly reconstructed. FlexRes Lossless is designed for scenarios where perfect video reproduction is vital. Lossless has the potential to create relatively large files and can be very heavy to playback so is best used with caution.



## Strengths

- Perfect video reproduction when set to 4:4:4 colour.

## Weaknesses

- Very High Playback load
- Large file size on disk

**Note:** Due to the potentially huge file size of Lossless media, it is very important to consider drive space carefully for each application.

## Resolution Limits

- Width must be divisible by four when using 4:2:0 or 4:2:2 chromatic sub-sampling
- Max Resolution: 16,384 × 16,384
- Minimum Resolution: 64 × 64

## Frame Rates Supported

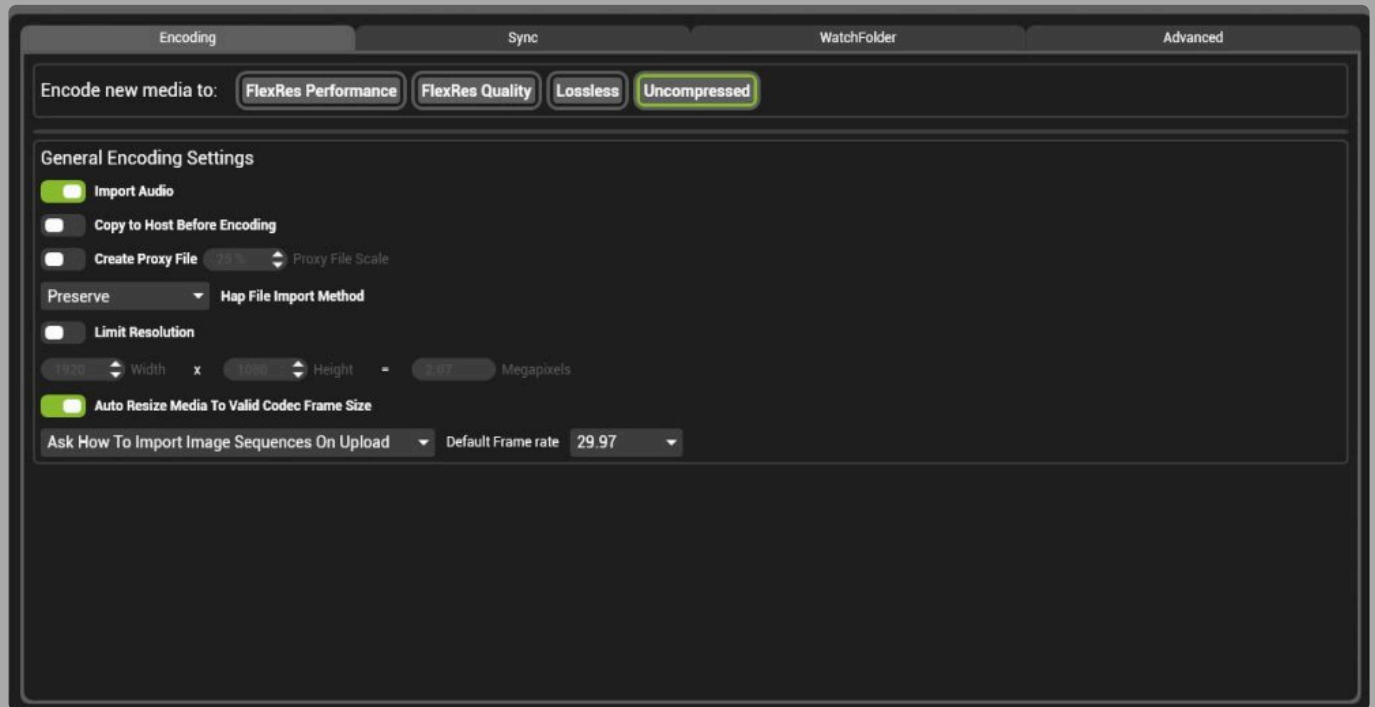
- Up to 60 FPS

**Alpha Support**

- Yes

# Uncompressed

FlexRes **Uncompressed** uses no compression when storing video files. Without data compression a single frame of 1920 × 1080 alpha containing video stores at 8MB.



## Strengths

- Perfect video reproduction
- No CPU usage to decompress.

## Weaknesses

- Very High Playback load
- Huge file size on disk

**Note:** Due to the potentially huge file size of Lossless media, it is very important to consider drive space carefully for each application.

## Resolution Limits

- Max Resolution: 16,384 × 16,384
- Minimum Resolution: 64 × 64



## Frame Rates Supported

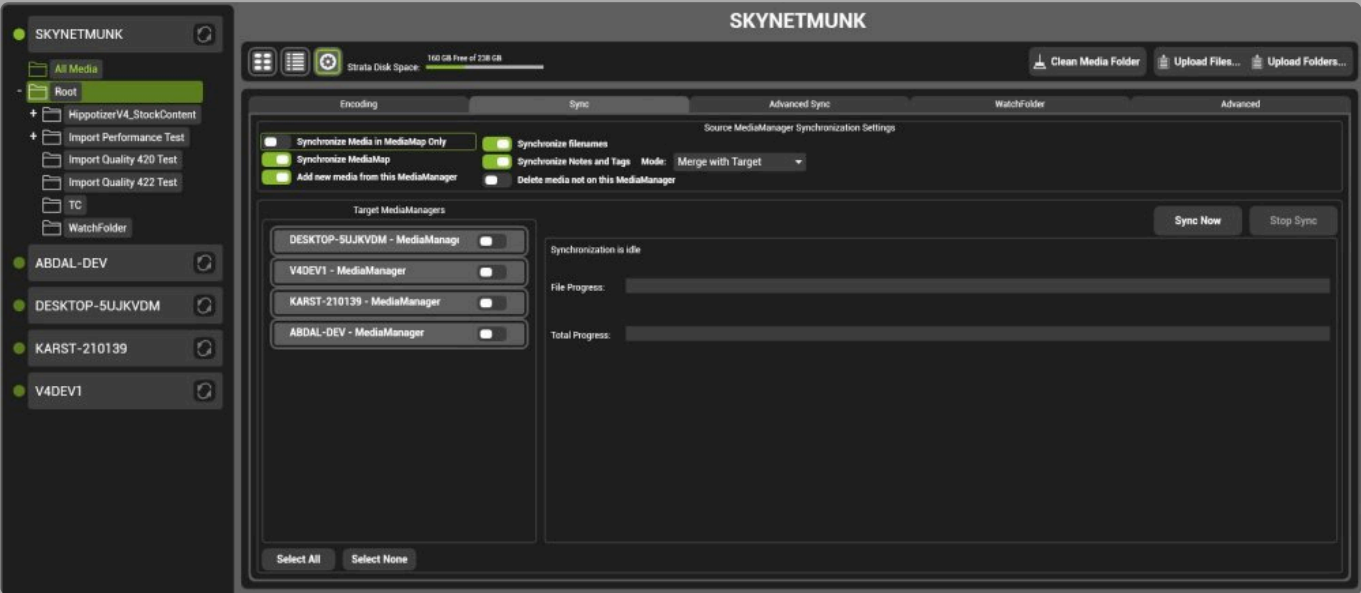
- Up to 60 FPS

## Alpha Support

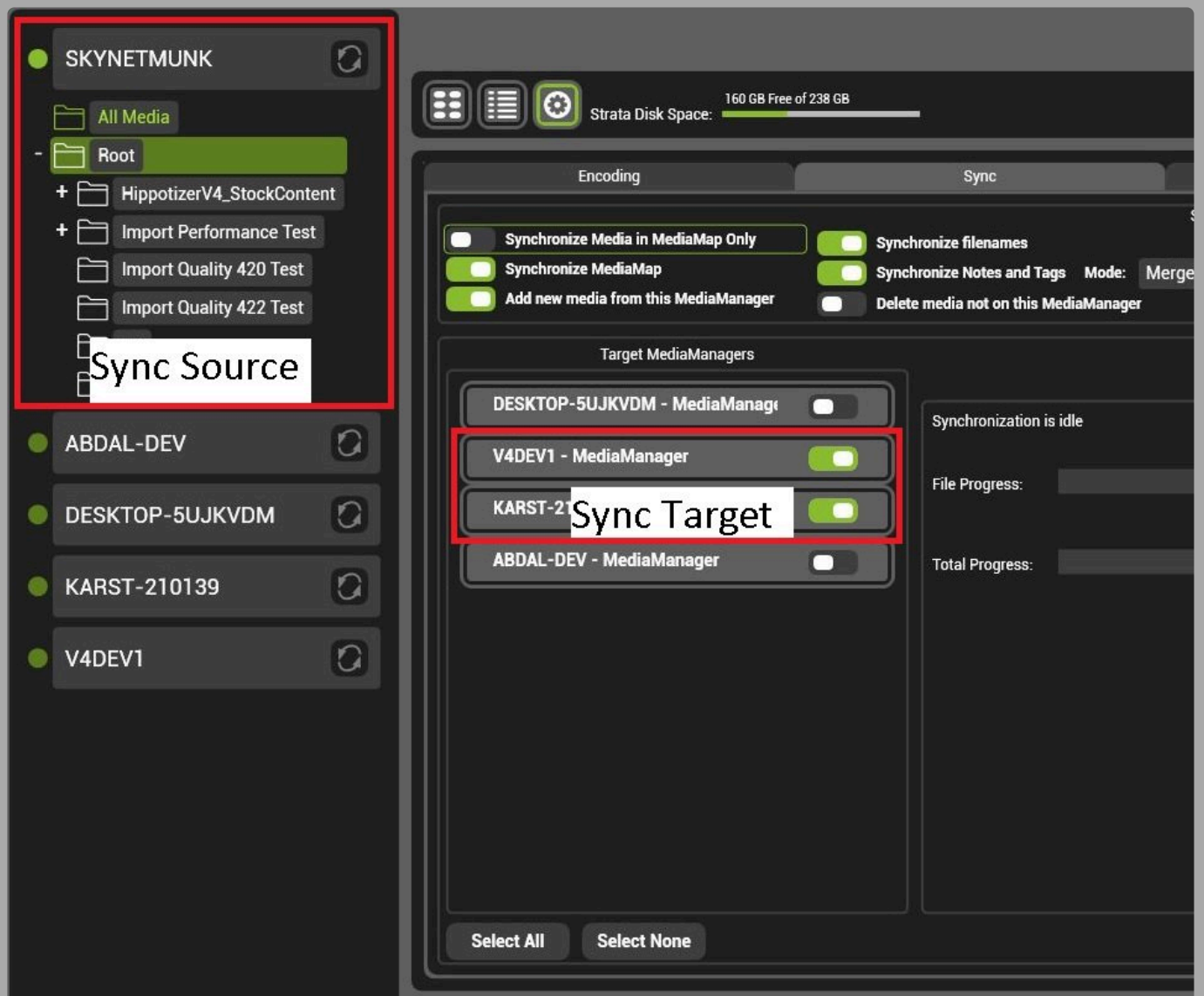
- Yes

# Media Sync

Sync sends media to other systems on the network



Media is sent from the selected system to the selected targets:



## Sync Settings:

### Synchronise Media in Media Map only

Only media that is used in the media map will be sent.

### Synchronise Media Map

Sends the media map as well as media.

### Add new Media from this media Manager

If disabled, only deletions are synchronised. If Enabled all additional media will be sent.

**Synchronise file names**

If enabled and a file on the destination system has the same ID as the source but a different name, the name will be changed on the destination.

**Delete Media not on this media manager**

Deletes any media that are not present on the source machine.

**Target Media managers**

Choose which media managers to sync to.

# Watchfolders

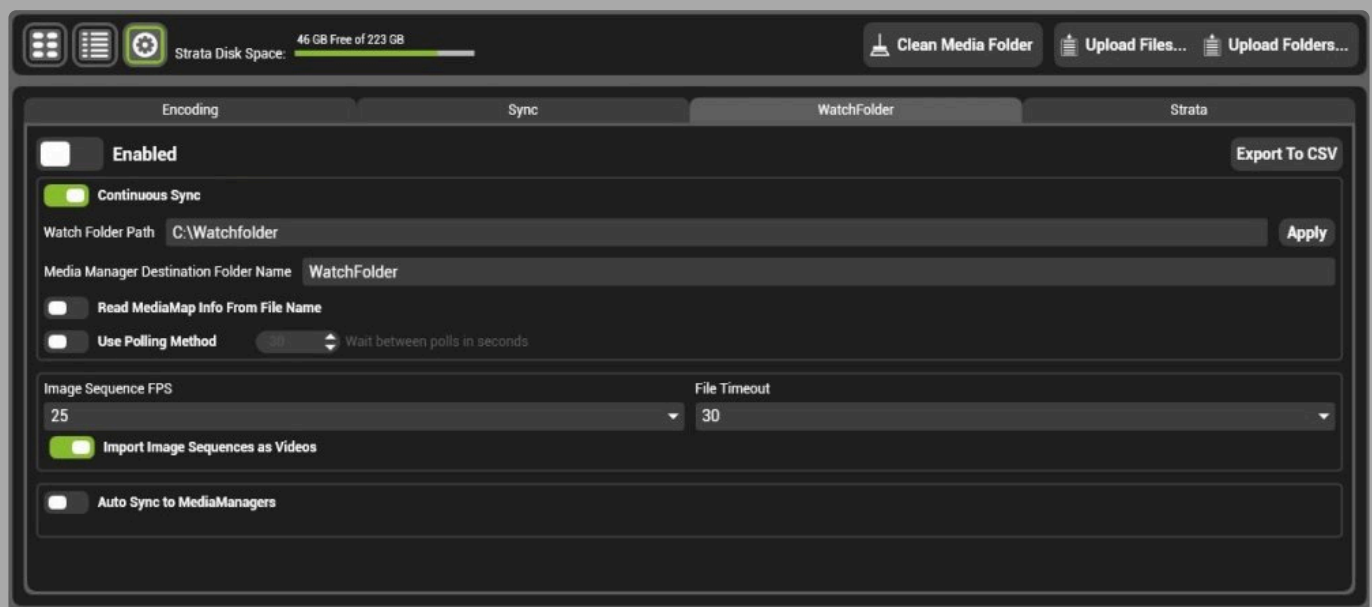
Watchfolders automatically encodes media files in a selected folder. The media will be placed in Hippotizer's media library where it can be added to the media map and sent to other systems across the network.

Watchfolders is used in many ways to save time and improve the media workflow to:

- Instantly encode content as it is created by watching a shared network folder
- Synchronize media on primary and backup systems by watching the same folder with two (or more) systems.
- Automatically download new content from web based folders such as Dropbox
- Remotely update the media map of an installation

! Watchfolders is a powerful tool to automate the media ingest and distribution workflow. It can automate media changes and deletions so should be used with great caution; disable it in show critical situations.

Watchfolders is configured from within media manager's settings.



## Enabled

If enabled, Watchfolders will automatically encode any media placed in the designated watch folder path.

**With the above settings:**

Media Placed in `C:\Watchfolder` will automatically encode using the codec chosen in media manager's settings and be placed in the `Watchfolder` folder in media manager. Files deleted from the watchfolder will not be changed in media manager.

**Note:** When Watchfolders is enabled it will check to see if the folder on the watchfolder path exists, if it doesn't the folder will be created. Watchfolders will also place a small hidden file on the designated folder, this is integral for normal function of Watchfolders: do not delete or modify it.

## Continuous Sync

If enabled, Watchfolders will synchronise file deletes from the Watchfolder to the Media Manager.

Continuous Sync only deletes media that is deleted while it is enabled; it does not synchronise the folder when it is enabled

Media deleted while Continuous Sync is disabled will be deleted from Media Manager if the engine is restarted with Continuous Sync is enabled.

**Note:** Media deletes are synchronised across media manager no matter what folder the clip is placed in. **This setting will result in media being deleted automatically from media manager and the media map; use with caution.**

## Watch Folder Path

The source folder where Watchfolders reads from. Networking and Watchfolders can be complex. [More info is here.](#)

## Media Manager Destination

The folder in media manager where content is encoded to. Folder trees in the Media Manager Path will be replicated in the destination.

## Read Media Map Info from File Name

If enabled, any clips that contain `[bank number, clip number]` in the name will automatically be placed in the media map.

**For example:**

`Layout[10,10].mov` will be placed in bank 10, clip 10 of the media map.

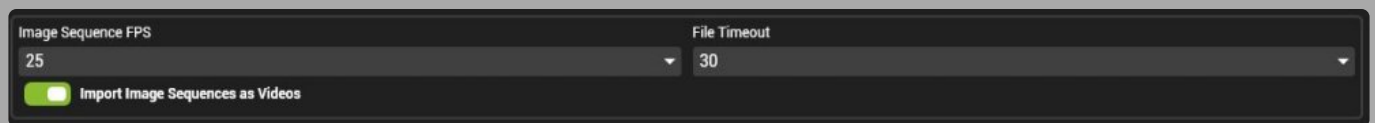
**Note:** This will overwrite any media already present in this media location.

## Use Polling Method

An alternate way to detect media changes to using Windows. By default, Watchfolders uses a Microsoft Windows subsystem to detect when files are added to the Watchfolder. On some Network Attached Storage (NAS) devices this is not supported. Polling will manually check the designated folder for changes at every poll interval. Polling is a more intensive system than using Windows notifications so should be used only where required.

[More info on different folder methods can be found here.](#)

## Image Sequences and Watchfolders



Watchfolders will encode any numbered sequence of images as an image sequence providing they are named correctly:

- All images in the sequence share the same name preceding the file number `Filename_####`
- The number must be at least 4 digits. For files of number less than 1000, use preceding zeros. `Filename_0001`
- When using bank and clip information, it should be between the file name and the frame number. `FileName_[##,##]_0001`

### Frame Rate

Image sequences are encoded at the set frame rate. The setting for Media Manager's image sequence frame rate and that of Watchfolders are separate. All other encode settings are shared.

### File Timeout

Watchfolders can import image sequences however it is a little more complicated than in a normal file encode. This is due to the fact that as an image sequence is added to the watchfolder path Hippotizer will detect the image files being added one at a time but not know when to start encoding them. (There is no way to know the copy has been completed). To fix this, Watchfolders has a **File Timeout** which is the time in seconds that it will wait before attempting to encode an image sequence from the time the last image was added. After each image is added Watchfolders waits for the File Timeout period, if the time elapses and no additional frames of that sequence are added it will be encoded. As a new frame is added the file timeout is reset. The default setting of 30 seconds is appropriate for most applications.

## **Auto Sync to Media Managers**

Will synchronise media encoded with Watchfolders to selected media managers on the network as they are uploaded.



# Setting up Networked Watchfolders

---

Hints for setting up various networking scenarios:

## Choosing a NAS to use.

Networked Attached Storage (NAS) is a very good way to store data on the network and share it to Watchfolders. Multiple content creators can add media to a single NAS and watchfolders can encode it automatically creating a seamless content ingest path. When choosing the NAS, it is best to ensure that it supports Windows Files Notifications. In general, only a NAS running a Windows operating system (such as Microsoft Storage Server ). Other operating systems may work in one folder, but not in sub folders for example.

Where a NAS does not support Windows File Notifications, use [Polling](#).

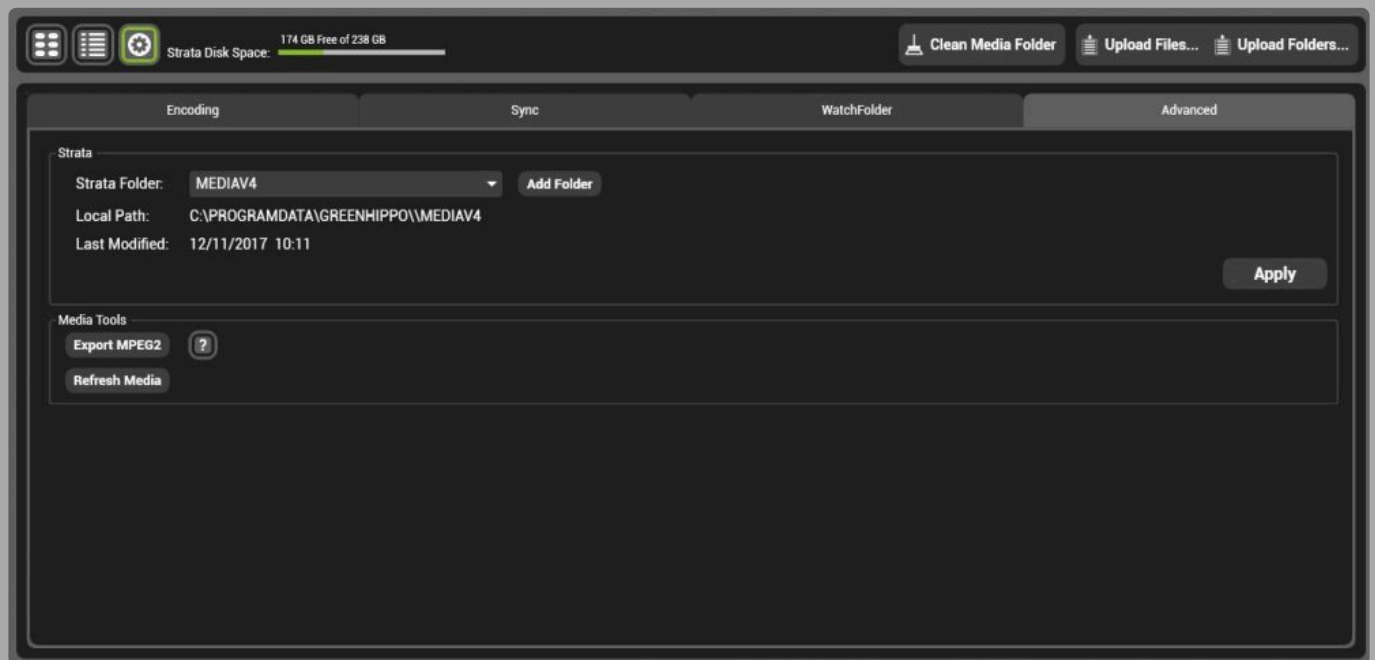
## Sharing a Mac folder with Windows

1. Create a folder on the Mac to share
2. Use SMB sharing (Samba)
3. The username and password will need to be entered after a restart

## Sharing with Dropbox or similar cloud storage

1. Use the cloud storage's client to create a folder that synchronises with the online content on a networked machine (we do not advise directly connecting a Hippo to the internet)
2. Share the folder with the Hippotizer
3. Point watchfolders to this folder.

# Advanced



## STRATA Drives

STRATA Drives re-map the path to media storage. By default the internal D: Drive is set as the media path. Other paths and drives may be used.

- [STRATA](#)

## Export Mpeg2

Exports all mpeg2 based media.

- [Export Mpeg2](#)

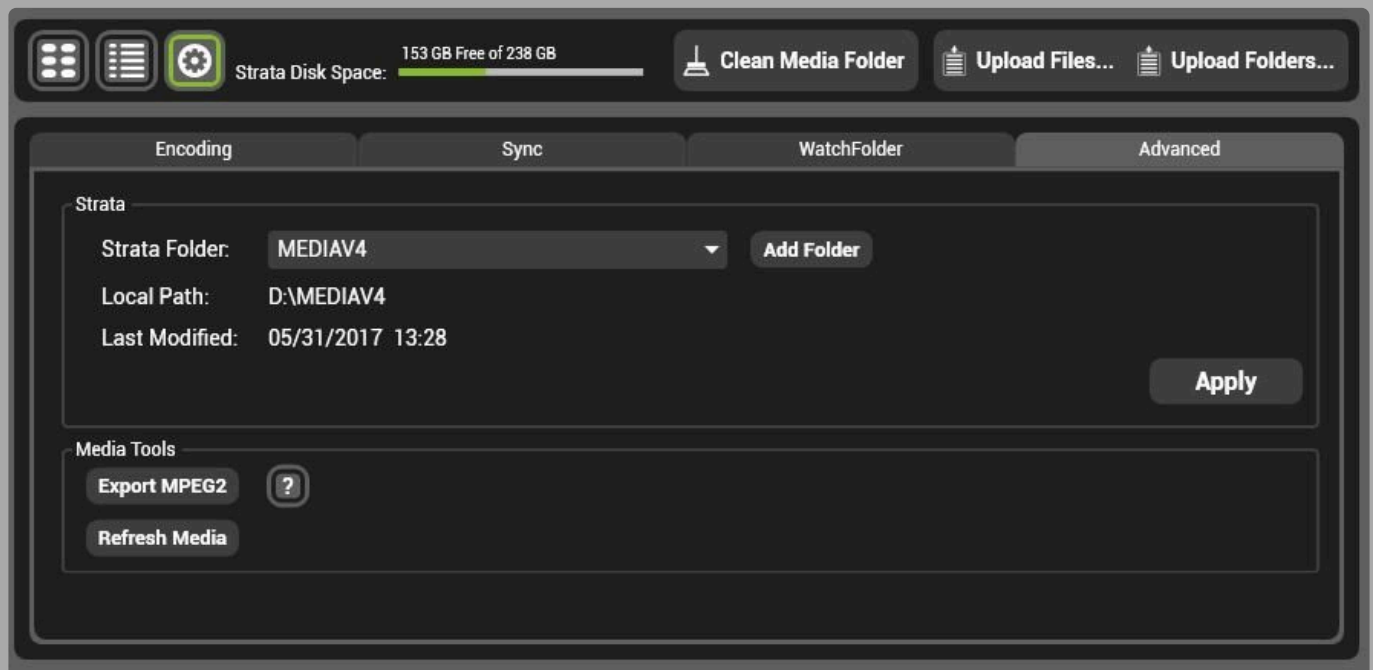
## Refresh Media

Re-writes all media files on the drive to combat read degradation seen on some SSDs.

- [Refresh media](#)

# STRATA

The folder that Media Manager uses to store and retrieve media is called the STRATA path.



By Default on a production Hippotizer (except Portamus) the media is stored on `D:\MediaV4`

On Play and Portamus the media is stored on `C:\ProgramData\GreenHippo\MediaV4`

This path can be changed to a new drive or folder as required.

**Note:** Hippotizer's performance is heavily dependant on the read speed and latency of the media drive. For best results use the removable drive bay and Sata 6G SSDs to hold media. Never use USB Drives, network locations or conventional hard drives. Where possible on Boreal and Taiga copy media to the D: Drive for playback.

## Recommended drives to use for STRATA

Given the fast changing nature of computer hardware it is impossible to maintain an up to date list of recommended STRATA drives. Green Hippo has extensive experience with some makes and product lines however that we have found to be reliable:

- Samsung Pro series. (850 and 860 have been tested)
- Crucial MX 500 Series

When choosing the drive we recommend targeting the fastest possible sequential read speeds. (500MB/

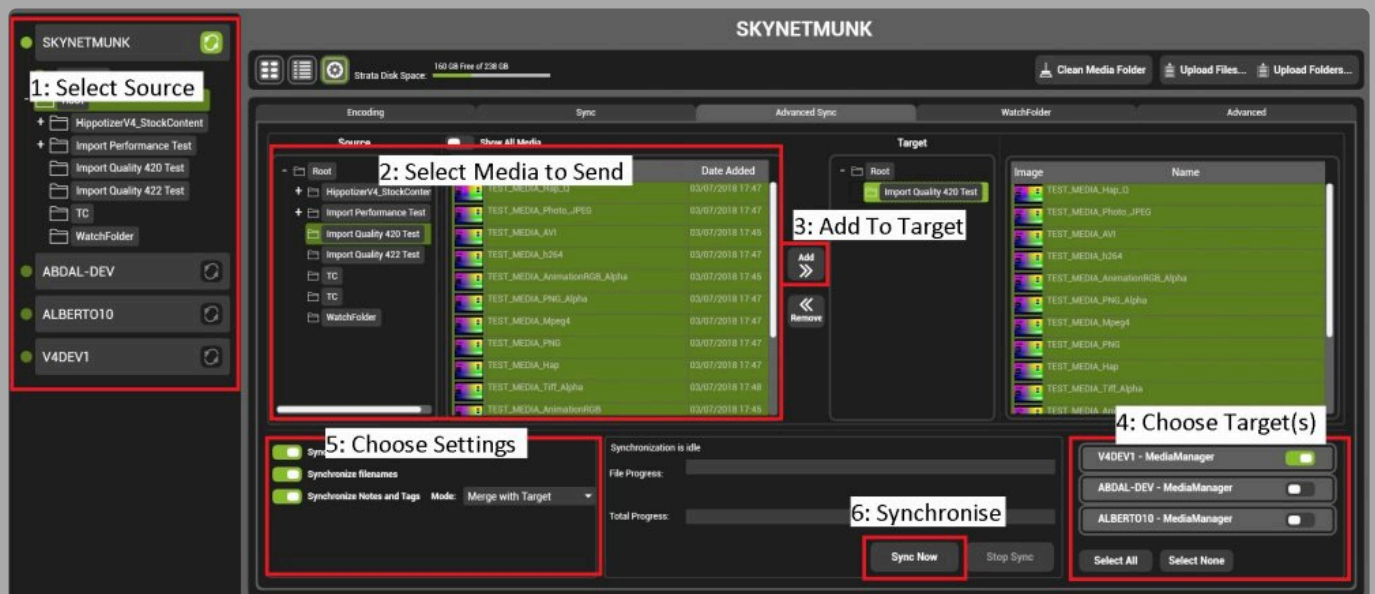
s is common for SATA drives). The read-centric nature of media drives means that other measures such as IOPS or drive writes per day (DWPD) are not as important.

# Advanced Sync

Advanced Sync transfers specific media between Hippotizers across the network



Setting up Advanced Sync involves setting a source, choosing media and destination.



## 1: Select Source

Choose the media manager that will send media.

## 2: Select Media to Send

Choose a folder to send all the media contained within it, or choose individual clips within the folder.

Holding **CTRL** will toggle clip selection.

Holding **SHIFT** will toggle all clips between the selection.

## 3: Add to Target

Press the Add to target button to add the selected media to the send list. Media will not be sent yet.

When sending multiple folders it is best to select each one individually, then add it, and select the next one.

## 4: Choose Targets

Choose which media manager(s) will receive the media

## 5: Choose settings.

### Synchronise Media Map

Determines if the media map is sent.

- **Enable** The default. The media map will be sent with the synchronisation
- **Disable** The media map is not sent.

### Synchronise File Names

- **Enable** The default. Media name changes will be reflected in the destinations
- **Disable** Synchronised media will appear with it's original name (if it had been changed)

### Synchronise Notes and Tags

- **Enable** The default. All notes and tags are sent with the media
- **Disable** The notes and tags are not sent.

## 6: Synchronise

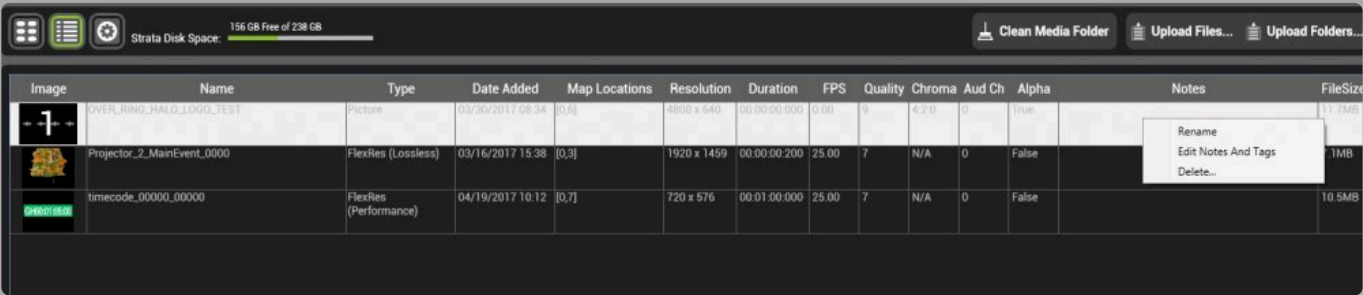
Press **Sync Now** to begin sending files.

Note: Zookeeper must be running throughout the media sync process.

# Tags and Notes

In order to assist with Media Management and versioning, Notes and Tags can be applied to media in media manager.

This is accessed from the list view in Media Manager:



Right click in the Notes Field to open the editor:





## Tags

A tag is a short, generic descriptor of a media file such as “blue” or “120BPM” to enable rapid searching of content.

Hippotizer Version 4.3 will introduce a Tag searching feature.

## Notes

Text can be added to each clip that is visible in Media Manager. This can be useful to

## Entering a new Tag

To create a tag, type the desired name in and press **Add Tag**

## Removing a Tag

Select the Tag and press **Remove**

## Adding or editing notes

Click into the notes field and type or edit the note.

# Converting Mpeg2 to FlexRes

---

## From Version 4.2.1 Hippotizer does not support Mpeg2 playback.

If Mpeg encoded content is present in your media library it must be converted to FlexRes to play in Version 4.2.1 onwards.

## Converting a library should follow these steps:

1. [Back up the Media Library](#)
2. [Mpeg Export Tool](#)
3. [MPEG Conversion](#)



The Mpeg conversion process can be very time consuming (depending on size) and could lead to corrupt media. **It is critical to create a back-up copy before attempting to convert**

# Back up the Media Library

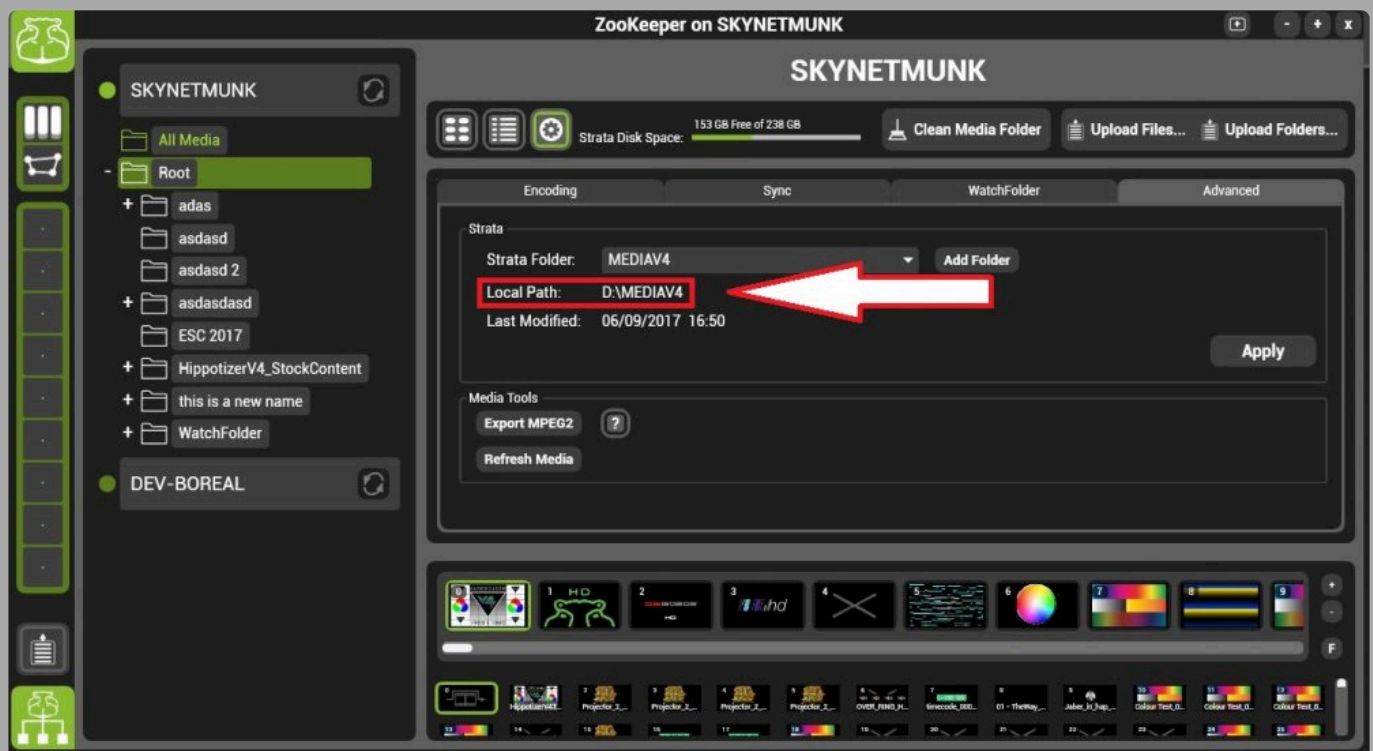
Before beginning the process of transcoding media from Mpeg2 to FlexRes it is vital to back up the media library.

To create a back-up, follow these steps.

Note: In most cases, an external hard drive or large USB stick will be required.

## Locate the media folder:

The STRATA Path is listed in the advanced tab of Media Manage:



Note: The STRATA path is local to the engine; a remote Zookeeper will not be able to see the media folder.

Locate this folder on your Hippotizer system from the STRATA Folder and copy it. If there is enough space, making a copy to the same drive is ok, otherwise the copy must be made to an external drive or USB stick.



The size of the media folder will increase when it is converted from Mpeg2 to FlexRes. Be sure to leave at least **6 Times** the media folder space free on the media drive. For example, if the media folder is 5GB, be sure there is 30GB free on the media drive before proceeding.

# Mpeg Export Tool

The Mpeg Export tool copies all Mpeg based media out of the media folder and saves it to a new directory. The media's original name is restored in this process.

! This tool simply copies media out and renames it; media containing alpha will not play normally in a media player.

The media export tool is accessible from the advanced tab of media manager:



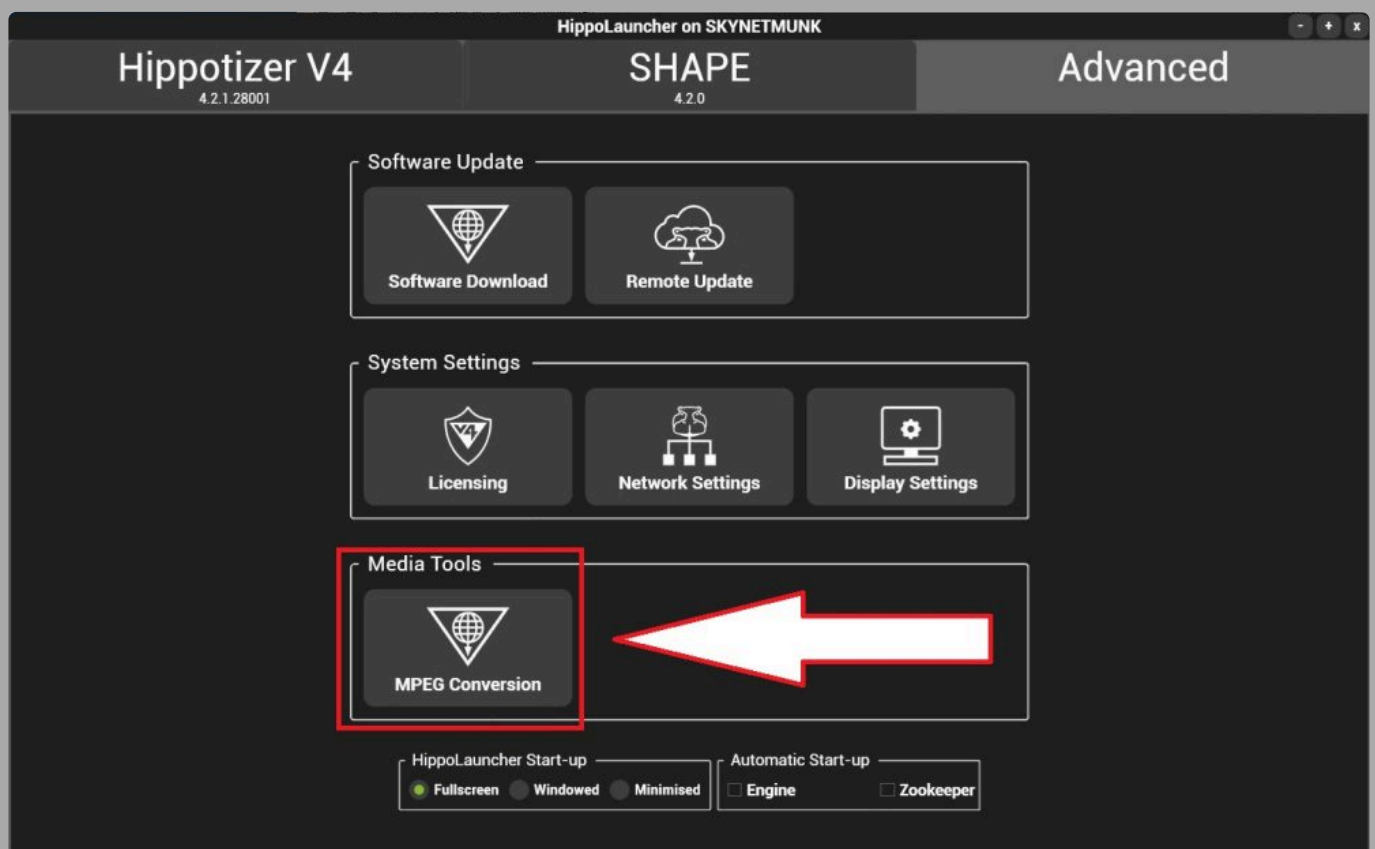
Note: Media is not deleted as it exported, only copied.

# MPEG Conversion

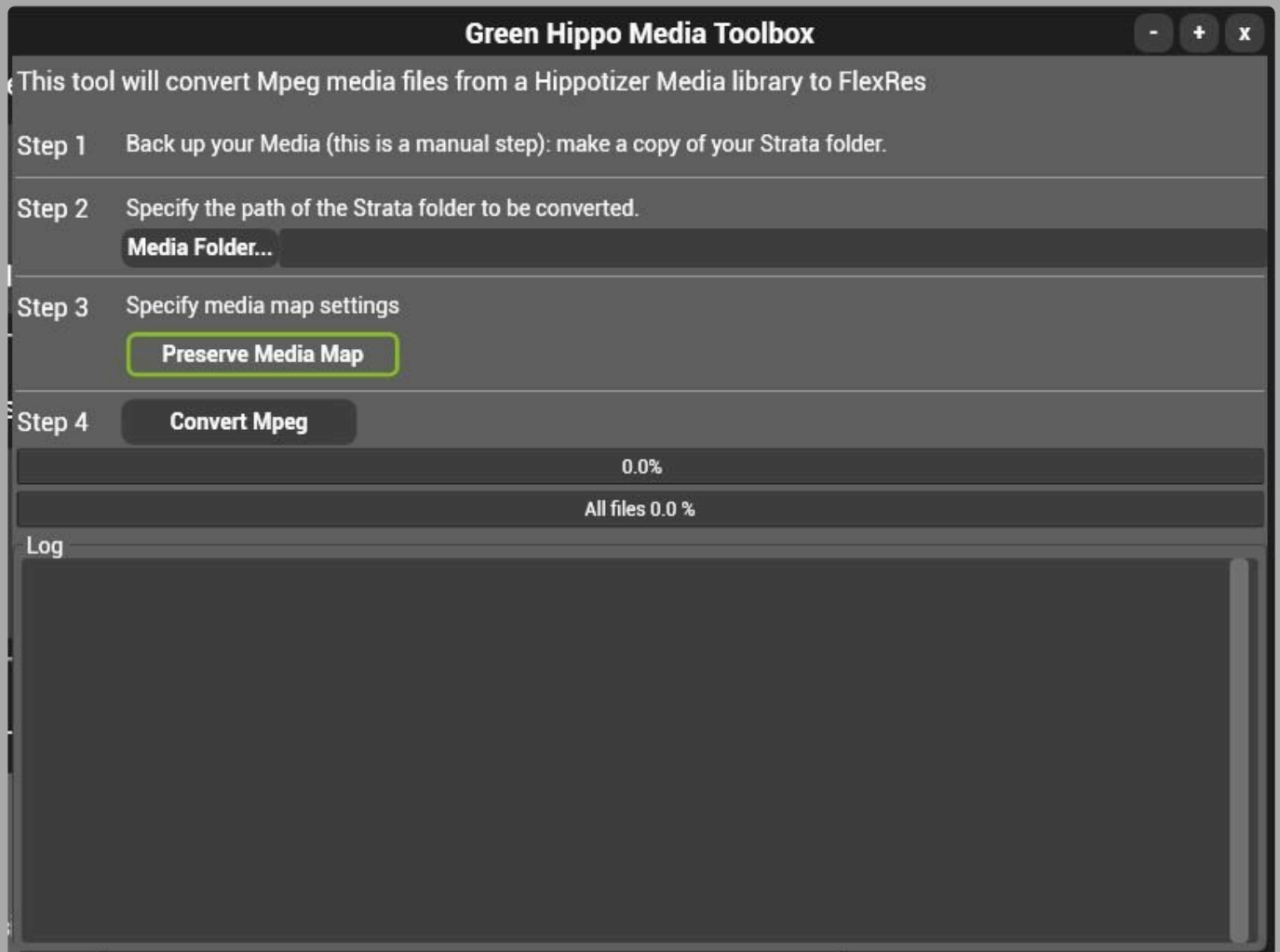
The final step to transcode Mpeg content to FlexRes is to run the Mpeg Conversion tool.

The Mpeg Conversion Tool can be found in the media toolbox in Hippo Launch.

Note: The engine and Zookeeper must not be running to use media tool box.



