USER GUIDE

VERSION 10.0V5

THE FOUNDRY.

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Preface

Hiero, in conjunction with HieroPlayer, is designed to provide shot management, conform, and playback capabilities for people creating visual effects, especially those using The Foundry's Nuke Compositor. Hiero combines well with Nuke to deliver visual effects sequences without resorting to other third party applications.

Key Features

The following are key features supported by Hiero and HieroPlayer:

- Conform multi-track timelines from CMX 3600 Edit Decision Lists (EDLs), Final Cut Pro XML, and AAFs including cuts, transitions and retimes.
- Soft import any image sequence type supported by Nuke, meaning the media is not copied multiple times saving disk space. In addition, Hiero and HieroPlayer can also ingest audio and multi-channel images.
- Playback clips and sequences in real-time (dependent on hardware) on 2-up source/record Viewers, including multi-view or stereo footage.
- Version and snapshot clips and sequences to record progress and manage your creative options.
- Add real-time GPU soft effects directly on the timeline before export.
- Round-trip through Nuke or export general purpose shots using soft exports in most cases - no bakes are required.
- Accomplish most tasks through Python scripting that you can with the Hiero and HieroPlayer user interfaces.

About this Guide

Throughout this User Guide, we assume you have a basic knowledge of video and audio theory, as well as proficiency with the operating system on which the application is installed.

For the most up-to-date information, please see the relevant product page and the latest User Guide on our website at www.thefoundry.co.uk.

Getting Help

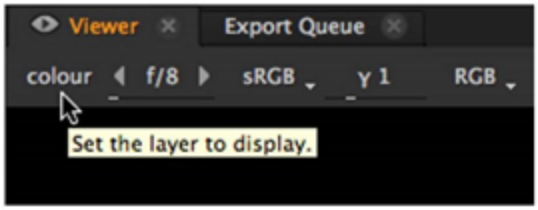
If you can't find what you need in this document, there are other sources of help available to you for all aspects of Hiero and its operation.

Customer Support

Should questions arise that this manual or the Online Help system fails to address, you can contact Customer Support by visiting supportportal.thefoundry.co.uk.

Online Help

Most controls offer concise instructions in the form of tooltips. To display the tooltips, hover your mouse pointer over an interface control or parameter.



Hiero's Help menu includes links to the latest Release Notes and www.nukepedia.com, the online knowledge base maintained by experienced Nuke users, containing downloads, tutorials, interviews and more.

There is also a user forum at forums.thefoundry.co.uk, set up as a hub for users to ask questions and share information.

Installation and Licensing

Installing and licensing new applications can be a boring task that you just want to be done with as soon as possible. To help you with that, this chapter guides you to the point where you have a default workspace in front of you and are ready to start viewing and editing your media with the minimum of effort.

System Requirements

Before you do anything else, ensure that whichever platform you intend to run Hiero or HieroPlayer on meets the following minimum requirements.

Operating System

The following operating systems are supported:

Mac OS X

- Mac OS X 10.9 (Mavericks)
- Mac OS X 10.10 (Yosemite)

Linux

- CentOS/RHEL 5 64-bit
- CentOS/RHEL 6 64-bit

Windows

- Windows 7 64-bit
- Windows 8 64-bit

Hardware

The following hardware is recommended:

- 4 GB of disk space available for caching and temporary files
- 8 GB of RAM (minimum requirement)
- Intel i3 CPU (or equivalent)

• Workstation-class graphics card with OpenGL 2.1 driver support, such as NVIDIA Quadro series or ATI FireGL series

NOTE: Hiero and HieroPlayer do not support the NVIDIA Quadro 4500 FX and GeForce 7300 GT graphics cards.

• RED Rocket cards with at least Rocket Driver 1.4.19.0 and Firmware 1.1.16.5 or later

NOTE: RED Rocket cards may not work as expected without the latest drivers and firmware.

• Our monitor out architecture interfaces directly with the AJA and BlackMagic device drivers, which are unified across their respective hardware lines, meaning all current supported cards for the following versions should work:
  • BlackMagic: 9.1
  • AJA: 3.2 on Mac OS X, 10.2 on Windows
• We test using a selection of the following hardware :
  • BlackMagic: Current BlackMagic Decklink PCI hardware, including Decklink SDK, DeckLink 4K Extreme, and Ultrastudio SDI Thunderbolt devices (Mac only).
  • AJA: Current AJA Kona PCI Family, including Kona 3G, LHi, LHe Plus, and ioXT Thunderbolt device (Mac only).

NOTE: AJA monitor out cards are not currently supported on Linux.

NOTE: On Mac, the AJA Kona 3G is only supported on OS X 10.7 (Lion).