## This opens the Media toolbox:



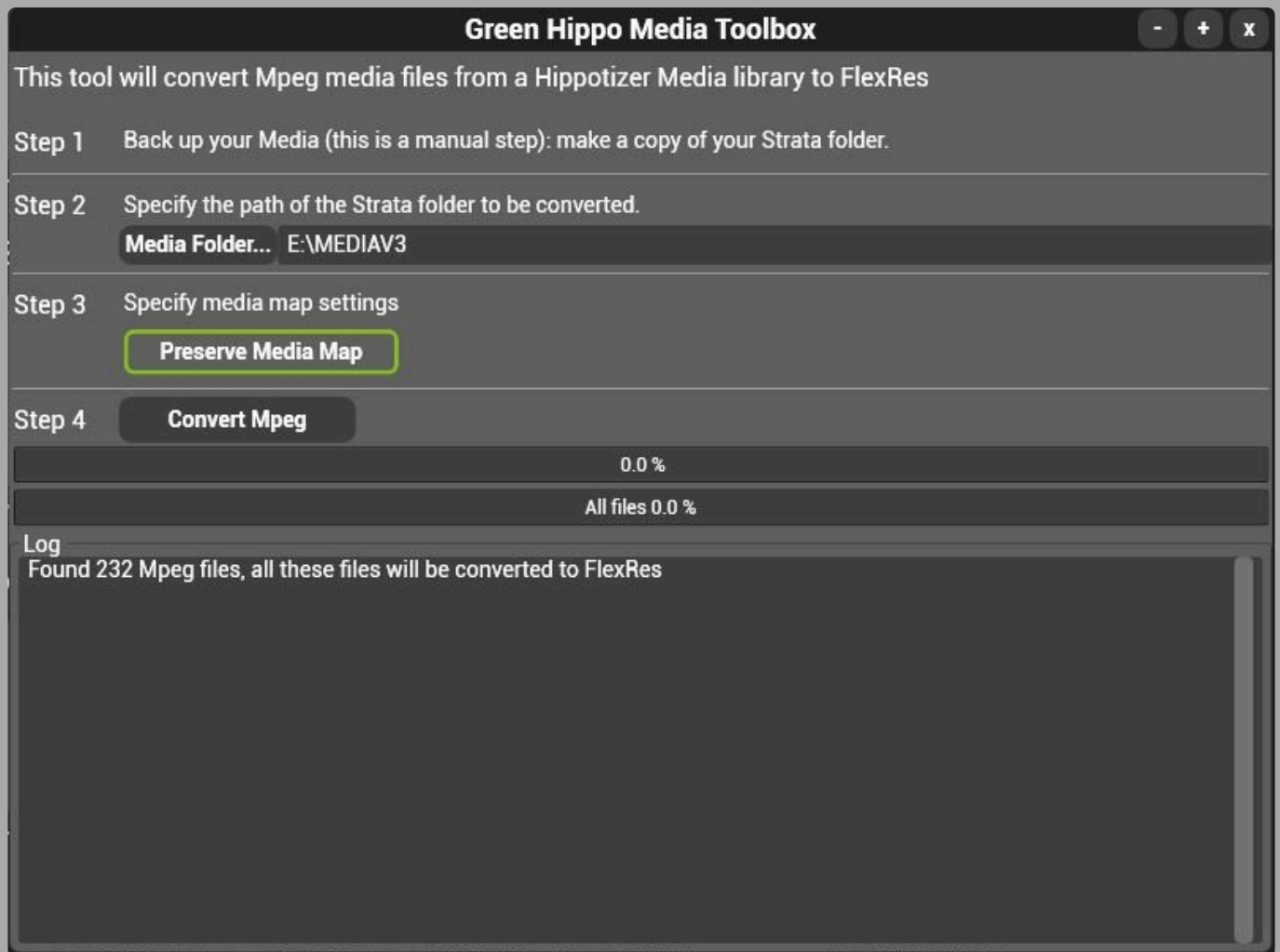
### Step 1: [Back up the media library before converting.](#)

A separate back up folder is the only way to ensure there is no data loss should a failure occur during transcode.

### Step 2: Choose the media folder to convert.

Note: The transcode process will increase file size by four to five times. A media library that was 2GB will inflate to 8-10GB. Ensure sufficient disk space is available before proceeding.

When a folder is selected, Media Toolbox will scan it for Mpeg media and display the results in the log.



## Step 3: Choose to preserve the media map or not

If **enabled**, the media map will be updated with the FlexRes encoded clips.

If **disabled**, the media map will not be changed.

## Step 4: Convert Mpeg

The conversion process will proceed automatically once **Convert Mpeg** is chosen. Any files that fail conversion will be noted in the log.

## Step 5: Test the content

We strongly recommend testing the converted content to ensure it is visually correct before using in a live environment.



## Step 6: Delete Mpeg content

Once everything has been tested the mpeg content can be deleted from inside media manager.

## Additional considerations

### Mpeg clips with an alpha channel

Hippotizer V3 allowed alpha to be encoded in to media files. Due to the fact that mpeg-2 does not support alpha, the clip was divided in half horizontally with one half encoding the RGB values and the other half the alpha channel. The media player combines the two halves on playback. This method results in the halving of vertical resolution; so the maximum resolution of alpha containing clips is 1920 × 540.

### Preserve Media Map

Before making changes to the media map a back-up is made and stored into the media folder. The active media map is `DMXMediaMap.v3.xml` while the back up is `DMXMediaMap.v3.xml.backup`. Should it ever be necessary to revert to the original media map simply replace the active media map with the backup.

### Media Quality

Mpeg clips are converted to FlexRes Performance by default by the media tool box as this offers a good balance of visual quality and playback performance. Some clips may noticeably degrade in FlexRes Performance however, especially those with colour gradients or high contrast edges. If better visual quality is required, clips can be encoded in Media Manager into a lower compression format such as FlexRes Quality.

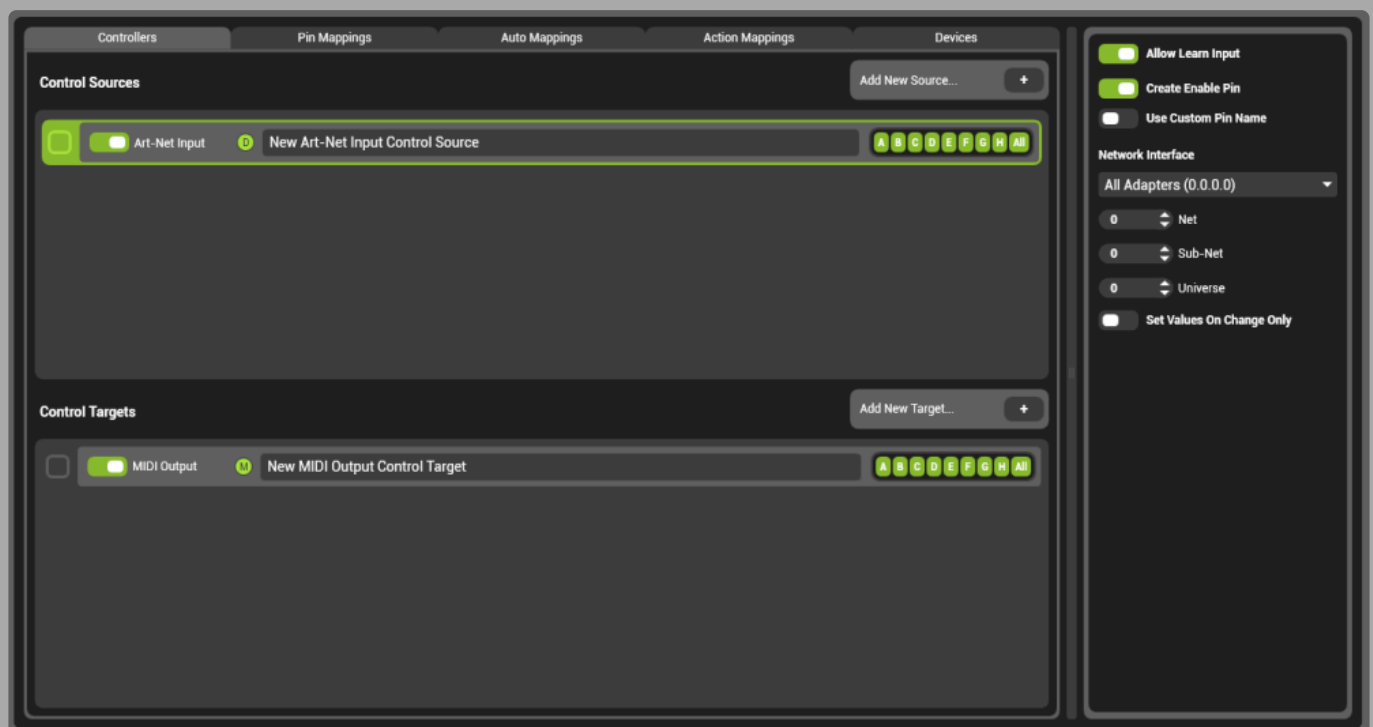
# Multicontroller

Multicontroller combines many of the ways that Hippotizer interfaces with the world around it into one component.

Multicontroller supports Midi, OSC, TCP, and ArtNet as well as myriad Automation protocols.

The component can also directly control select devices such as BlackMagic Videohubs or Lightware Matrix's.

Note: Multicontroller can receive DMX input over ArtNet, however to control Hippotizer from a lighting desk it is best to use the [DMX component](#).



Multicontroller is made up of five sections represented as tabs in the interface:

## [Controllers](#):

Define the inputs and outputs of Multicontroller. Whether a TCP port or a MIDI device, each controller is added as a separate item in this menu.

## Mappings

The most important concept to understand in Multicontroller is **Mappings**: the connection between a controller (such as a Midi controller or TCP listener) to a pin in Hippotizer (such as the level of a layer). There are three types of mappings in Multicontroller

## **Pin Mappings**

Specify individual pins in Hippotizer to send or receive data.

For example: Set layer 1's level fader to respond to a MIDI controller with a Midi Mapping.

## **Auto Mappings**

Specify whole groups of pins to send or receive data.

For example: Set Mix 1, Layers 1 thru 8 to listen to OSC information with a Text Mapping.

## **Action Mappings**

Some pins are not easily mapped such as preset select or Timeline controls. Action Mappings allow for these functions to be controlled simply. Frequently, Action Mappings are used to create a trigger that is then controlled from a Timeline, DMX or within a the Zookeeper interface directly.

For example: Create a trigger pin to play Timeline 2, Cue 10.

## **Devices**

Similar to a personality, Devices are pre-built profiles to communicate with specific third party equipment. Devices must be created by Green Hippo. To request a new device to be added please contact us.

Adding a device creates a series of pins to control the functions of that device. These pins can then be controlled from DMX, a Timeline or within Multicontroller.

For example: Create a Black Magic video hub to create pins controlling the input and output patch of the video hub.

# Controllers

Multicontroller is able to handle external devices controlling Hippotizer as well as trigger actions in connected equipment. In both cases, the protocol used, and specifically the format of data, determines how information is handled by Multicontroller. For example, TCP commands are actually strings of text transmitted over the network, so they use a text mapping in Multicontroller.

## Controllers and their mappings:

	Text	MIDI	DMX	Automation	GPIO
<b>ArtNet Input</b>			X		
<b>BlackTrax</b>				X	
<b>DEAP</b>				X	
<b>GHAP</b>				X	
<b>LabJack</b>					X
<b>MIDI</b>		X			
<b>OSC</b>	X				
<b>PoKeys</b>					X
<b>Posi Stage Net</b>				X	
<b>PRG Automation</b>				X	
<b>TCP</b>	X				
<b>UDP</b>	X				

The mapping for each controller and target is indicated in Multicontroller as a letter in a green circle.

### Text Mapping

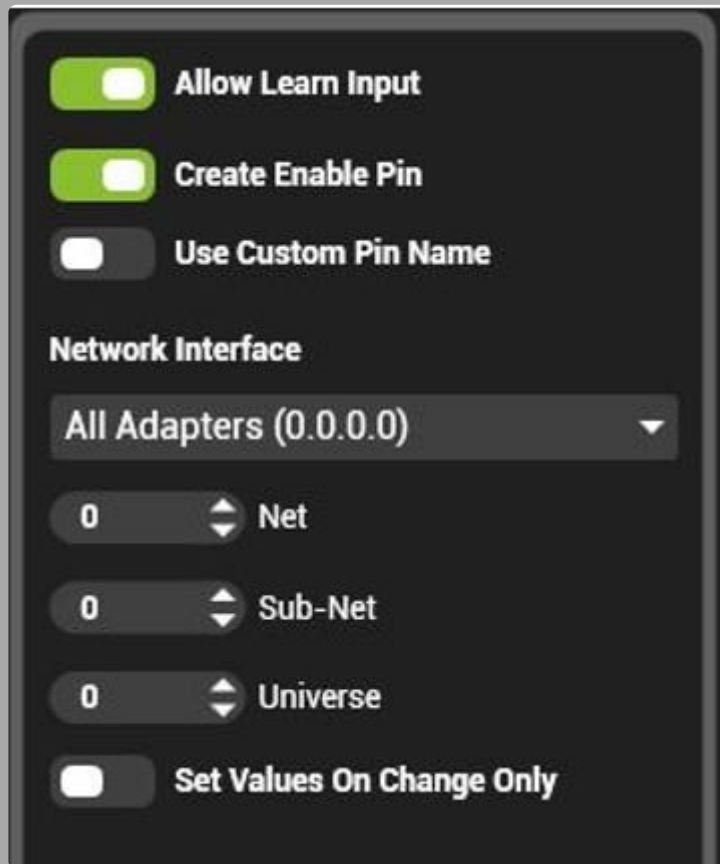
Each Controller has a unique configuration.

- [ArtNet Input](#)
- [BlackTrax](#)
- [DEAP / GHAP](#)
- [Labjack / Pokeys](#)
- [Midi](#)
- [OSC](#)
- [Posi Stage Net](#)
- [PRG Automation](#)

- [TCP Listener](#)

# ArtNet Input

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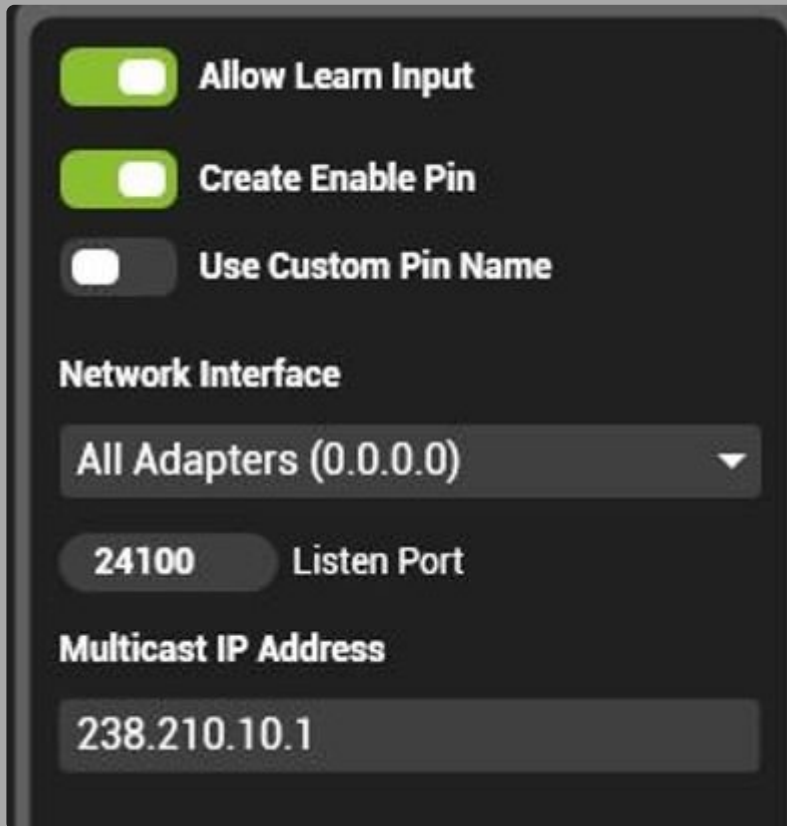
The ArtNet input allows for easy mapping of single ArtNet based DMX channels to specific functions in Hippotizer. The DMX component is still the best way to patch a DMX lighting desk to an entire layer where Multicontroller is useful for setting a show controller to recall presets for example. ArtNet uses a DMX mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which network interface connection to receive data from.
- **Net:** ArtNet 3 Only, defines which net to receive data from. Devices that are not ArtNet 3 compliant normally default the net number to 0.

- **Sub-Net:** defines which ArtNet sub-net to receive data from
- **Universe:** defines which ArtNet universe to receive data from
- **Set Values on Change Only:** Similar to update only in DMX2, pin values are only changed when the incoming ArtNet changes. Often known as Last Takes Precedence (LTP).

# BlackTrax

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BlackTrax is Cast Software's proprietary object tracking system based on infra-red beacons and calibrated cameras. The BlackTrax system is able to communicate to Hippotizer the location in 3D space of the beacons. BlackTrax integration is most commonly used with SHAPE to move 3D objects around in a scene, for that application in order to reduce latency, we suggest receiving the automation directly in SHAPE and not through Multicontroller. For other applications, such as using BlackTrax together with the Visualiser, use Multicontroller.

BlackTrax uses an Automation Mapping.

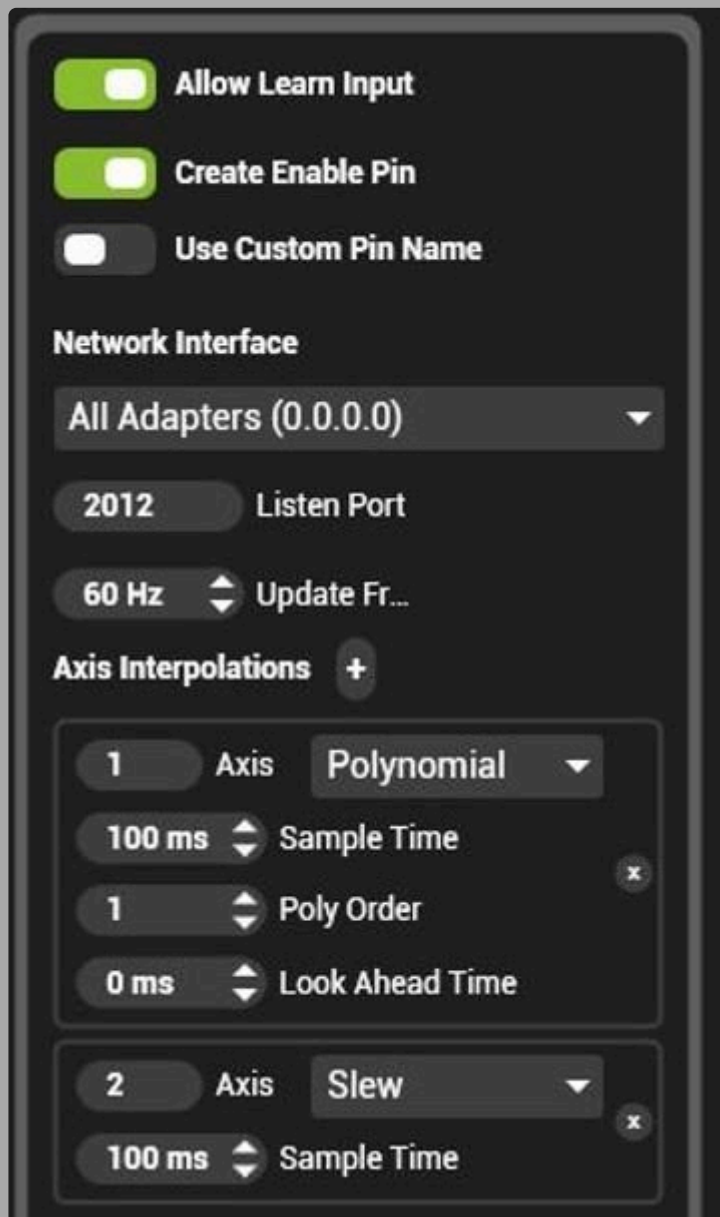
- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which network interface connection to receive data from.
- **Listen Port:** Defines which network port data is received. Must match the port set by the BlackTrax sender.
- **Multicast IP Address:** Defines which multicast group to subscribe to, set by the multicast IP address. This must match the settings of the BlackTrax sender.



It can be confusing to configure IP settings when receiving multicast data. In general, the Network interface on the sender and the receiver should be set as a normal static local network: (192.168.0.xxx with a subnet mask of 255.255.255.0). The multicast IP address is only an identification of the multicast group used by network equipment, and should not be set as an address. The most common error in setup of BlackTrax (or any automation protocol) is with IP configuration.

# DEAP / GHAP

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DEAP (Disney Automation Protocol) and GHAP (Green Hippo Automation Protocol) are network based methods for transferring movement information from encoders. Commonly used for tracking moving set pieces, each encoder reports the position of a specific axis.

Both DEAP and GHAP use an Automation mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.

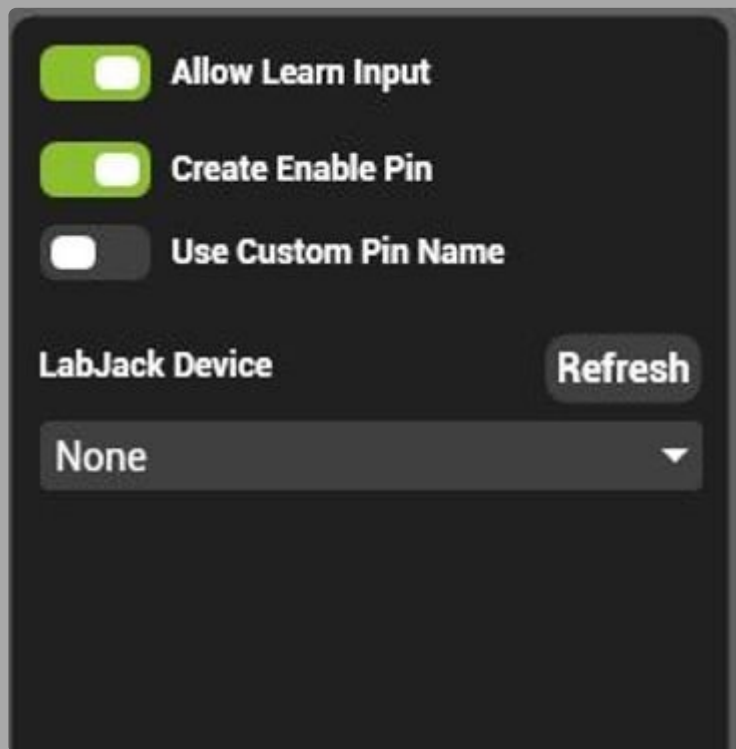
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which network interface connection to receive data from.
- **Listen Port:** Defines which network port data is received. Must match the port set by the automation sender.
- **Update Frequency:** Sets how often data is sent from Multicontroller. This essentially sets the frequency of interpolation. It is recommended to set this to the output video frequency. (50 or 60Hz usually).
- **Axis Interpolations:** As the data refresh rate from most encoders is much slower than the output frame rate, it is often desirable to 'smooth' the movement. There are two methods for smoothing automation data in Hippotizer: Polynomial and Slew.

Polynomial looks at a set of received values defined by the sample time, and attempts to find an equation to approximate them. Using this equation, it then tries to predict what values will come in next based on the look ahead time setting. The complexity of the equation is its Poly Order; an order of 1 would be a static number, 2 a straight line and 3 a curved line for example. In general, lower Poly Order produces better results.

Slew is a simple interpolation: it takes data across it's sample time and creates data points in-between. Both interpolation methods must introduce delay in order to function and may cause objects in Hippotizer to disagree with the real world, especially when changing speed.

## Labjack / Pokeys

---



Allow Learn Input

Create Enable Pin

Use Custom Pin Name

LabJack Device

Refresh

None

LabJack <https://labjack.com/> make a series of USB and Ethernet based analogue and digital input and output devices. These devices offer a reliable way to integrate sensors and buttons with Hippotizer.

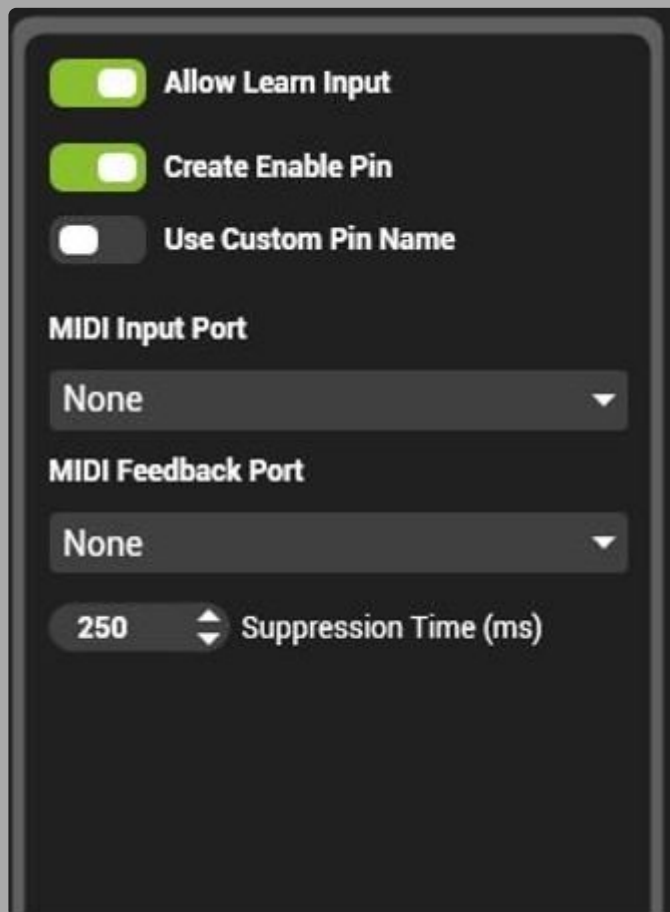
Pokeys <https://www.poscope.com/PoKeys57U> are a lower cost USB based input device.

LabJack and Pokeys uses a GPIO mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **LabJack Device:** Select from connected lab jacks.

# Midi

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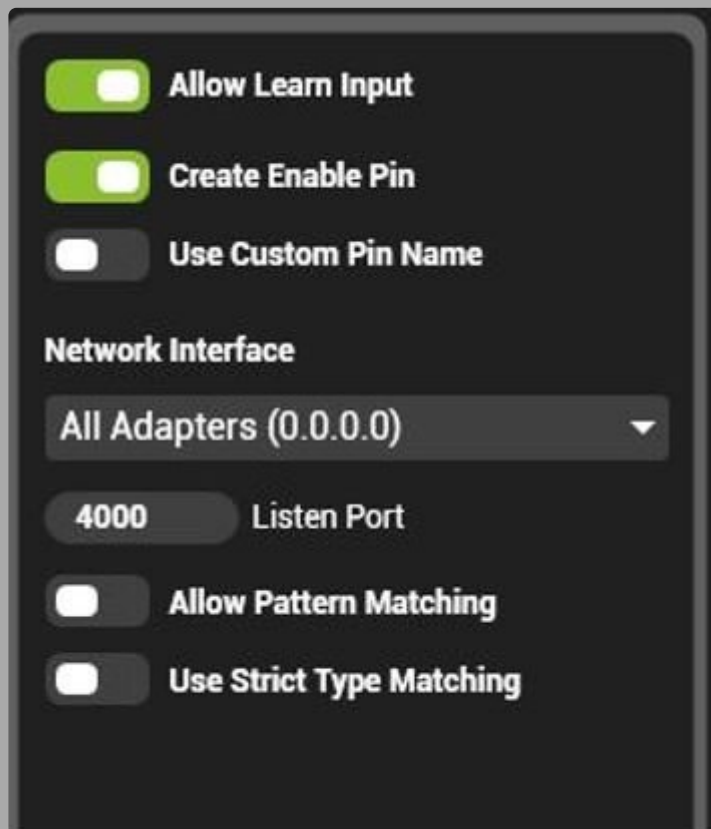


Midi used by many popular controllers such as a BCF2000 or Launch Pad. Midi devices rely on Windows USB drivers to function properly; install the device and confirm it is working in Windows before using it in Hippotizer.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Midi Input Port:** Select which midi device to use for input. In order to appear in this list, the device must be plugged in with drivers installed.
- **Midi Feedback Port:** Select which midi device to send feedback to (if desired). This is frequently used for midi controllers with motorised faders.
- **Suppression Time:** When a device is using feedback, the data sent to Hippo must be delayed before being sent back to the device in order to avoid feedback loops. This is most commonly noticed as motorized faders 'snapping back' after they have been moved. The default setting of 250ms has been found to be correct for many Midi controllers.

# OSC

---



OSC, or Open Sound Control is an open-ended network protocol designed to connect musical instruments such as synthesizers together. <http://opensoundcontrol.org/introduction-osc> Due to its flexibility, OSC is an easy way to send commands from 3rd party devices such as an iPad application to Hippotizer. (TouchOSC is popular for this). OSC sends strings of data, (words basically) across the network which Multicontroller can listen to.

## OSC input uses a Text Mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which adaptor to use for receiving OSC data
- **Port:** Choose which port to use for receiving OSC data, this must match the sender's settings.
- **Allow Pattern Matching:** Enables OSC Pattern Matching as defined in the OSC spec:
  - '?' in the OSC Address Pattern matches any single character
  - '\*' in the OSC Address Pattern matches any sequence of zero or more characters
  - A string of characters in square brackets (e.g., "[string]") in the OSC Address Pattern matches any

character in the string. Inside square brackets, the minus sign (-) and exclamation point (!) have special meanings:

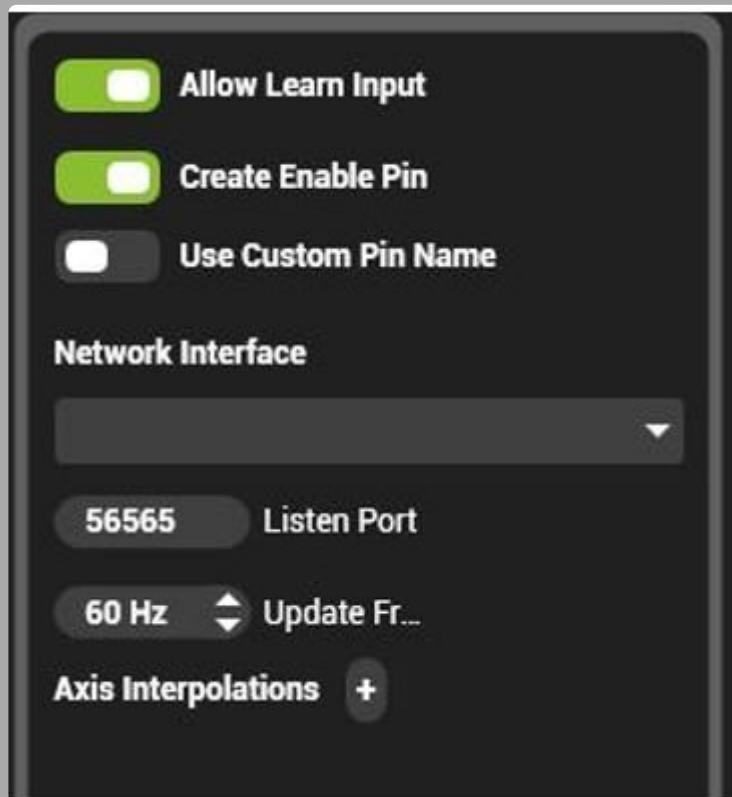
- two characters separated by a minus sign indicate the range of characters between the given two in ASCII collating sequence. (A minus sign at the end of the string has no special meaning.)
- An exclamation point at the beginning of a bracketed string negates the sense of the list, meaning that the list matches any character not in the list. (An exclamation point anywhere besides the first character after the open bracket has no special meaning.)
- A comma-separated list of strings enclosed in curly braces (e.g., "{foo,bar}") in the OSC Address Pattern matches any of the strings in the list.
- Any other character in an OSC Address Pattern can match only the same character.

Source: [http://opensoundcontrol.org/spec-1\\_0](http://opensoundcontrol.org/spec-1_0)

- **Use Strict Type Matching:** If strict type matching is on, data types from OSC must match exactly the data type of the pin to be set. For example, float messages will only apply to float pins even if the address matches. This is off by default as it can lead to undesired behaviour. TouchOSC for example only sends float messages, so enabling strict type matching would make it impossible to control Int pins.

# Posi Stage Net

---



PosiStageNet (PSN) is an open protocol for streaming 3D positioning of objects on stage developed by VYV and Ma Lighting. <http://www.posistage.net/> PSN is a network based protocol that reports the position, velocity and acceleration of multiple objects.

PSN uses an Automation mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which adaptor to use for receiving PSN data
- **Listen Port:** Choose which network port to receive on, must match the settings of the sender.
- **Update Frequency:** Sets how often data is sent from Multicontroller. This essentially sets the frequency of interpolation. It is recommended to set this to the output video frequency. (50 or 60Hz usually).
- **Axis Interpolations:** As the data refresh rate from most encoders is much slower than the output frame rate, it is often desirable to 'smooth' the movement. There are two methods for smoothing automation data in Hippotizer: **Polynomial and Slew.**

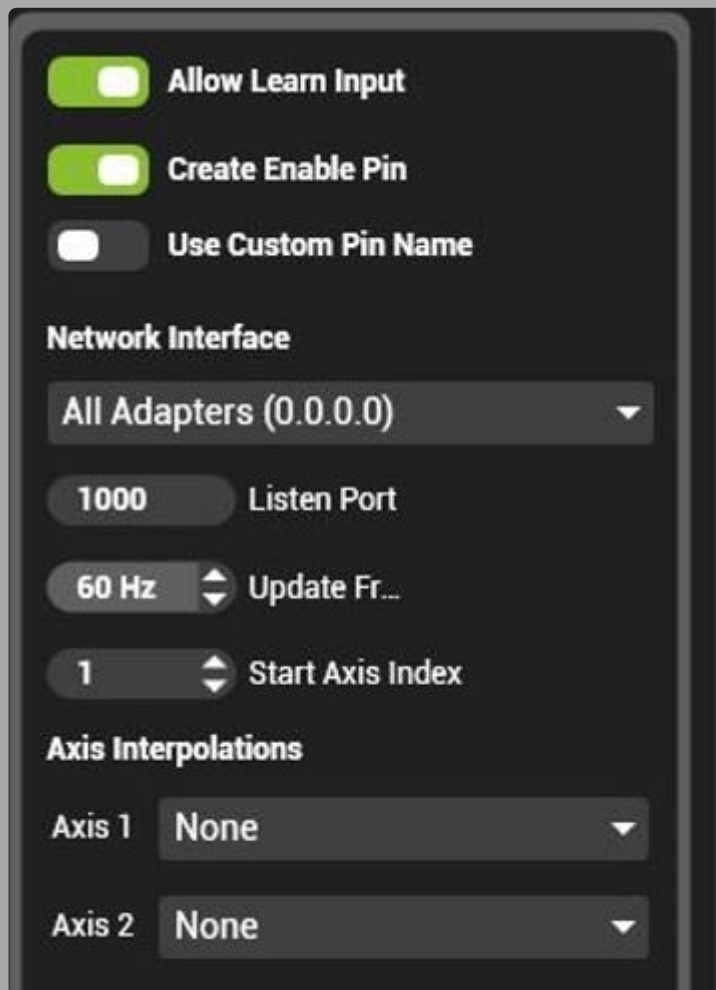


- Polynomial looks at a set of received values defined by the sample time, and attempts to find an equation to approximate them. Using this equation, it then tries to predict what values will come in next based on the look ahead time setting. The complexity of the equation is its Poly Order; an order of 1 would be a static number, 2 a straight line and 3 a curved line for example. In general, lower Poly Order produces better results.
- Slew is a simple interpolation: it takes data across it's sample time and creates data points in-between.

Both interpolation methods must introduce delay in order to function and may cause objects in Hippotizer to disagree with the real world, especially when changing speed.

# PRG Automation

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PRG Automation Reader brings data into Hippotizer from the proprietary PRG Automation system.

PRG uses an Automation mapping.

- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which adaptor to use for receiving PSN data
- **Listen Port:** Choose which network port to receive on, must match the settings of the sender.
- **Update Frequency:** Sets how often data is sent from Multicontroller. This essentially sets the frequency of interpolation. It is recommended to set this to the output video frequency. (50 or 60Hz usually).
- **Axis Interpolations:** As the data refresh rate from most encoders is much slower than the output

frame rate, it is often desirable to 'smooth' the movement. There are two methods for smoothing automation data in Hippotizer: **Polynomial and Slew.**

- Polynomial looks at a set of received values defined by the sample time, and attempts to find an equation to approximate them. Using this equation, it then tries to predict what values will come in next based on the look ahead time setting. The complexity of the equation is its Poly Order; an order of 1 would be a static number, 2 a straight line and 3 a curved line for example. In general, lower Poly Order produces better results.
- Slew is a simple interpolation: it takes data across it's sample time and creates data points in-between.

Both interpolation methods must introduce delay in order to function and may cause objects in Hippotizer to disagree with the real world, especially when changing speed.

# TCP Listener

---



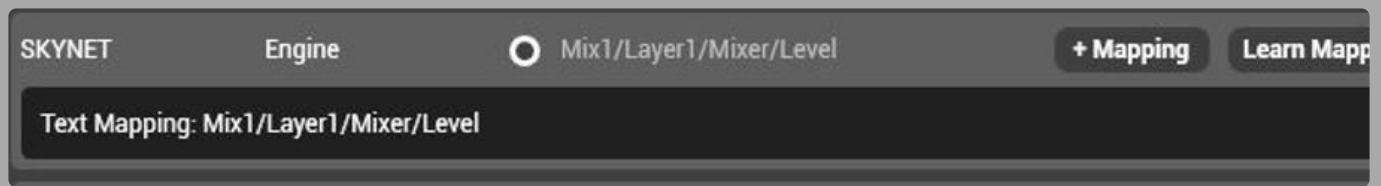
TCP Listener allows Hippo to interface with network based TCP commands. Frequently used by controllers such as Crestron or AMX systems, TCP can be used to trigger events in Hippo or to query the status of a system.

TCP uses a Text mapping.

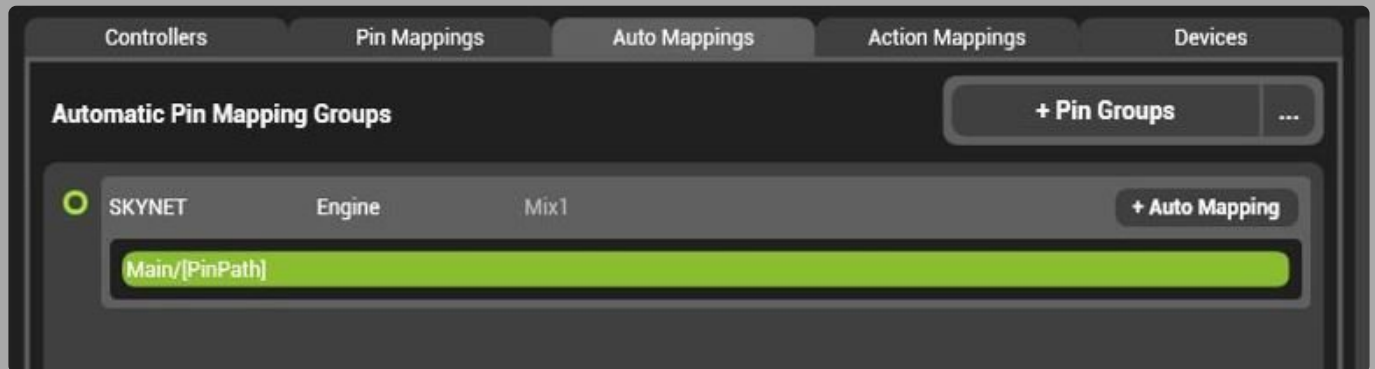
- **Allow Learn Input:** If enabled, the input can be used to automatically assign to a mapping with the learn button. It is advisable to disable allow learn input on sources that are constantly sending data as it will interfere with other sources associating.
- **Create Enable Pin:** Creates a new pin (Bool) to allow the controller to be turned on or off.
- **Use Custom Pin Name:** Allows user to name enable Pin.
- **Network Interface:** Choose which adaptor to use for receiving TCP data
- **\* Listen Port\*:** Choose network port number to receive data on: must match sender's settings.
- **Allow Value Queries:** TCP can be used to get the values of pins to determine the status of a system. For example, getting the value of the performance/FPS pin can be a good way to see how the engine is running. When this is enabled queries are allowed.

Commands for the TCP listener are formatted as the **Identifier** followed by the command. The Identifier is set in the pin mapping:

For single pins, the identifier is in the text mapping:



For auto mappings the identifier looks different:



## TCP command syntax

Commands take the basic form as the identifier followed by a comma, the value and then a carriage return.

### To set a value:

```
[Identifier],[Value]\r
```

#### E.g.

```
DmxEnable,1\r
```

#### Returns (if successful):

```
[Identifier],[Value]:OK\r
```

#### E.g.

```
DmxEnable,1:OK\r
```

### To Trigger a Command:

```
[Identifier]\r
```

#### E.g.

```
TestPattern\r
```

#### Returns (if successful):

```
[Identifier]:OK\r
```

#### E.g.

```
TestPattern:OK\r
```

## To Query a Value:

```
[Identifier],?\r
```

### E.g.

```
Fps,?\r
```

### Returns (if successful):

```
[Identifier]_[ValueType]=[Value]\r
```

### E.g.

```
Fps_(float)=60.\r
```

## ValueType can be:

- bool (on/off values),
- int (whole numbers),
- float (fractional numbers)
- string (text).

## Errors

### One of the following may be returned if there is an error:

```
[Identifier]:NOK_SYN\r – Command syntax is incorrect
```

```
[Identifier]:NOK_VAL\r – Failed to set value (can happen when sending the wrong value type, e.g.  
text to a number value)
```

```
[Identifier]:NOK_STR\r – Identifier was not found.
```

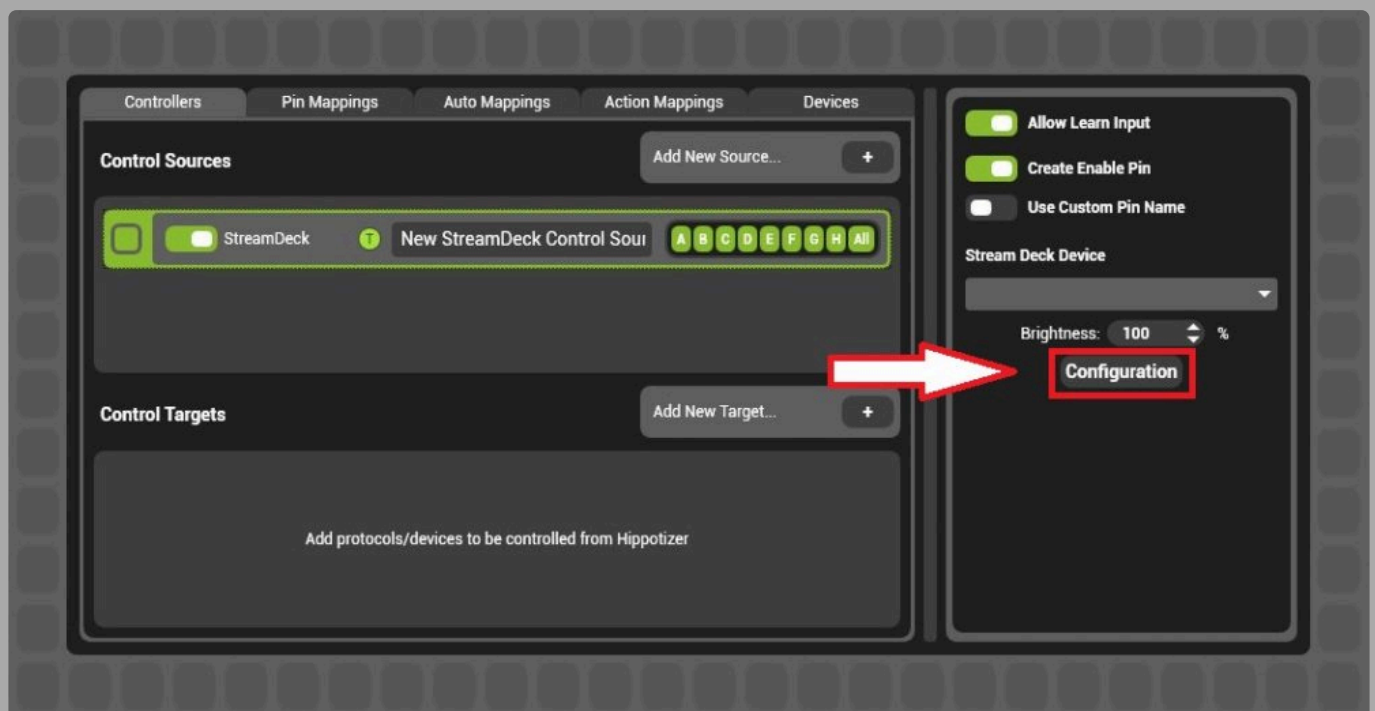
# Stream Deck

The Stream Deck is an inexpensive, configurable USB controller made by Elgato.



[Elgato Website](#)

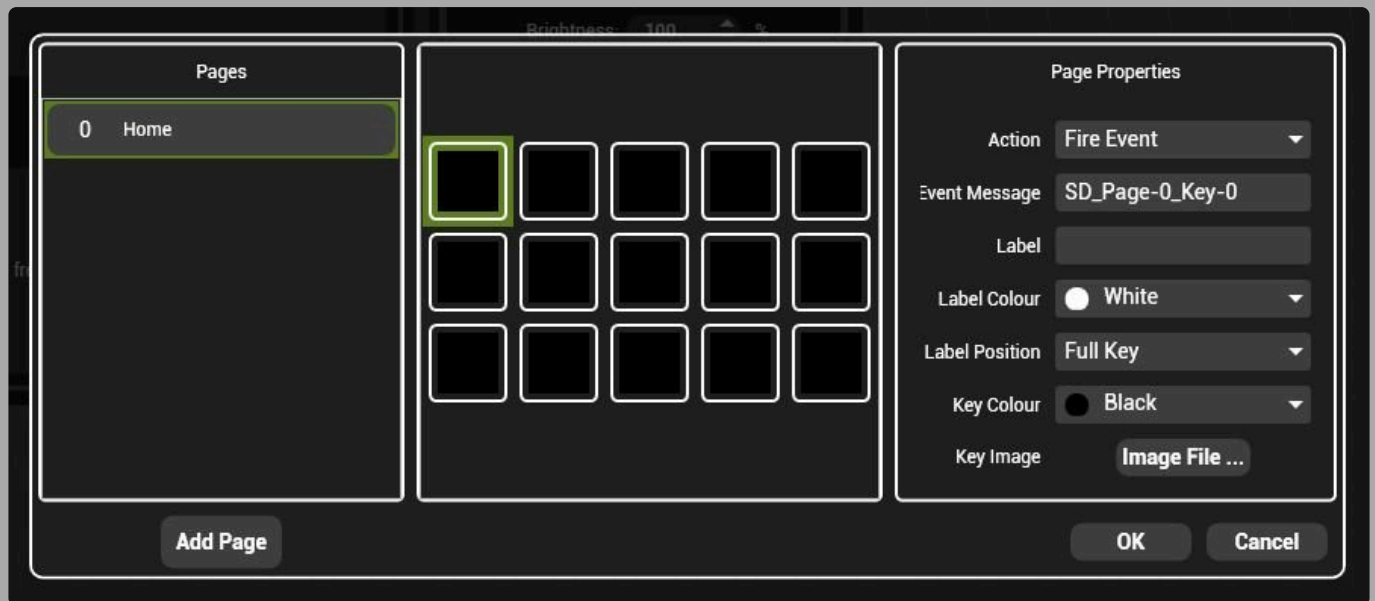
Multicontroller supports the Stream Deck and Stream Deck Mini



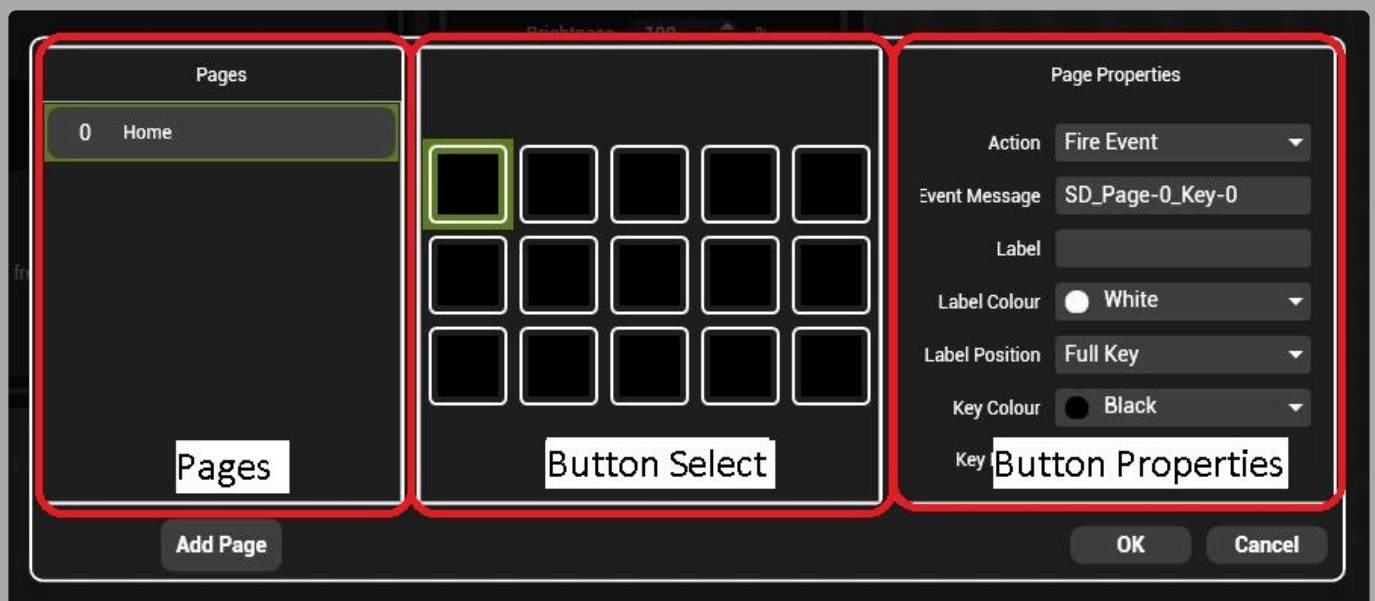
To set the function of Stream Deck buttons, press the Configuration button in the settings of the Stream Deck control source.

Stream Deck has been added to Hippotizer as a source of String commands. These commands can be

mapped to action mappings for easy control of Presets and Timelines.



The Stream Deck configuration has three basic sections:



## Pages

Each panel of buttons is called a page.

## Button Select

Determines which button is being edited in the properties panel



# Button Properties

Displays the settings for the selected button.

## Action

Sets what pressing the selected button does.

### Fire Event

Sends the command string displayed in the **Event Message** panel below. The default for each button is unique so under normal circumstances no editing is required.

### Navigate to Page

Changes the page to the page number selected. Pages can only be selected after they have been created.

### Navigate to Previous Page

Changes the page to the one numbered below it.

### Navigate to Next Page

Changes the page to the one numbered after it.

### Navigate to Homepage

Changes to page 0.

## Label

Adds a text label to the button. The **Label Colour** and **Label Position** is set a well.

## Key Colour

Sets the background colour of the button.

## Image File.

Select and image file to use for the button. Images are automatically scaled down on import.

## Assigning a button to an action

The fastest way to map a button to an action is to use the **learn** function of the action.

1. Create the button on Stream Deck
2. Create the action
3. Add a string mapping
4. press learn on the string mapping and then press the button on Stream Deck

# Pin Mappings

---

Each Mapping corresponds to a certain format of data. Each mapping is represented by a green dot in Multicontroller.

## Text Mapping

Strings of plain text. Used by network based protocols to send data such as TCP, UDP and OSC.

## Midi Mapping

The unique data format used by Midi controllers. Can carry different types of midi information such as midi notes and midi show control.

## DMX Mapping

An Array of number values associated with a single universe of ArtNet.

## Automation Mapping

Used by automation systems to send information about the location of items. This is normally an axis number and a displacement, though some protocols such as Posi Stage Net carry additional information such as acceleration.

## GPIO Mapping

General Purpose Input Output mapping, the GPIO is used to interface with devices that read analogue or digital inputs.

A controller's mapping type is determined by how that controller sends data. Pins in Hippotizer are assigned mappings as required.

Multicontroller does not require the user to specifically patch a controller to a target; by default any sources or targets with the same mapping will automatically be connected.

# Action Mappings

---

# Output Manager

Output Manager is the component which starts and manages layers, mixes and viewports. Output Manager is used to configure many important aspects of Hippotizer V4 including:

- [Basic Layout](#)
- [Basic Configuration](#)
- [Patching SHAPE](#)
- [Viewports and mix resolution](#)
- [Windowed Outputs](#)
- [Startup behaviour](#)
- [Re-patching Outputs](#)

Access the output manager by clicking the 'Outputs' tab in Zookeeper's Home screen.



Output Manager is critical for the normal operation of Hippotizer. The component should not be stopped or deleted.

Video Tutorial of Output Manager



# Basic Layout

Output Manager has a few basic parts

1. The Host Selector
2. Mixes
3. Viewports (Patches)
4. Outputs



## Host Selector:

Shows all systems running in HippoNet. Simply click on the host to select it and view it's settings.

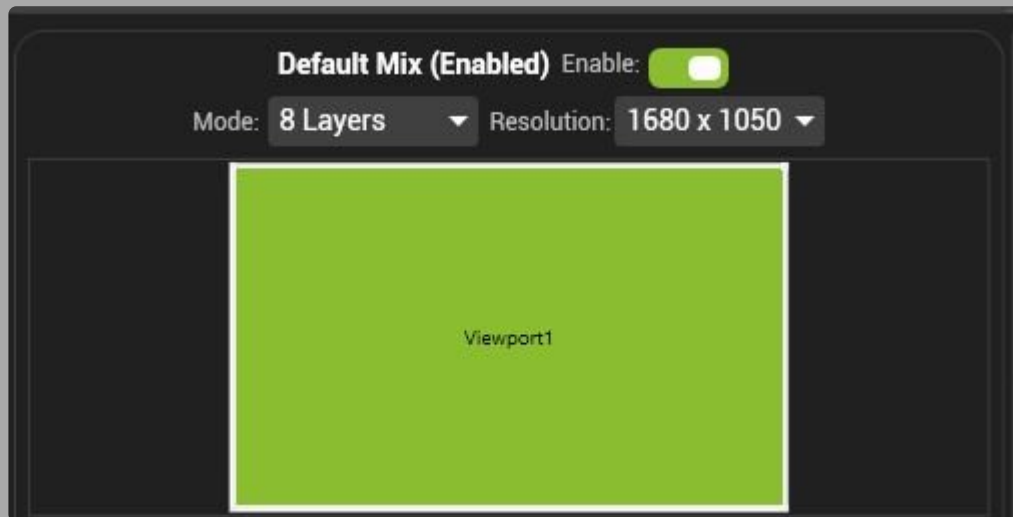
## Mixes:

A mix is a collection of media layers that are composited based on mix modes. Each mix can run up to 16 layers, which are capable of playing clips, still images or live camera feeds.

The number of mixes that a system can run is based on what type of Hippotizer it is:

- Amba / Portamus: 4 Mixes
- Karst: 8 Mixes
- Boreal: 12 Mixes
- Taiga: No Limit

Clicking on a mix selects and will show it's details in the menu below the Mixes list.



Each Mix has three attributes:

- Enable  
Mixes are on by default. Disabled mixes will not start their media layers.
- Mode  
The number of layers that the mix will start.

✿ Media layers use resources to run even if they are not doing anything. To maximize performance only start as many layers as required.

- Resolution  
The size in pixels of all layers in that mix. The Mix resolution is usually best set to be as high as the highest content resolution. Media of different resolutions can be played on the same mix however playing content of a higher resolution than the mix will result in down scaling.

✿ The resolution of a mix can have a large impact on performance. It is best to set the resolution only as high as required.



## Viewports

Viewports patch mixes to outputs. A Viewport contains controls for blending, warping and video mapping usually a viewport is associated with a single display device (such as projector or LED processor). The viewport is represented as bars in the patches section of Output Manager. Click on them to show their settings in the details windows below.



A viewport is comprised of an input window and an output window. The input window is where in the Mix the viewport samples, while the output determines where on the output the viewport is placed.

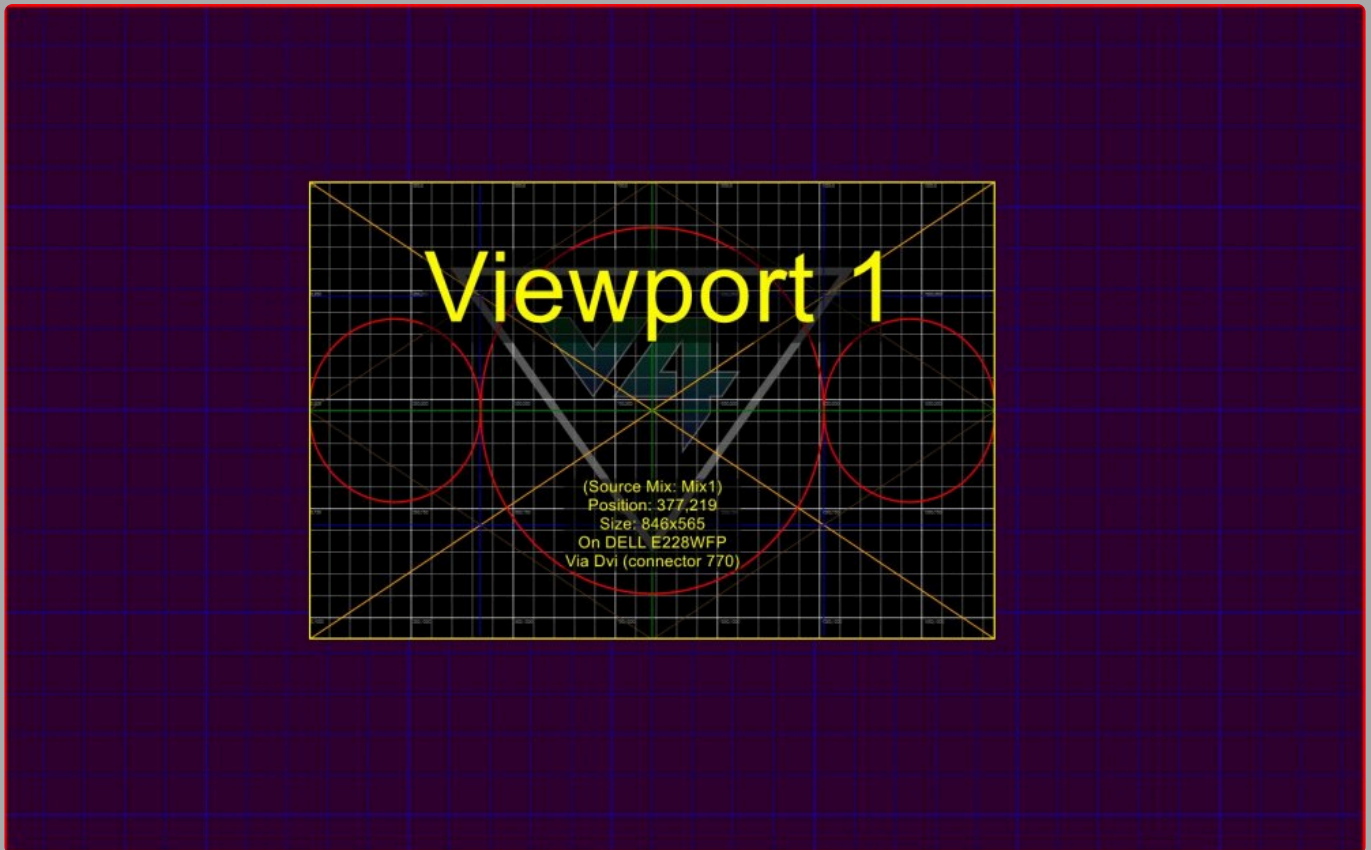
# Basic Configuration

When the system is running and playing video, the Output manager's settings can be viewed but not edited. In order to make changes in Output Manager, press the configure button.

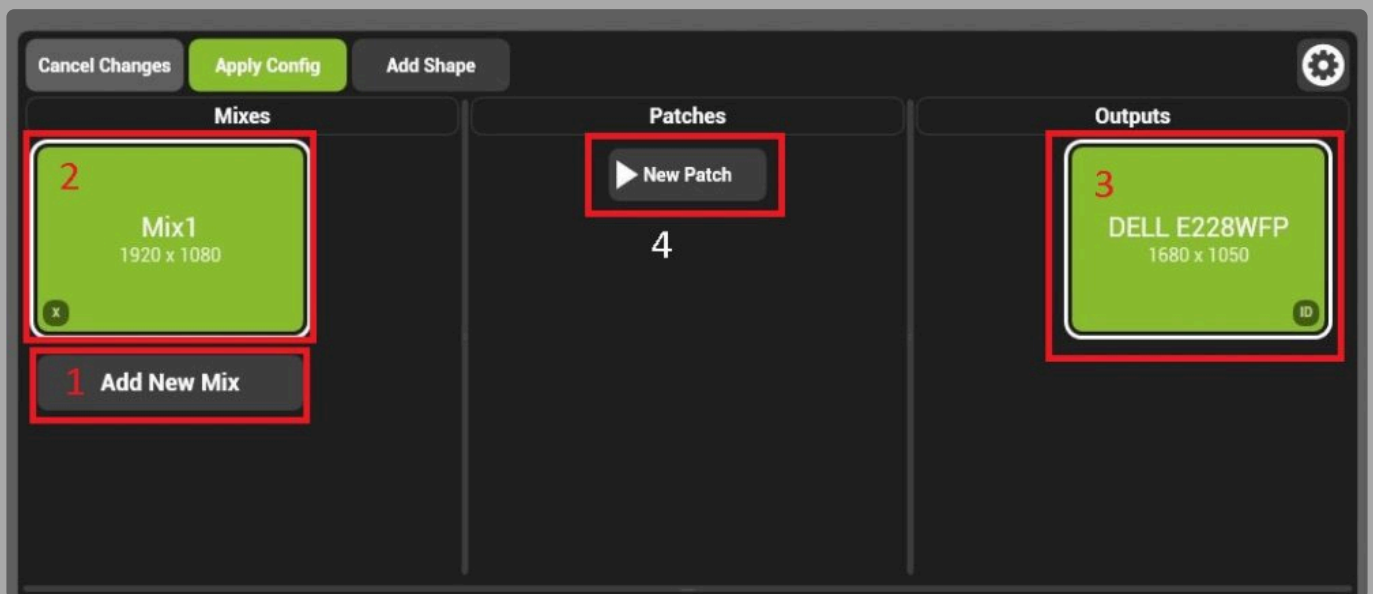


When the Output Manager is being configured media is not rendered and test grids are displayed on all outputs.

All detected outputs will display a purple test grid while viewports will appear as black test grids.



To send a mix to an output; add a mix, select it, then click the target output and press New Patch.



By Default, a new mix will be created with the resolution of the output and the viewport will send the whole mix to the whole output.

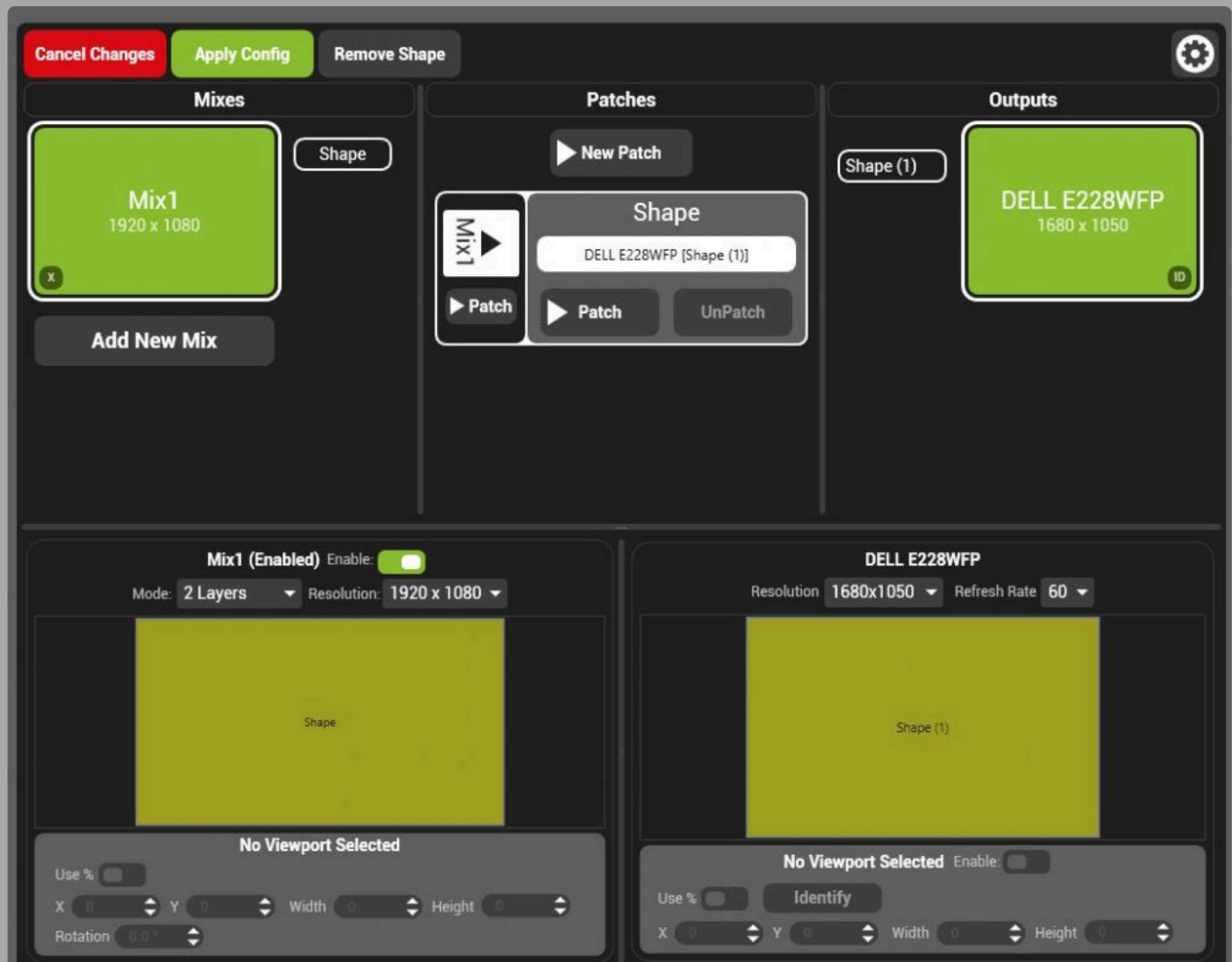
Pressing the apply config button now will save these changes and start the rendering engine.



- Starting the engine can take some time depending on how many media layers are being started. Each media layer will appear as a green film strip in the system tray.

# Patching SHAPE

SHAPE is the third dimension of Hippotizer V4 allowing for real time rendering of video on a 3D model. SHAPE is comprised of two parts: a plug-in in Hippotizer and an editor. The SHAPE plugin is started from Output Manager while the editor is a separate application. To add the SHAPE plugin, enter configuration mode and press the Add SHAPE button.



SHAPE is patched in a similar way to a viewport: it has an input mix and is patched to one or more outputs.

✿ The input mix of SHAPE feeds the 1st of eight input textures. The other seven inputs are controlled from the SHAPE viewport.



SHAPE should be patched to a physical output for each projector in the SHAPE model. The assignment of projectors to outputs is handled from within the SHAPE project in the SHAPE application.



# Viewports and mix resolution

When setting up the Output Manager there are several different resolutions to consider:

- Mix Resolution
- Input Viewport Resolution
- Output Viewport Resolution
- Output Resolution



## Mix Resolution

The Mix resolution is the pixel size of the layer mixer; where media layers are composited. Every mix has an independent layer mixer and can have different resolutions.. Each media layer will automatically take the resolution of the clip it is playing, however that will then be scaled by the layer mixer according

to the mix resolution.

## Input Viewport Resolution

The input viewport is the window through which the viewport samples the mix. The input viewport is usually set to match the resolution of the output it is associated with. A common exception would be where an output splitter (such as Datapath FX-4) is used.



The input viewport resolution is also the input resolution for any videomaps on that viewport.

## Output Viewport Resolution

The output viewport dictates where on a physical output the viewport is displayed. On a simple display, the viewport may fill the entire output. Where a splitter is used, several viewports would be placed on an output.



Output viewports may not overlap each other. Any overlapping viewports will be disabled by default.

The resolution of an output viewport is dictated by the physical output itself; normally it is set to the whole output, or a portion of the output based on a video splitter.



The screenshot displays the Hippotizer V4 software interface, which is organized into several panels and sections:

- Top Bar:** Contains three buttons: "Cancel Changes" (red), "Apply Config" (green), and "Add Shape" (grey). A settings gear icon is located in the top right corner.
- Mixes Panel:** Located on the left, it contains two mix objects: "Mix1" (white) and "Mix2" (green), both with a resolution of 1920 x 1080. To the right of these mixes are two viewport selection buttons: "Viewport1" (green) and "Viewport2" (white).
- Patches Panel:** Located in the center, it shows two patch entries: "Mix1 ► DELL E228WFP [Viewport1]" and "Mix2 ► DELL E228WFP [Viewport2]". Below these is a "New Patch" button.
- Outputs Panel:** Located on the right, it features a large green output object labeled "DELL E228WFP" with a resolution of 1680 x 1050. To its left are two more viewport selection buttons: "Viewport1" (green) and "Viewport2" (white).
- Bottom Section:** This section contains two detailed configuration panels.
  - Mix2 (Enabled):** Shows "Mode: 2 Layers" and "Resolution: 1920 x 1080". It includes a preview window labeled "Viewport2" and a "No Viewport Selected" status. Below the preview are controls for "Use %", "X", "Y", "Width", "Height", and "Rotation".
  - DELL E228WFP:** Shows "Resolution: 1680x1050" and "Refresh Rate: 60". It includes a preview window showing two side-by-side viewports labeled "Viewport1" and "Viewport2". Below the preview is a "Viewport1 (Enabled)" status and an "Identify" button. It also has controls for "Use %", "X", "Y", "Width", and "Height".

\* The output viewport resolution is also the output resolution of any videomaps on that viewport.

# Windowed Outputs

In normal operation, the Hippotizer renders video to entire outputs. However there are times where it is better to see only a small windows of the video output; for pre-programming for example. This can be achieved in Output Manager by setting the viewport to be Windowed.



In order to set a viewport to be windowed, Enter Configuration mode, select the viewport and enable Windowed mode.

- \* Placing windowed outputs on Zookeeper displays (driven from the Zookeeper graphics card) can result in poor performance. Always ensure windowed outputs are on displays driven from the more powerful graphics card.

# Startup behaviour

---

The first time your Hippotizer starts up, or after a clean show is started, Output Manager will create a default setup based on the output configuration at startup.

- \* It is always best to ensure all displays are attached and are visible in Windows before starting the Hippotizer software. The windows primary display should be set to the Zookeeper (control) output.

Output Manager's defaults are based around the number of displays and where the Windows primary display is assigned.

If only one display is present, a single output viewport will be created in Windowed mode on that output.

If two or more displays are present a single full screen output will be created on the non-primary display

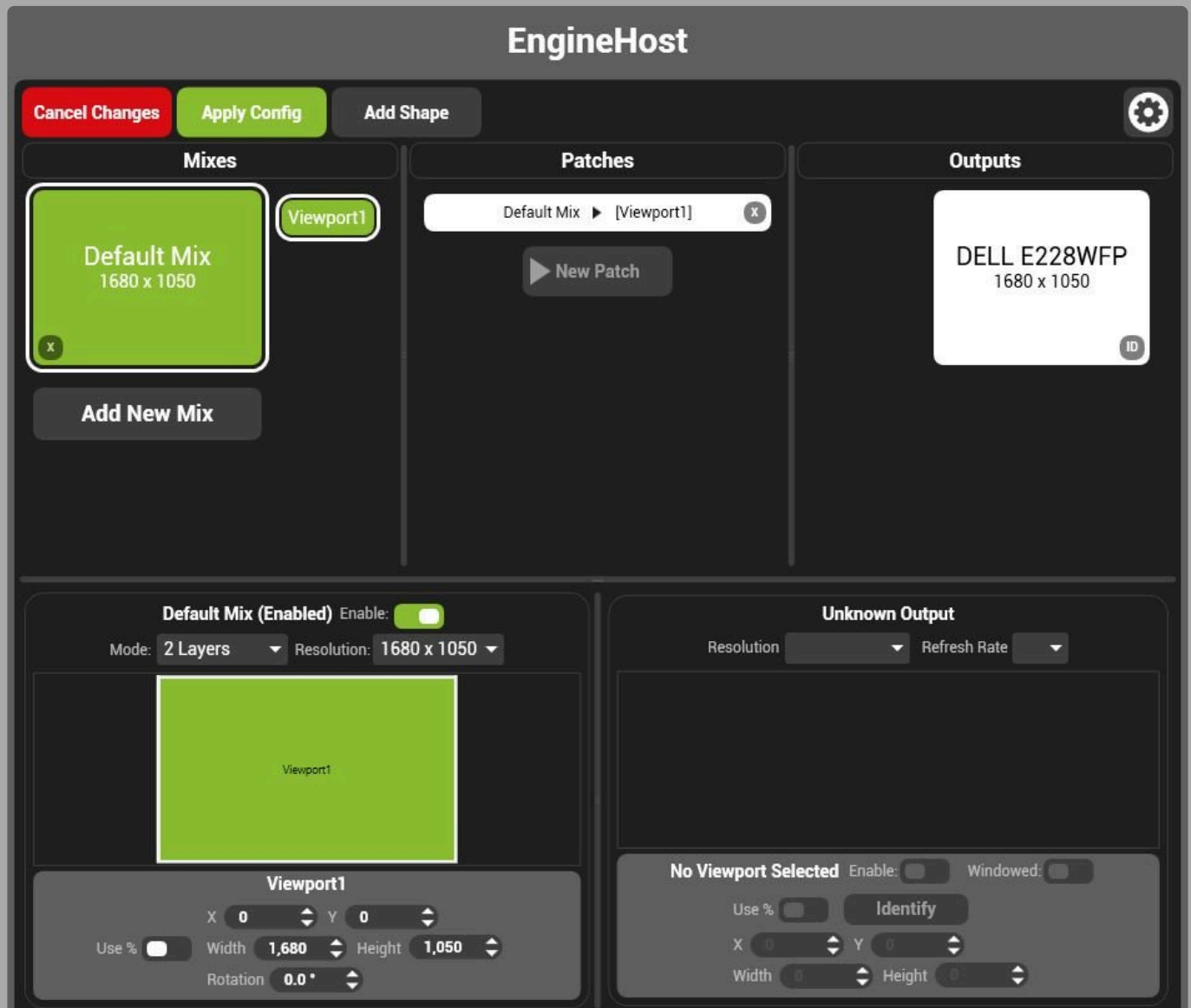
- \* Holding CTRL + ESCAPE for four seconds will put Output Manager into configuration mode. This is a good way to break out of situations of where you can not see the desktop because it is covered with an output.

After the first run, Output Manager saves the previous settings and will attempt to place the system back into the same state it was at shut down. This based on the display name as give to Hippotizer by EDID. If the same displays are not detected, Viewports will appear un-patched and can be re-patched from within Output Manager.

See [Re-patching outputs.](#)

# Re-patching Outputs

On every startup of Output Manager, viewports will attempt to re-attach to the output they were previously patched to. This is based on the name of the display and what physical output port it is on. If that changes, the Output Manager will not know which viewport should be patched to which output. To avoid confusion, it will create the viewport “unpatched”



To Repatch the viewport, in configuration mode, select the viewport to re-patch, select the output to patch it to and press “Repatch”.

EngineHost

Cancel Changes

Apply Config

Add Shape

Mixes

Default Mix  
1680 x 1050

Add New Mix

Patches

Default Mix ▶ [Viewport1]

New Patch

Outputs

DELL E228WFP  
1680 x 1050

Default Mix (Enabled) Enable: ☒

Mode: 2 Layers Resolution: 1680 x 1050

Viewport1

Viewport1

Use % ☐

X 0 Y 0

Width 1,680 Height 1,050

Rotation 0.0 °

Unknown Output

Resolution Refresh Rate

No Viewport Selected Enable: ☐ Windowed: ☐

Use % ☐

Identify

X 0 Y 0

Width 0 Height 0

Page 447 of 634

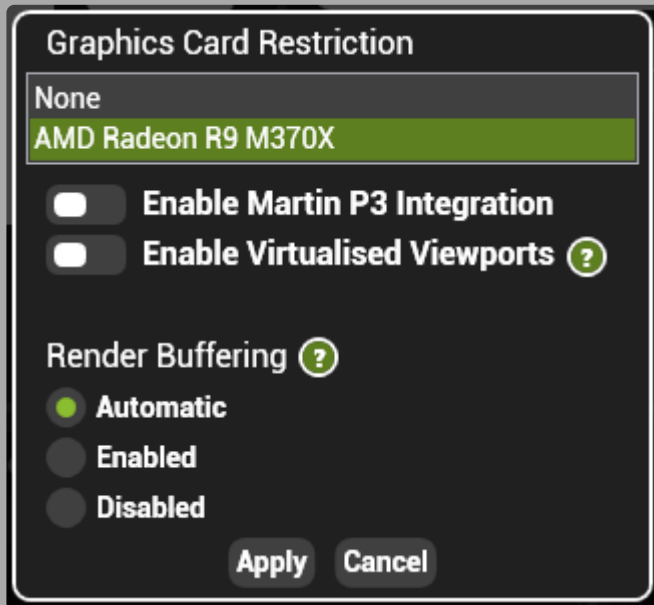
# Advanced Options

---

Some setup options in output manager are in the advanced menu:

- [Graphics Card Restriction](#)
- [Martin P3 Integration](#)
- [Virtualised Viewports](#)
- [Render Buffering](#)

# Graphics Card Restriction

A screenshot of a software dialog box titled "Graphics Card Restriction". It features a list box with "None" and "AMD Radeon R9 M370X", where "AMD Radeon R9 M370X" is selected and highlighted in green. Below the list are two toggle switches: "Enable Martin P3 Integration" (disabled) and "Enable Virtualised Viewports" (disabled with a green question mark icon). Underneath is a "Render Buffering" section with a green question mark icon and three radio buttons: "Automatic" (selected), "Enabled", and "Disabled". At the bottom are "Apply" and "Cancel" buttons.

**Graphics Card Restriction**

None  
AMD Radeon R9 M370X

☐ **Enable Martin P3 Integration**

☐ **Enable Virtualised Viewports** ?

**Render Buffering** ?

☒ **Automatic**

☐ **Enabled**

☐ **Disabled**

**Apply** **Cancel**

Output manager will only show the displays of the output graphics card as available for patching. If attached displays are not shown in output manager or creating an output on the Zookeeper monitor is desired, then this restriction can be changed.

Select the graphics card from the list or choose none to see all outputs.

- \* Although outputs can be placed onto the Zookeeper graphics card, the performance will be significantly reduced. Where a single output is required (such as for visualisation) it is best to use the more powerful graphics card by plugging into a production output.

# Martin P3 Integration

---

Working in conjunction with Martin Professional's P3 controller software, Hippotizer can send video directly to P3 running on the same machine. Use this to control a limited amount of Martin P3 fixtures directly from the Hippotizer.



A Martin USB Dongle is required to run P3 software, purchased from your local Martin distributor.

P3 integration allows the Martin software to detect and automatically capture local mixes and viewports running in Hippotizer.

## To set up P3 integration:

1. Install P3 software onto the Hippotizer machine
2. Start Hippotizer and start a mix
3. Start the P3 software on the same machine
4. Enable P3 integration in Hippotizer
5. The mixes and viewports of Hippotizer should now be visible to the P3 software as sources



# Virtualised Viewports

---

Virtualised viewports change the way that the output windows are created and can dramatically improve Hippotizer performance when using more than four viewports.

Normally, each viewport is created inside a discrete window which is placed on the output. This works well where there are four or less viewports. However, for more than four viewports it is more efficient to use one large window. Virtual viewports creates a single window around all the viewports and renders each viewport inside that window. There is no difference to the user; viewports are created and patched the same way in both modes.

✿ Virtual Viewports will create a window that surrounds all viewports; this requires that the zookeeper output is not placed between two production outputs as it would be covered by a black window. Be sure that the Zookeeper monitor is placed to one side of the output displays in the Windows Display management control.

It is usually best to disable render buffering when using virtualised viewports.

# Render Buffering

---

In order to ensure output smoothness in all cases, by default Hippotizer stores several frames for each output before displaying them in a buffer. This buffer will increase the delay of live capture so may need to be disabled in certain situations.

There are three settings:

## Automatic

Enables render buffering where there are four or less viewports.

## Enabled

Buffers the output by up to three frames. Capture latency with buffering enabled will be roughly five frames. Using render buffering with more than four viewports will likely result in un-smooth output.

## Disabled

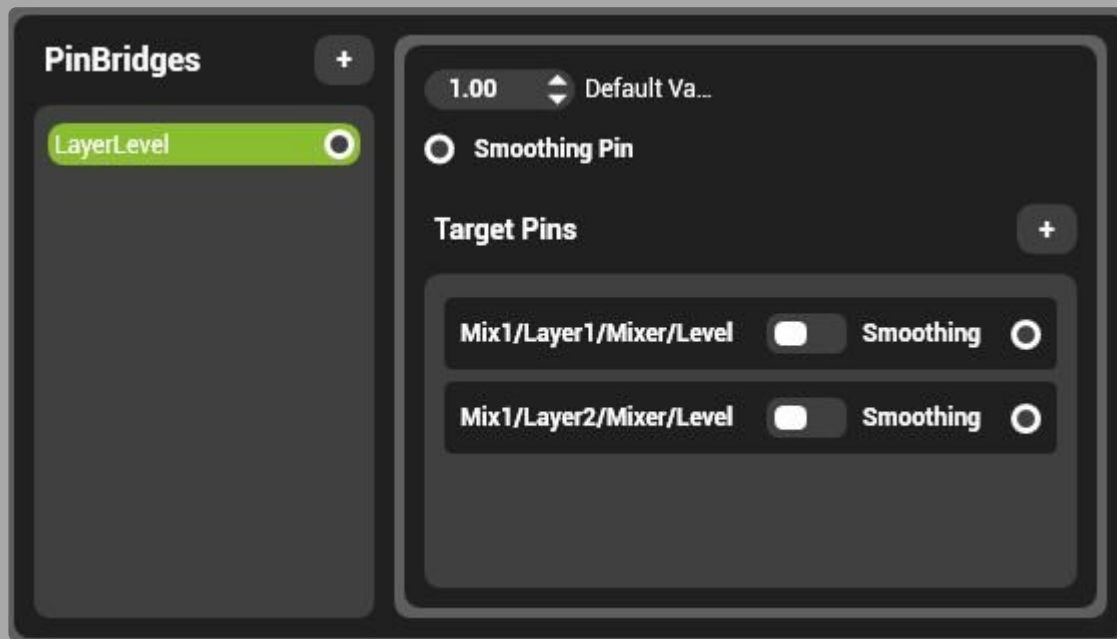
Removes the buffer. Capture latency with buffering disabled will be between two and three frames.



With buffering disabled output smoothness will be dependent on the timing of each display. It is advised to genlock the outputs together and ensure that Zookeeper outputs have the same frame rate as production outputs to ensure smooth playback.

# PinBridge

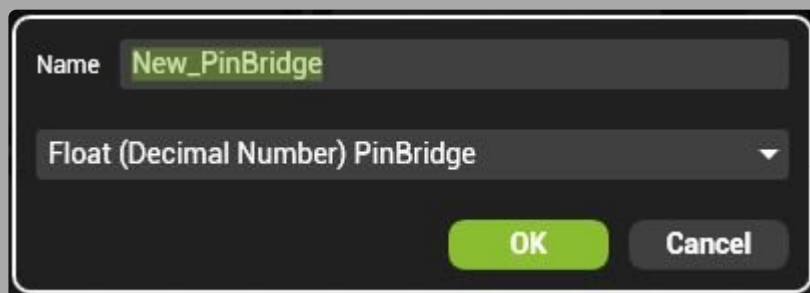
PinBridge allows functions to be grouped together and controlled by a single pin.



## Creating Pin Bridges

To create a new PinBridge:

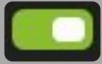
Press the new bridge button (the + symbol)



## Name the PinBridge

**Note:** As creating a PinBridge will create a new Pin in HippoNet, they cannot be renamed once created.

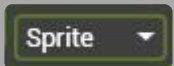
## Select the type of Bridge to use.



**Boolean Pin:** Can be on or off, represented by a switch in Zookeeper.



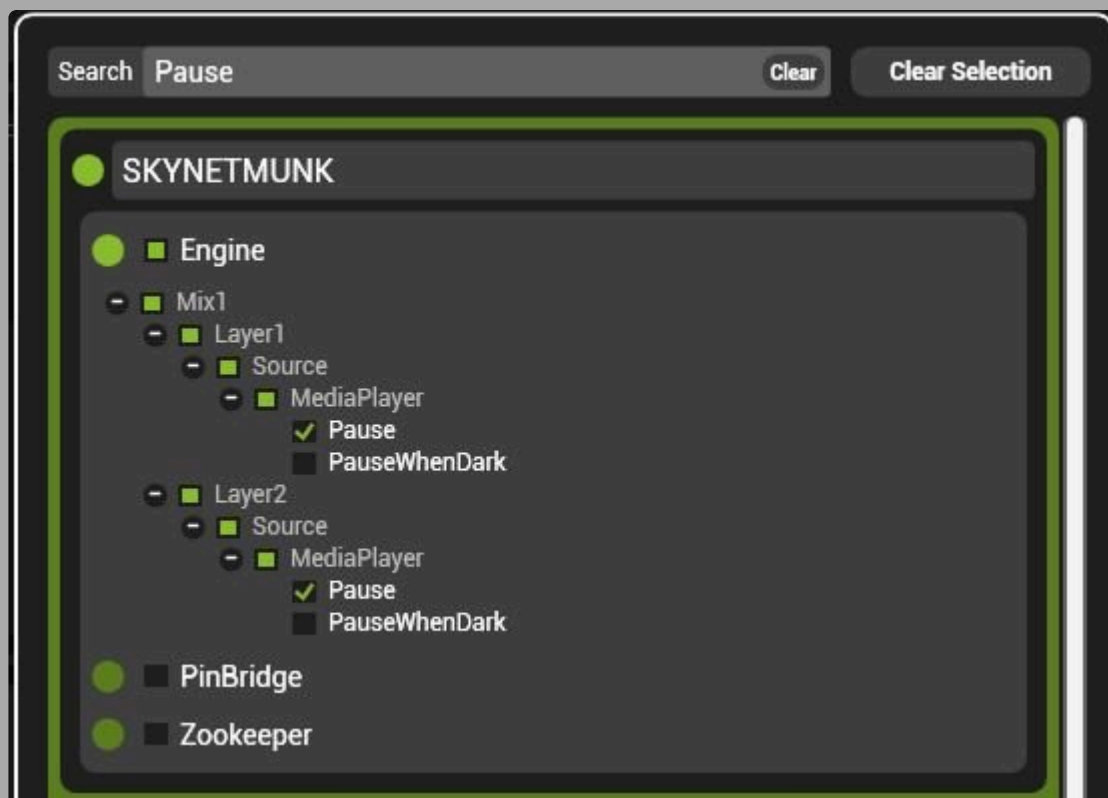
**Float Pin:** Can be a number value from 0 to 1 and are most commonly shown as faders in Zookeeper.



**Integer Pin:** Can be a whole number (1,2,3...) used to pick options from a list such as Mix modes.

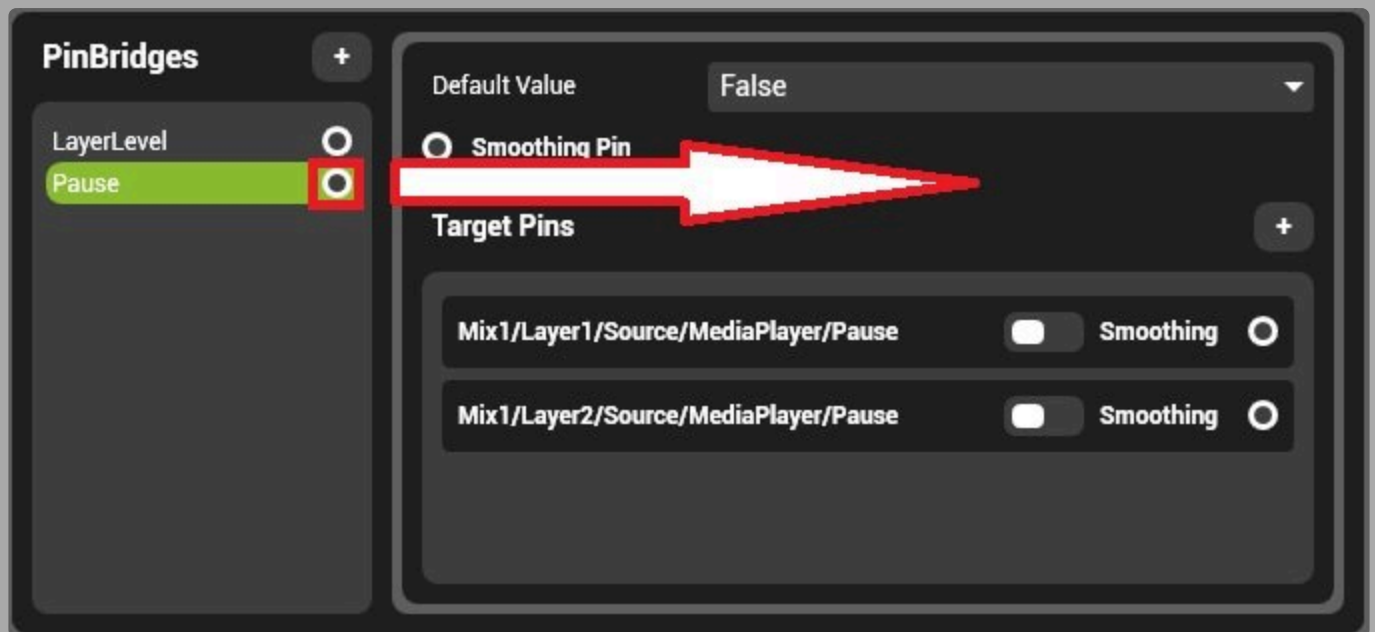
**String Pin:** Carries text — Very rare to use this in a PinBridge.

## Select the pins to control

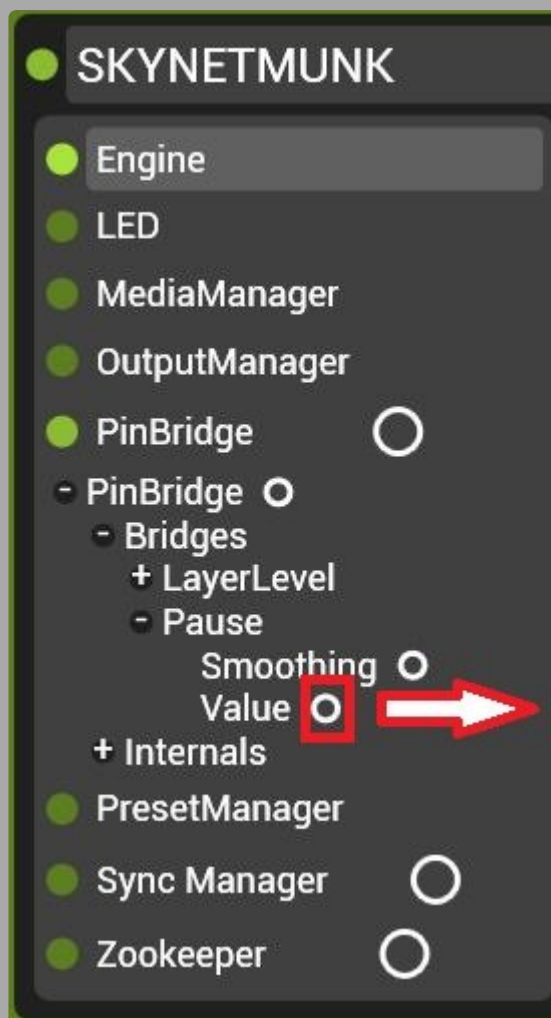


## Adding Bridges to the Pin Board

To add a PinBridge control to the pin board simply drag the bridge out from the component:



Or, drag the Pin out from the pin tree:



# Pixelmapper

---

Pixelmapper turns DMX controlled lights into part of the video screen by using video to control the colour or intensity of fixtures.

**Pixelmapper is comprised of three parts:**

- [Pixel Maps](#) The two dimensional representation of the fixture layout.
- [Settings](#) Controls how to send data out of Pixelmapper over the network. Choose output protocols and IP addresses.
- [Mix Controls](#) Assign pixelmaps to a mix to choose the video source for pixelmapper.

# Pixel Maps

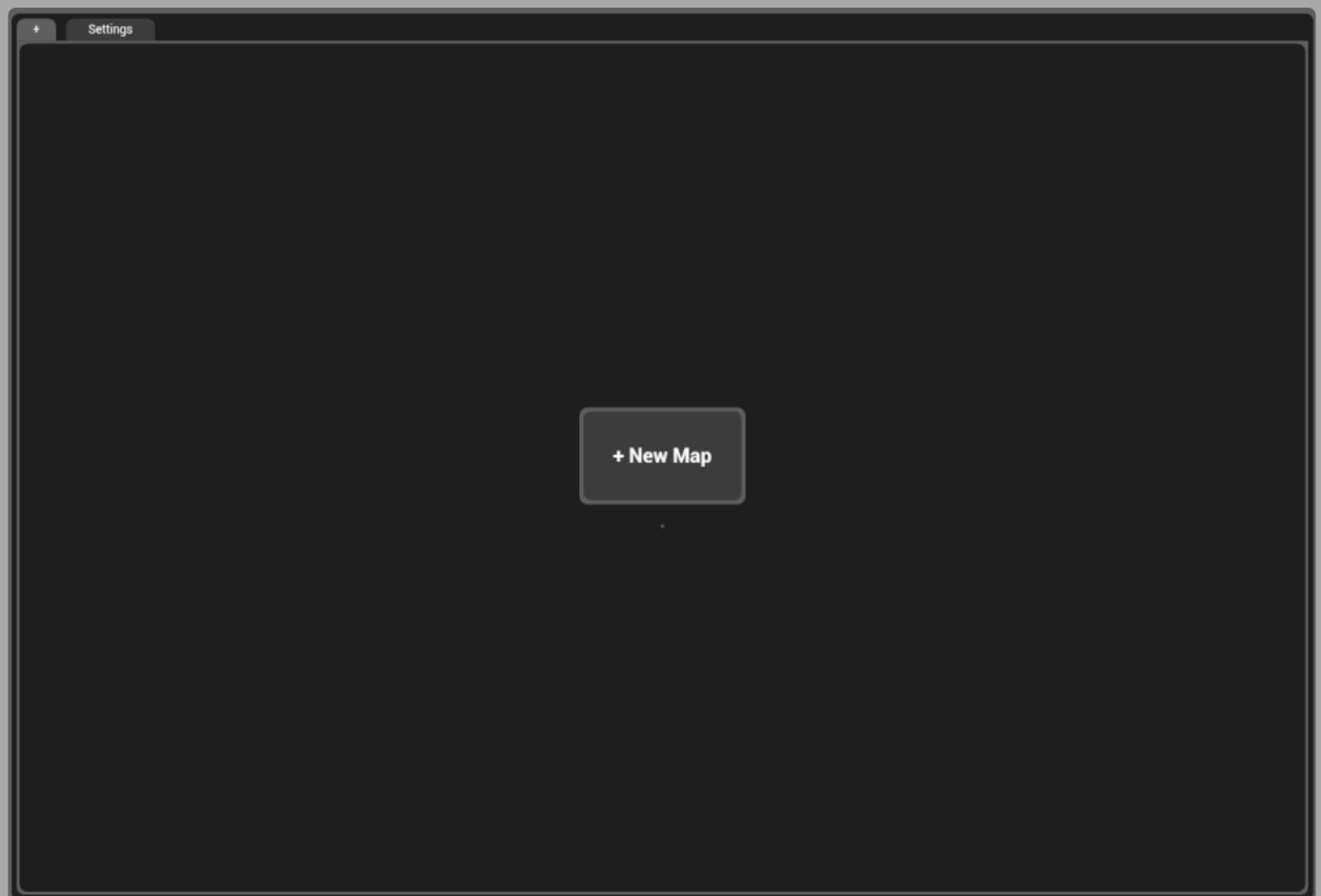
---

A **Pixel Map** is the representation of where lighting fixtures are located to determine how video is applied to them.

Pixelmapper can have many different maps. Each map has a name and Index number and are opened from the Pixelmapper component.

## To Create a new pixel map:

- Start the Pixelmapper Component
- Add the component to a pin board.
- Click + New Map



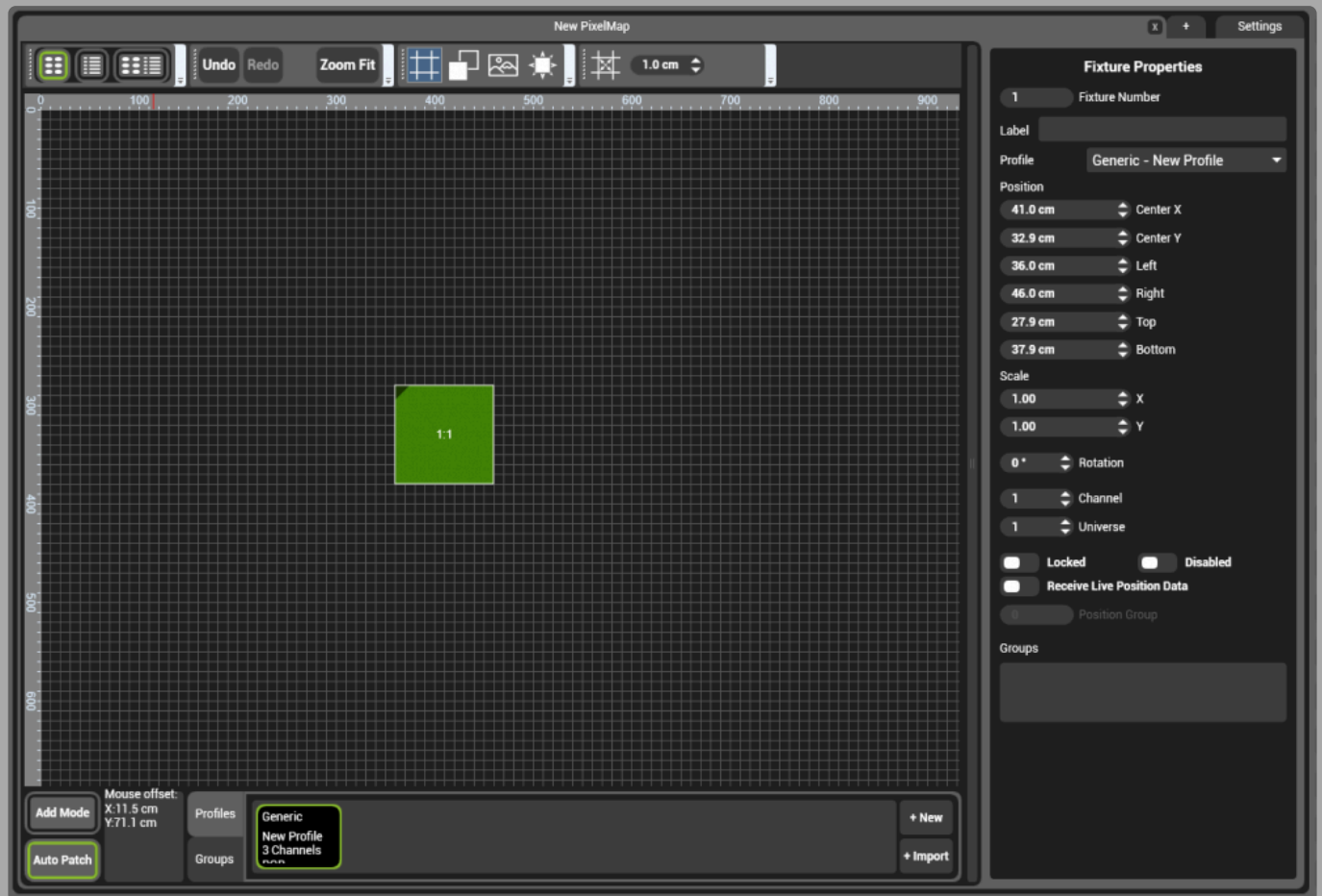
This will open a new Pixel map where fixtures can be created, added and patched to universes.

## There are three basic modes used when working with pixel maps:

- [Pixel Map Properties](#)

- [Fixture Profile Properties](#)
- [Fixture Properties](#)

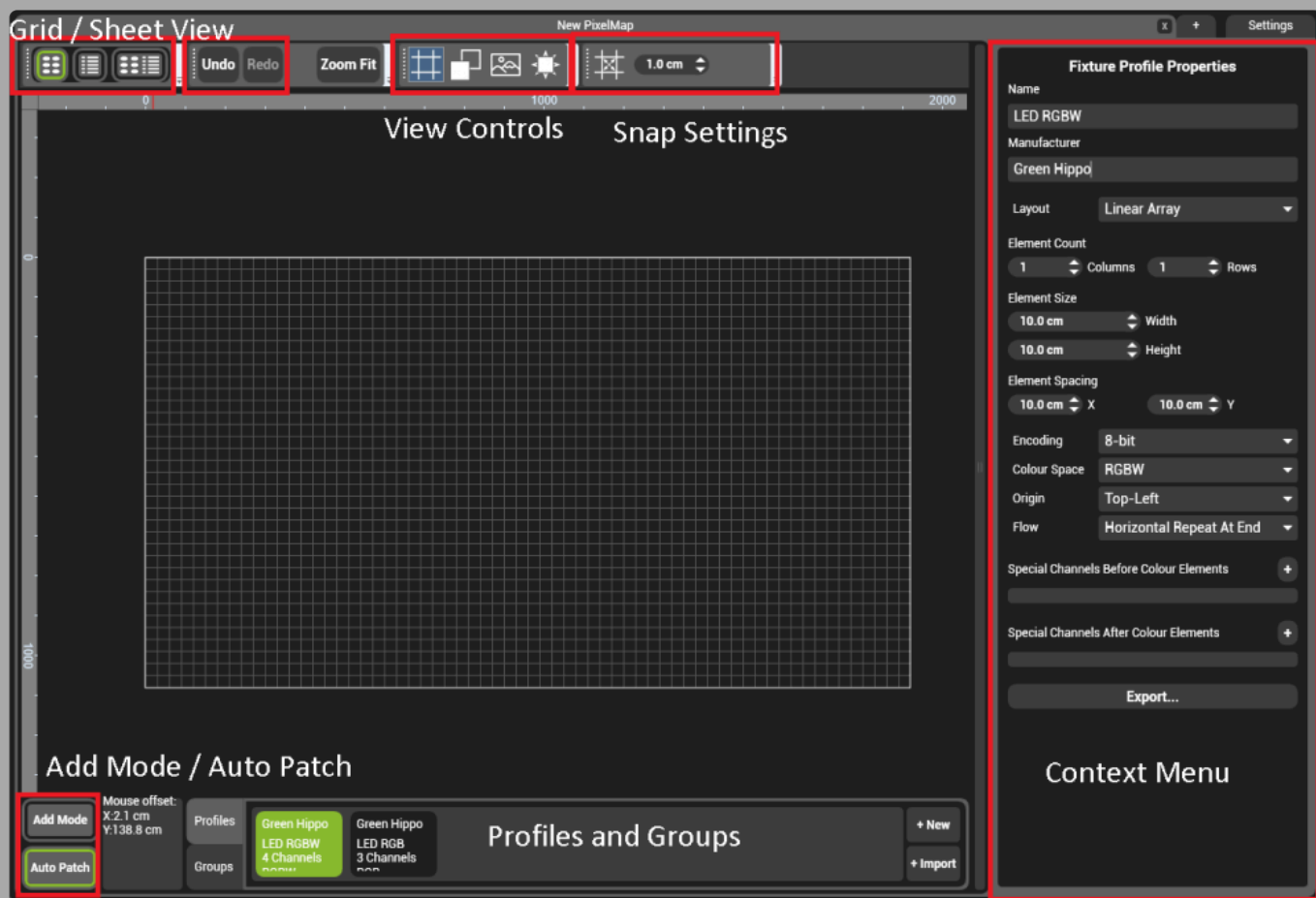
The active mode is show in the right side context menu.



Clicking the map, a fixture or a profile will switch the properties to that object.



Around the pixelmap are a series of controls.



## Grid / Sheet View

Changes the map view to be either full map, half data grid or full data grid.



the pixel map references a profile and if the profile is changed, the fixtures using that profile will also change.

**Fixture Groups** allows fixtures to be grouped together for easier editing.

## **Add mode / Auto Patch**

**Add Mode** When enabled, left clicks in the pixel map will add the selected fixture.

**Auto Patch** All new fixtures added to the pixel map are placed in the next available DMX Address.

# Pixel Map Properties

---

Each Pixel Map has configuration and settings to determine the resolution and size of the map.

### PixelMap Properties

Name

New PixelMap

1 Index

Size

192.0 cm Width

108.0 cm Height

Resolution

1920 px Width 1080 px Height

AutoPatch Start Address

1 Start Channel

1 Start Universe

Import Fixtures... Export Fixtures...

Import Fixture Profile XML...

### Background Image Properties

Image Path

Open...

Size

0.0 cm Width

0.0 cm Height

0 px Width 0 px Height

PixelMap Size Image Size

Offset

0.0 cm X 0.0 cm Y

0 px X 0 px Y

1.00 Opacity

Click in the pixel map grid to show map properties in the context menu.

## Name

The name of the pixel map as it appears in map select menus. This does not need to be unique.

## Index

The order the pixel map will be shown in lists and selected by DMX. Zero is reserved for bypassed.

## Size

The physical size of the pixel mapped area.

The combination of the size and the resolution of a pixelmap determine the physical size of each pixel. For example, the default is set to 192cm x 108cm with a resolution of 1920×1080. This equates to 10 pixels per centimeter.

## Resolution

The resolution of the pixel mapped area.

Note: Pixelmapper will not scale the input into it. In order to maintain Pixel 1-to-1 behavior therefore, it is important to set the pixel map's resolution to match that of the mix.

## Auto Patch Start Address

Sets the address that auto patch will start patching fixtures. Once a fixture is placed auto patch will increment to the next free address.

## Import / Export Fixtures

Saves or loads a comma delimited file (csv) of the fixture patch.

Note: The csv export uses the globally unique identification (GUID) to reference the fixture profiles, so it is important to save the fixture profile with the csv export.

## Import Fixture Profile XML

Import a Fixture patch from a Grand MA 2 lighting desk. To do this, use the option in Grand MA to export the patch as XML.

## Background Image Properties

A Background image can be placed in the pixelmap to aid with fixture placement.

**Image Path**

location of the image

**Size**

Size of the image

**Pixelmap / Image Size**

Set the image to be the full size of the pixel map or the native size of the image (in pixels)

**Offset**

Location of the top left corner of the image.

**Opacity**

Determines the transparency of the image.

# Fixture Profile Properties

---

The fixture profile defines the channel layout and attributes of each fixture type used in the pixel map.

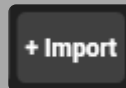
A fixture profile is required for each type of light being used.

Fixture profiles can be saved and shared between maps and systems. so they only need to be created once.

## Saving Fixture Profiles

Fixture profiles are saved as part of each pixelmap. To use fixture profiles in other maps, right click on them and select [copy to profile library](#). A copy of the profile is now stored in the profile library. Any map

can copy from that profile using the profile import button.





## The Fixture Profile Properties pane

**Fixture Profile Properties**

**Name**

**Manufacturer**

**Layout**

**Element Count**  
 Columns  Rows

**Element Size**  
 Width  
 Height

**Element Spacing**  
 X  Y

**Encoding**

**Colour Space**

**Origin**

**Flow**

**Special Channels Before Colour Elements**

**Special Channels After Colour Elements**

### Name

The Name of the fixture. This does not need to be unique.

### Manufacturer

Further identification for the fixture

## Layout

The pattern of emitters of the light. **Linear Array** is the most common type of fixture comprising rectangular rows and columns of lights.

Note: As of Version 4.2, Free-form fixtures have not been implemented. To work around this create a linear array fixture that is 1×1.

## Element Count

The number of individually controllable lights in the fixture.

## Element Size

The size (Diameter) of each emitter element.

## Element Spacing

The amount of space between each emitter measured from the centre of one light to the centre of the other.

## Encoding

Sets the DMX information to the fixture to be either 8 or 16 bit.

## Colour Space

Sets what colour mixing system the fixture uses.

## Origin

When addressing the emitters within the fixture, sets where to start counting.

## Flow

Sets how to count up in address from the origin.

## Special Channels

The screenshot shows a dark-themed configuration window for 'Special Channels'. It is divided into two main sections, each with a '+' icon in the top right corner.

**Special Channels Before Colour Elements**

- Pan**: A radio button is selected. Below it is a value of '0', a 'Default' label, and a '16-bit' dropdown menu.
- Tilt**: A radio button is selected. Below it is a value of '0', a 'Default' label, and a '16-bit' dropdown menu. This entire row is highlighted with a green border.

**Special Channels After Colour Elements**

- Dimmer**: A radio button is selected. Below it is a value of '100', a 'Default' label, and an '8-bit' dropdown menu.

**Special Channels** are spacers in the channel layout of the fixture. In the above example, the personality would leave 4 channels empty ( $2 \times 16\text{bit}$  channels) before the colour information and 1 channel empty after the colour information. This is frequently used to patch moving lights or LED fixtures that have macro or strobe channels.

Note: The default value of each special channel is output from Pixelmapper at all times as DMX does not allow channels to be skipped.

## Export

Saves the personality file as an XML to allow it to be loaded onto other systems.

# Fixture Properties

Each Fixture has a set of properties such as it's patch, location and scaling.

To view the properties of a fixture, select it and the context menu will change to show that fixture's information.

### Fixture Properties

10 Fixture Number

Label

Profile Green Hippo - LED RGBW

Position

52.6 cm Center X

79.8 cm Center Y

32.6 cm Left

72.6 cm Right

74.8 cm Top

84.8 cm Bottom

Scale

1.00 X

1.00 Y

0 ° Rotation

37 Channel

1 Universe

☐ Locked ☐ Disabled

☐ Receive Live Position Data

0 Position Group

Groups

## Fixture Number

A user assignable number for each fixture. Two fixtures can have the same number.

## Label

An optional text field for each fixture

## Profile

Select which profile the fixture references.

## Position

The location in the map. As the center of the fixture can be confusing when arraying fixtures, the location of the corners are also given.

Note: The position of a fixture is measured from the bounding box containing the un-rotated fixture.

## Scale

Allows the fixture to be made smaller or larger. The scale is a factor, so scale of 10 will make the fixtures 10 times larger in that axis.

## Rotation

Rotation of the fixture in degrees.

## Channel

The starting DMX channel of the fixture.

## Universe

The pixelmapper universe that the fixture will transmit on.

Note: Pixelmapper universes are patched to outputs in the settings of Pixelmapper.

## Locked

Locks the fixture so it can not be moved on the map by accident

## Disabled

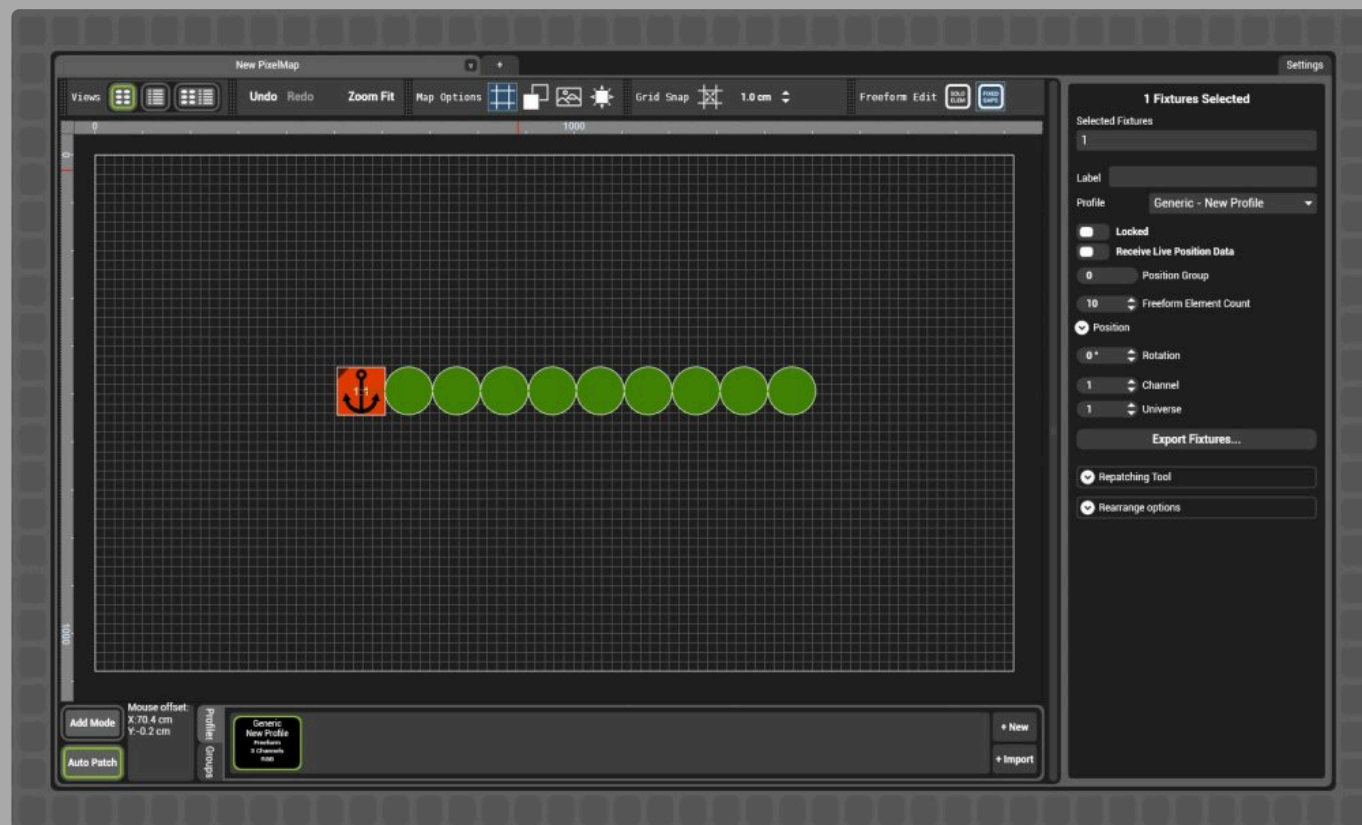
Stops output to the fixture

## Groups

Any group(s) that the fixture has been assigned to.

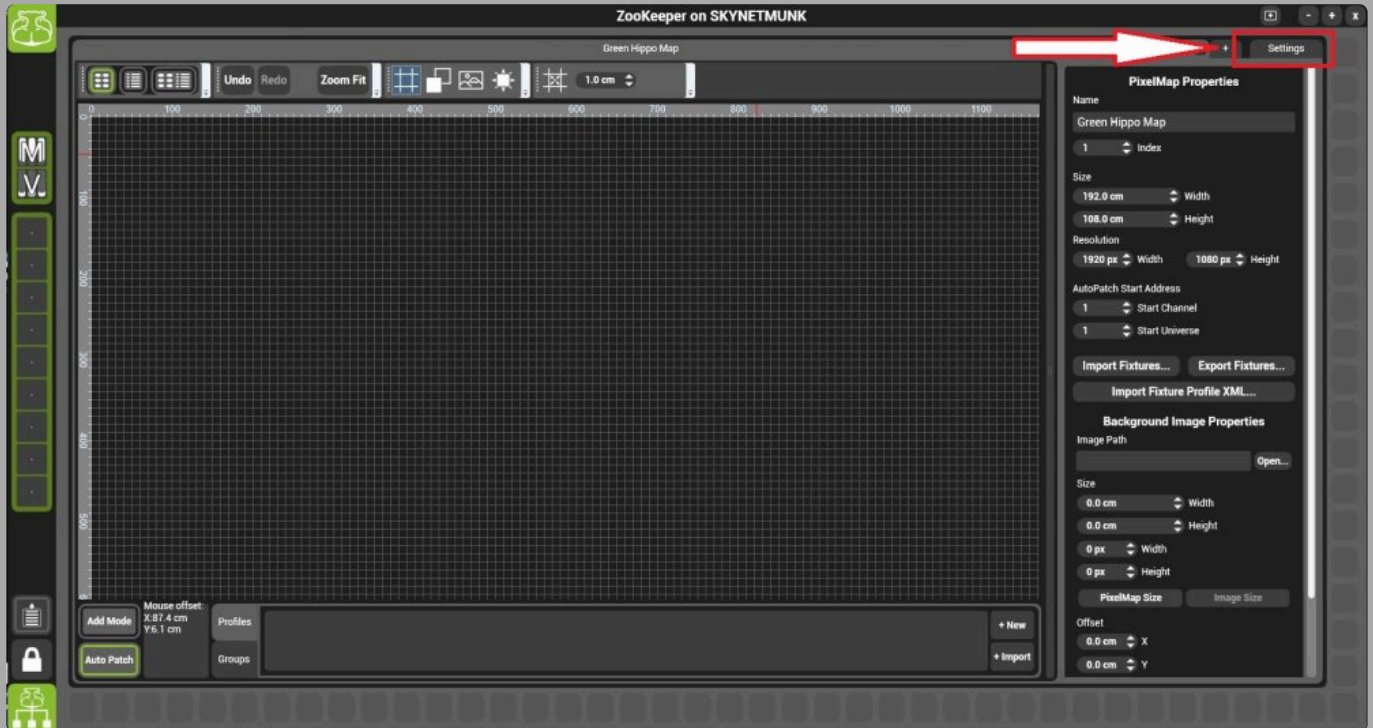
# Free Form Fixtures

Free Form Fixtures allow for LED tape and other non-linear fixtures to be Pixel mapped.

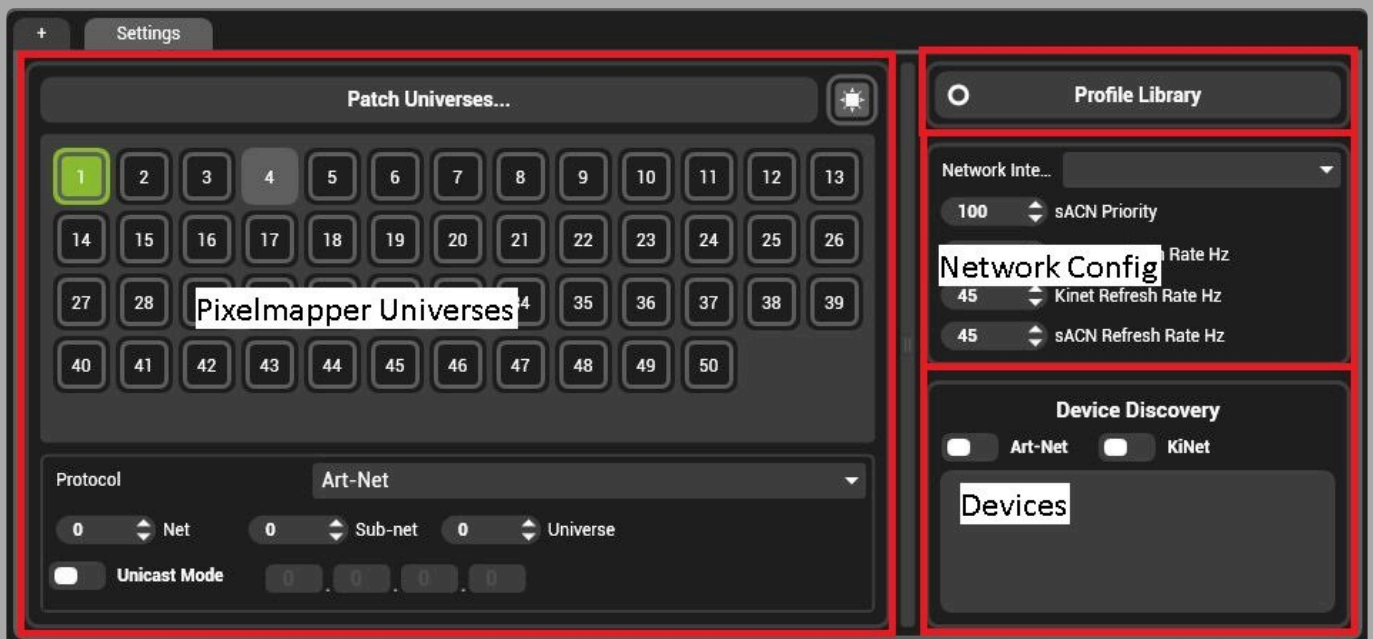


# Settings

The patch of pixellmapper is configured within the Settings tab of the component.



The Pixellmapper settings page is comprised of several parts.





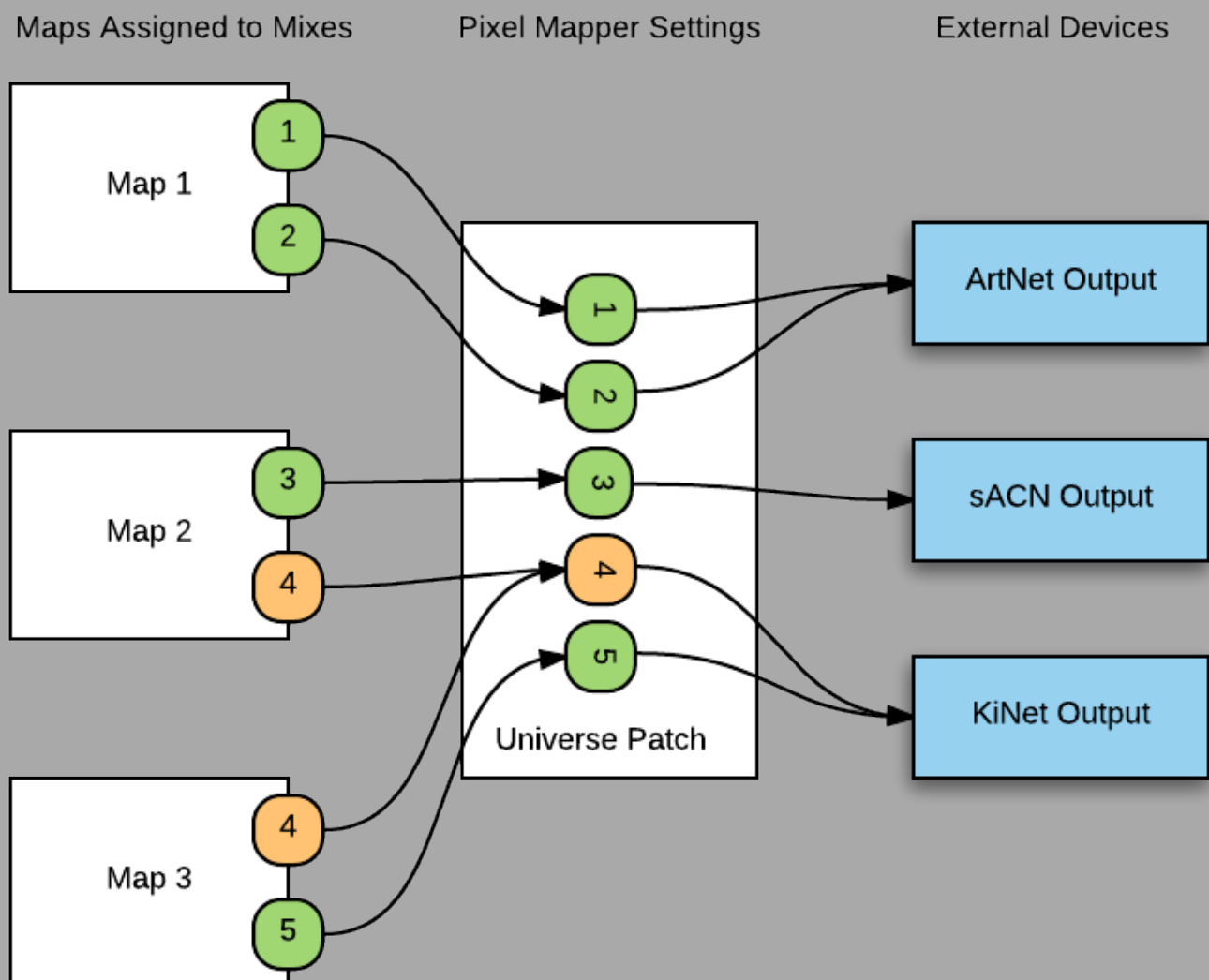
- [Pixelmapper Universes](#)
- [Network Config](#)
- [Devices](#)
- [Profile Library](#)

# Pixelmapper Universes

In order to know where to send data to, each **Pixelmapper Universe** must be patched to an output device.

## Pixelmapper Universes

Pixelmapper combines all data universes used by all active pixelmaps into a single pool represented in the settings menu as Pixelmapper universes. This allows pixelmaps to be created without regard for how each universe will be transmitted (e.g. by Art-Net and to what IP).



In the above example, there are three pixelmaps loaded onto three different mixes. Each pixelmap uses two universes.

**Note:** Universe four above is used by two maps simultaneously. This is allowed; any values that are in both maps will be taken on a [Last Take Precedence basis](#).

Each Pixelmapper universe outputs to the network using one of three protocols: Artnet, Kinet or sACN.

A pixelmapper universe must be assigned a protocol and applicable settings. These settings are accessible in the pane below and apply to the highlighted universe.

The screenshot shows the 'Settings' pane with the 'Patch Universes...' section. A grid of 50 universe buttons (1-50) is displayed, with universe 1 highlighted in green. Below the grid, the 'Protocol' is set to 'Art-Net'. The 'Net' field is 0, 'Sub-net' is 0, and 'Universe' is 0. The 'Unicast Mode' checkbox is unchecked, and the 'IP Address' field shows 0.0.0.0.

- [Art-Net Output](#)
- [Kinet Output](#)
- [sACN Output](#)

# ArtNet Output



Art-Net is a very common DMX over network protocol; Pixelmapper supports Art-Net Versions 1, 2 and 3 as well as discovery and Artsync.

## Net:

Used for Art-Net 3, Net increases the number of universes that can be carried in Art-Net's address space.

For devices that do not support Art-Net 3 this setting should normally be left at 0.

**Note:** Art-Net 3 has a larger capacity to address universes however it does not have any better data handling than previous iterations, as such do not expect any higher capacity than Art-Net 1 or 2.

## Universe and Sub-Net:

Output Universe assignment used for Art-Net 1 and 2.

## Unicast Mode:

Unicast sends data to a specific IP address instead of using broadcast. To use unicast, a destination IP address for each node must be set.

Many Art-Net Nodes support discovery, this is accessed from the [devices section of Pixelmapper](#), and can simplify the process of setting unicast addresses.

**Note:** Using unicast as opposed to broadcast dramatically reduces network load and will increase the amount of channels.

## How many universes can be sent?

The question of how many universes can be sent from a particular system type is not easily answered; the natural response is always (and unhelpfully) "it depends".

There is no software limit in Hippotizer on how many universes can be created or sent. Most commonly the limit is dictated by the network or the receivers.

**Best practices to maximise Art-Net data carrying capacity**

- Use unicast addressing for all universes
- Reduce the Art-Net refresh rate if receivers start to flicker or fail
- Use a gigabit switched network that have non-blocking switches (are capable of switching at full wire speed). Most modern models from reputable brands have this.

# KiNET Output

---



The image shows a dark-themed configuration window for KiNET. It contains four main settings: 'Protocol' is set to 'KiNet' in a dropdown menu; 'IP Address' consists of four numeric input fields, each containing '0', followed by a 'Port' label and a numeric input field containing '0'; 'Version' is set to 'V2' in a dropdown menu. The interface is clean and modern, with a dark gray background and lighter gray text and input fields.

KiNET is a proprietary network based protocol used by many Color Kinetics brand LED control nodes.

Similar to other network based control systems, KiNET addresses each output node by IP address. Each port of the node is then given a number.

## IP Address

The IP address of the output node. Usually in the 10.xxx.xxx.xxx range, nodes can be discovered on the network using [discovery](#).

## Port

The port number of the string of devices to be controlled.

## Version

KiNET control version, this is defined by the receiving hardware.

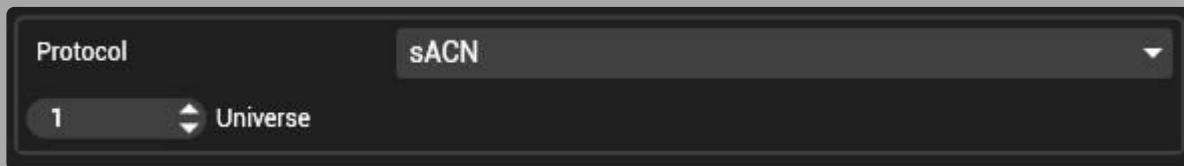
## Getting the most from KiNET

- KiNET networks can quickly become clogged when a node drops offline. It is important to un-patch nodes that are not present.
- Older output nodes (Such as PDS-60) can saturate on busy networks. This can be helped by reducing sending frame-rate and reducing the network speed to the node. (10base is frequently best).

# sACN Output

---

Streaming Architectural Control Network (sACN) is a protocol for sending DMX data across the Architectural Control Network (ACN) family of protocols. sACN has been developed by a group of lighting industry professionals (ESTA) to improve upon other methods of sending DMX on a network such as Art-Net. sACN has a several key advantages over Art-Net including support for multi-casting, controller priority and low processing overhead.

A screenshot of a software interface for configuring sACN output. It features a dark-themed window with a 'Protocol' dropdown menu set to 'sACN' and a 'Universe' input field containing the number '1'.

sACN uses the IP address and priority set in Pixelmapper's [network configuration](#)

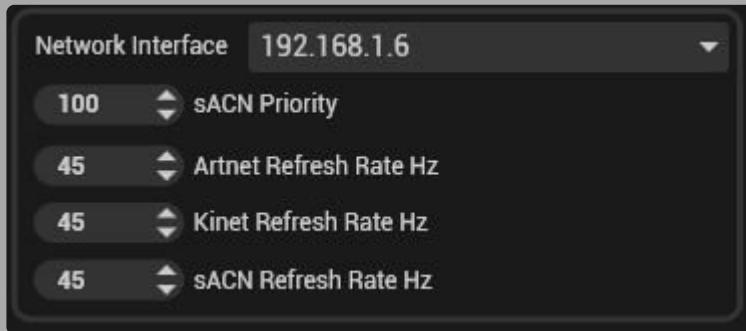
## Universe Number

sACN receivers are addressed based on what Universe they respond to. Set this for each Pixelmapper universe.

**Please Note:** sACN relies on multi-cast grouping so disabling network functions such as IGMP snooping can seriously degrade the efficiency of sACN. Careful network planning and management is critical to maximise the amount of data that can be carried.

# Network Config

---



Network Interface 192.168.1.6

100 sACN Priority

45 Artnet Refresh Rate Hz

45 Kinet Refresh Rate Hz

45 sACN Refresh Rate Hz

## Network Interface

Specifies which network port Pixelmapper will use to output data. This is defined by the IP address of available network cards.

Only IP Addresses from enabled and connected Network Cards will appear in this list.

**Note:** The configuration of IP addresses should be carried out before starting Pixelmapper. [A guide to setting IP addresses can be found here.](#)

## sACN Priority

Sets the behaviour of receivers where multiple sACN senders are present on the network. This can be used to define what happens in the event a controller stops transmitting. The higher priority station on a network takes control. If a higher priority station stops transmitting, the next highest priority sender will take control after a short delay.

Two senders with the same priority will normally merge their values on each receiver.

**Note:** The exact priority behaviour depends on the make and model of receiver.

## Artnet Refresh Rate

How often a new frame of Art-Net is sent over the network. Older Art-Net receivers or very congested networks may benefit from a lower refresh rate.

## KiNET Refresh Rate

How often a new frame of KiNET is sent over the network. Older KiNET receivers or very congested networks may benefit from a lower refresh rate.



## **sACN Refresh Rate**

How often a new frame of sACN is sent over the network.

# Devices

---

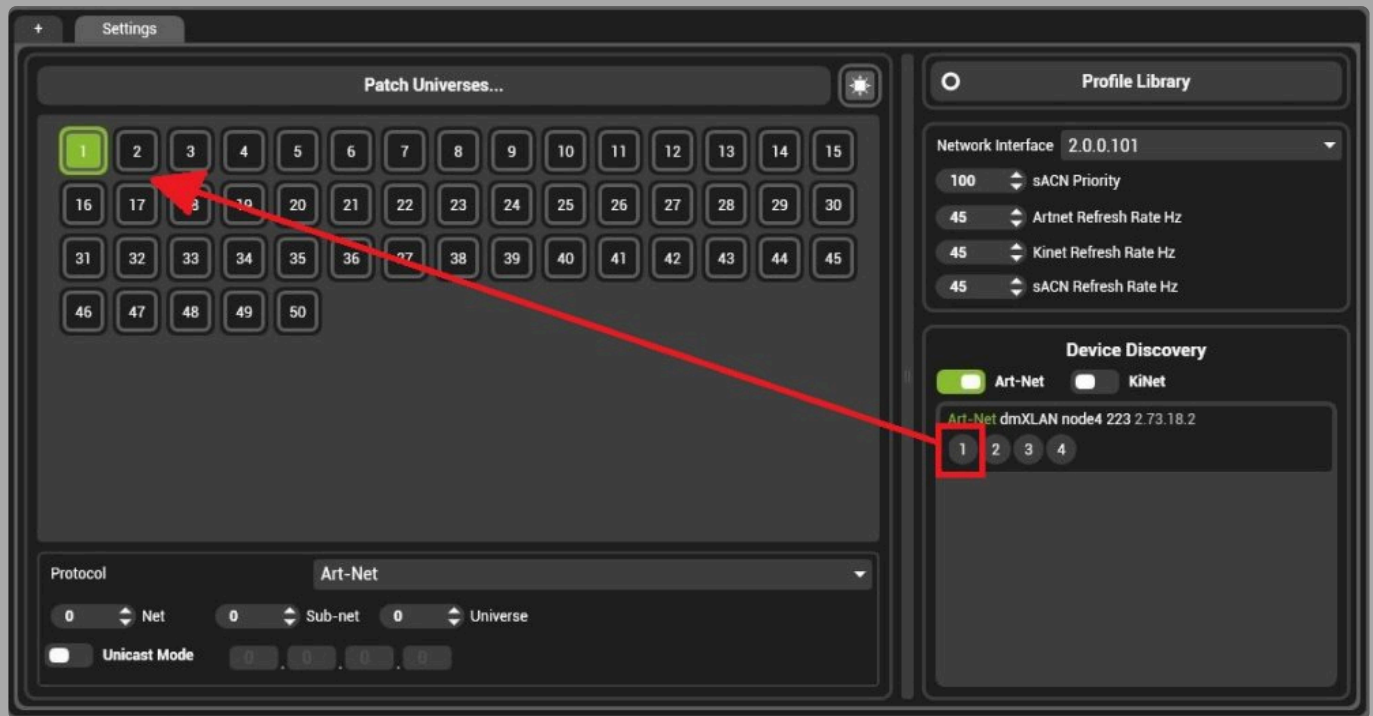


Pixelmapper can discover attached Art-Net and KiNET nodes; enable the relevant discovery to populate the list.

All discovered nodes appear with the number of reported ports. Depending on the device, the reported number of ports may not correlate with physical ports on the node. (KiNET nodes for example usually report two ports despite only having one).

The IP address and name of any discovered devices can also be seen.

To quickly patch a Pixelmapper universe to a device port, simply drag the port onto the pixelmapper universe.



Dragging the port onto the Pixelmapper universe will apply the correct network and port settings to the universe. The network settings will be retained in the event discovery is turned off or connection is lost.

# Profile Library

The Profile Library allows fixtures to be shared between Pixel maps; a profile created in one map is saved to the library so that it can be used in other maps.

The Profile Library exists in the settings tab of Pixelmapper.

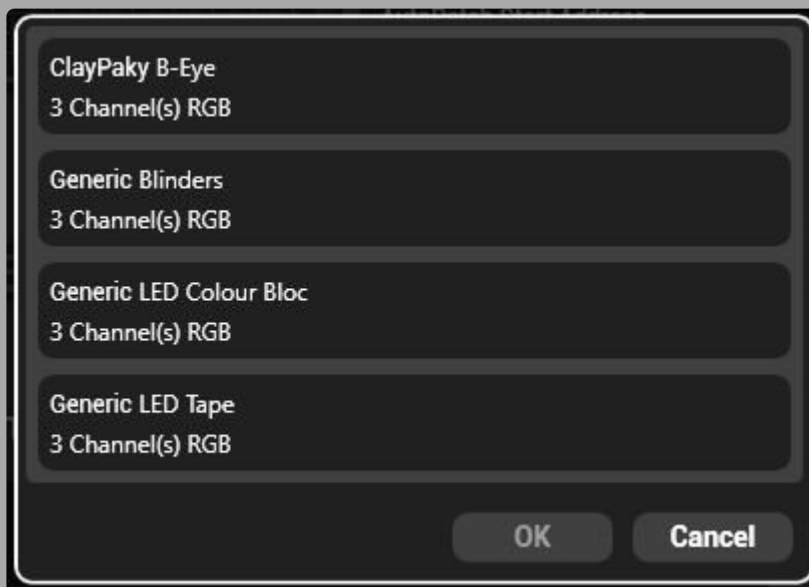


The library can be viewed by either clicking on it or adding it to a pinboard.



To add fixtures from a map to the library right click on them and select **\*Copy to Profile Library**

To add fixtures to a pixel map from the library click the **Import** button in the pixelmap.



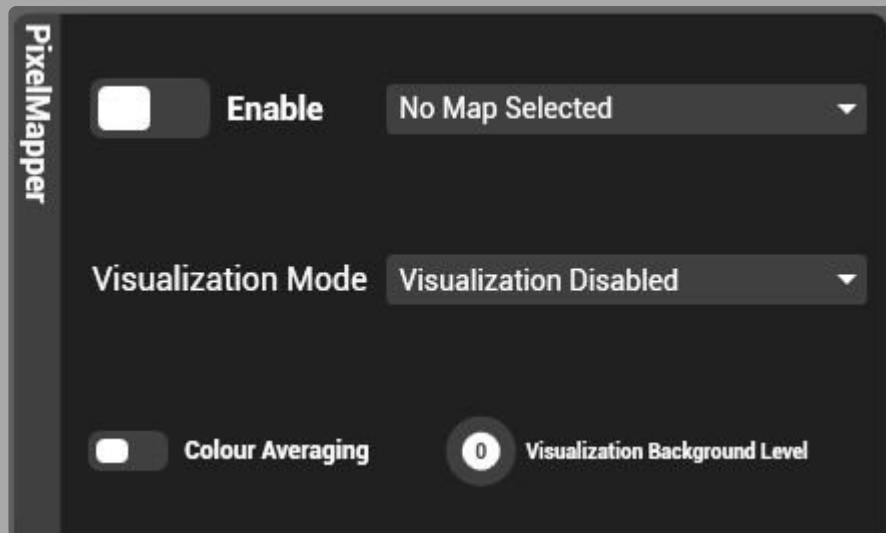
Once a profile has been added to the pixelmap it can be edited without affecting the library copy of the profile.

# Mix Controls

Pixel maps are assigned to a mix using the mix controls. Enter the mix controls by pressing the 'M' button in a layer selector.



Each mix has a pixelmapper control panel:



## Enable

When disabled, Pixel mapper is shut off for that mix.

## Visualisation

By default, there is no video output to the mix from pixellmapper; it only samples pixels and sends the data out over the network. The mapping can be seen live on the mix output by selecting an option in the visualisation menu.

## Colour Averaging

Colour averaging calculates the average colour for each cell based on all pixels it intersects.

With Colour Averaging disabled, cells that span across multiple pixels will take the colour of the pixel that hits the centre of the cell. When enabled, all pixels that are overlapped by a cell are averaged together and used to determine the colour for that cell.

Colour averaging can have a dramatic impact specifically with very large or very small cells.

Where cells span across multiple pixels, colour averaging will have the effect of smoothing out colour changes that otherwise would appear too fast. **In the case of larger cells, colour averaging is frequently desirable.**

Where cells are only one pixel, colour averaging makes it very difficult to place fixtures perfectly as they not overlap any adjoining pixels. **In the case of small, or single pixel cells colour averaging is likely better disabled.**

## Visualisation Background Image

Sets the level of the background video when using pixelmapper visualisation on the mix. When visualisation is on, an area of the output not covered by a pixelmapper fixture is black by default. Visualisation Background Image allows the video to be show as well as the mapped fixtures.

## Pixelmapper and Engine performance

Pixelmapper can add significant load to a system, especially with large and complex maps. This results in a slowing of the video output frame-rate.

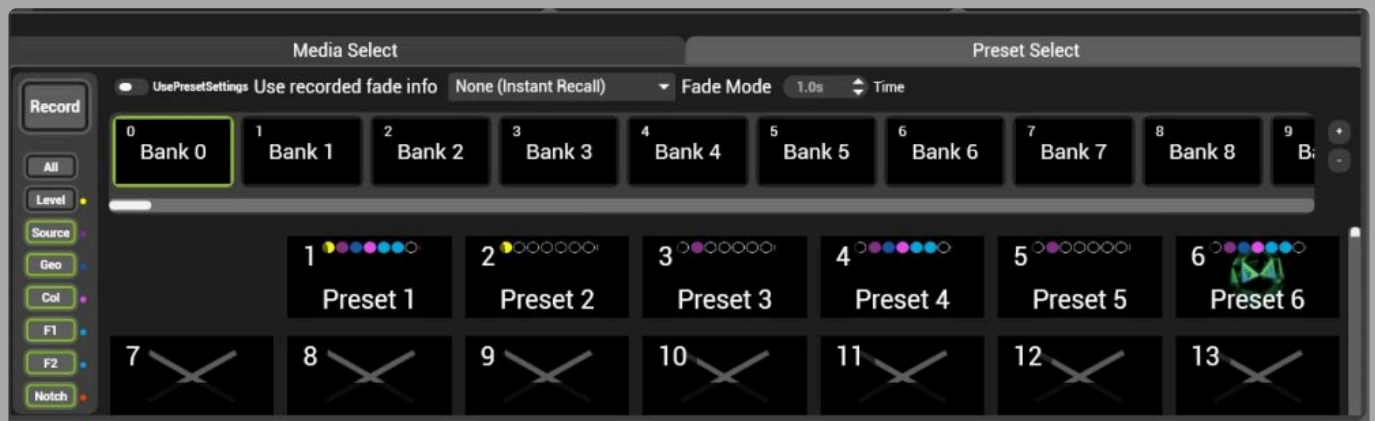


# Preset Manager

Presets are a quick way to save and quickly recall layers, a whole mix or a viewport.

Presets can be saved for Layers, Mixes or Viewports.

## Layer Presets



Layer Presets save information from each layer such as level, media playing, colour, effects and geometry.

## Mix Presets



Mix Presets save the mix effects and pixelmapper information and can save some or all layers in that mix.

## Viewport Presets

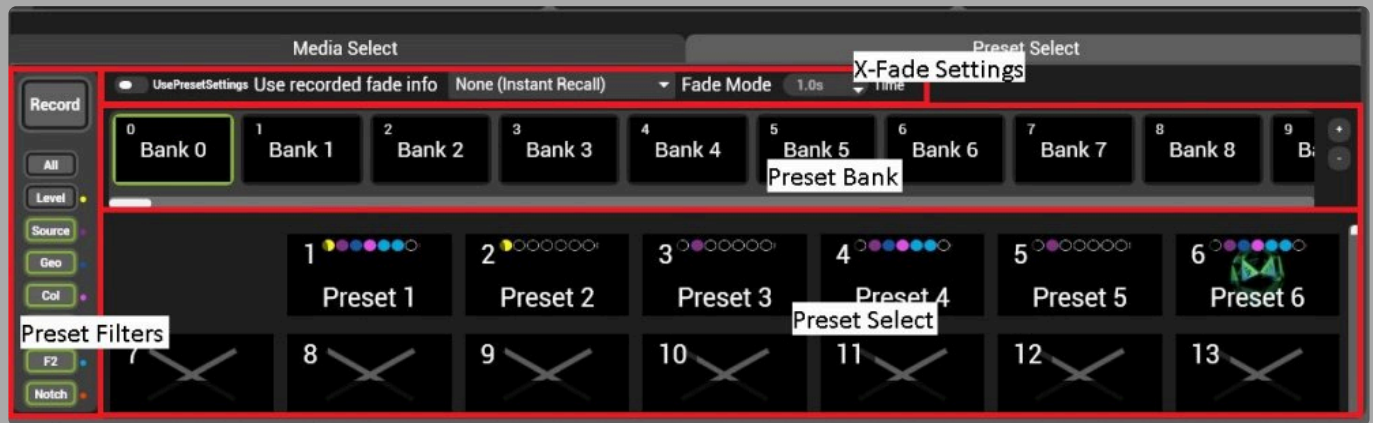


Viewport Presets save information such as warp, keystone and video mapper assignments.

## Saving Presets

# Layer Presets

## Layer Presets save all aspects of a media layer



## Presets have four main sections:

### Preset bank and select

Each Preset bank contains 255 preset select slots.

A single Integer pin (0-65535) selects each preset sequentially, so Bank 1, Preset 1 is a value of 257.

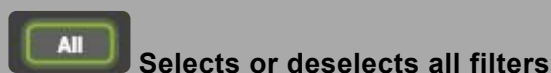
In order to toggle a preset the value of the pin must change. From a DMX desk, it is often easiest to toggle the value from 0 (Bank 0, Preset 0 cannot be recorded to) then set the pin to the desired preset value before returning it to 0. When toggling from Midi, use action mappings in Multicontroller to automate this process.

### X-Fade Settings

All layer presets save the x-fade state of the layer as they are recorded. The X-fade settings override this setting to quickly allow the fade time to be set on the fly.

### Preset Filters

The preset filters determine what attributes are saved or recalled from a selected preset.





**Filters the layer level**

**Contains:**

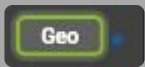
- Mixer/Level



**Filters the layer source and mix mode**

**Contains:**

- Source / MediaPlayer
- Source / Generator
- Source / Liveinput
- Source / Relays
- Source / NDI
- Source / Spout
- Mixer / Mixmode
- Key



**Filters the layer Geometry, Videomap, Aspect and keystone**

**Contains:**

- Geometry
- Keystone
- Videomapper on layer
- Live Mask



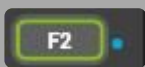
**Filters colour**

**Contains:**

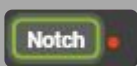
- Colour



**Filters Effects 1**



**Filters Effects 2**



**Filters Notch parameters and setup**

**Contains:**

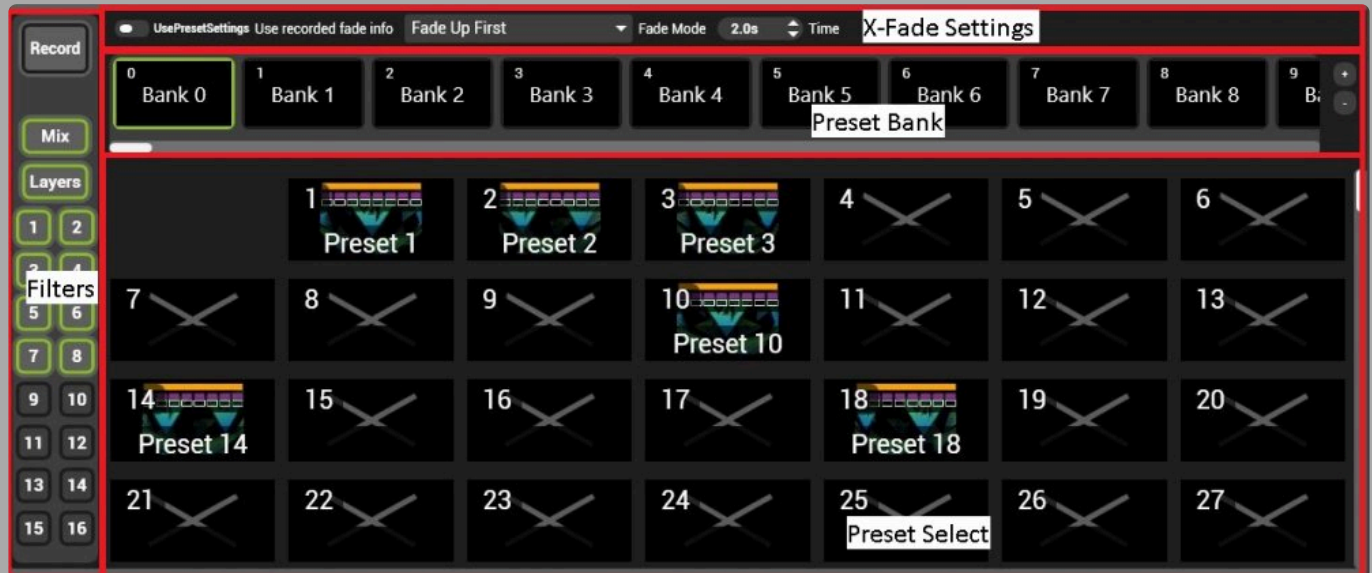
- Notch/Parameters
- All Notch Settings

**Using Filters**

- Filters work both in saving **and** applying presets. It is usually best to either filter while saving or filter while playing back.
- Double clicking a filter will solo it.

# Mix Presets

## Mix Presets save and recall the whole mix and it's layers



Mix Presets have four main sections:

### Bank and Preset select

Each Preset bank contains 255 preset select slots.

A single Integer pin (0-65535) selects each preset sequentially, so Bank 1, Preset 1 is a value of 257.

In order to toggle a preset the value of the pin must change. From a DMX desk, it is often easiest to toggle the value from 0 (Bank 0, Preset 0 cannot be recorded to) then set the pin to the desired preset value before returning it to 0. When toggling from Midi, use action mappings in Multicontroller to automate this process.

### X-Fade Settings

All mix presets save the x-fade state of each of layers as they are recorded. The X-fade settings override this setting to quickly allow the fade time to be set on the fly.

### Filters

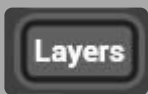
Filters control what data is saved or recalled from a preset. Mix presets have several types of filters:



Contains all information from the Mix Master

**Contains:**

- Mix / Audio
- Timecode Shift
- FX
- Mix / Level
- NDI
- Pixelmapper



Toggles the selection of all layer filters



Selects which whole layers are included in the preset

# Saving and Editing Presets

Presets record the current state of the selected Layer, Mix or Viewport.

Recording a preset follows a simple 3-step process:



## 1. Press Record

- Single clicking the record button will highlight it with green indicating a after a single preset is saved record will disable.
- Double clicking the record button will highlight it with orange indicating that it will remain in record mode after saving a preset. Use this to quickly snapshot many states.

## 2. Select the desired record filters

- On **Layer**, filters allow for only certain attributes such as level, geometry or effects to be saved.
- On **Mix** filters allow for certain layers or the mix controls to be saved.
- There are no filters for **Viewports**.

## 3. Choose the bank and slot to save the preset in.



# Presets and Timelines

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# Presets and DMX

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# ScreenWarp Manager

## Screen Warp Manager is Hippotizer's blending and warping system

Note: SHAPE has a warping and blending system for use with SHAPE Viewports.

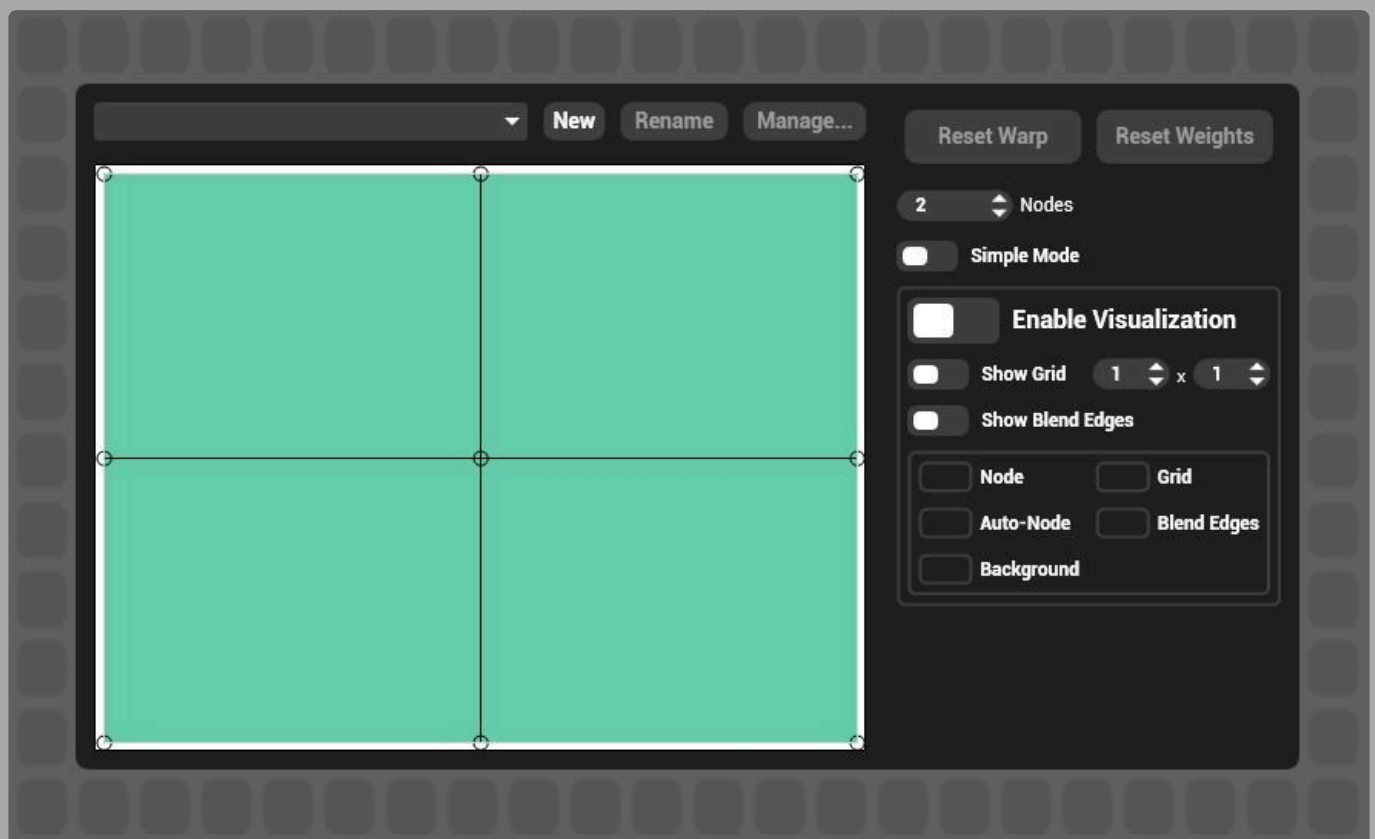
Screen Warp is a component that does not run by default; it must be started before use.

[More information on starting a component can be found here.](#)

## Basic Layout

Screen Warp is made up of two parts: the warp editor and viewport controls.

## Warp Editor



[The warp editor is where warps are created and edited.](#)

## Viewport Controls



[Each warp can be assigned to one or more Viewports. The viewport controls also contain blending controls enabling square and radial blending.](#)

# Screen Warp Viewport Controls

Each Viewport selects whether to use Screen Warp and sets blending.



The viewport controls are made of two sections:

## Enable

Turns the screen warp rendering on that selected viewport on or off.

## Warp Mix

Two screen warps can be loaded to each viewport and faded between with the warp mix fader.

## Blending

On each viewport all four edges can be blended individually or a radial (circular) blend can be applied.

Each blend has two attributes:

## **Gamma**

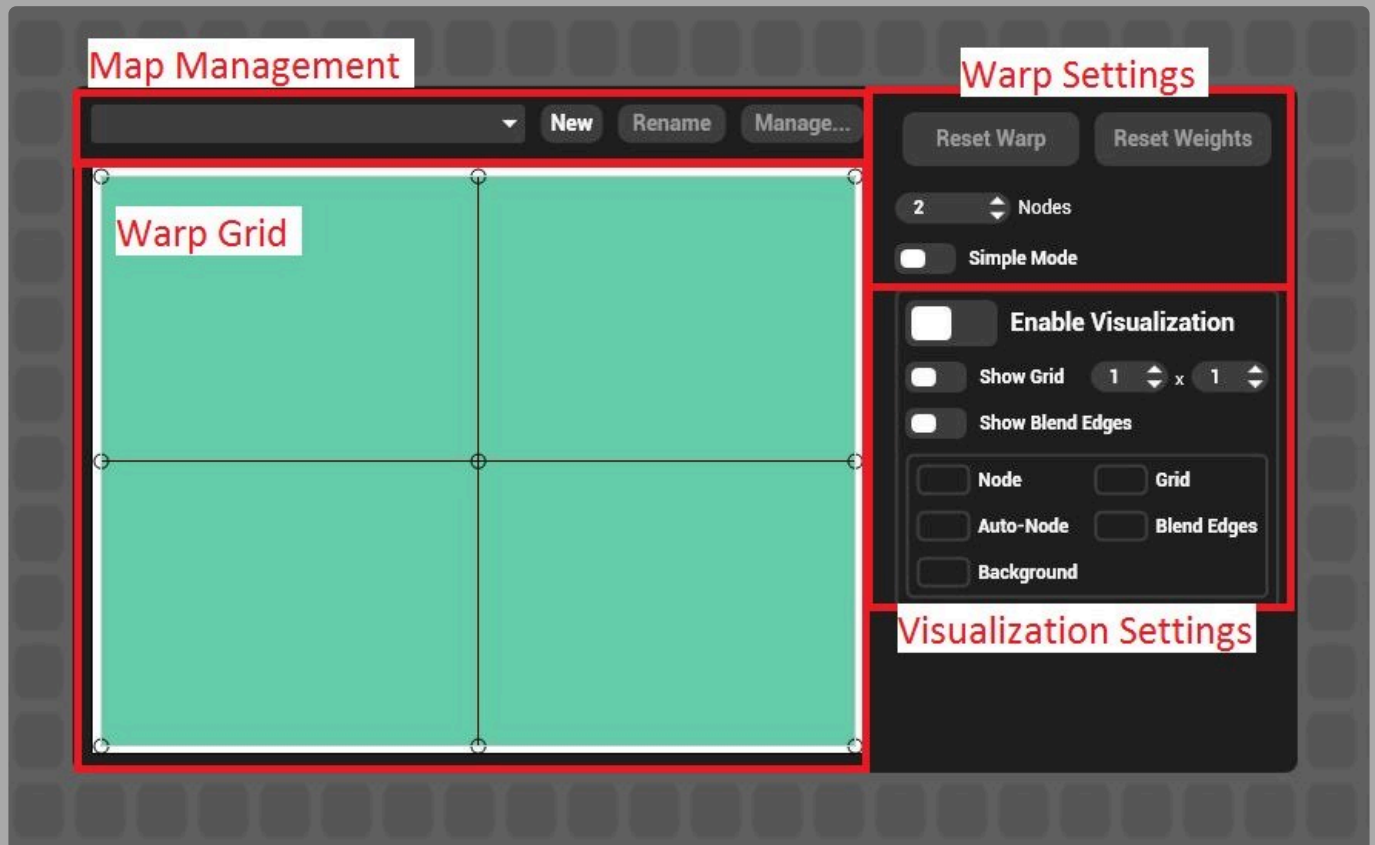
Measured from 1 – 3, a gamma of 1 is a steeper curve while a gamma of three is flatter.

## **Overlap**

Sets the starting point for the blend as a proportion of the overall width of the viewport.

# Screen Warp Editor

The Screen Warp editor is where warps are created and modified.



The Editor is comprised of four sections:

## Map Management

Screen warps are saved as part of a list of warps accessible by each viewport.

### Warp select drop down list

Selects which warp is visible in the screen warp editor.

### New

Creates a new screen warp and adds it to the end of the screen warp list.

## Rename

Renames the selected warp

## Manage...



Each warp has an index to determine how they are recalled from the warp select pin. The manage dialogue allows the list to be re-ordered by moving warps up and down in the list.

Note; DMX, Timeline and Preset recall of warps is by index number; changing the index may affect existing programming.

## Warp Grid

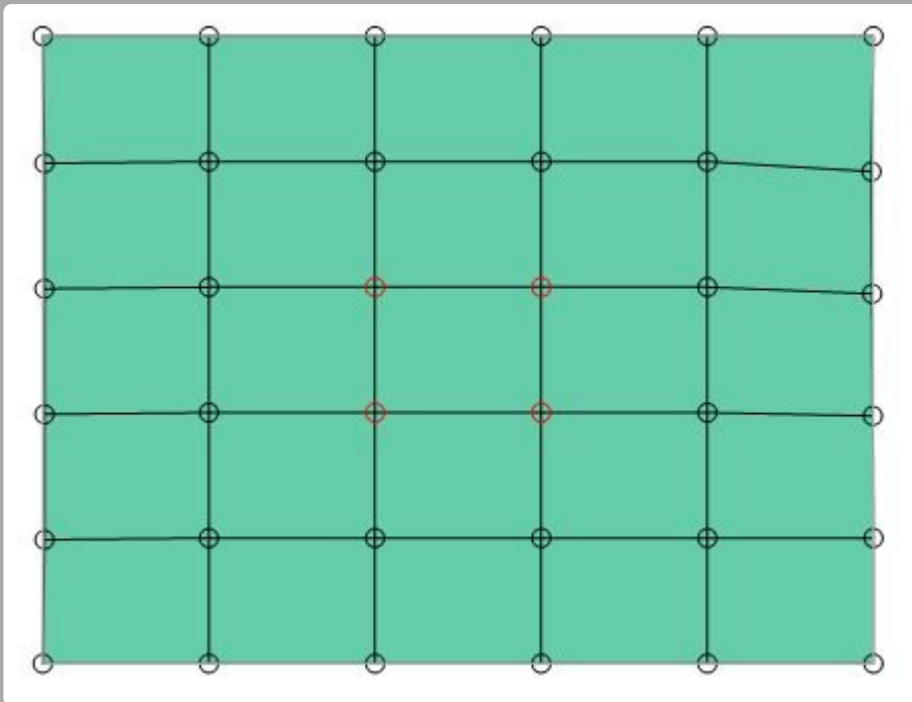
The warp grid represents the distortion of the selected screen warp.

### Controls

Editing a warp begins by selecting the desired node to modify. Multiple node can be selected by clicking and dragging over them with the mouse or holding CTRL while selecting the nodes.

Selected nodes appear red.





Once selected, there are different ways to edit a warp depending on the situation.

**Left Click and drag** on the desired node to move it with the mouse. To edit multiple nodes select them first then click on one node in the selection to move the entire selection. Holding SHIFT while dragging with the mouse is a fine adjustment.

**Arrow Keys** Select the desired node and use the arrow keys to move it. Holding SHIFT + Arrow keys is a fine adjustment.

**Right Click and drag** changes the selected node's **weight**. This is best thought of pushing the node into or pulling it out of the screen.

## Warp Settings

### Reset Warp

Sets the position and weight of all nodes to default.

### Reset Weight

Sets the weight of all nodes to default.

### Number of nodes

Sets the number of nodes (in the and X and Y dimensions)

Hint: The warp grid does not move when you add points, so it is faster to use as few nodes as possible and add them as needed.

## Simple Mode

In simple mode, only the corner points are editable to facilitate quick basic warps.

## Visualisation settings

Warps can be shown on the output as they are edited.

### Show Grid

Draws a lineup grid on the output with the selected number of lines

### Show blend edges

Displays where the beginning of the gamma curve is applied to the edge of the viewport

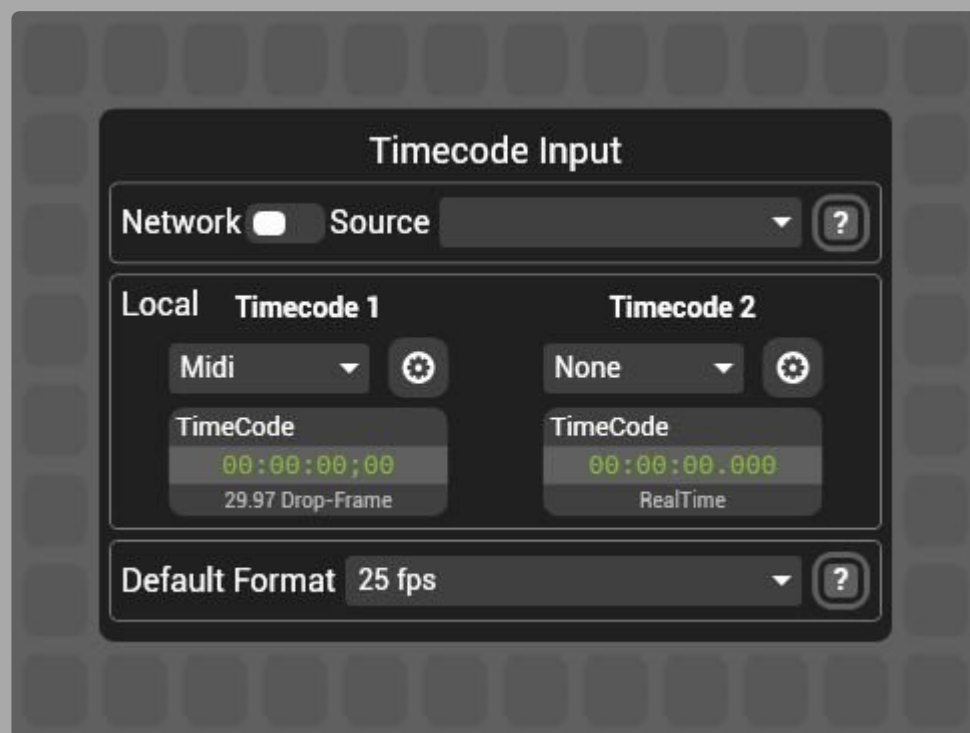
## Colours

The colour of each aspect of screen warp visualisation can be edited by left clicking on the colour tags.

# Sync Manager

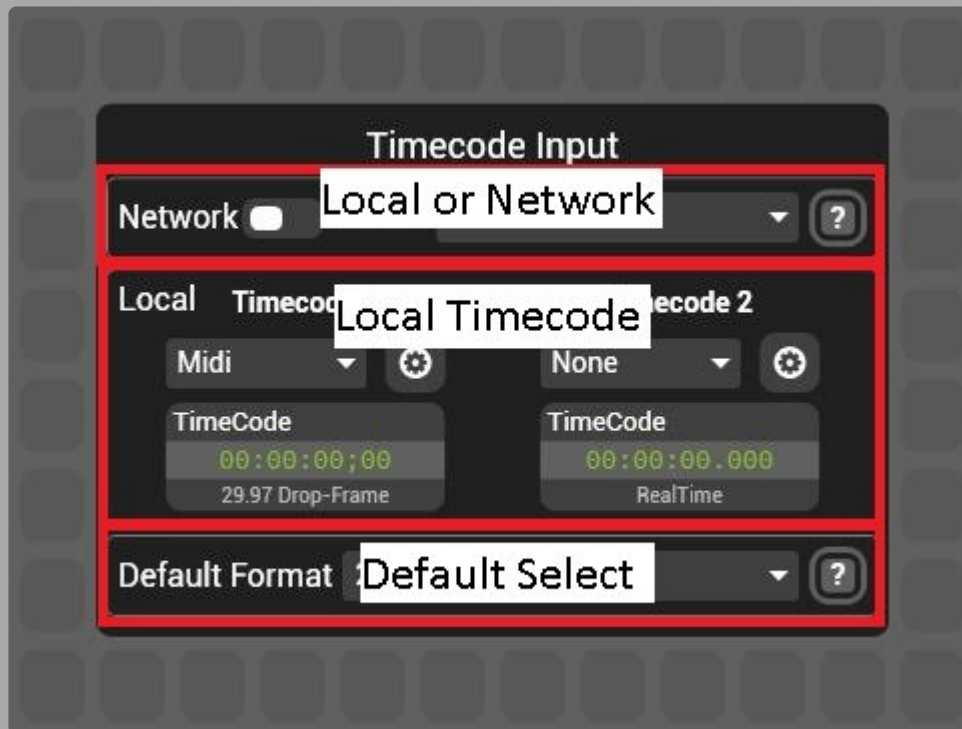
---

Sync Manager receives and distributes timecode



[The Sync Manager is a component that does not run by default. For more information on starting components see here.](#)

## Sync Manager has three basic parts:



### [Local or Timecode](#)

Selects the source of timecode; whether it is local to the system or another system on the network

### [Local Timecode](#)

Where all local timecode input and generation is handled.

### [Default Select](#)

Instructs the media players what timecode to expect before timecode is first received.

## Timecode, Time and Sync busses

Hippotizer synchronises media playback in several ways depending on the timing source.

### Timecode

Timecode is an externally received time signal expressed in [Hours:Minutes:Seconds; Frame Number].

Timecode is applied to the media player with respect to time. That means if two media players are locked to the same timecode signal and they are playing dissimilar frame-rate media, their play heads will be at the same time.

In the case that media frame-rate does not match the timecode frame-rate, playback will be smooth, however it will be impossible to seek to specific media frames accurately from timecode. For this reason it is recommended to always match media and timecode frame-rates.

Timecode has been standardised into formats, of which Hippotizer supports **Linear timecode** (LTC) and **Midi timecode**.

### Linear Timecode (LTC)

Linear timecode follows a SMPTE defined standard (SMPTE 12M) encoding timecode into an audio signal. LTC is widely used in broadcast and live events and is frequently distributed over standard audio cables.

Linear timecode can be received in Hippotizer with the following devices:

- Factory fitted Alpermann Velte internal card
- [Rosendahl Mif4 USB timecode interface.](#)
- [Adrienne Electronics USB-LTC](#)
- The left channel of the audio input can also receive LTC

### Midi Timecode (MTC)

Midi timecode is a standard for transmitting timecode using midi messages.

Midi timecode is supported in Hippotizer from the following devices:

- [Rosendahl Mif4 USB timecode interface.](#)

## Time

Differing from timecode, time signals are used internally by Hippotizer to synchronise media playback by defining the play head position in time and the playback speed, regardless of clip frame rate. Time signals are created when using the Generator or a media player as a source.

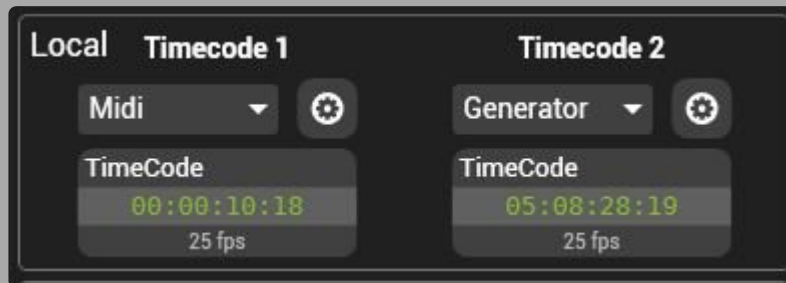
## Sync buses

A sync bus carries time and a **sync state** between media players. The sync state is the media selection, playmode, in and outpoints and the inner-loop points. A layer listening to a sync will follow the source's media selection as well as synchronising playback.

# Timecode In

---

The timecode in panel controls the two input channels



Each sync component has two input channels: **Timecode 1** and **Timecode 2**

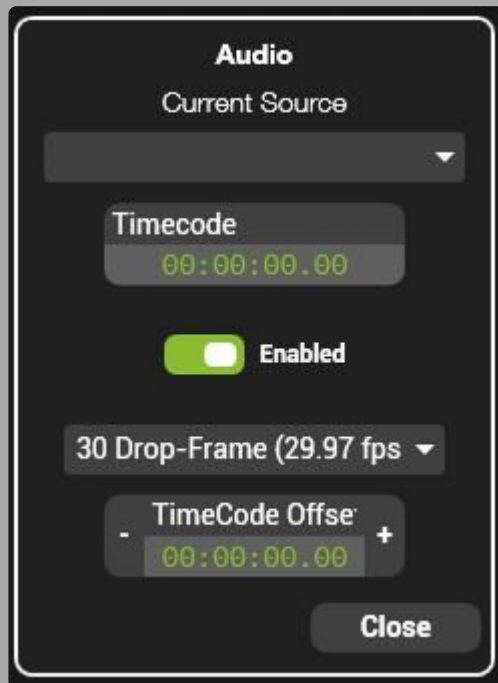
An input channel can use a variety of sources:

- [Audio Input](#)
- [Generator Input](#)
- [MIDI](#)
- [Alpermann Velte](#)

# Audio Input

---

Linear Timecode can be received using the audio input.



Linear Time Code (often called SMPTE timecode or LTC) encodes a time signal into audio, Hippotizer can read this signal from any audio input.

## Current Source

Lists all active audio input sources on that machine. This list is managed by Windows and determined by which devices are discovered, so if a device does not appear here it is likely down a driver issue.

## Timecode

The time received from the selected source

## Enabled

On/Off control for the source.

## Frame Rate Drop Down

Select the type of timecode received. (This is determined by the timecode source)

## Timecode Offset

Add a set amount of time to the incoming timecode in order to compensate for delays.

## To Configure

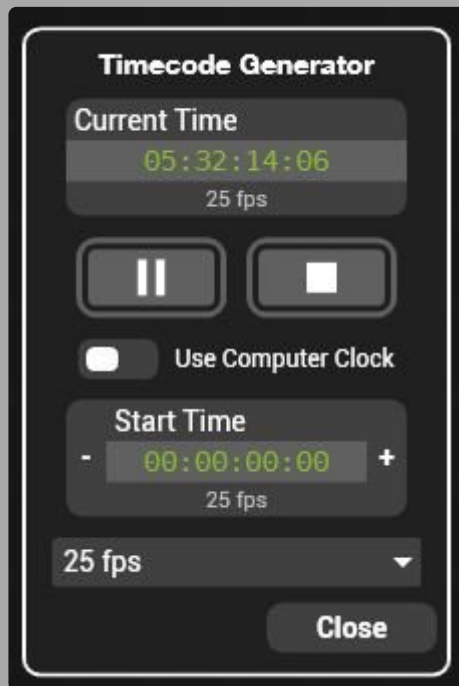
1. Plug the audio input into your Hippotizer system (Audio must be going into the system running the Sync Manager Component)
2. Goto Sync Manager in Zookeeper and select Audio as an External Input
3. Click the settings cog
4. Select the Audio input device as the Current Source; this will depend on what is used to bring audio into the system.
5. When Set correctly, the time readout will reflect the timecode being received

**Note:** As timecode is being carried by a normal audio line, the gain (volume) must be set correctly to function. It is frequently necessary to experiment with various combinations of the output device volume and the input gain to find a correct setting.



# Generator Input

The Timecode Generator creates timecode from the computer's clock or from a user specified time.



## Using the computer clock

1. Set the external input in Sync Manager to be Generator
2. Open the settings by clicking the settings cog
3. Ensure the switch “Use Computer Clock” is enabled.

When using the computer clock, the stop jog control is disabled, while play and pause can be used to hold and restart timecode.

**Note:** Automatic changes to the computer clock (such as for daylight savings time) will be reflected in this time.

## Using an arbitrary time

1. Set the external input in Sync Manager to be Generator
2. Open the settings by clicking the settings cog
3. Ensure the switch “Use Computer Clock” is disabled
4. Set the desired start time in the “Start Time” readout

When using an arbitrary time the stop jog control resets the timecode to the Start Time. Pausing and restarting will not reset to the start time.

## Frame rate drop down

Sets the frame rate of generated timecode.

# MIDI

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Hippotizer can use Timecode over MIDI via a USB interface to receive Timecode.

## Supported Devices:

### Rosendahl Mif 4

[Mif 4 Website](#)



### Adrienne Electronics USB LTC/RDR

[USB-TC Website](#)



## To Configure:

1. Stop the Hippotizer Engine and Zookeeper
2. Plug in the USB Time Code device and allow Windows to discover it and install drivers. (Follow

manufacturer instructions)

3. Start the Engine and Zookeeper and select the Midi source as an external source in Sync Manager
4. Click the settings cog and select the desired midi device
5. Enable the source. If timecode is being received the time counter should reflect it.



# Alpermann Velte

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Hippotizer supports an internal timecode card using the Alpermann Velte PCIe TC card.

If fitted, the Alpermann will appear as a timecode source option in Sync Manager's External inputs.

## To Configure:

1. Ensure the Alpermann Card is fitted and drivers are correctly installed.
2. In Sync Manager, set the External Input source as Alpermann
3. Click the settings cog to view and edit the Alpermann card's options

# Non Real-Time Timecode

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Hippotizer V4 supports many Timecode standards, including 29.97 FPS Non Drop-Frame (NDF) a “Non real-time” time code format.

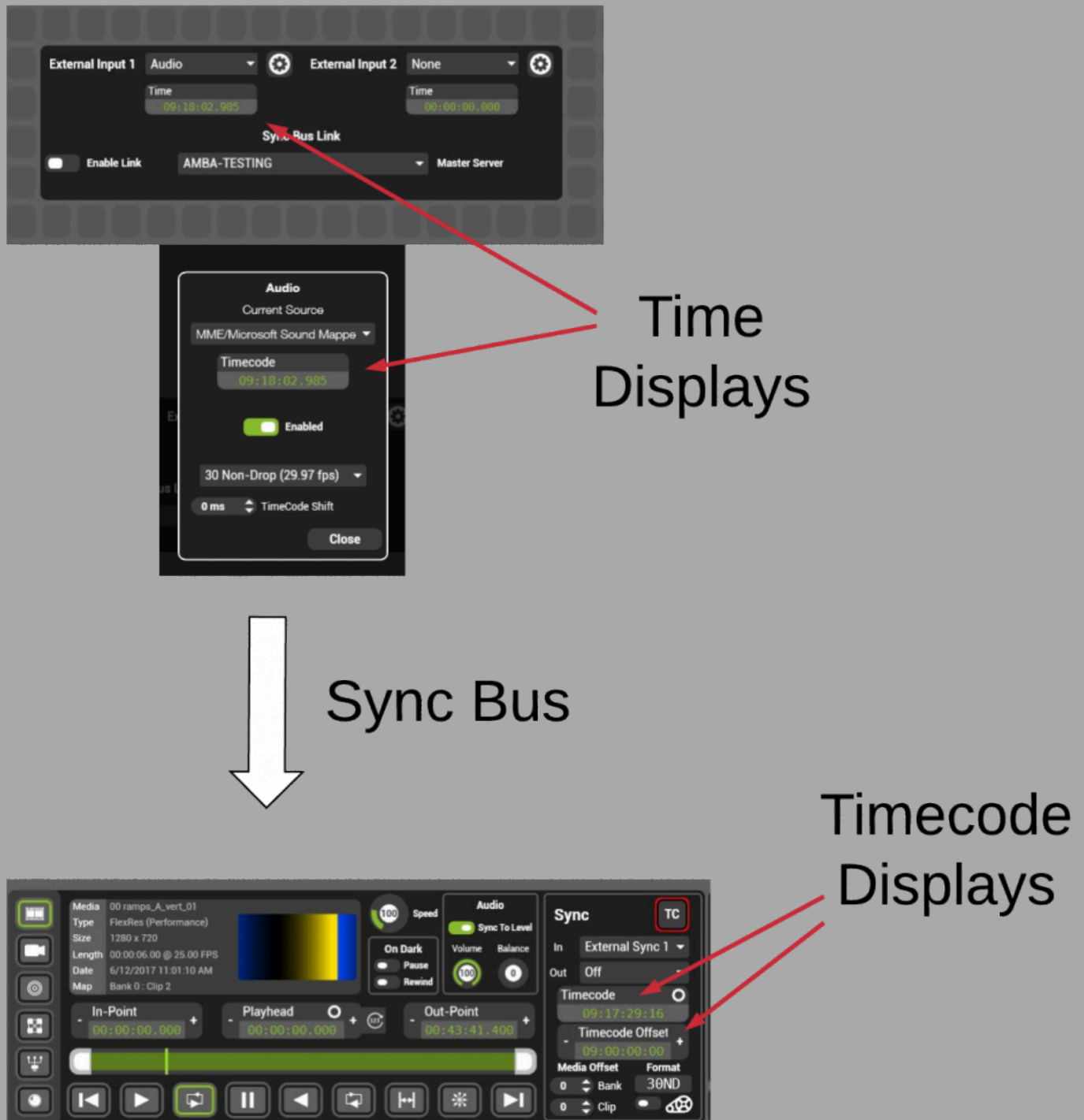
29.97 Non Drop Frame is a somewhat archaic standard that for legacy reasons differs from the time it is meant to represent. Unless there is a specific reason to use this format, we strongly advise using another more common standard of timecode.

**Note:** The logic and mathematics behind 29.97 NDF extends beyond the scope of this manual, however there is a very good explanation of how and why this format exists here:

[http://www.connect.ecuad.ca/~mrose/pdf\\_documents/timecode.pdf](http://www.connect.ecuad.ca/~mrose/pdf_documents/timecode.pdf)

In 29.97 NDF, the **time** and the **timecode** differ by 1.8 frames of video per minute, which equates to a drift of 3.6 seconds per hour. This means that timecode of 01:00:00:00 equals a time of 01:00:03:18.

Hippotizer’s media player uses time to know which frame of video to play, this requires all timecode to be converted to time. Under normal circumstances, these two values are identical, meaning it does not matter which value is displayed or controlled. 29.97 NDF however breaks this convention, making it very important to know where time and timecode is used in Hippotizer.



Sync manager receives the timecode signal and will convert it to **time**, displaying it as **time** in the Sync manager interface and detailed views.

The time signal then travels to media player(s) over a sync bus, which also displays in **time**.

The Media Player then converts it back into **timecode** so it can be correctly edited and viewed. The timecode offset control also displays **timecode**.

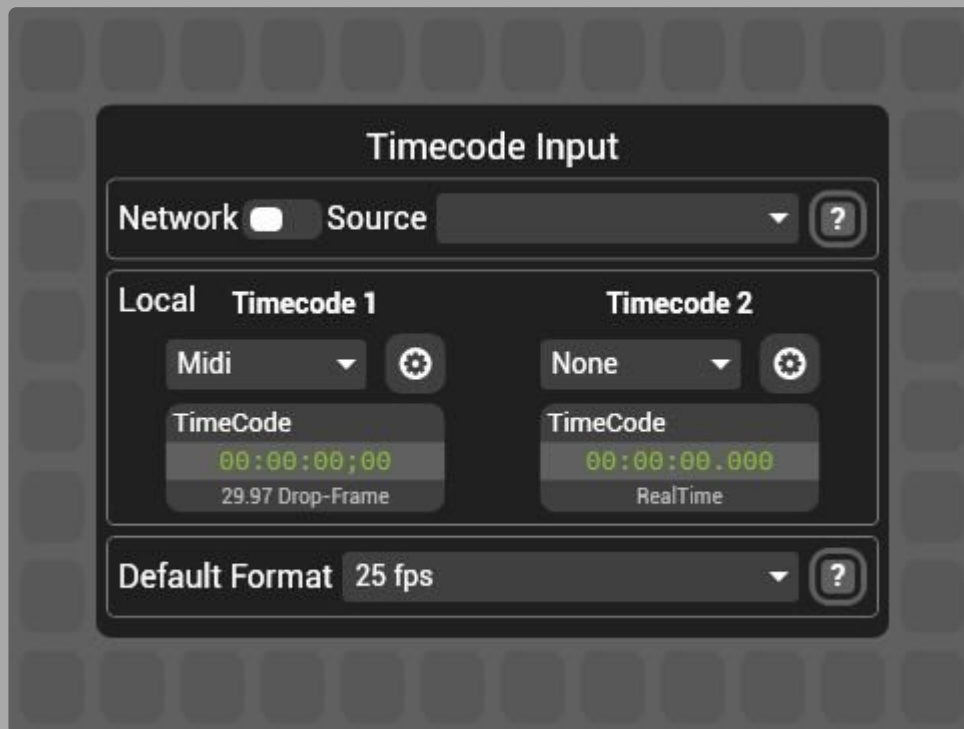
The timecode offset pins work in **timecode**.

This mixture of time and timecode means that for 29.97 NDF it is normal to see slightly different numbers in each interface depend on where in the signal flow you are.



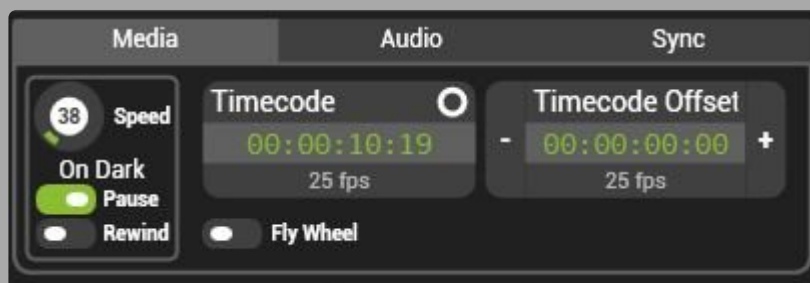
# Default Timecode Format

Default format sets the frame-rate used by media player controls when nothing else is setting the frame-rate.



The default format sets timecode controls to the desired frame-rate. As the default setting is overridden by the media or timecode frame-rate, it's primary purpose is to assist programming before media is played.

The default format is indicated in timecode controls:



## Default format disagreeing with timecode

If the default format is set to a different frame-rate to timecode being received by the media player then it will appear red in the interface.



In cases where the default format is a different frame-rate to the media player (if it is receiving different frame-rate timecode) the media player will take priority.

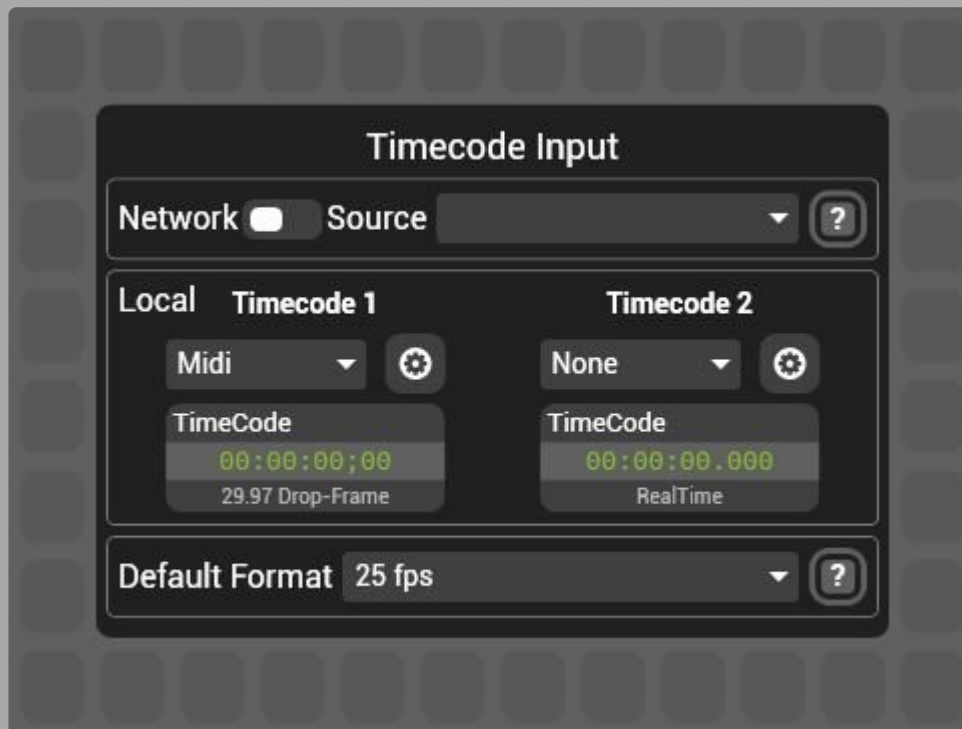
## Default format and timelines

One important use for default format is when programming with timelines. Without a default, setting the media player's in or outpoint before loading media or assigning timecode can yield unpredictable results as it does not know what frame-rate to use.

To avoid this, it is best to always set the default format to the show's timecode format.

# Local or Network Timecode

Timecode can either be received on the local machine or on a remote one via HippoNet



Time and timecode are distributed by Hippotizer within a single system or between systems over the network.

## Network

Sets the timecode and synchronisation sources.

- **Disabled** The default. *The system is the master.* Timecode is received on the local system. Sync busses are generated and received on the local system only.
- **Enabled** *The system is a slave to another system.* Local timecode controls are disabled. Both Timecode channels and all 16 Sync Bus channels are received from the selected remote source.

**There are two common methods for handling timecode in Hippotizer systems:**

**Receive timecode on every system.**

- Send timecode to each system

- Disable network timecode in sync manager

#### Advantages to this method:

- Offers a robust topology; a single failure will not stop multiple systems from playing back
- Any signal delay will be same for all systems ensuring frame synchronisation

#### Disadvantages to this method

- Requires more equipment as each system must have identical timecode hardware.

#### **Distribute timecode from a master system.**

- Send timecode to one system only — the master.
- Enable network sync on all other systems (the slaves) and set their source to be the master

#### Advantages to this method:

- Simplifies setup and uses less equipment; only one timecode receiver is required.

#### Disadvantages to this method

- If a the master system, or it's timecode hardware were to fail the whole system would stop working
- The delay may not be the same between master and slaves as they have dis-similar signal chains.

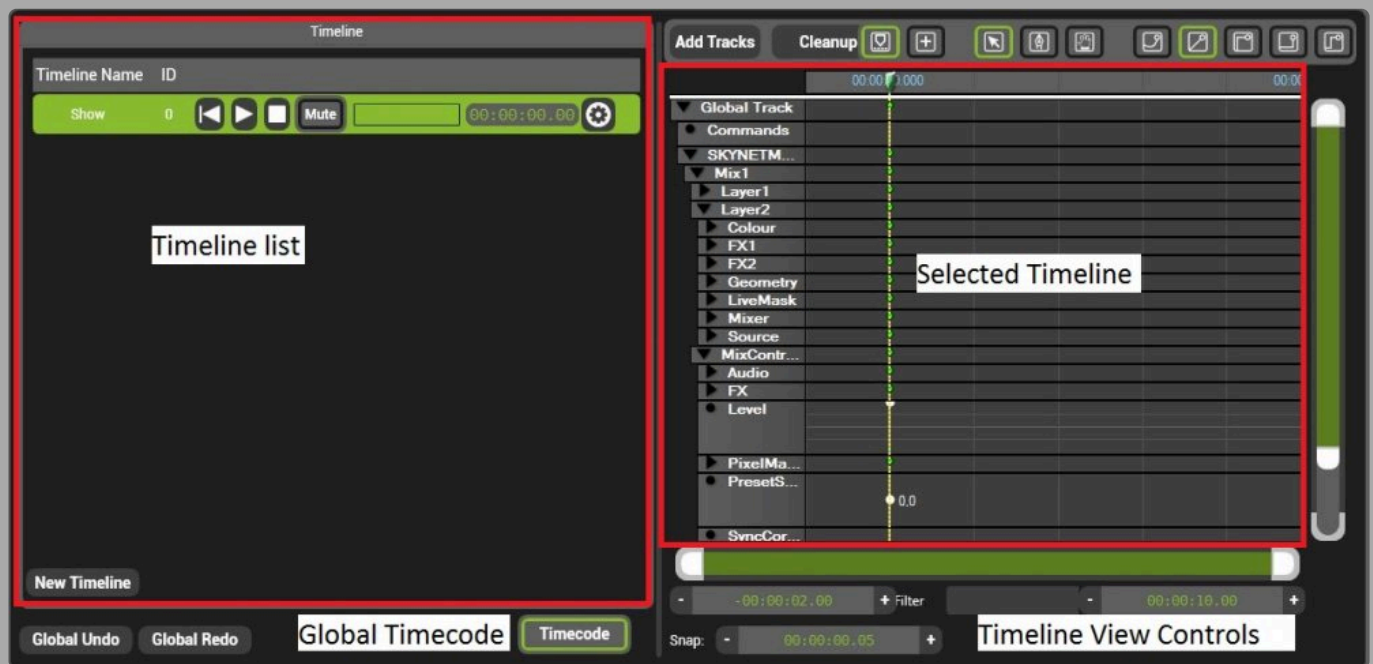
# Timeline

Timeline allows a Hippotizer V4 to save and playback complex shows across the Hippotizer network. Timeline programming is a skill and the best method depends on how it will be used. The basics of timelines and their use are covered here while the nuances of advanced timeline programming are beyond the scope of this manual; for additional information please contact Green Hippo for training.

## Starting Timeline

Timeline is a component, to use it [start the component](#).

## Basic Component Layout



### Timeline List

All timelines on the system are shown here. They can be ordered by index or name.

### Selected Timeline

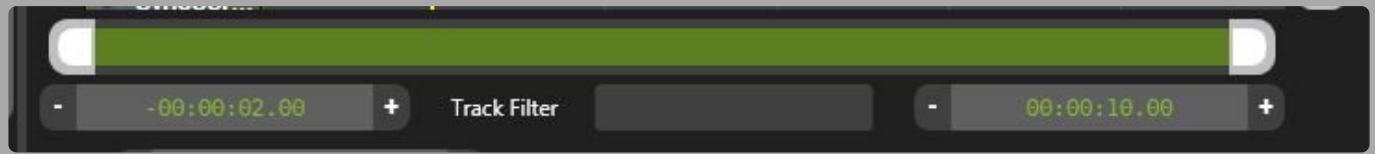
Shows the detail of the timeline selected in the timeline list.

### Global Timecode

Enables / Disables timecode going to all timelines

## Timeline View Controls

### View Bar



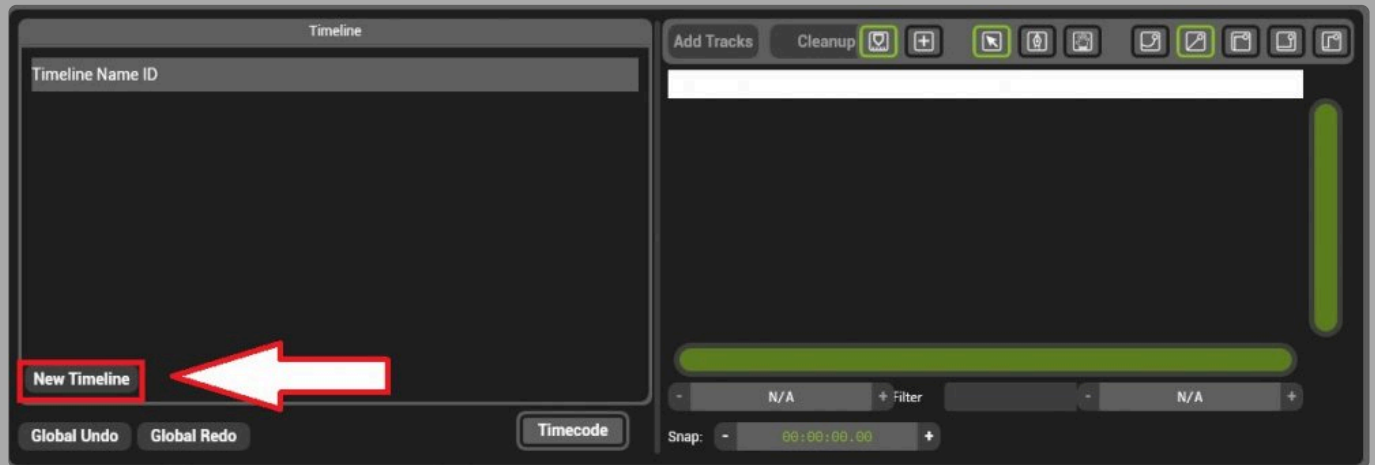
The view in the selected timeline window extends from the two times shown.

### Track Filter

Will only show the tracks matching words in the filter. To see **mixer/level** type `level` and the timeline will show only tracks with level in the name.

# Creating a new Timeline

Timelines control pins: the first step in making a Timeline is to choose which pins to control.




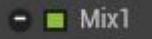
Click **New Timeline** to create a Timeline.

A Pin Selector Window will open



The pin tree will show all local and networked Hippotizer systems, expand the groups to select desired pins.

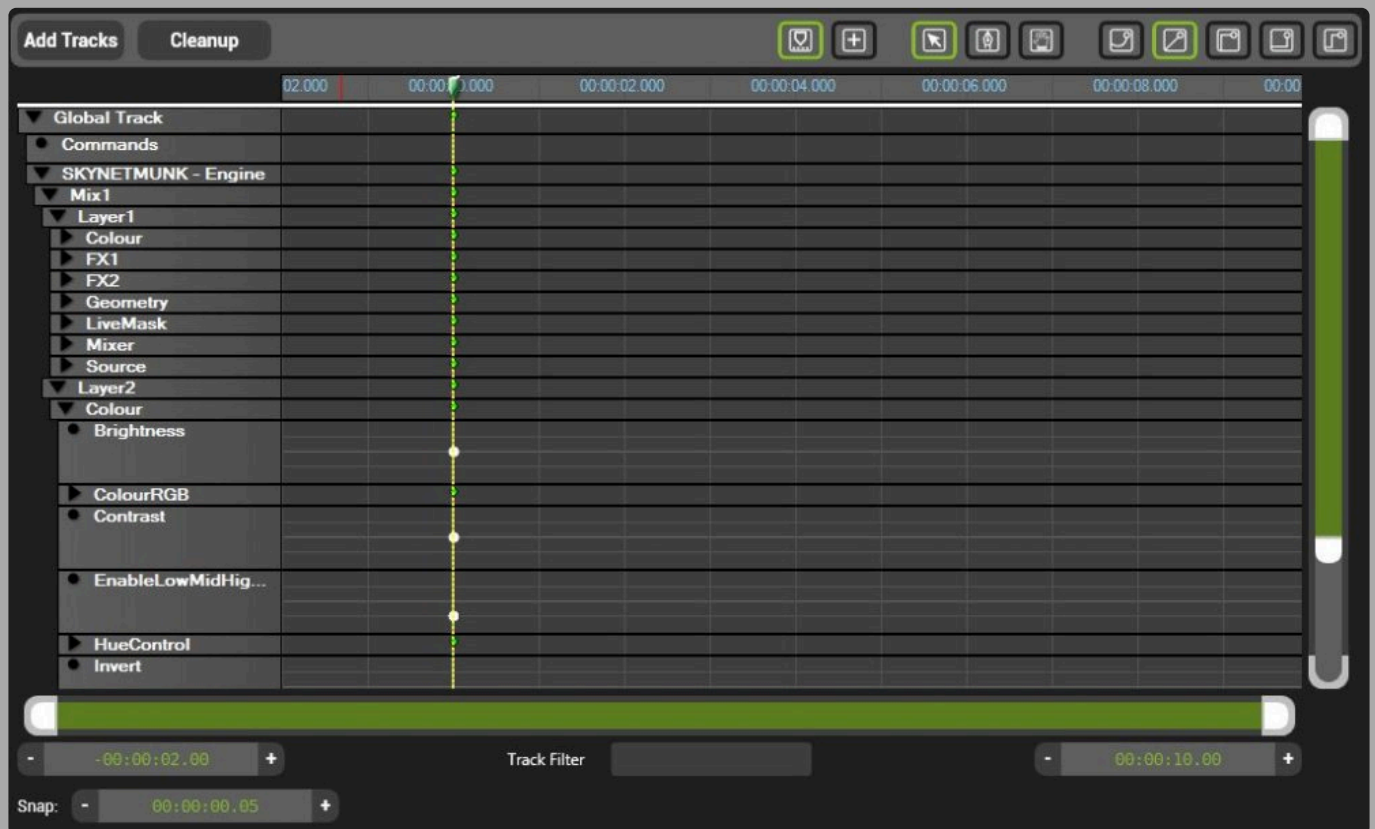
 Layer1 Groups that have had all child pins selected are shown ticked.

 Mix1 Groups that have some but not all child pins are show with a square.

Once all desired pins have been selected click OK to create the timeline and name it.



# Timeline Structure



The Timeline window is comprised of a series of controls around the tracks window.

## Basic Timeline Controls



Scrolls the timeline view to keep the play head in view



Opens the insert timeline dialogue to embed one timeline into another. Timelines can also be dragged from the timeline list into the Global Track to embed them.



Sets the mouse to allow selecting of nodes or groups of nodes.



Sets the mouse to add values to a track with a single click. Pressing **ALT** will temporarily set insert mode.



Sets the mouse to scroll the view by left clicking and dragging.

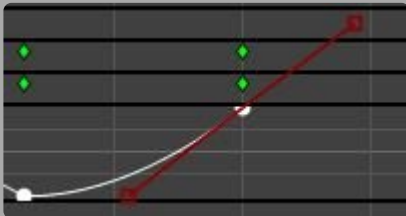
## Transition controls

The transition between two points on a float pin's track can be set in different ways.

**Note:** Only float pins (those going from 0-1) can be faded, other pin types such as integers do not fade.



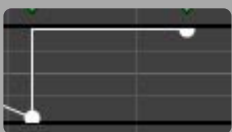
Creates a curve between two points in a track. The Spline's curve is controlled by modifying the red Spine bar.



Linearly fades between the two points.



Snaps from the first value to the second value immediately



Snaps from the first value to the second value at the second value.

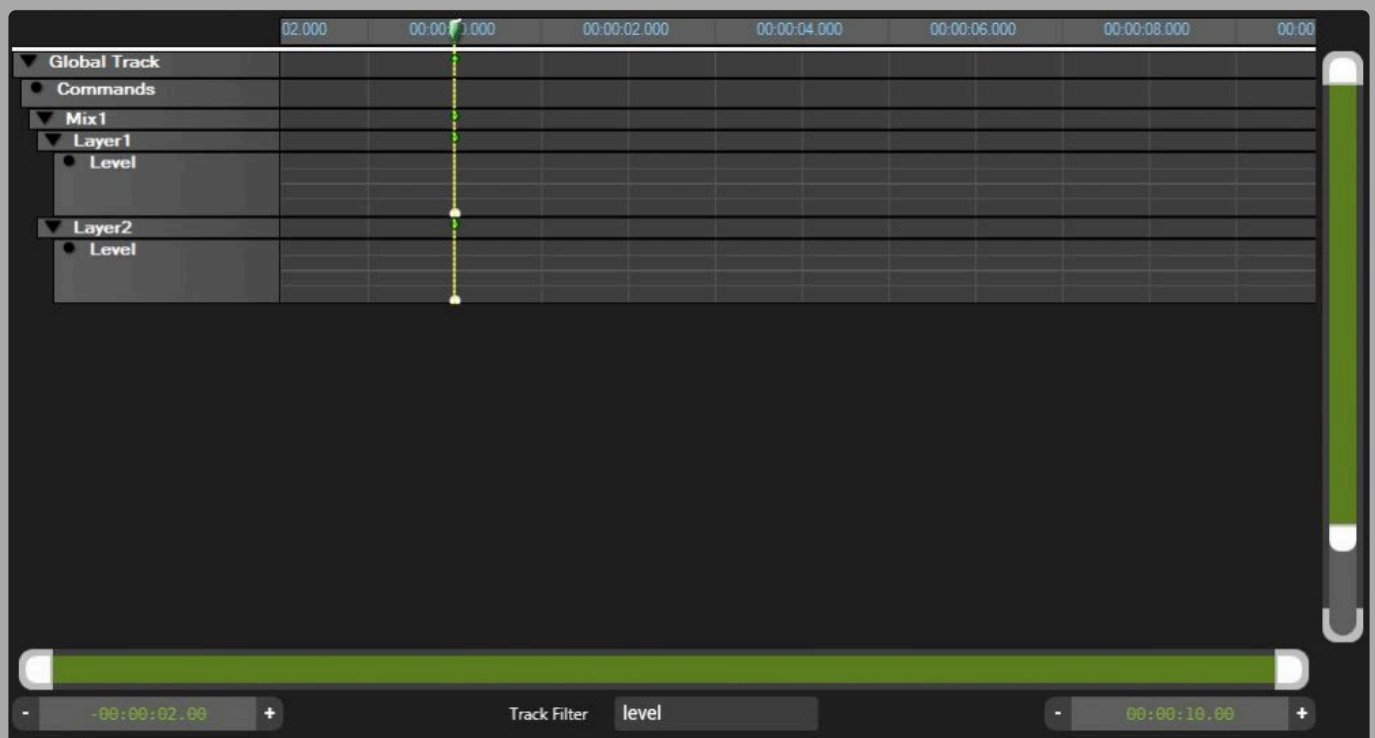


Snaps from the first value to the second value at the centre point time between the two.



## Track Filter

The timeline will show all tracks inside of it by default. For larger timelines this can prove daunting. To temporarily hide tracks, type a filter into the **Track Filter** box. The filter will hide all pins that do not match the filter text.



## Global Track

The Global contains any timelines that are embedded into the current timeline.



To embed timelines either drag the timeline to be nested into the global track of the current timeline or select the Insert Timeline button.



## Command Track

The command track controls how the timeline is played.

To create a command, select insert mode (or press the ALT key) and click in the command track where the desired command should be placed.

New commands will be created matching the command before them, or as blank commands if no commands are before them.



Event takes no action

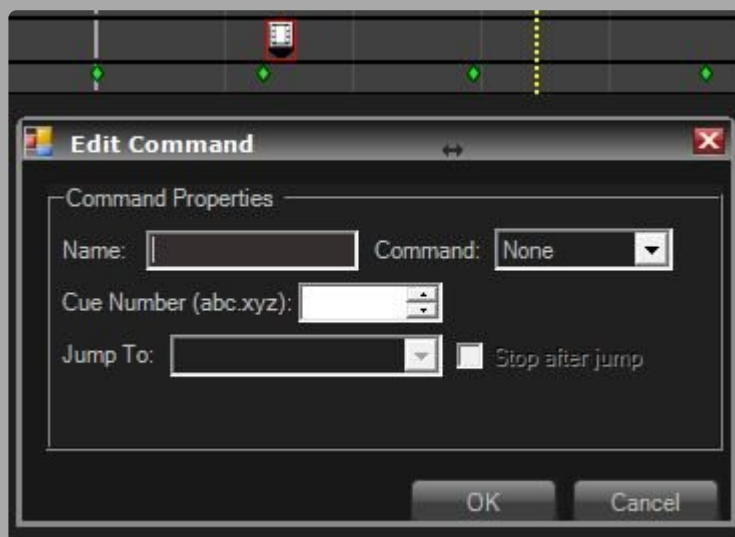


Stops the play head at the action. Pressing Play again resumes the timeline.



The Play head will jump from the command to either the beginning of the timeline or another event based.

Set command types and edit them by right clicking on them:



A jump command that has been named 'Jump' and given the cue number 1.

## Cue Number

Cue numbers allow Timelines to be started from points within the timeline as required. Cue numbers must be unique within the timeline. The Cue number is used by DMX component and Multicontroller to start timelines.

# Control of Timelines

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Timeline can be controlled from several sources.

- [Triggering from another timeline](#)
- [Controlling from Zookeeper](#)

# Triggering from another timeline

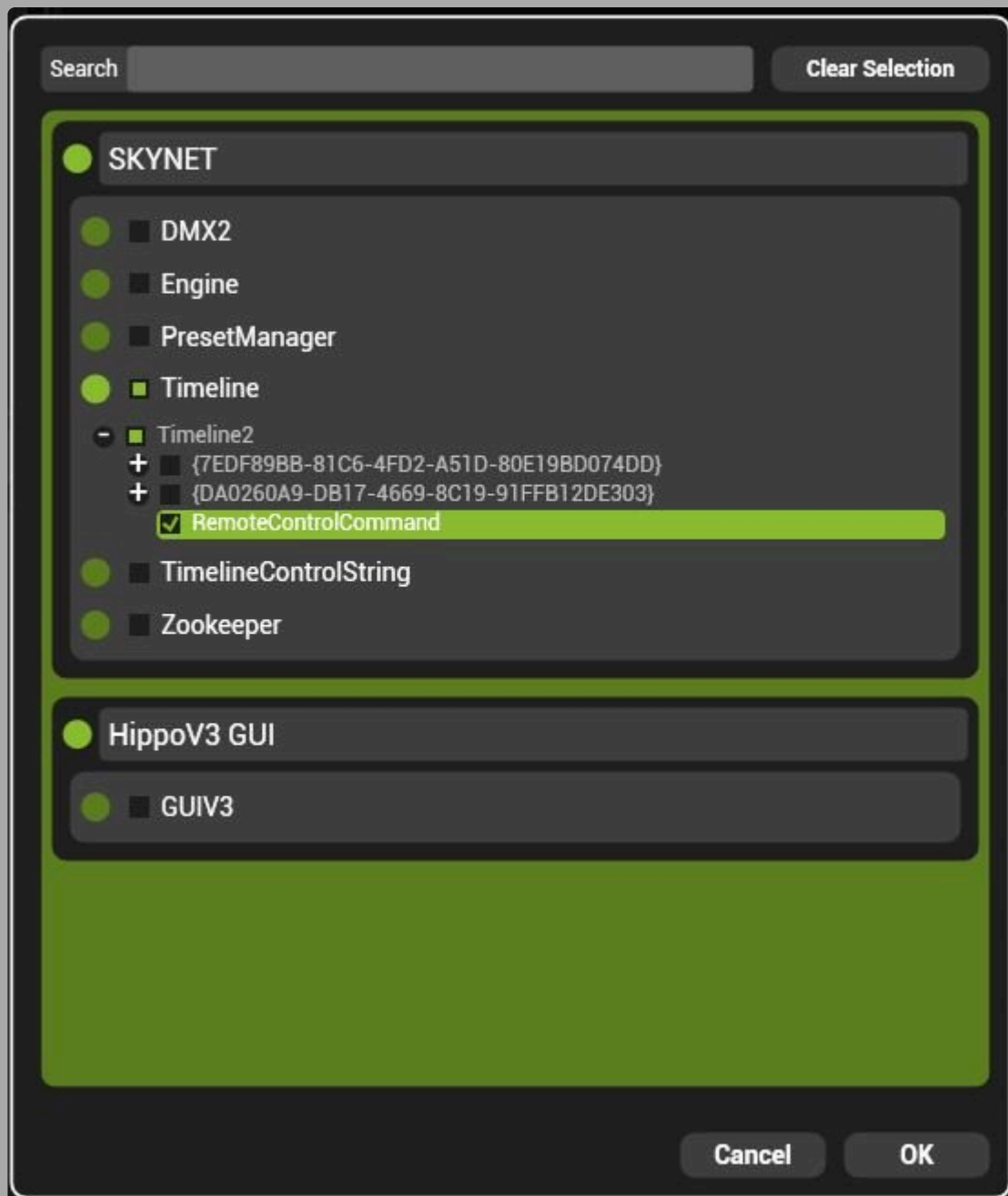
---

Timelines can be triggered in different ways from either a remote device such as a DMX lighting desk or locally from Zookeeper. Timelines can also trigger other timelines.

## Triggering a timeline from another timeline.

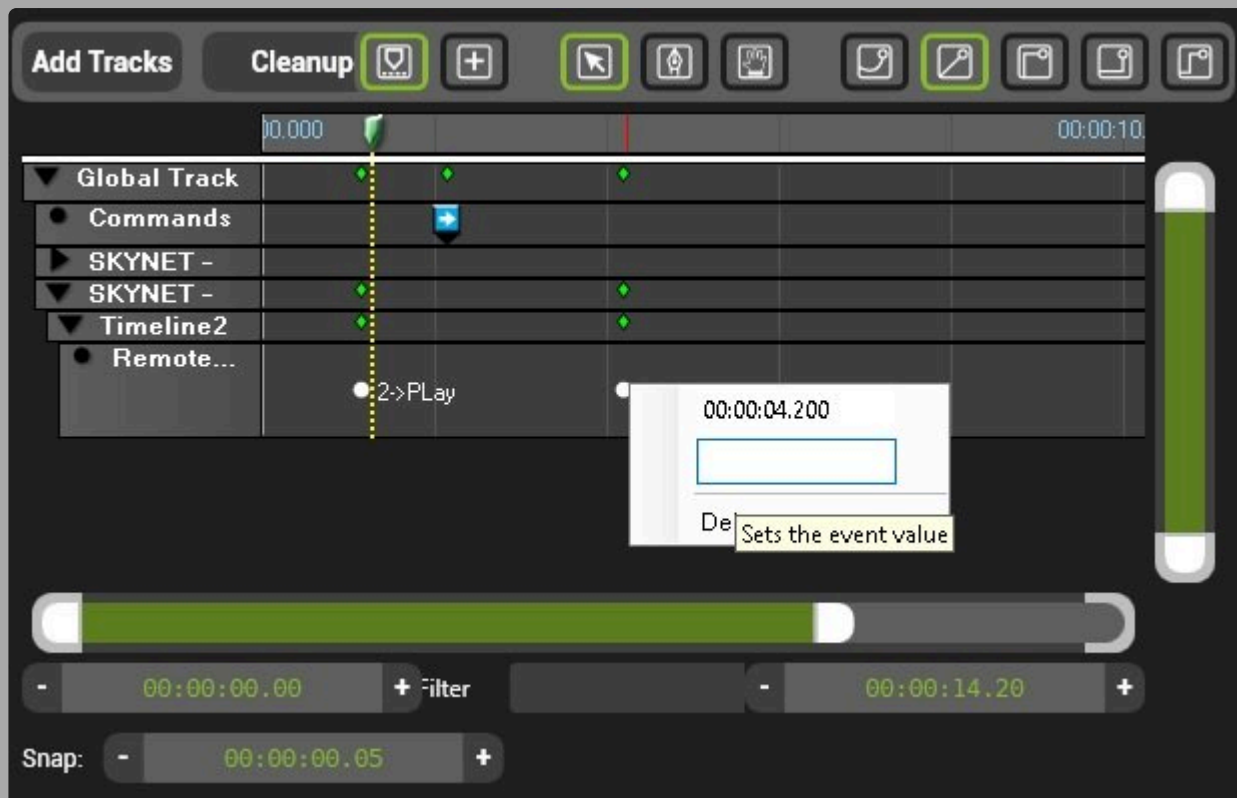
The timeline component contains a String Pin: **RemoteControlCommand** this pin receives commands for all timelines on it's timeline component.

Add this pin to a timeline to trigger other timelines.



### To add a command:

- Add a point on the remote control track at the desired position. (ALT + Left Mouse Click is a quick way).
- Right click on the point and choose the blank field:



- Type in the command.

## Remote control pin Syntax:

### Play Timeline

Plays a timeline referenced by the timeline ID.

2->Play

### Stop Timeline

Stops a timeline referenced by the timeline ID.

2->Stop

### Pause Timeline

Pauses a timeline referenced by the timeline ID

2->Pause

### Go to a Cue

Moves timeline playhead the designated cue number. Cue numbers are referenced with three trailing



zeros. So cue 1 is shown as cue 1000. Cue 1.001 would be 1001.

2->GoCue (1000)

### **Muting a timeline**

Mutes the target timeline (1 in the example)

1->Mute

UnMutes the target timeline (3 in the example)

3->UnMute

# Controlling from Zookeeper

Timelines can be triggered and controlled from inside the Timeline window in one of three ways.

- Playback Controls
- Timeline Button View
- Inline controls

## Playback controls



The basic playback controls are shown in the timeline component interface.



**Resets the timeline.** The play head is sent to 00:00:00.000



**Plays the timeline** from the current play head position



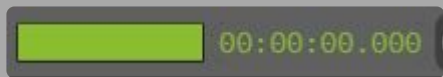
**Pauses the timeline** leaving the play head at the current position. If the play head is scrubbed when the timeline is paused, all changes the play head encounters while moving will be applied.



**Stops the timeline** leaving the play head at the current position. If the play head is scrubbed when the timeline is stopped, changes the play head encounters are not applied.



**Mutes the timeline** the timeline will not affect any pins while muted.



Shows the progress of the timeline as a proportion of the overall length and also the play head location.

## Timeline Attributes

Each timeline also has a Name, and ID number. The name is a non-unique identification that is used only for the user interface. While the ID is used by multicontroller and DMX to remotely trigger the

timeline.

! Changing the timeline ID number will render existing multicontroller actions referencing that timeline inoperable. It is best to set the ID of a timeline then create actions referencing it.

## Controlling a timeline from within the editor



The timeline play head can be started and stopped from within the editor by pressing space bar when the window is selected.

To select the timeline window left click into it.

# Controlling Timelines from DMX

## Timelines can be triggered from DMX

The DMX personality for timeline is included in the DMX component. The profile uses four channels to trigger timelines and cues.

Function	DMX	DMX (16bit)	Default	Range	Notes
Timeline Select	1		0	0 – 255	
				0	No Timeline Selected
				255	Timeline 255 Seclected
Playback Command	2		0	0-9	Nothing
				10-19	Play
				20-29	Pause
				30-39	Stop
				40-49	GoCue and Play
				50-59	Go Cue and Pause
Recall Cues Command	3	4	0	0-65535	Recall Cues
				0	Recall Cue 0.00
				100	Recall Cue 1.00
				65535	Recall Cue 655.35

# Video Mapper

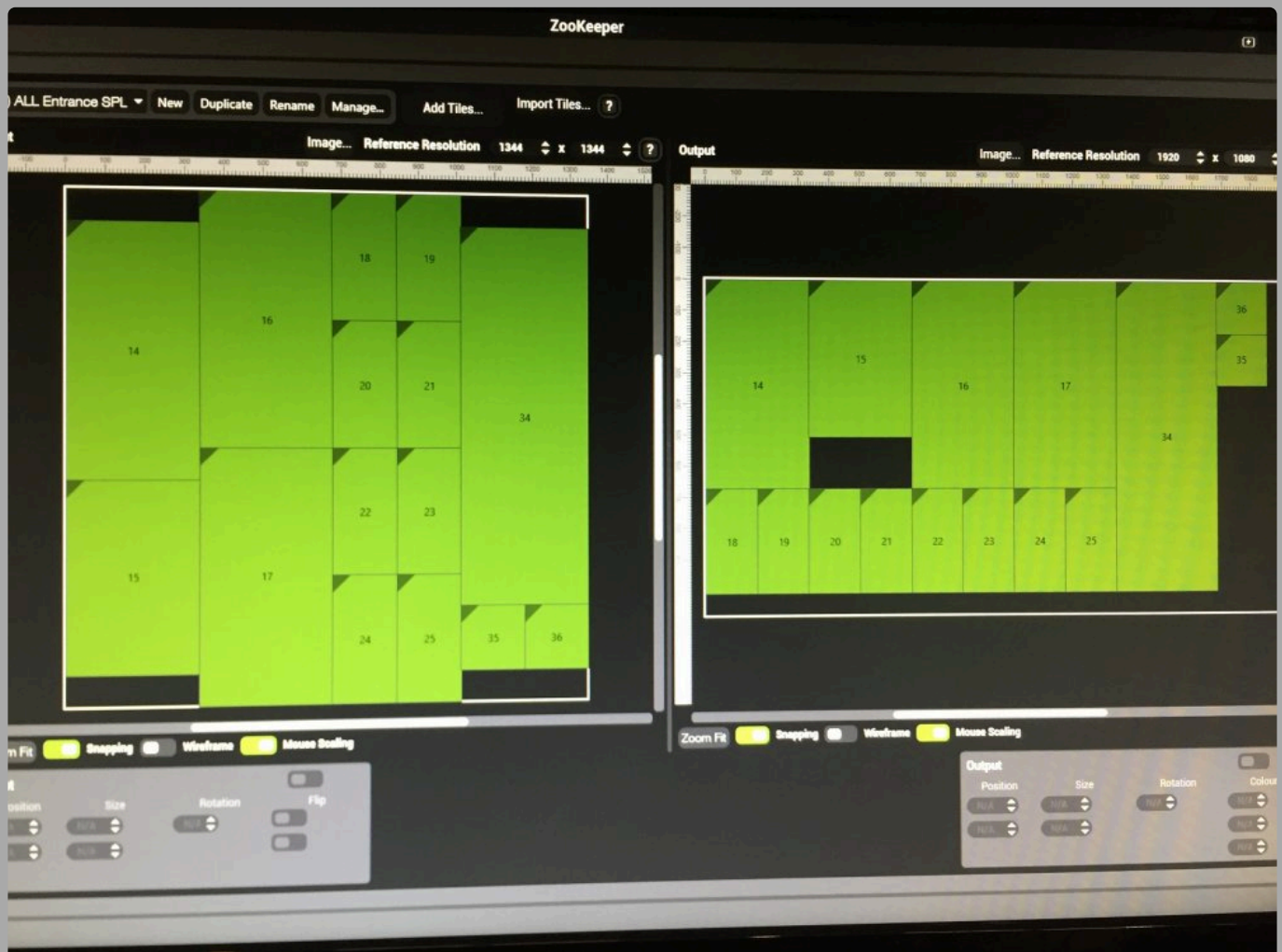
Video Mapper converts an input texture to an output texture pixel accurately, often used to map LED tiles walls.



- [Creating a Video Map](#)
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# Creating a Video Map



## Starting Video Mapper

Video Mapper is a component and must be started in order to function:

### [Starting a Component](#)

## Basic Structure

Video Mapper is comprised of two parts; the interface and viewport controls.

- The interface is used to create and edit video maps. The interface must be added to a pin board.
- Viewport controls are used to assign videomaps to viewport(s) and are part of the viewport controls by default.

## Adding the interface to a Pin Board.

Once the component has been started, it will appear in the Pin Tree.

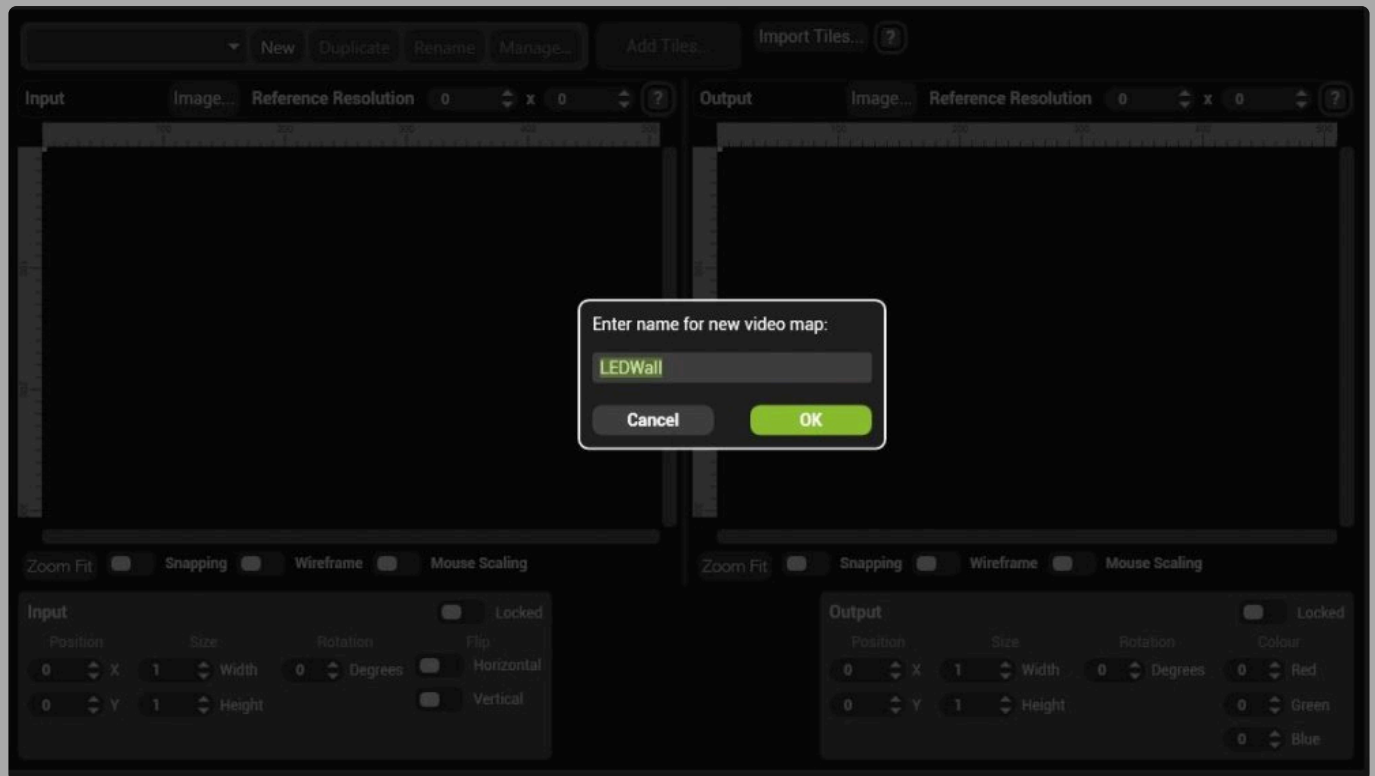


Drag the Video Mapper component onto a blank Pin Board 'grabbing' it by the circle next to the name.



Select **New** in the top bar of the Video Mapper interface to create a map and name it.





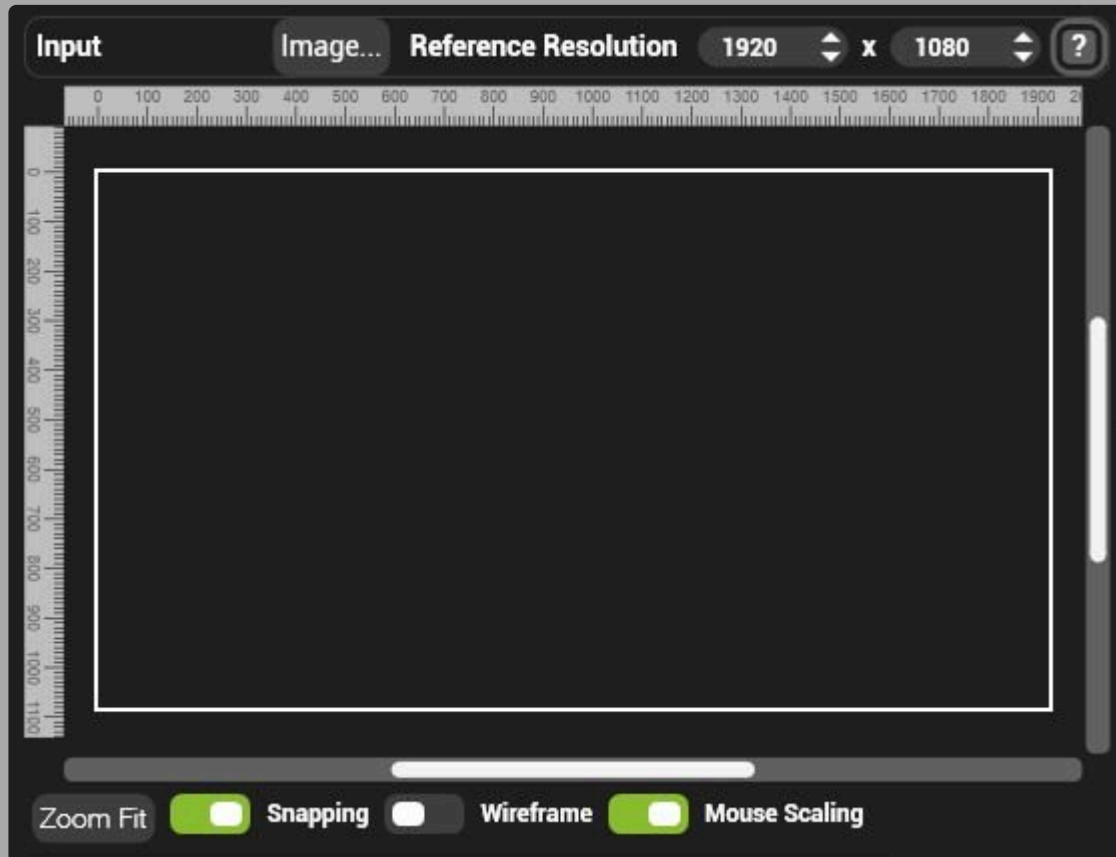
**Note:** The name of a Video Map does not need to be unique and can be changed later.

## Once created, editing a video map has several steps:

- [Adding Tiles](#)
- [Properties of a Video Map](#)
- [CSV Import](#)

# Properties of a Video Map

A video map has a set of properties that are to aid drawing and manipulating the map



## Image...

Allows a background image to be placed on the video map

## Reference Resolution

Video maps do not have an intrinsic resolution; they use the resolution of the Mix and Viewport to which they are assigned. The **Reference Resolution** simply provides guide lines to aid with placing tiles.

**Note:** As of version 4.2 Each video map is limited to 8192 × 8192 Pixels to allow for improved anti-aliasing.

## Zoom Fit

Shows the entire video map

## Snapping

When enabled, tiles will automatically move to abut one another when placed close together.

**Note:** Snapping can cause undesired behavior if small gaps are required between tiles. In this case it is best to disable snapping.

## Wireframe

Tiles are rendered as a clear box (better if a background image is present).

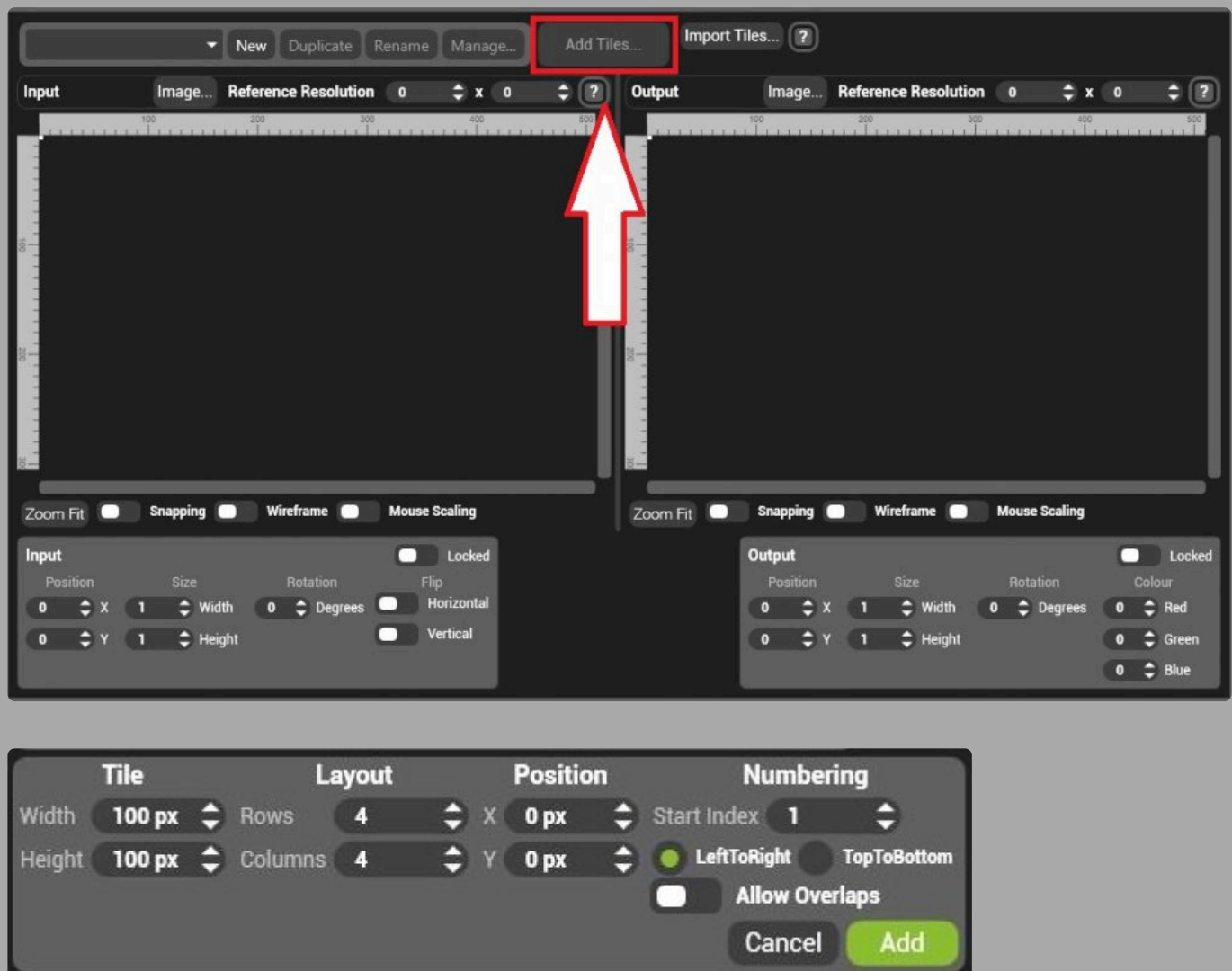
## Mouse Scaling

When enabled, tiles can be dragged larger or smaller with the mouse.

# Adding Tiles

A Video Map is comprised of tiles. A tile normally corresponds to the resolution of a video wall panel.

To create tiles, use the **Add Tiles Dialogue**.



## Tile Width and Height

The size in pixels of the tiles to be created

## Layout

The number of tiles to be created. By default, new tiles are created in a grid with a number of rows and columns. Tiles can be re-arranged after they are created.

## Position

The location of the top left corner of the array of tiles

## Numbering

The starting number of the tiles. By default this is the next available number.

The numbering can be set **Left To Right** or **Top to Bottom**:

### Left to Right

Number starting at the top left corner and works to the right increasing along the row. At the end of a row, the numbering jumps to the next row down.

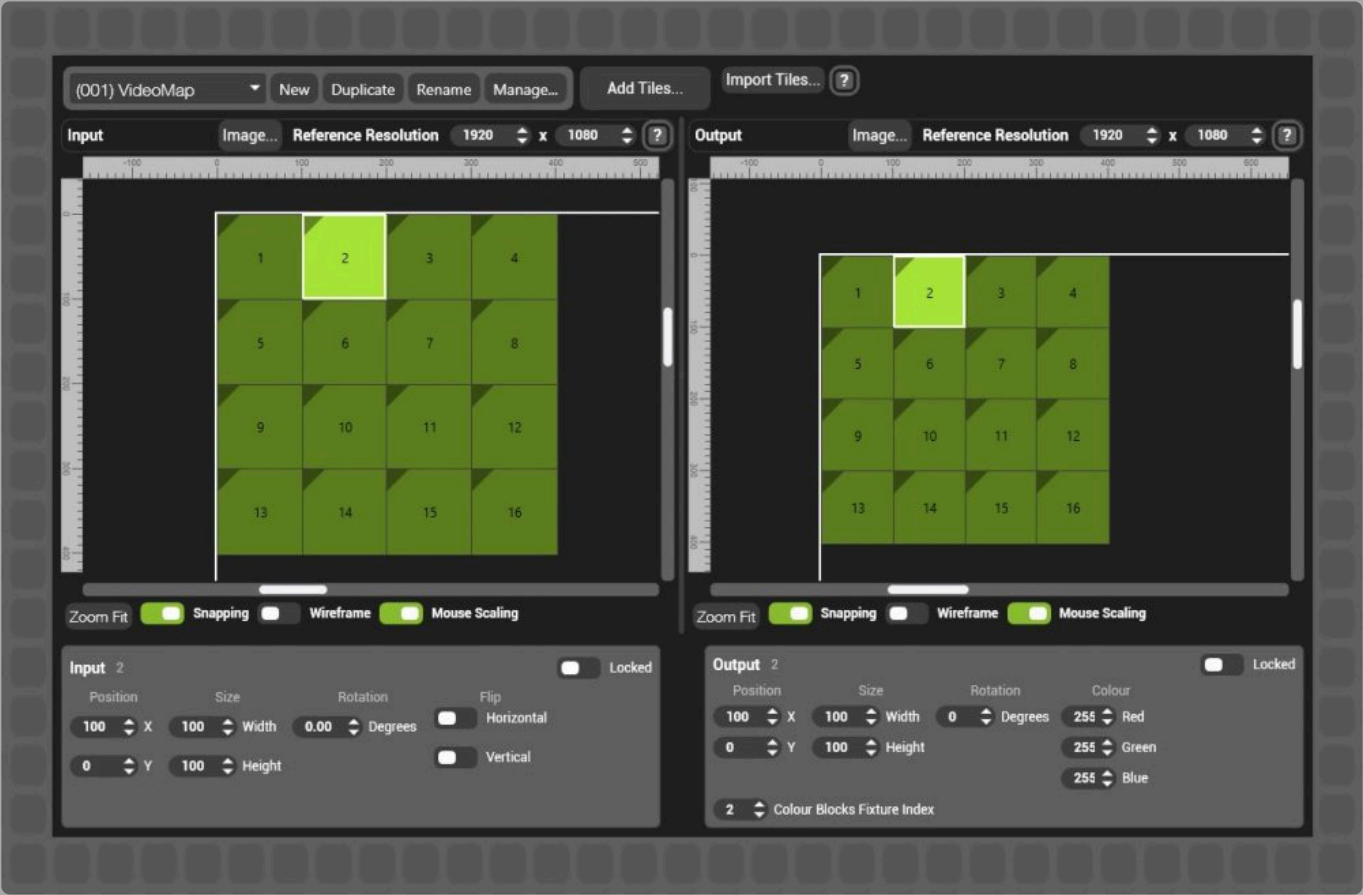
### Top to Bottom

Numbering starts at the top left and travels down each column before shifting one row right and moving down again.

### Allow Overlaps

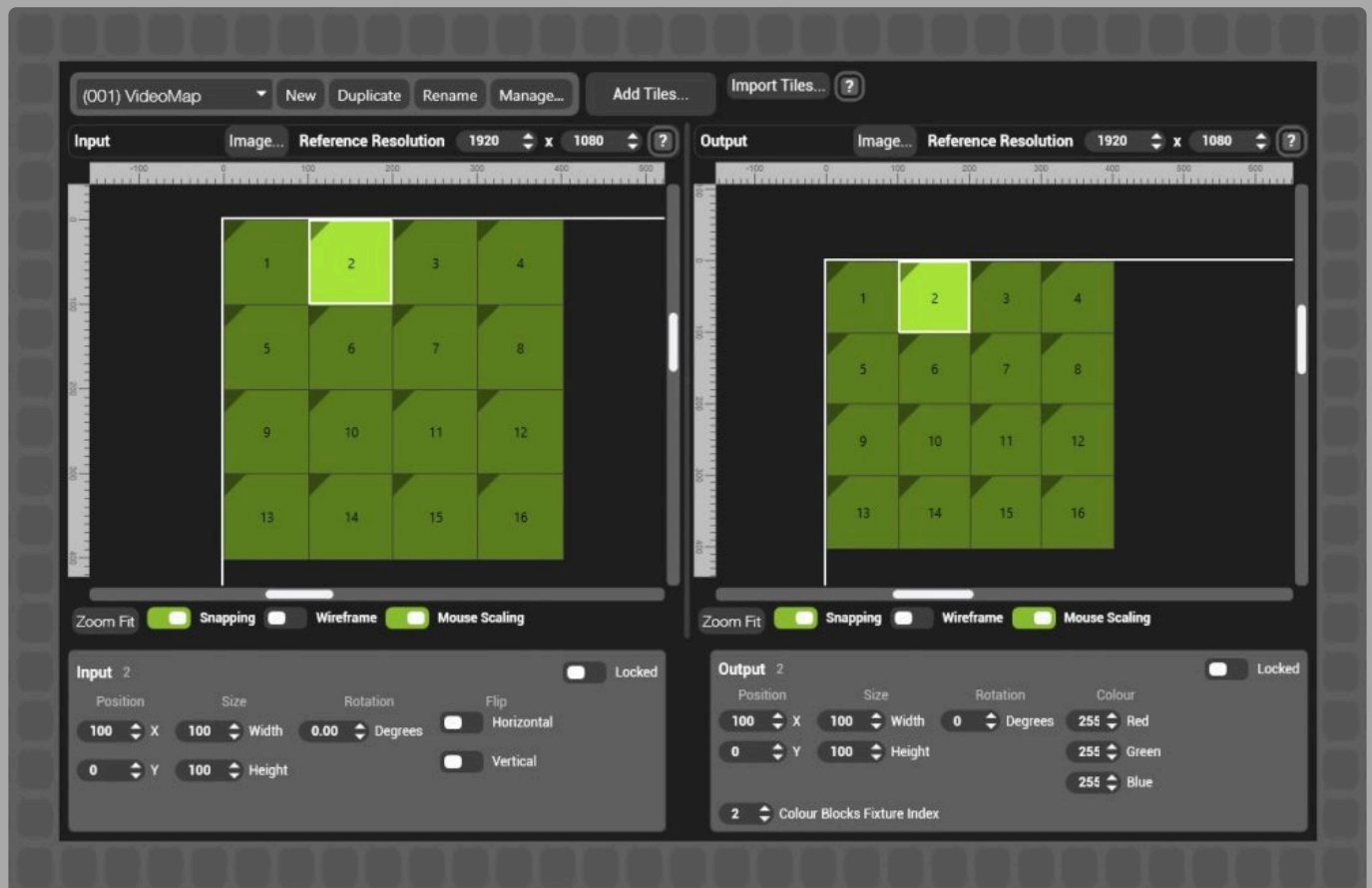
When enabled, two tiles may have the same Colour blocks index.

Once added, tiles can be arranged by dragging them or by setting the position in the tile properties.



# Properties of a Tile

Each video map tile represents a section of pixels that are transposed from input to output.



Each tile exists on the input and on the output of a video map.

## Input Tile Properties

The input video map is often drawn to match the physical setup of LED tiles or displays.

### Position

The location in pixel space of the top left corner of the tile.

### Size

The size in pixels of the input tile

## Rotation

The rotation in degrees of the tile.

**Note:** The position of a rotated tile can be confusing. The position of a tile is always referenced to the location of the top left corner of that tile if it was not rotated.

## Locked

Protects the tile from being edited.

## Flip

Mirrors the image on the tile about the Horizontal or Vertical axis.

# Output Tile Properties

The output video map is frequently drawn to match the content's layout

## Position

The location in pixel space of the top left corner of the tile.

## Size

The size in pixels of the output tile.

The output tile can be a different size than the input, Videomapper will scale in this instance. If a pixel-accurate pipeline is desired then the input and output tiles must be the same size.

## Rotation

The rotation in degrees of the tile.

**Note:** Input tiles can be rotated to any angle. Output Tiles can only be rotated in increments of 90 degrees.

## Locked

Protects the tile from being edited.

## Colour

Sets the maximum colour values (RGB) that can be sent to each tile. This can be used to colour balance



panels or displays.

## **Colour Blocks Fixture Index**

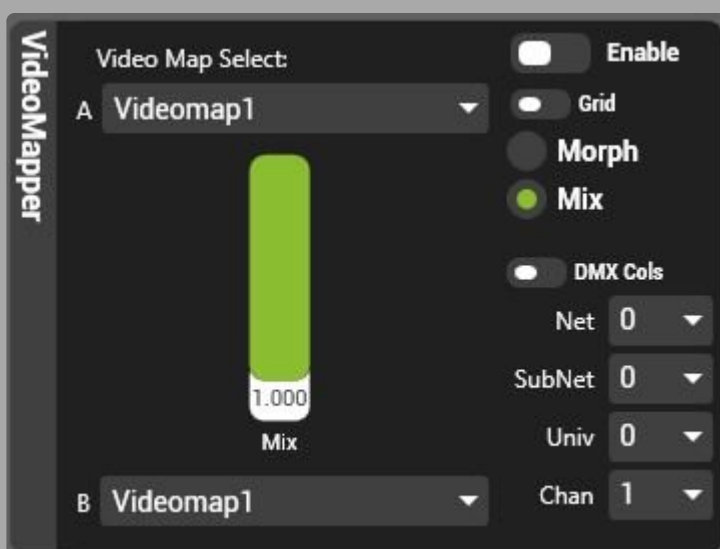
The value that Colour Blocks will use to address that tile. By default, the index matches the tile number. Unlike the tile number, Index can be changed at any time.

# Viewport Controls

Video maps are assigned on a per viewport basis in the viewport controls window.



Each Viewport can load two different video maps, or multiple viewports can use the same maps.



# Viewport controls

## Video Map Select

Each viewport can load two maps to allow for fading between maps. Select which maps to load from the drop down and use the Mix control to fade between them. The fade between maps can be a **Mix** or a **Morph**.

### Mix

Cross-fades between the two video maps; fading the intensity of map 1 out as it fades map 2 up.

### Morph

Content is stretched between the two maps as it transitions.

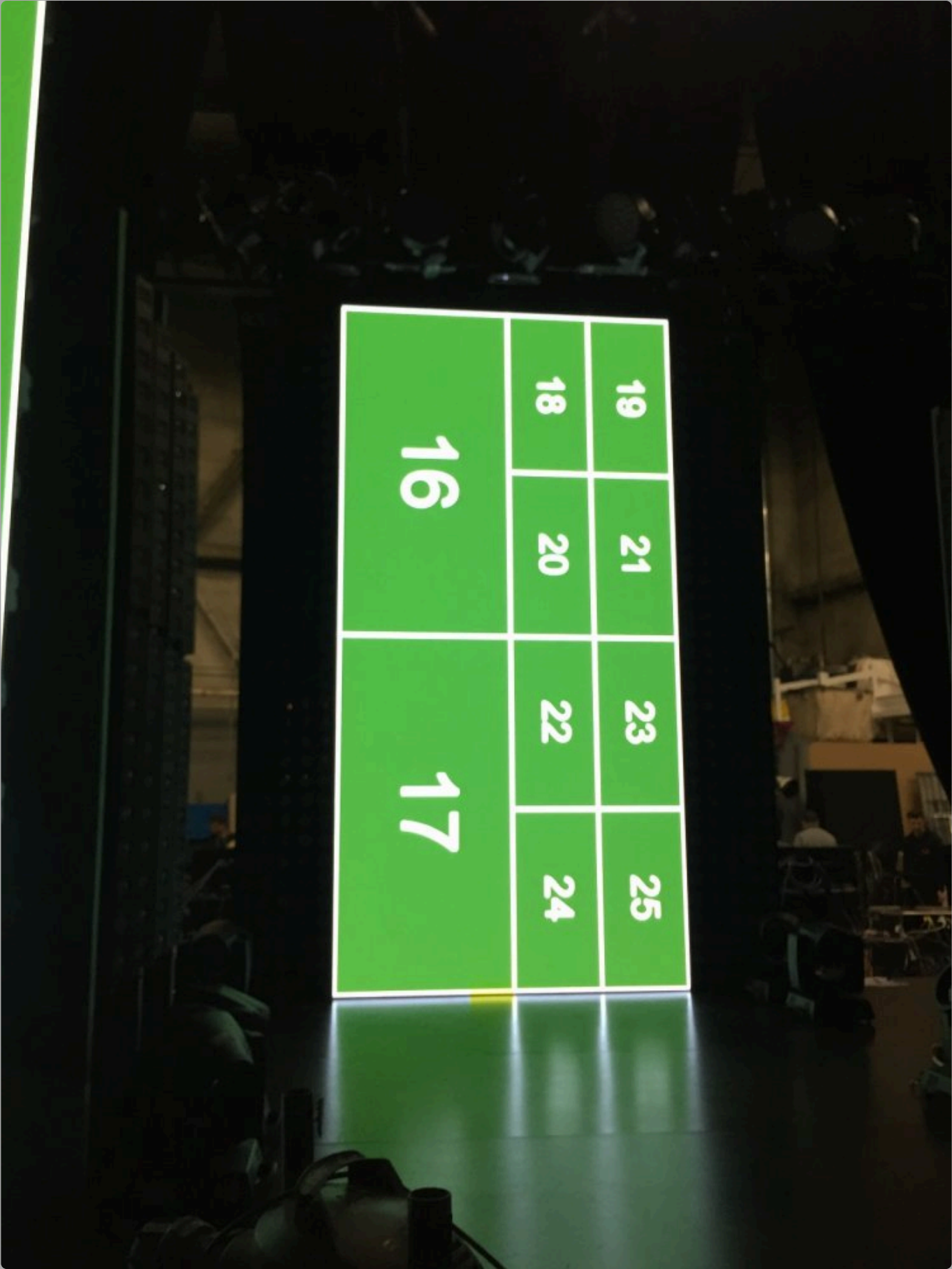
### Grid

Displays each tile as a solid green numbered box with a 2 pixel white outline.

Viewport1

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

**Note:** Mix and Morph do not work when grid is enabled.



## **Boston Major 2016**

**Video Design:** Starladder

**Supertech:** Cory Froke

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## **DMX Colour**

[Direct control of tile colour from DMX.](#)

# CSV Import

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For complex video maps, it can be faster to create the map in a 3rd part application such as Cinema 4D and then import the data to Hippotizer. Video Mapper supports importing data from Comma Separated Values (CSV) files.

CSV files should have the data separated by a comma with a carriage return at the end of each line. A row represents a single input/output tile in Video Mapper.

## Data Format:

- Input X Position (Pixels from top Left),
- Input Y Position (Pixels from top Left),
- Input X Size of Tile (Pixels),
- Input Y Size of Tile (Pixels),
- Input Rotation of Tile (Degrees),
- Input Tile Flipped X (True/False),
- Input Tile Flipped Y (True/False),
- Output X Position (Pixels from top Left),
- Output Y Position (Pixels from top Left),
- Output X Size of Tile (Pixels),
- Output Y Size of Tile (Pixels),
- Output Rotation of Tile (Degrees),
- Red Level (0-255 255=Default),
- Green Level (0-255 255=Default),
- Blue Level (0-255 255=Default)
- Colour Block Index (Number)

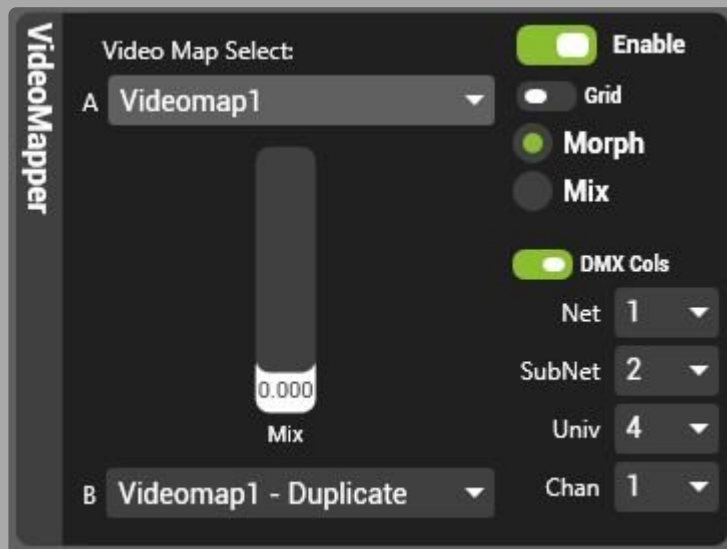
## Example Row

```
0,0,100,100,90,False,False,100,100,100,100,0,255,255,255
```

Creates a single tile at 0,0 on input and 100,100 on output with 90 degree rotation on the input.

# Colour Blocks

Allowing direct control the colour of each video map tile, Colour Blocks can be used to 'bit map' video mapped tiles from a lighting desk.



## Configuring colour blocks

- The start address for colour blocks is set in the Viewport controls. Set this to the desired Art-net address.
- Colour Blocks uses Art-Net received from any sender irrespective of which NIC it is received on.
- Each tile is addressed based on the tile number.
- Each tile uses four DMX channels: Red, Green, Blue and Intensity (alpha),
- The intensity value acts as a mixer between the video and the colour; Intensity at full is all colour and at zero is all Video.

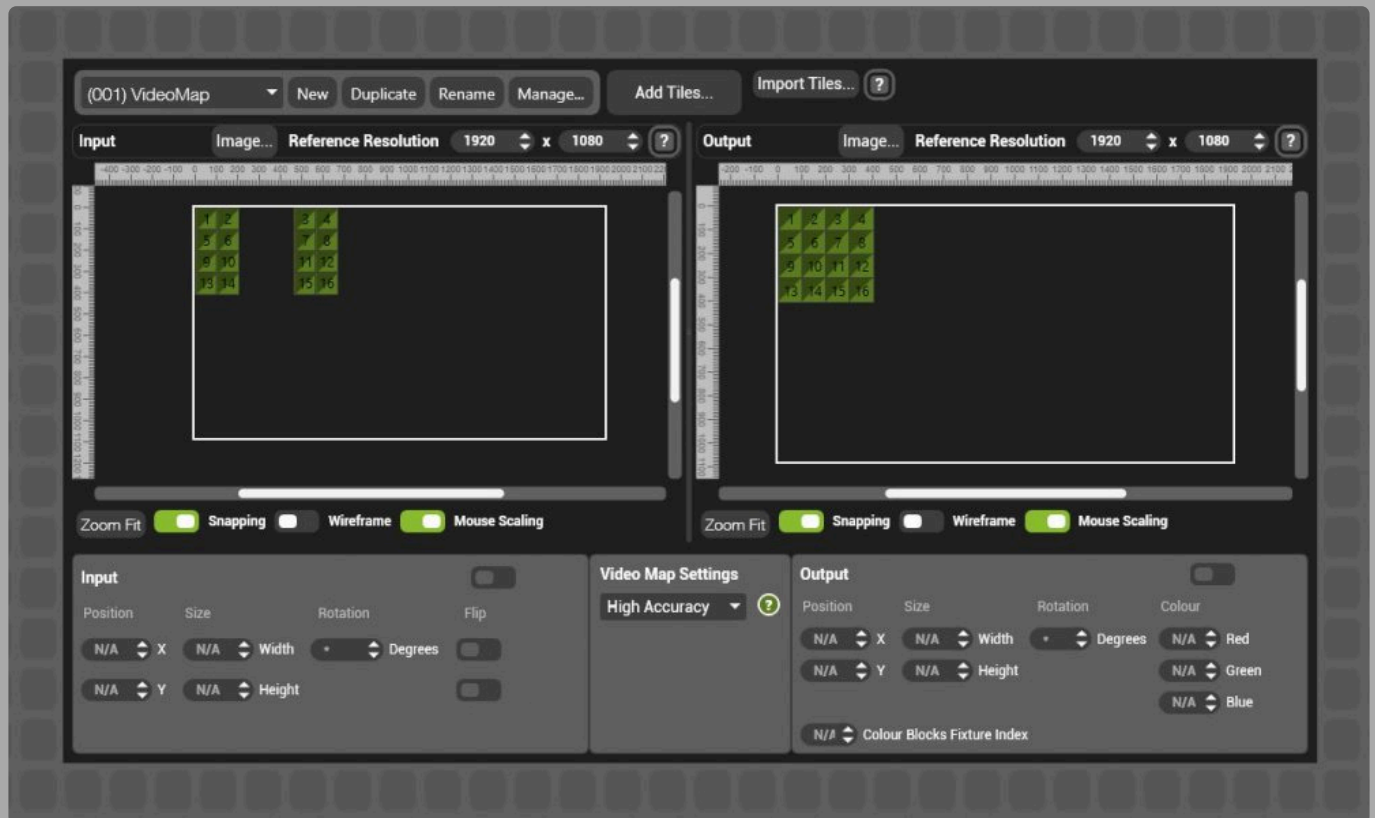
**Note:** Colour Blocks must be set to a different address than other Art Net receiving components in Hippotizer such as DMX or Multicontroller to avoid conflict.

Colour block tile index can be edited in the video map. Select the tile(s) and choose the desired colour block index.



# Video Map Configuration

Each Video map has its own settings



## Rendering Mode

A video map is transposing pixels from input to output. In most cases, a simple pixel-to-pixel reference works well. However, when tiles are rotated to non-square angles or are scaled, super sampling becomes important. Super sampling itself also can introduce artefacts and it reduces the maximum resolution of the Video map so the decision of which mode to use depends on the application.

To cause of 'problems' is when pixels do not line up exactly with each other. Pixels are arranged in a perfect grid, however a rotated tile's pixels will not always fall within that grid. Some pixels of a rotated tile will land between two other pixels — leading to the question of what is the correct behaviour. With super sampling, videomapper samples each underlying pixel many times allowing it to take an accurate average. Without super sampling it will use the nearest neighbour approach; using all the colour from the closest pixel.

To assist with this, there are three rendering modes to choose from:

- **High Accuracy** The default. Videomapper uses interpolation. The maximum resolution of the map

is  $8192 \times 8192$ . Diagonal tiles will appear more smooth. May introduce artefacts when scaling small tiles to larger ones.

- **High Resolution** Videomapper uses less interpolation then in High Accuracy. The maximum resolution of the map is  $16384 \times 16384$ . Diagonal lines will be smoothed as compared to 'nearest neighbour'. May introduce artefacts when scaling small tiles to larger ones.
- **No Interpolation** Videomapper uses no super sampling and instead uses the 'nearest neighbour' approach. The maximum resolution of the map is  $16384 \times 16384$ . Diagonal lines may appear steppy. Will not introduce scaling artefacts. **This mode is completely pixel accurate and is best used when single pixel wide content or fixtures are being used**

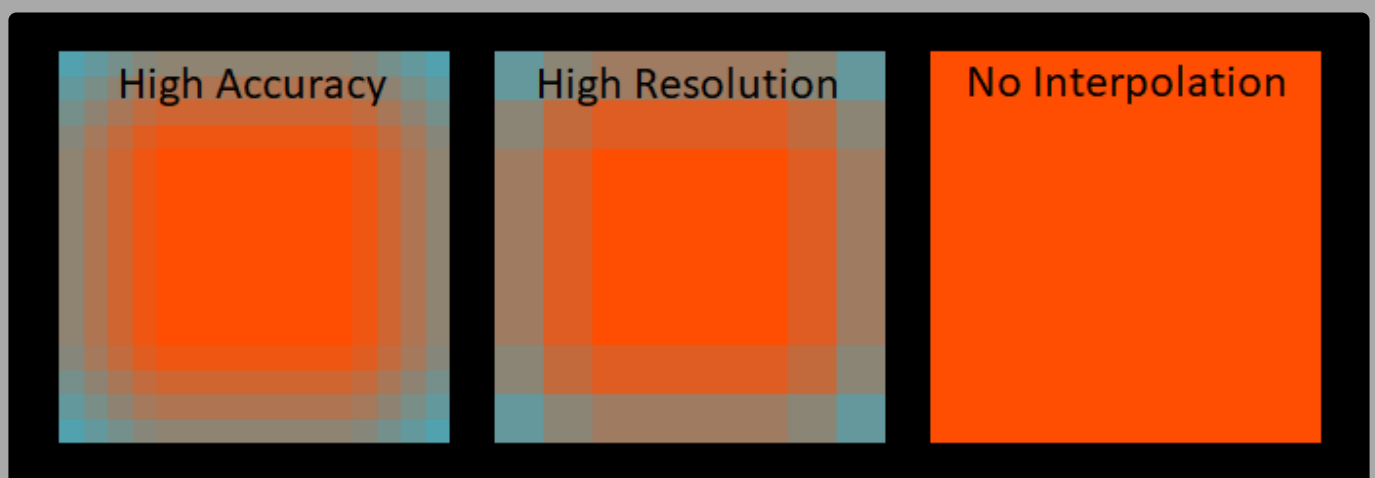
# Video Map Settings

Each Video Map's sampling mode can be set.



## Interpolation in Videomapper

Videomapper transposes pixels from input to output — a pixel however is not a point, it has a length and width. When tiles are rotated or scaled, a tile's pixel can correspond to multiple input pixels. How videomapper handles this is determined by the Interpolation Mode.



in the above example, a single red pixel is placed onto a blue background. The red pixel is rotated and scaled up to exaggerate the effect.

## High Accuracy

**The Default** Groups of pixels are super-sampled to smooth edges.

- Diagonal lines will be smoothed.
- Single Pixel diagonal lines may lose brightness
- **Max Map Resolution** 8192 × 8192

## High Resolution

Smaller groups of pixels are super-sampled resulting in less smooth edges.

- Diagonal lines will be smoothed slightly.
- Single pixel diagonal lines may lose brightness.
- **Max Map Resolution** 16,384 × 16,384

## No Interpolation

Pixels are transposed 1 for 1.

- Diagonal lines will appear steppy.
- Single pixel diagonal lines will be correctly rendered.
- **Max Map Resolution** 16,384 × 16,384

# Best Practices

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# Maximising Performance

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Many factors drive the capabilities of a Hippotizer. Here are some best practice tips to get the most out of the server.

## Use the least number of viewports possible.

Rendering a viewport is computationally heavy; aim to use as few as possible.

While there is no set limit, using more than two viewports per output will noticeably impact performance.

### Tips to reduce viewports:

- Use Videomapper instead of viewports to transpose from a single mix to a single output.
- Use sub-mixes and relays when compositing lots of mixes onto a single output. (eg. Run several mixes, patching only one 'main mix' to the output and use relays to composite onto the main mix).
- Use the overlapping viewport function in Output Manger to create 'frames' and other complex shapes thus requiring viewports.
- Make sure to use [Virtual Viewports](#) when there are five or more viewports.

## Use High Performance Mode

High Performance Mode disables previews and the visualiser offering a significant boost to performance and smoothness.

Systems with lots of mixes and layers and/or very high resolution mixes will benefit the most from using High Performance Mode.

## Run Zookeeper on a Remote Machine.

Zookeeper, like any program, uses some of the computer's resources; running it on a separate machine will improve performance.

# Advanced Topics

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Hippotizer V4 is a tool box that is used in many different ways depending on requirements.

# Querying Component Status with TCP

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Each Component in Hippotizer has a string pin to report it's status in real time. These can be found in the pin tree under each component.

The status pin carries the state of the component and an info tag.

The state can be:

- Config
- Run
- Limited
- Problem

Each component has specific responses

## DMX2

If no Devices have been created it will return an empty string, if one or more devices are enabled it will return a comma separated list of the status of each Device:

Example:

"Artnet0:OK,Artnet1:OK,Artnet2:No Data,sACN\_1:OK"

It will give an OK if and DMX data has been received at a rate of 1 Hz or more. On each device universe.

## Sync Component

Will return: Running or No Data for each of the two External Timecode sources separated by a comma:

Example:

"EXT1:Running,EXT2:No Data"

## Output Manager

Will be one of the following:

"Just Started"



“Waiting for Engine Component”

“Waiting for Engine Component to Start”

“Waiting for Eengine Component to Reconfigure” -> yes, there is a spelling mistake !

“Running”

“Configuring”

“Error – Waiting for Reset”

“Unknown”

## LED Component

Returns one of the following statuses

“run” -> normal operation, no problems

“config” -> one or more components are being reconfigured

“limited” -> there is an issue that is not stopping system from working but needs attention

“problem” -> A major issue is stopping normal operation of the system

For all of the above except “run” there is also a component name and a description of the issue or operation, far too many to list here.

Example:

“System Status=run, Message=”

Or

“System Status=config, Message=Media Manager : Media Files Syncing”

Or

“System Status=problem,Message=Engine : Viewports Overlapping On Output”

# Changing In/Outpoint Behavior on Media Change

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By default, when media is changed the in and out-points are reset to the in and out-frames of the new media. Though this is often expected, it may not be desirable in certain circumstances. To change it, the Engine XML must be edited.

- Stop the Engine and Zookeeper
- Find the Engine XML, it is located in: C:\Users\\*User\*\Hippo\AppData\Local\GreenHippo\4\_2\HFWStorage
- The Engine XML is a Unique ID prefaced with "Engine".
- Open the XML with note pad
- Locate the line containing **bMediaSelectModifiesInOut**

By Default this reads:

```
<StorageEntry Name="bMediaSelectModifiesInOut" Class="bool" Value = "true"/>
```

Change this to:

```
<StorageEntry Name="bMediaSelectModifiesInOut" Class="bool" Value = "false"/>
```

- Save the file and close it
- Restart the engine and Zookeeper

Note: New Show will reset these changes.

# Minimizing Capture Delay

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Reducing the delay (or latency) of a video system is a huge topic that extends beyond the scope of this manual. Here we can offer some best practice guidelines specifically to do with Hippotizer to reduce delay.

## Disable Render Buffering

In output manager, there is the option to buffer the outputs. [Render Buffering](#) adds up to three frames of delay. To reduce delay, disable render buffering.

## Use as high frame rate signals as possible

Delay occurs per frame; an operation that takes one frame will take 16 milliseconds (ms) at 60 frames per second (FPS), or 33ms at 30fps. Changing to 60FPS capture signal from 30 for example will reduce the delay from 200ms to 100ms.

## Ensure the engine is running at full frame rate

Similar to the capture signal's frame rate, the engine frame rate also can have a large effect on delay. Ensure systems are running at full frame rate when latency is critical.

## Genlock the whole signal chain

Genlocking the Hippotizer to the capture source will slightly improve delay (less than a frame) and will improve smoothness.

## How much delay to expect

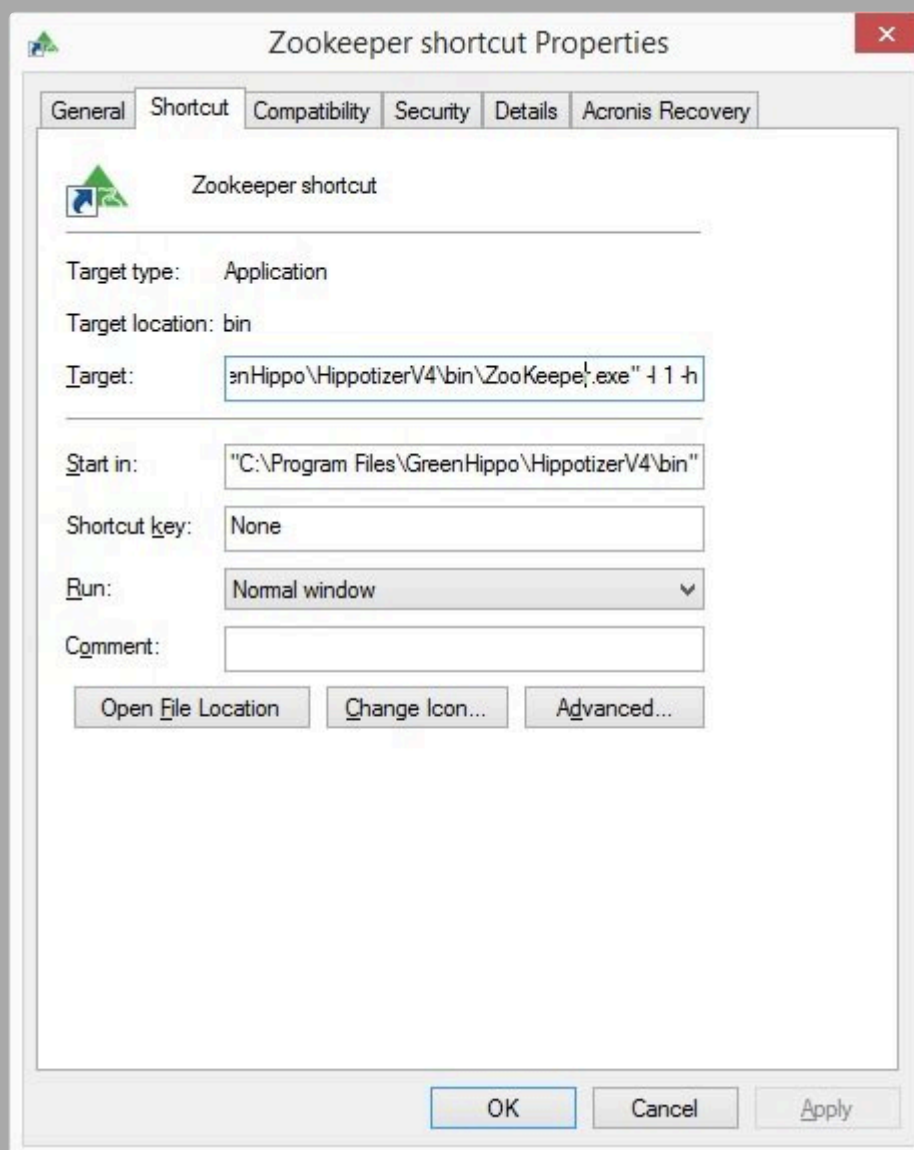
Due to the nature of media servers some delay is inevitable. A fully optimised system as described here should result in 4-5 frames of delay. (80-100ms at 60FPS).

# Advanced Startup options

The startup behaviour of Zookeeper can be edited to open into a default window or to disable editing of Pinboards.

## Starting up into a specific layout

Zookeeper can be set to go to a specific layout on startup with arguments that are added to the launch shortcut.



## Launch Zookeeper into a specific Pinboard

Add `-l 1` to launch into the 1st layout of the 1st bank. Each bank has 25 layouts so to launch into layout 1 of bank 2, use: `-l 26`

**Note:** The precise syntax is a hyphen and then lowercase letter “L”

## Launch Zookeeper without the ability to edit pinboards or navigate to new pages

Add `-h` to the launch short cut to hide the navigation bar of Zookeeper. Navigation Keyboard shortcuts will also be disabled.

# The Pin Tree

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# Time and Timecode

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**Time and Timecode are used throughout Hippotizer though they are often confused.**

## Timecode

To quote the [Wikipedia](#):

A timecode (alternatively, time code) is a sequence of numeric codes generated at regular intervals by a timing synchronization system.

There are several types of timecode commonly used in video, including LTC, MIDI and VITC. In every case, the timecode is received by a hardware or software decoder for translation into Hippotizer's framework.

[Additional information about receiving timecode can be found here.](#)

Timecode in Hippotizer is comprised of two pieces; time and format. Time is simply a clock from 00:00:00;00 to 23:59:59;59 while format indicates the frame rate used such as 25FPS or 29.97.

## Sync Packet

## Sync State

## Time

# Appendixes

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- [DMX Charts](#)
- [Creating DMX Personalities](#)
- [Effects List](#)
- [Generator List](#)
- [Key Board Shortcuts](#)
- [Glossary](#)



# DMX Charts

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DMX profiles are built in to Hippotizer software and can be viewed from within DMX component.

## Factory Personalities

- [4.4 Layer](#)
- [4.4 Layer Presets](#)
- [4.4 Mix](#)
- [4.4 Viewport](#)
- [4.4 Shape Viewport](#)
- [Timeline](#)

## 4.4 Layer

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Layer Level	1		0	0-255		
Mixer Mode	2		128	0-9	Additive Dissolve	
				10-19	Subtractive Dissolve	
				20-29	Darken	
				30-39	Lighten	
				40-49	Softlight	
				50-59	Softlight Inverse	
				60-69	Hardlight	
				70-79	Overlay	
				80-89	Difference	
				90-99	Multiply	
				100-109	Screen	
				110-119	Opaque	
				120-129	Sprite	
				130-139	Luminance Key	
				140-149	<b>Empty</b>	
				150-159	Alpha	
				160-169		
Live Mask	3		0	0-255	Live Mask Select	
Live Mask Level	4		0	0-255		
Red	5		128	0-127	Subtract Red	
				128	No Change	
				129-255	Add Red	
Green	6		128	0-127	Subtract Green	
				128	No Change	
				129-255	Add Green	
Blue	7		128	0-127	Subtract Blue	
				128	No Change	
				129-255	Add Blue	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Brightness	8		128	0-127	Darken layer	
				128	No Change	
				129-255	Brighten Layer	
Contrast	9		128	0-127	Reduce Contrast	
				128	No Change	
				129-255	Increase Contrast	
Invert Colour	10		0	0-128	Invert Off	
				129-255	Invert On	
Advance Colour	11		0	0-128	Disable Advance Colour	
				129-255	Enable Advance Colour	
Advance Red Low	12		128	0-127	Subtract Red Low	
				128	No Change	
				129-255	Add Red Low	
Advance Red Mid	13		128	0-127	Subtract Red Mid	
				128	No Change	
				129-255	Add Red Mid	
Advance Red High	14		128	0-127	Subtract Red High	
				128	No Change	
				129-255	Add Red High	
Advance Green Low	15		128	0-127	Subtract Green Low	
				128	No Change	
				129-255	Add Green Low	
Advance Green Mid	16		128	0-127	Subtract Green Mid	
				128	No Change	
				129-255	Add Green Mid	
Advance Green High	17		128	0-127	Subtract Green High	
				128	No Change	
				129-255	Add Green High	
Advance Blue Low	18		128	0-127	Subtract Blue Low	
				128	No Change	
				129-255	Add Blue Low	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Advance Blue Mid	19		128	0-127	Subtract Blue Mid	
				128	No Change	
				129-255	Add Blue Mid	
Advance Blue High	20		128	0-127	Subtract Blue High	
				128	No Change	
				129-255	Add Blue High	
Layer Rotation	21	22	16384	0-32768	Index Position	
				32769-49151	Continuous Clock-Wise Rotation	
				49152	Stop	
				49153-65535	Continuous CounterClock-Wise Rotation	
Position X	23	24	32768	0-32767	Move Left	
				32768	No Change	
				32769-65535	Move Right	
Position Y	25	26	32768	0-32767	Move Up	
				32768	No Change	
				32769-65535	Move Down	
Aspect Ratio	27		128	0-127	Distort Aspect Ratio	
				0	No Change	
				129-255	Distort Aspect Ratio	
Zoom	28	29	32768	0-32767	Zoom Layer	
				32768	No Change	
				32769-65535	Zoom Layer	
Aspect Mode	30		0	0-9	Auto Scale (Fits image to nearest axis)	
				10-19	Pixel 1:1	
				20-19	Fill	
				30-39	4:3	
				40-49	16:9	
				50-59	16:10	
				60-69	1:1	
				70-79	Auto Fill	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				80-89	Fit to Width	
				90-99	Fit to Height	
Effects 1 Select	31		0	0-255	See Effects List	
Effects 1 Level	32		0	0-255		
Effects 1 Parameter 1	33		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	34		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	35		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	36		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 5	37		128	0-255	Determined by Selected Effect	
Effects 2 Select	38		0	0-255	See Effects List	
Effects 2 Level	39		0	0-255		
Effects 2 Parameter 1	40		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 2	41		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 3	42		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 4	43		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 5	44		128	0-255	Determined by Selected Effect	
Source Type	45		0	0-9	Media Player	
				10-19	Live Input (Capture)	
				20-29	Generator	
				30-39	Relays	
				40-49	NDI	
				50-59	SPOUT	
Media Bank Select	46		0	0-255	Bank 0, Clip 0 Bypasses the Media player	
Media Clip Select	47		0	0-255		
Media Player Play	48		15	0-9	Play Forward Once	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Mode						
				10-19	Play Forward and Loop	
				20-29	Play Backwards Once	
				30-39	Play Backwards and Loop	
				40-49	Play Forwards then Backward, looping	
				50-59	Random Frame	
				60-69	In Frame	
				70-79	Out Frame	
				80-89	Inner Loop Play	
				90-99	Loop In Frame	
				100-109	Loop Out Frame	
Relay Mix Select	49		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Relay Layer Select	50		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Playback Speed	51		64	0-63	Slows Media Playback: 0-99%	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				64	Playback Normal Speed	
				65-255	Faster Playback Speed: 101-400%	
Media In-Point	52	53 and 54	0	0	First Frame	
				1-16,777,216	Moves Inpoint into clip by frame	
Media Pause	55		0	0-128	Pause Off	
				129-255	Pause On	
Media Out-Point	56	57 and 58	0	0	End of Clip	
				1-16,777,216	Moves Outpoint into clip by frame	
Live Input Select	59		0	0-9	Disabled	
				10-19	Input 1	
				20-29	Input 2	
				30-39	Input 3	
				40-49	Input 4	
				50-59	Input 5	
				60-69	Input 6	
				70-79	Input 7	
				80-89	Input 8	
Live input De-Interlace	60		0	0-128	De-interlace Off	
				129-255	De-interlace On	
Generator Select	61		0	0-255	See List of Generators	
Generator Parameter 1	62		128	0-255	Determined by Selected Generator	
Generator Parameter 2	63		128	0-255	Determined by Selected Generator	
Generator Parameter 3	64		128	0-255	Determined by Selected Generator	
Generator Parameter 4	65		128	0-255	Determined by Selected Generator	
Generator Parameter 5	66		128	0-255	Determined by Selected Generator	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Generator Parameter 6	67		128	0-255	Determined by Selected Generator	
Generator Parameter 7	68		128	0-255	Determined by Selected Generator	
Generator Parameter 8	69		128	0-255	Determined by Selected Generator	
Generator Parameter 9	70		128	0-255	Determined by Selected Generator	
NDI Refresh List	71		0	0-128	Refresh Disabled	
				129-255	Refresh Source List	
NDI Source Select	72		0	0-9	Disabled	
				10-19	Input 1	
				20-29	Input 2	
				30-39	Input 3	
				40-49	Input 4	
				50-59	Input 5	
				60-69	Input 6	
				70-79	Input 7	
				80-89	Input 8	
Pause on Dark	73		255	0-128	Disabled	
				129-255	Enabled	
Rewind on Dark	74		0	0-128	Disabled	
				129-255	Enabled	
Layer Audio Volume	75		0	0-255		
Audio Pan	76		128	0-127	Pan Left	
				128	Centre	
				129-255	Pan Right	
Sync Audio to Layer Level	77		255	0-128	Do Not Sync to Layer Level	
				129-255	Sync to Layer Level	
Timecode On Layer (Sync In)	78		0	0-9	Sync In – Off	
				10-19	Sync In – Sync Bus 1	
				20-29	Sync In – Sync Bus 2	



CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				30-39	Sync In – Sync Bus 3	
				40-49	Sync In – Sync Bus 4	
				50-59	Sync In – Sync Bus 5	
				60-69	Sync In – Sync Bus 6	
				70-79	Sync In – Sync Bus 7	
				80-89	Sync In – Sync Bus 8	
				90-99	Sync In – Sync Bus 9	
				100-109	Sync In – Sync Bus 10	
				110-119	Sync In – Sync Bus 11	
				120-129	Sync In – Sync Bus 12	
				130-139	Sync In – Sync Bus 13	
				140-149	Sync In – Sync Bus 14	
				150-159	Sync In – Sync Bus 15	
				160-169	Sync In – Sync Bus 16	
				170-179	Sync In – External Sync 1	
				180-255	Sync In – External Sync 2	
Media In Loop Point	79	80 and 81	0	0	First Frame	
				1-16,777,216	Moves In Loop Point into clip by frame	
Media Out Loop Point	82	83 and 84	0	0	End of Clip	
				1-16,777,216	Moves Out Loop Point into clip by frame	
Colour Shift	85		128	0-255	Shifts colour gamut of layer	
Colour Saturation	86		128	0-255	Saturates / De-saturates colours	
Time Code Offset: Hours	87		0	0-255	TC on Layer Offset Hours	
Time Code Offset: Minutes	88		0	0-255	TC on Layer Offset Minutes	
Time Code Offset: Seconds	89		0	0-255	TC on Layer Offset Seconds	
Time Code Offset: Frames	90		0	0-255	TC on Layer Offset Frames	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Timecode on layer Fly Wheel	91		0	0-127	Disable Fly Wheel	
				128-255	Enable Fly Wheel	
Keystone 1X	92	93	0	0-65535		
Keystone 1Y	94	95	0	0-65535		
Keystone 2X	96	97	65535	0-65535		
Keystone 2Y	98	99	0	0-65535		
Keystone 3X	100	101	65535	0-65535		
Keystone 3Y	102	103	65535	0-65535		
Keystone 4X	104	105	0	0-65535		
Keystone 4Y	106	107	65535	0-65535		
X-fade Type	108		0	0-9	Bypass	
				10-19	Cross Fade	
				20-29	Fade Through Black	
				30-39	Fade Up First	
				40-49	Snap Start	
				50-59	Snap End	
Fade Time	109	0	0	0-255	Cross Fade Time in 0.1 Seconds	
Auto Fade	110		0	0-128	Manual	
				129-255	Auto	
Take	111		0	0-127	Take On	
				128-255	Take Off	
Spout Source	112		0	0-9	None	
				10-19	Source 1	
				20-29	Source 2	
				30-39	Source 3	
				40-49	Source 4	
				50-59	Source 5	
				60-69	Source 6	
				70-79	Source 7	
Media Bank Offset	113		127	0-255	-127 to 127	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Media Clip Offset	114		0	0-255	-127 to 127	
Ignore Media	115		0	0-128	Media and Time	
				129-255	Time only	
Sync Out	116		0	0-9	Sync Out – Off	
				10-19	Sync In – Sync Bus 1	
				20-29	Sync In – Sync Bus 2	
				30-39	Sync In – Sync Bus 3	
				40-49	Sync In – Sync Bus 4	
				50-59	Sync In – Sync Bus 5	
				60-69	Sync In – Sync Bus 6	
				70-79	Sync In – Sync Bus 7	
				80-89	Sync In – Sync Bus 8	
				90-99	Sync In – Sync Bus 9	
				100-109	Sync In – Sync Bus 10	
				110-119	Sync In – Sync Bus 11	
				120-129	Sync In – Sync Bus 12	
				130-139	Sync In – Sync Bus 13	
				140-149	Sync In – Sync Bus 14	
				150-159	Sync In – Sync Bus 15	
				160-169	Sync In – Sync Bus 16	
Key Mode	117		0	0-9	Bypass	
				10-19	Key	
				20-29	inverse Key	
Key Source Mix Select	118		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Key Source Layer	119		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Videomapper Enable	120		0	0-128	Disabled	
				129-255	Enabled	
VideoMap A Select	121		0	Map 1-255		
VideoMap B Select	122		0	Map 1-255		
Colourblocks Enable	123		0	0-128	Disabled	
				129-255	Enabled	
VideoMap Mix	124		0	Mix A to B		
VideoMap Mix / Morph	125		0	0-127	Mix	
				128-255	Morph	
Notch Bypass	126		100	0-127	Bypass	
				128-255	Enable	
Cached Resources	127		0	0-127	Cache	
				128-255	Enable	
Notch File Select	128		0	File 1-255		
Notch Effect Select	129		0	Effect 1-255		
Input 2 Source Mix Select	130		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 2 Source Layer	131		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Notch Timecode Source	132		0	0-9	Disable	
				10-19	Ext 1	
				20-29	Ext 2	
Notch Time Code Offset: Hours	133		0	0-255	TC on Layer Offset Hours	
Notch Time Code Offset: Minutes	134		0	0-255	TC on Layer Offset Minutes	
Notch Time Code Offset: Seconds	135		0	0-255	TC on Layer Offset Seconds	
Notch Time Code Offset: Frames	136		0	0-255	TC on Layer Offset Frames	
Notch Parameter 1	137		0	0-255	Parameter 1	
Notch Parameter 2	138		0	0-255	Parameter 2	
Notch Parameter 3	139		0	0-255	Parameter 3	
Notch Parameter 4	140		0	0-255	Parameter 4	
Notch Parameter 5	141		0	0-255	Parameter 5	
Notch Parameter 6	142		0	0-255	Parameter 6	
Notch Parameter 7	143		0	0-255	Parameter 7	
Notch Parameter 8	144		0	0-255	Parameter 8	
Notch Parameter 9	145		0	0-255	Parameter 9	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Notch Parameter 10	146		0	0-255	Parameter 10	

## 4.4 Layer Presets

The Layer Preset personality is the same as 4.4 Layer, with the following changes:

- Add Preset Select Pin
- Add Preset Crossfade settings
- Set all channels to update only

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Layer Level	1		0	0-255		
Mixer Mode	2		128	0-9	Additive Dissolve	
				10-19	Subtractive Dissolve	
				20-29	Darken	
				30-39	Lighten	
				40-49	Softlight	
				50-59	Softlight Inverse	
				60-69	Hardlight	
				70-79	Overlay	
				80-89	Difference	
				90-99	Multiply	
				100-109	Screen	
				110-119	Opaque	
				120-129	Sprite	
				130-139	Luminance Key	
				140-149	<b>Empty</b>	
				150-159	Alpha	
				160-169		
Live Mask	3		0	0-255	Live Mask Select	
Live Mask Level	4		0	0-255		
Red	5		128	0-127	Subtract Red	
				128	No Change	
				129-255	Add Red	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Green	6		128	0-127	Subtract Green	
				128	No Change	
				129-255	Add Green	
Blue	7		128	0-127	Subtract Blue	
				128	No Change	
				129-255	Add Blue	
Brightness	8		128	0-127	Darken layer	
				128	No Change	
				129-255	Brighten Layer	
Contrast	9		128	0-127	Reduce Contrast	
				128	No Change	
				129-255	Increase Contrast	
Invert Colour	10		0	0-128	Invert Off	
				129-255	Invert On	
Advance Colour	11		0	0-128	Disable Advance Colour	
				129-255	Enable Advance Colour	
Advance Red Low	12		128	0-127	Subtract Red Low	
				128	No Change	
				129-255	Add Red Low	
Advance Red Mid	13		128	0-127	Subtract Red Mid	
				128	No Change	
				129-255	Add Red Mid	
Advance Red High	14		128	0-127	Subtract Red High	
				128	No Change	
				129-255	Add Red High	
Advance Green Low	15		128	0-127	Subtract Green Low	
				128	No Change	
				129-255	Add Green Low	
Advance Green Mid	16		128	0-127	Subtract Green Mid	
				128	No Change	
				129-255	Add Green Mid	



CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Advance Green High	17		128	0-127	Subtract Green High	
				128	No Change	
				129-255	Add Green High	
Advance Blue Low	18		128	0-127	Subtract Blue Low	
				128	No Change	
				129-255	Add Blue Low	
Advance Blue Mid	19		128	0-127	Subtract Blue Mid	
				128	No Change	
				129-255	Add Blue Mid	
Advance Blue High	20		128	0-127	Subtract Blue High	
				128	No Change	
				129-255	Add Blue High	
Layer Rotation	21	22	16384	0-32768	Index Position	
				32769-49151	Continuous Clock-Wise Rotation	
				49152	Stop	
				49153-65535	Continuous CounterClock-Wise Rotation	
Position X	23	24	32768	0-32767	Move Left	
				32768	No Change	
				32769-65535	Move Right	
Position Y	25	26	32768	0-32767	Move Up	
				32768	No Change	
				32769-65535	Move Down	
Aspect Ratio	27		128	0-127	Distort Aspect Ratio	
				0	No Change	
				129-255	Distort Aspect Ratio	
Zoom	28	29	32768	0-32767	Zoom Layer	
				32768	No Change	
				32769-65535	Zoom Layer	
Aspect Mode	30		0	0-9	Auto Scale (Fits image to nearest axis)	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				10-19	Pixel 1:1	
				20-19	Fill	
				20-39	4:3	
				40-49	16:9	
				50-59	16:10	
				60-69	1:1	
				70-79	Auto Fill	
				80-89	Fit to Width	
				90-99	Fit to Height	
Effects 1 Select	31		0	0-255	See Effects List	
Effects 1 Level	32		0	0-255		
Effects 1 Parameter 1	33		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	34		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	35		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	36		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 5	37		128	0-255	Determined by Selected Effect	
Effects 2 Select	38		0	0-255	See Effects List	
Effects 2 Level	39		0	0-255		
Effects 2 Parameter 1	40		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 2	41		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 3	42		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 4	43		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 5	44		128	0-255	Determined by Selected Effect	
Source Type	45		0	0-9	Media Player	
				10-19	Live Input (Capture)	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				20-29	Generator	
				30-39	Relays	
				40-49	NDI	
				50-59	SPOUT	
Media Bank Select	46		0	0-255	Bank 0, Clip 0 Bypasses the Media player	
Media Clip Select	47		0	0-255		
Media Player Play Mode	48		15	0-9	Play Forward Once	
				10-19	Play Forward and Loop	
				20-29	Play Backwards Once	
				30-39	Play Backwards and Loop	
				40-49	Play Forwards then Backward, looping	
				50-59	Random Frame	
				60-69	In Frame	
				70-79	Out Frame	
				80-89	Inner Loop Play	
				90-99	Loop In Frame	
				100-109	Loop Out Frame	
Relay Mix Select	49		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Relay Layer Select	50		0	0	Use Mix / Viewport	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Playback Speed	51		64	0-63	Slows Media Playback: 0-99%	
				64	Playback Normal Speed	
				65-255	Faster Playback Speed: 101-400%	
Media In-Point	52	53 and 54	0	0	First Frame	
				1-16,777,216	Moves Inpoint into clip by frame	
Media Pause	55		0	0-128	Pause Off	
				129-255	Pause On	
Media Out-Point	56	57 and 58	0	0	End of Clip	
				1-16,777,216	Moves Outpoint into clip by frame	
Live Input Select	59		0	0-9	Disabled	
				10-19	Input 1	
				20-29	Input 2	
				30-39	Input 3	
				40-49	Input 4	
				50-59	Input 5	
				60-69	Input 6	
				70-79	Input 7	
				80-89	Input 8	
Live input De-Interlace	60		0	0-128	De-interlace Off	
				129-255	De-interlace On	
Generator Select	61		0	0-255	See List of Generators	
Generator Parameter 1	62		128	0-255	Determined by Selected Generator	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Generator Parameter 2	63		128	0-255	Determined by Selected Generator	
Generator Parameter 3	64		128	0-255	Determined by Selected Generator	
Generator Parameter 4	65		128	0-255	Determined by Selected Generator	
Generator Parameter 5	66		128	0-255	Determined by Selected Generator	
Generator Parameter 6	67		128	0-255	Determined by Selected Generator	
Generator Parameter 7	68		128	0-255	Determined by Selected Generator	
Generator Parameter 8	69		128	0-255	Determined by Selected Generator	
Generator Parameter 9	70		128	0-255	Determined by Selected Generator	
NDI Refresh List	71		0	0-128	Refresh Disabled	
				129-255	Refresh Source List	
NDI Source Select	72		0	0-9	Disabled	
				10-19	Input 1	
				20-29	Input 2	
				30-39	Input 3	
				40-49	Input 4	
				50-59	Input 5	
				60-69	Input 6	
				70-79	Input 7	
				80-89	Input 8	
Pause on Dark	73		255	0-128	Disabled	
				129-255	Enabled	
Rewind on Dark	74		0	0-128	Disabled	
				129-255	Enabled	
Layer Audio Volume	75		0	0-255		
Audio Pan	76		128	0-127	Pan Left	
				128	Centre	
				129-255	Pan Right	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Sync Audio to Layer Level	77		255	0-128	Do Not Sync to Layer Level	
				129-255	Sync to Layer Level	
Timecode On Layer (Sync In)	78		0	0-9	Sync In – Off	
				10-19	Sync In – Sync Bus 1	
				20-29	Sync In – Sync Bus 2	
				30-39	Sync In – Sync Bus 3	
				40-49	Sync In – Sync Bus 4	
				50-59	Sync In – Sync Bus 5	
				60-69	Sync In – Sync Bus 6	
				70-79	Sync In – Sync Bus 7	
				80-89	Sync In – Sync Bus 8	
				90-99	Sync In – Sync Bus 9	
				100-109	Sync In – Sync Bus 10	
				110-119	Sync In – Sync Bus 11	
				120-129	Sync In – Sync Bus 12	
				130-139	Sync In – Sync Bus 13	
				140-149	Sync In – Sync Bus 14	
				150-159	Sync In – Sync Bus 15	
				160-169	Sync In – Sync Bus 16	
				170-179	Sync In – External Sync 1	
				180-255	Sync In – External Sync 2	
Media In Loop Point	79	80 and 81	0	0	First Frame	
				1-16,777,216	Moves In Loop Point into clip by frame	
Media Out Loop Point	82	83 and 84	0	0	End of Clip	
				1-16,777,216	Moves Out Loop Point into clip by frame	
Colour Shift	85		128	0-255	Shifts colour gamut of layer	
Colour Saturation	86		128	0-255	Saturates / De-saturates colours	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Time Code Offset: Hours	87		0	0-255	TC on Layer Offset Hours	
Time Code Offset: Minutes	88		0	0-255	TC on Layer Offset Minutes	
Time Code Offset: Seconds	89		0	0-255	TC on Layer Offset Seconds	
Time Code Offset: Frames	90		0	0-255	TC on Layer Offset Frames	
Timecode on layer Fly Wheel	91		0	0-127	Disable Fly Wheel	
				128-255	Enable Fly Wheel	
Keystone 1X	92	93	0	0-65535		
Keystone 1Y	94	95	0	0-65535		
Keystone 2X	96	97	65535	0-65535		
Keystone 2Y	98	99	0	0-65535		
Keystone 3X	100	101	65535	0-65535		
Keystone 3Y	102	103	65535	0-65535		
Keystone 4X	104	105	0	0-65535		
Keystone 4Y	106	107	65535	0-65535		
X-fade Type	108		0	0-9	Bypass	
				10-19	Cross Fade	
				20-29	Fade Through Black	
				30-39	Fade Up First	
				40-49	Snap Start	
				50-59	Snap End	
Fade Time	109	0	0	0-255	Cross Fade Time in 0.1 Seconds	
Auto Fade	110		0	0-128	Manual	
				129-255	Auto	
Take	111		0	0-127	Take On	
				128-255	Take Off	
Spout Source	112		0	0-9	None	
				10-19	Source 1	
				20-29	Source 2	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				30-39	Source 3	
				40-49	Source 4	
				50-59	Source 5	
				60-69	Source 6	
				70-79	Source 7	
Media Bank Offset	113		127	0-255	-127 to 127	
Media Clip Offset	114		0	0-255	-127 to 127	
Ignore Media	115		0	0-128	Media and Time	
				129-255	Time only	
Sync Out	116		0	0-9	Sync Out – Off	
				10-19	Sync In – Sync Bus 1	
				20-29	Sync In – Sync Bus 2	
				30-39	Sync In – Sync Bus 3	
				40-49	Sync In – Sync Bus 4	
				50-59	Sync In – Sync Bus 5	
				60-69	Sync In – Sync Bus 6	
				70-79	Sync In – Sync Bus 7	
				80-89	Sync In – Sync Bus 8	
				90-99	Sync In – Sync Bus 9	
				100-109	Sync In – Sync Bus 10	
				110-119	Sync In – Sync Bus 11	
				120-129	Sync In – Sync Bus 12	
				130-139	Sync In – Sync Bus 13	
				140-149	Sync In – Sync Bus 14	
				150-159	Sync In – Sync Bus 15	
				160-169	Sync In – Sync Bus 16	
Key Mode	117		0	0-9	Bypass	
				10-19	Key	
				20-29	inverse Key	
Key Source Mix Select	118		0	0	Disabled	
				1	Mix 1	



CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Key Source Layer	119		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Videomapper Enable	120		0	0-128	Disabled	
				129-255	Enabled	
VideoMap A Select	121		0	Map 1-255		
VideoMap B Select	122		0	Map 1-255		
Colourblocks Enable	123		0	0-128	Disabled	
				129-255	Enabled	
VideoMap Mix	124		0	Mix A to B		
VideoMap Mix / Morph	125		0	0-127	Mix	
				128-255	Morph	
Preset Select	126	127	0	0-65535	Preset Select	
Use Preset Settings	128		0	0-128	Disabled	
				129-255	Enabled	
Preset X-fade Type	129		0	0-9	None (Instant Recall)	
				10-19	Cross Fade	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
				20-29	Fade Through Black	
				30-39	Fade Up First	
				40-49	Snap Start	
				50-59	Snap End	
Preset Fade Time	130	0	0	0-255	Cross Fade Time in 0.1 Seconds	
Notch Bypass	131		100	0-127	Bypass	
				128-255	Enable	
Cached Resources	132		0	0-127	Cache	
				128-255	Enable	
Notch File Select	133		0	File 1-255		
Notch Effect Select	134		0	Effect 1-255		
Input 2 Source Mix Select	135		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 2 Source Layer	136		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Notch Timecode	137		0	0-9	Disable	

CHANNEL FUNCTION	DMX	DMX (16BIT)	DEFAULT	DMX RANGE (0-255)		NOTES
Source						
				10-19	Ext 1	
				20-29	Ext 2	
Time Code Offset: Hours	138		0	0-255	TC on Layer Offset Hours	
Time Code Offset: Minutes	139		0	0-255	TC on Layer Offset Minutes	
Time Code Offset: Seconds	140		0	0-255	TC on Layer Offset Seconds	
Time Code Offset: Frames	141		0	0-255	TC on Layer Offset Frames	
Notch Parameter 1	142		0	0-255	Parameter 1	
Notch Parameter 2	143		0	0-255	Parameter 2	
Notch Parameter 3	144		0	0-255	Parameter 3	
Notch Parameter 4	145		0	0-255	Parameter 4	
Notch Parameter 5	146		0	0-255	Parameter 5	
Notch Parameter 6	147		0	0-255	Parameter 6	
Notch Parameter 7	148		0	0-255	Parameter 7	
Notch Parameter 8	149		0	0-255	Parameter 8	
Notch Parameter 9	150		0	0-255	Parameter 9	
Notch Parameter 10	151		0	0-255	Parameter 10	

## 4.4 Mix

### 4.4 Mix personality

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Mix Level	1		255	0-255		
Effects 1 Select	2		0	0-255	See Effects List	
Effects 1 Level	3		0	0-255		
Effects 1 Parameter 1	4		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	5		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	6		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	7		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 5	8		128	0-255	Determined by Selected Effect	
Effects 2 Select	9		0	0-255	See Effects List	
Effects 2 Level	10		0	0-255		
Effects 2 Parameter 1	11		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 2	12		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 3	13		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 4	14		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 5	15		128	0-255	Determined by Selected Effect	
Pixelmapper Enable	16		0	0-128	Disabled	
				129-255	Enabled	
Pixel mapper map select	17		0	0-255		
Visulisation mode	18		0	0-9	Visulization Disabled	
				10-19	Output Buffer	
				20-29	Buffer View Overlay	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
				30-39	Element Locations	
				40-49	Element Colours	
Colour Averageing	19		0	0-128	Disabled	
				129-255	Enabled	
Vis background level	20		0	0-255		
Audio Level	21		255	0-255		
Timecode shift	22	23	32767	0-65535		
NDI Enable	24		0	0-128	Disabled	
				129-255	Enabled	
NDI Frame Rate	25		0	0-9	15FPS	
				10-19	25 FPS	
				20-29	29.97 FPS	
				30-39	30 FPS	
				40-49	50 FPS	
				50-59	59.94 FPS	
				60-69	60 FPS	
				70-79	Free Run	

## 4.4 Mix Presets

### 4.4 Mix with Presets Personality

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Mix Level	1		255	0-255		
Effects 1 Select	2		0	0-255	See Effects List	
Effects 1 Level	3		0	0-255		
Effects 1 Parameter 1	4		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	5		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	6		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	7		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 5	8		128	0-255	Determined by Selected Effect	
Effects 2 Select	9		0	0-255	See Effects List	
Effects 2 Level	10		0	0-255		
Effects 2 Parameter 1	11		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 2	12		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 3	13		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 4	14		128	0-255	Determined by Selected Effect	
Effects 2 Parameter 5	15		128	0-255	Determined by Selected Effect	
Pixelmapper Enable	16		0	0-128	Disabled	
				129-255	Enabled	
Pixel mapper map select	17		0	0-255		
Visulisation mode	18		0	0-9	Visulization Disabled	
				10-19	Output Buffer	
				20-29	Buffer View Overlay	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
				30-39	Element Locations	
				40-49	Element Colours	
Colour Averageing	19		0	0-128	Disabled	
				129-255	Enabled	
Vis background level	20		0	0-255		
Audio Level	21		255	0-255		
Timecode shift	22	23	32767	0-65535		
NDI Enable	24		0	0-128	Disabled	
				129-255	Enabled	
NDI Frame Rate	25		0	0-9	15FPS	
				10-19	25 FPS	
				20-29	29.97 FPS	
				30-39	30 FPS	
				40-49	50 FPS	
				50-59	59.94 FPS	
				60-69	60 FPS	
				70-79	Free Run	
Preset Select	26	27	0	0-65535	Preset Select	
Use Preset Settings	28		0	0-128	Disabled	
				129-255	Enabled	
Preset X-fade Type	29		0	0-9	None (Instant Recall)	
				10-19	Cross Fade	
				20-29	Fade Through Black	
				30-39	Fade Up First	
				40-49	Snap Start	
				50-59	Snap End	
Preset Fade Time	30	0	0	0-255	Cross Fade Time in 0.1 Seconds	

## 4.4 Viewport

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
ViewPort Level	1		255	0-255		
Red	2		128	0-127	Subtract Red	
				128	No Change	
				129-255	Add Red	
Green	3		128	0-127	Subtract Green	
				128	No Change	
				129-255	Add Green	
Blue	4		128	0-127	Subtract Blue	
				128	No Change	
				129-255	Add Blue	
Brightness	5		128	0-127	Darken layer	
				128	No Change	
				129-255	Brighten Layer	
Contrast	6		128	0-127	Reduce Contrast	
				128	No Change	
				129-255	Increase Contrast	
Colour Saturation	7		128	0-255	Saturates / Desaturates colours	
Colour Shift	8		128	0-255	Shifts colour gamut of layer	
Invert Colour	9		0	0-127	Invert Off	
				128-255	Invert On	
Effects 1 Select	10		0	0-255	See Effects List	
Effects 1 Level	11		0	0-255		
Effects 1 Parameter 1	12		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	13		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	14		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	15		128	0-255	Determined by Selected Effect	



Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Effects 1 Parameter 5	16		128	0-255	Determined by Selected Effect	
Rotation Positon (Index)	17	18	16384	0-32768	Index Position	
				32769-49151	Continuous Clock-Wise Rotation	
				49152	Stop	
				49153-65535	Continuous CounterClock-Wise Rotation	
Position X	19	20	32768	0-35767	Move Left	
				32768	No Change	
				32869-65535	Move Right	
Position Y	21	22	32768	0-35767	Move Up	
				32768	No Change	
				32869-65535	Move Down	
Viewport Zoom	23	24	32768	0-35767		
				32768	No Change	
				32869-65535		
Keystone AntiAliasing	25		0	0-127	Disable	
				128-255	Enable	
Keystone Point 1X	26	27	0	0-255		
Keystone Point 1Y	28	29	0	0-255		
Keystone Point 2X	30	31	65535	0-255		
Keystone Point 2Y	32	33	0	0-255		
Keystone Point 3X	34	35	65535	0-255		
Keystone Point 3Y	36	37	65535	0-255		
Keystone Point 4X	38	39	0	0-255		
Keystone Point 4Y	40	41	65535	0-255		
Livemask Select	42		0	0-255	Live Mask Select	
Videomapper Enable	43		0	0-127	Enable	
				128-255	Disable	
Videomapper Mix	44		0	0-255		

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Videomapper Mix/ Morph	45		0	0-127	Mix	
				128-255	Morph	
Videomap A Select	46		0	0-255		
Videomap B Select	47		0	0-255		
Screen Warp Enable	48		0	0-127	Enable	
				128-255	Disable	
Screen Warp Select A	49		0	0-255	Screen Warp A Select	
Screen Warp Select B	50		0	0-255	Screen Warp B Select	
Screen Warp Mix	51		128	0-255		
LiveMask Level	52		0	0-255		

## 4.4 Viewport Presets

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
ViewPort Level	1		255	0-255		
Red	2		128	0-127	Subtract Red	
				128	No Change	
				129-255	Add Red	
Green	3		128	0-127	Subtract Green	
				128	No Change	
				129-255	Add Green	
Blue	4		128	0-127	Subtract Blue	
				128	No Change	
				129-255	Add Blue	
Brightness	5		128	0-127	Darken layer	
				128	No Change	
				129-255	Brighten Layer	
Contrast	6		128	0-127	Reduce Contrast	
				128	No Change	
				129-255	Increase Contrast	
Colour Saturation	7		128	0-255	Saturates / Desaturates colours	
Colour Shift	8		128	0-255	Shifts colour gamut of layer	
Invert Colour	9		0	0-127	Invert Off	
				128-255	Invert On	
Effects 1 Select	10		0	0-255	See Effects List	
Effects 1 Level	11		0	0-255		
Effects 1 Parameter 1	12		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 2	13		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 3	14		128	0-255	Determined by Selected Effect	
Effects 1 Parameter 4	15		128	0-255	Determined by Selected Effect	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Effects 1 Parameter 5	16		128	0-255	Determined by Selected Effect	
Rotation Positon (Index)	17	18	16384	0-32768	Index Position	
				32769-49151	Continuous Clock-Wise Rotation	
				49152	Stop	
				49153-65535	Continuous CounterClock-Wise Rotation	
Position X	19	20	32768	0-35767	Move Left	
				32768	No Change	
				32869-65535	Move Right	
Position Y	21	22	32768	0-35767	Move Up	
				32768	No Change	
				32869-65535	Move Down	
Viewport Zoom	23	24	32768	0-35767		
				32768	No Change	
				32869-65535		
Keystone AntiAliasing	25		0	0-127	Disable	
				128-255	Enable	
Keystone Point 1X	26	27	0	0-255		
Keystone Point 1Y	28	29	0	0-255		
Keystone Point 2X	30	31	65535	0-255		
Keystone Point 2Y	32	33	0	0-255		
Keystone Point 3X	34	35	65535	0-255		
Keystone Point 3Y	36	37	65535	0-255		
Keystone Point 4X	38	39	0	0-255		
Keystone Point 4Y	40	41	65535	0-255		
Livemask Select	42		0	0-255	Live Mask Select	
Videomapper Enable	43		0	0-127	Enable	
				128-255	Disable	
Videomapper Mix	44		0	0-255		

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Videomapper Mix/ Morph	45		0	0-127	Mix	
				128-255	Morph	
Videomap A Select	46		0	0-255		
Videomap B Select	47		0	0-255		
Screen Warp Enable	48		0	0-127	Enable	
				128-255	Disable	
Screen Warp Select A	49		0	0-255	Screen Warp A Select	
Screen Warp Select B	50		0	0-255	Screen Warp B Select	
Screen Warp Mix	51		128	0-255		
LiveMask Level	52		0	0-255		
Preset Select	53	54		0 – 65535		

## 4.4 Shape Viewport

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
ViewPort Level	1		255	0-255		
SHAPE Enable	2		0	0-127	Disable	
				128-255	Enable	
Input 2 Relay Mix/Viewport Select	3		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 2 Relay Layer Select	4		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Input 3 Relay Mix/Viewport Select	5		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 3 Relay Layer Select	6		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Input 4 Relay Mix/Viewport Select	7		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 4 Relay Layer Select	8		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Input 5 Relay Mix/Viewport Select	9		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 5 Relay Layer Select	10		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Input 6 Relay Mix/Viewport Select	11		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	



Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 6 Relay Layer Select	12		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Input 7 Relay Mix/Viewport Select	13		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 7 Relay Layer Select	14		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	

Channel Function	DMX	DMX (16bit)	Default	DMX Range (0-255)		Notes
Input 8 Relay Mix/Viewport Select	15		0	0	Disabled	
				1	Mix 1	
				2	Mix 2	
				3	Mix 3	
				4	Mix 4	
				5	Mix 5	
				...	To Mix 127	
				128	Viewport 1	
				129	Viewport 2	
				130	Viewport 3	
				131	Viewport 4	
				...	To Viewport 128	
Input 8 Relay Layer Select	16		0	0	Use Mix / Viewport	
				1	Layer 1 Visible	
				2	Layer 1 Hidden	
				3	Layer 2 Visible	
				4	Layer 2 Hidden	
				...	To layer 16 Hidden	
Enable Network	17		0	0-127	Disable Network	
				128-255	Enable Network	
Project File Select	18		255	0-255		
Output Feed Select	19		255	0-255		

# Timeline

## Timelines can be triggered from DMX using a built in personality

In the timeline list in the User Interface you need to set the ID for each timeline as this will be referenced by the first DMX channel. Channel 2 triggers the action on this particular timeline.

Please note that a command will only be triggered if a DMX value changes.

For example timeline 1->Play (DMX values 1, 10) will trigger a play command the first time this is issued.

If the timeline runs into a stop command and you wish to play again simple sending 1->Play won't do anything as the values have not changed.

you need to insert a "nothing" cue in between (values 1, 0) before issued 1\_Play again (1,10).

Function	DMX	DMX (16bit)	Default	Range	Notes
Timeline Select	1		0	0 – 255	
				0	No Timeline Selected
				255	Timeline 255 Seclected
Playback Command	2		0	0-9	Nothing
				10-19	Play
				20-29	Pause
				30-39	Stop
				40-49	GoCue and Play
				50-59	Go Cue and Pause
Recall Cues Command	3	4	0	0-65535	Recall Cues
				0	Recall Cue 0.00
				100	Recall Cue 1.00
				65535	Recall Cue 655.35

# Creating DMX Personalities

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Controlling a Hippotizer from a DMX lighting desk is easy and the software come complete with stock personalities.

However, it is can be necessary to create custom personalities. This requires some specific decisions and mappings. These are detailed here.

# Layer Playback Speed

The speed of a layer should be set to 25% exactly by default. This requires mapping the value of 25% to a DMX value of 64:

The screenshot shows the Hippotizer V4 interface. On the left, a table lists parameters for a media player. The 'Source/MediaPlayer/Speed' parameter is highlighted in green, showing it is assigned to Channel 1 (DMX 49) and is a Variable type. On the right, the '8 Bit' mode is selected with Channel 1 set to 49. Below this, a 'Set Center' button is set to 128. A table shows the DMX mapping for the speed parameter, with DMX 64 corresponding to a parameter value of 0.25.

ParameterName	Channel1	Channel2	Type	Update On
Source/MediaPlayer/InPoint	50	51	Mappable	<input checked="" type="checkbox"/>
Source/MediaPlayer/MediaSelect	45	46	Mappable	<input type="checkbox"/>
Source/MediaPlayer/OutPoint	53	54	Mappable	<input checked="" type="checkbox"/>
Source/MediaPlayer/Pause	52	0	Toggle	<input checked="" type="checkbox"/>
Source/MediaPlayer/PlayMode	47	0	Mappable	<input type="checkbox"/>
Source/MediaPlayer/Speed	49	0	Variable	<input type="checkbox"/>
Source/MediaPlayer/FlywheelEnabled	91	0	Toggle	<input type="checkbox"/>
Source/MediaPlayer/Sync/Source	80	0	Mappable	<input type="checkbox"/>
Source/MediaPlayer/TimeCodeOffset	81	82	TimeAddre	<input type="checkbox"/>
Source/MediaPlayer/PauseWhenDark	75	0	Toggle	<input checked="" type="checkbox"/>
Source/MediaPlayer/RewindWhenDark	76	0	Toggle	<input checked="" type="checkbox"/>

8 Bit Channel 1: 49  
16 Bit Channel 2: 0  
Set Center 128 (0 - 255) Update Table

DMX Min	DMX Max	Param Min	Param Max
0	64	0.00	0.25
64	128	0.25	0.50
128	193	0.50	0.75
193	255	0.75	1.00

+

# **Pixelmapper Map select update only**

To avoid a serious impact on performance, ensure the Map Select pin in mix controls is set to update only.

# Effects List

DMX #	FX Name	Level	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
1	Blur	Level					
2	Radial Blur	Level	Amount	Whirl	Quality	Fade Out	Shift X
3	Motion Blur	Level					
4	StrobeFreeze	Level					
5	Mask	Level	Mask	Blur	Zoom	Rotate	
6	Alpha Transition	Level	Mask	Blur	Smooth		
7	Displacement effect	Level	Input		Smooth		
8	XY-Shifter	Level	X	Y	Speed X	Speed Y	
9	Shutter	Level	Left	Right	Top	Bottom	Feather
10	ChromaKey	Level	Hue	Tolerance	Transparency		
11	Johans Effect	Level	Squash X	Squash Y			
12	Scroller	Level	X	Y	Speed X	Speed Y	
13	RGB Tint	Level	Red	Green	Blue		
14	Colour Studio	Level	Shift A	Shift B	Bright		
15	Strobe	Level	Frequency	Symmetry	Colour		
16	Neon	Level	Width				
17	ColourTrafo	Level	Saturation	Hue	Brightness	Speed	
18	DuoTone	Level	Col 1	Col 2	Contrast		
19	RGB Palette	Level	Red	Green	Blue	Speed	
20	Bloom	Level	Bloom				
21	Interlace	Level	Stripes	Sat			
22	Colourizer (random)	Level	Mymul	Shifter	Randomizer	Speed	
23	Karls Eye	Level	K1	Shift X	Shift Y	Zoom	
24	Mega Zoom	Level	Zoom	Rotate	Shift X	Shift Y	Aspect
25	Noise	Level	Colouredness	Frequency	Grain Size		
26	Leave Colour	Level	Hue	Tolerance	Transparency		
27	Rings	Level	Rings				

DMX #	FX Name	Level	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
28	Cube Style	Level	Size	Patern A	Pattern B	Speed A	Speed B
29	Bump	Level	Bump	Light X	Light Y	Zoom	
30	LED	Level	Density	Softness	Brightness		
31	Pixelate	Level	Pixels				
32	Film	Level	Flicker	Flickrate	Dirt		
33	Halftone	Level	Size	Angle			
34	Inv LumaKey	Level	Threshold	Softness	Invert		
35	Colour Change	Level	Blue2Red	Blue2Green	Green2Red	Green2Blue	Red2Green
36	Colour Enhancer	Level	Red	Green	Blue		
37	Plasma	Level	D1	D2	Light	Anim	
38	Flower	Level	Flora				
39	Flip	Level	Flip X	Flip Y			
40	Kaleidoscope	Level	Leaves	Angle	Shift	Speed A	Speed B
41	Roto Zoom	Level	Rot	ZoomOut			
42	Glass	Level	Glass				
43	Aqua	Level	Wave A	Wave B	Speed A	Speed B	
44	Tunnel	Level	Cam	ZoomOut	Speed X	Speed Y	
45	Planes	Level	Anim Rot	Anim Shift	Wip	Dist shift	Distplanes
46	FluidDistortion	Level	X	Y	Z	Speed A	Speed B
47	Polarwave	Level	Flower	Caleido	Leaves	Speed	
48	Twisted	Level	Twist	Flower	Leaves	Speed	Twisty
49	Rectangles	Level	Width	Height	Num X	Num Y	Speed
50	Ripple	Level	Numwaves	Speed			
51	Wave	Level	Wave				
52	Jitter	Level	Speed	Rotation	X	Y	Zoom
53	Stripes	Level	Frequency	Scale			
54	Infinite zoom	Level	Speed				
55	Sven's digits	Level	Zoom	Height	Width	digits	
56	Pixel Dunst	Level	Direction	Frequency	GrainSize		
57	Bounce	Level	Speed	X move	Y move	Zoom	



DMX #	FX Name	Level	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
58	Infinity	Level	Speed				
59	RB MultiMirror	Level	Vert	Horiz	X-Flip	Y-Flip	
60	Zoom Area	Level	Left	Right	Top	Bottom	
61	SE-Left	Level	Gamma	Factor	Offset		
62	SE-Right	Level	Gamma	Factor	Offset		
63	SE-Left Right	Level	Gamma	Factor	Offset		
64	SE-Top	Level	Gamma	Factor	Offset		
65	SE-Bottom	Level	Gamma	Factor	Offset		
66	SE-Top Bottom	Level	Gamma	Factor	Offset		
67	SE-Pan	Level	Gamma	Width	Pos		
68	SE-Frame	Level	Range	Gamma			
69	DropShadow	Level	Distance	Size	Alpha	Softness	
70	Radar Screen	Level	Speed	Glow Curve Radar	Number of Rings	Glow Curve Content	Color
71	Crop_De-Interlace	Level	Crop Left	Crop Right	Crop Top	Crop Bottom	
72	SEDualPan	OverlapLeft	Pos Left	Gamma Left	Overlap Right	Pos Right	Gamma Right
73	SEPanV	Level	gamma	width	position		
74	Displace Mixer	Level	X	Y			
75	Magnifier	Level	Size	X	Y	Manual	Speed
76	Curtain Down	Level	Rotation				
77	Burn Out	Level	Gamma				
78	Moving Blurb	Level	Gamma				
79	DeGapper	Level	X Reps	X Gap	Y Reps	Y Gap	
80	Tilt Shift	Level	Shift X	Shift Y	Angle	DOF	
81	Tilt Shift Radial	Level	Shift X	Shift Y	DOF		
82	Cady Colour	Level	Speed	Colours	Saturation		
83	Idiot Strobe	Level	Freq	Symmetry	colour	Wash	Random
84	Neils Gamma	Level	Gamma	Black	White		
85	Neon 2	Level	Width				

<b>DMX #</b>	<b>FX Name</b>	<b>Level</b>	<b>Channel 1</b>	<b>Channel 2</b>	<b>Channel 3</b>	<b>Channel 4</b>	<b>Channel 5</b>
86	Super 8	Level	Speed	Rot	X	Y	Zoom
87	JR Fade	Level	Hue	Saturation	Offset	Width	Rotate
88	Reflection	Level	Gamma	Factor	Angle	Zoom	
89	Katie Mirror	Level	Speed	Splits	Direction		
90	Mirror Max	Level	Source	Orient			
91	Blinder	Level					
92	Fader	Level	Fader				
93	Line Displacement	Level	Lines	Y-Shift	Width		
94	RGB Key	Level	Red Key	Green Key	Blue Key		
95	RGB Split	Level	Red X	Red Y	Blue X	Blue Y	Green Z
96	Contour Drop	Level	X	Y	R	G	B
97	Ken Burns Effect	Level	Speed	Zoom			
98	RB Jitter Mask	Level	Size	Speed	Pattern	Edges	
99	Lens Flare	Level	Shift X	Shift Y	Darken	Size	Spikes
100	Bad TV	Level	Noise	Wobble	Frequency	scroll	Interlace
101	UV Tile	Level	U Tile	V Tile	U Offset	V offset	
102	TV Wall	Level	SizeX	SizeY	Curve	Mode	Dodginess
103	Console Daze	Level	Invert	Pixels	Constrast	Palette	
104	Colour Crush	Level	BitDepth	CrushR	CrushG	CrushB	
105	Recursion Window	Level	Shift X	Shift Y	Zoom		
106	MultitImage	Level	Size	Aspect			
107							
108							
109	Pufferizer	Level	BaseHeight	Repeat	Rotate X	Rotate Y	Mode
110	CTBO	Level	Filter	Bright			

# Generator List

Generator number	Description	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	P 9
0	RGB colour Generator	Red	Green	Blue						
1	HSV Colour Generator	Hue	Saturation	Bright						
2										
3	Rings Generator	X	Y	Z	Size	Smooth	Animation			
4	Chess Generator	X	Y	Edge X	Edge Y	XY	Zoom	Anim		
5	Interference CC	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
6	Interference CC Retro	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
7	Interference RC	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
8	Interference RCretro2	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
9	Interference RC Retro	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
10	Interference RR	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
11	Interference RR Retro2	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
12	Interference RR Retro	Speed	Red 1	Green 1	Blue 1	Red 2	Green 2	Blue 2		
13	Clouds	Lightness	Speed	Softness	Scale					
14	Flowerz	Rotspeed	Zoom	Fade	Colour	Colour Speed				
15	Fog	Lightness	Speed							
16	Rain	Density	Length	Angle	Speed					
17	Starfield	Speed								
18	Gradient	Hue 1	Sat 1	Hue 2	Sat 2	Angle	Speed 1	Speed 2	Rot Speed	
19	Colourgames	Speed	Size	Offset	Boost	Cutoff				

Generator number	Description	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	P 9
20	Globulars 1	Speed	Size	Offset	Boost	Cutoff				
21	Globulars 2	Speed	Size	Offset	Boost	Cutoff				
22	Globulars 3	Speed	Size	Offset	Boost	Cutoff				
23	Colour bands	Speed	Wave 1	Wave 2						
24	Smoke	Lightness	Speed							
25	Squares	X	Y	Z	Size	Smooth	Animation			
26	Radar	Speed	Glow curve radar	Number of rings	Glow Curve Content	Speed 1	Speed 2	Speed 3		
27	Countdown	TSec	Tmin	Thour	Tday	Tmonth	Tyear			
28	Digital Clock	Blink	Height	Contrast						
29	Moire Generator	Translation X	Translation Y	Rotation Speed	Texture	Rotation	Zoom			
30	WestLiner	Rotation	Count	Smooth	Animation	Colour				
31	OneShot	Rotation	Count	Smooth	Animation	Colour				
80	Pong (bouncer)	Block 1	Block 2	Speed						
100	Sound Spectrum	Bar Width	Bar Pattern	Peak Falls Off	X	Y	Offset	Zoom		
101	WaveForm	Scale	Red	Green	Blue	Width				
121										

# Key Board Shortcuts

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## General control methodology

In designing the controls for Hippotizer, we have made some assumptions:

- Users will always have at least two-button mouse with scroll wheel
- A screen resolution of 1280 × 720 minimum, 1920 × 1080 or greater is ideal.
- A keyboard is present for naming and keyboard shortcuts though not critical.

## Engine Short-cuts

- Holding CTRL + ESCAPE for 5 seconds will put output manager into configuration mode. This shortcut works only local to the engine and does not require Zookeeper to be running.

## General Zookeeper Shortcuts

- **F1** Navigate to Mixes Page
- **F2** Navigate to Viewports Page
- **F3** Navigate to Visualiser
- **F4** Navigate to Media Manager
- **F5** Navigate to Output Manager
- **F6** Navigate to Configuration Page
- **Escape** Toggle Home screen; returns to home screen if in a pinboard or navigates to previous page if in the home screen.
- **CTRL + 1-9** Navigates to quick launch screen 1-9.
- **SHIFT** holding shift while moving faders with the mouse makes changes 10x more fine.
- **CTRL + E** Toggles lock of the pinboard.

## Moving values between layers, mixes and viewports

- **Drag** Applies the values of the source to the destination
- **CTRL + Drag** Switches the values between the source and destination

## Mixes Page

The geometry controls have specific set of shortcuts in addition to **SHIFT**:

- **X + Click and drag** Locks geometry movement in the X-Axis
- **Y + Click and drag** Locks geometry movement in the Y-Axis

- **CTRL + Click and drag** Locks geometry movement to position (Indexed rotation)
- **ALT + Click and drag** Locks geometry movement to Zoom

## Timeline

- **Spacebar** Starts or stops selected timeline
- **ALT** enters insert mode to quickly add nodes or commands
- **Scroll Wheel** Navigate up and down the timeline

## Screen Warp

- **Scroll Wheel** Zoom in and out on the warp

## Live Mask

- **Scroll Wheel** Zoom the selected shape
- **CTRL + Click** Move blur point
- **CTRL + Scroll Wheel** Zoom all blur points

# Glossary

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Hippotizer uses some technical terminology. Here is a list of frequently used terms.

## Last Takes Precedence (LTP)

As with lighting desks, Hippotizer is frequently mixing control inputs from different sources. To do this, all pin values will always take the latest input they have been given. There are common cases where LTP becomes important to understand.

### DMX Control + Zookeeper

Zookeeper may be controlling a system that is also being triggered from DMX. A value that is controlled from DMX will always 'snap' to the DMX value if moved in Zookeeper. This is normal, DMX is constantly refreshing so sets the pin values many times per second. In affect, DMX is always last.

**Note:** Setting a DMX channel to update only changes this behaviour. With Update only enabled the pin value is only applied when the DMX value coming in changes.

### Multiple Zookeepers controlling one system

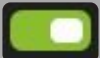
More than one Zookeeper interface can be used to control a Hippotizer system. In this case the last change made will take priority.

### Timeline and Zookeeper

Timeline applies changes to it's target pins only when there values or fades at the Timeline play-head and it is playing. Values are set once by timeline so other interface methods can be used in parallel with timeline with predictable results.

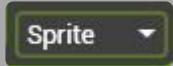
## Pins

Pins are the 'handles' used to control attributes within the Hippotizer Engine. Each Pin is available to all systems on the network over HippoNet. There are different types of Pins depending on what information they convey.

-  **Boolean Pin:** Can be on or off, represented by a switch in Zookeeper.



- **Float Pin:** Can be a number value from 0 to 1 and are most commonly shown as faders in Zookeeper.



- **Integer Pin:** Can be a whole number (1,2,3...) used to pick options from a list such as Mix modes.
- **String Pin:** Sends text which can be letters and numbers. Used to report the status of Components and for other tasks where complex data needs to be transferred. For example, Timeline remote control uses String Pins to select and start timelines.

## Pin Path

Each pin has a unique address that is derived from the Pins's address. This is expressed as a hierarchy, for example, the level of a layer is show as: **Mix1/Layer1/Mixer/Level**