NOTE: Monitor out on Windows machines with AMD graphics cards is not currently supported.

Installing Hiero or HieroPlayer

Hiero and HieroPlayer are included in the Nuke application bundle, so you'll need to download the required Nuke version from www.thefoundry.co.uk/products/ by choosing the correct platform from the list. For example, if you intend to install Hiero on Mac OS X, download the Nuke **.dmg** file.

Follow the on-screen instructions to download the correct installer.

Mac OS X

1. Double-click on the **.dmg** archive to extract the installation package.
2. Double-click on the **.pkg** file.
3. Follow the on-screen instructions to install the application. By default, Hiero (contained within the Nuke bundle) is installed to **/Applications/Nuke10.0v5**

Linux

1. Extract the application from the **.run** archive with the following terminal command:

   ```
   sudo ./Nuke10.0v5-linux-x86-release-64.run
   ```

   The installer displays the End User Licensing Agreement (EULA) and prompts you to accept it.
2. If you agree with the EULA, enter **y** and press **Enter** to accept the EULA. (If you don't agree with the EULA and press **n** instead, the installation is cancelled.)

   The selected application is installed in an appropriately named folder in the current working directory.

   If you leave out **sudo** from the terminal command, you need to ensure that you have sufficient permissions to install the application under your current working directory.

NOTE: After the application files have been installed, the installer also runs a post-installation script that creates the following directory:

```
/usr/local/foundry/RLM
```

If you don't have sufficient permissions on the **/usr/local** folder for this directory to be created, the post-installation script prompts you for your **sudo** password as necessary.

Windows

1. Double-click on the Nuke **.exe** file.
2. Follow the on-screen instructions to install the required application. By default, Hiero (contained within the Nuke bundle) is installed to **<*drive letter*>:\Program Files\Nuke10.0v5**

Launching Hiero or HieroPlayer

Launch Hiero or HieroPlayer using one of the following methods, depending on which platform you're using.

Mac OS X

- Click the required dock icon.
- Using the Finder, open the Nuke application directory (by default, **/Applications/Nuke10.0v5/** and double-click the required **.app** icon (or list item).
- Open a terminal and enter the following command:

  ```
  /Applications/Nuke10.0v5/Nuke10.0v5.app/Contents/MacOS/Nuke10.0v5 --hiero
  ```

  OR

  ```
  /Applications/Nuke10.0v5/Nuke10.0v5.app/Contents/MacOS/Nuke10.0v5 --player
  ```

Linux

- Open the **~/Nuke10.0v5/bin** directory and double-click the required icon (or list item).
- Open a terminal, navigate to the **~/Nuke10.0v5/bin** directory and enter:

```
./Nuke10.0v5 --hiero
```

OR

```
./Nuke10.0v5 --player
```

NOTE: The **~/** in the file path indicates the directory from which the installer was executed.

Windows

- Double-click the required icon on the Desktop.
- Navigate to **Start** > **All Programs** > **The Foundry** > **Nuke10.0v5 Hiero** or **Nuke10.0v5 HieroPlayer**
- Using a command prompt, navigate to the application directory (by default, **\Program Files\Nuke10.0v5** or **\Program Files (x86)\Nuke10.0v5**), and enter:

```
Nuke10.0exe --hiero
```

OR

```
Nuke10.0.exe --player
```

Hiero Analytics

In an effort to further improve quality and reliability, we ask you to allow us to collect usage statistics from the machines on which you license Hiero and HieroPlayer. This usage information also assists our Support team to resolve issues more quickly.

NOTE: The port number used to communicate with The Foundry is 443, the same one used for uploading crash reports.

The first time you start an application, and on every major release, a dialog displays asking for permission for us to collect this information. You can enable or disable collection at any time in the **Preferences** under **Behaviors** > **Startup**.

NOTE: This information is only collected for interactive sessions. Running applications in terminal mode or under render licenses does not upload data to The Foundry.

The following list shows the information we'll collect, if you give us permission to do so:

- Unique session ID
- Application name
- If the session exited cleanly
- Anonymous user key
- Session start time (GMT)
- Peak memory usage
- Application version string
- Session duration (in seconds)
- Model

- Operating system
- CPU Name
- Amount of GPU RAM
- Amount of RAM
- System OS version
- CPU Cores
- OpenGL driver version
- Memory speed
- MAC address
- GPU model name
- GPU driver version

Startup Options

If you choose to launch the application from a command line, you can append arguments to the command as follows:

Argument	Result
--help (-h)	Displays the available arguments with examples.
--version	Displays version and copyright information.
--script	Opens the specified script. For example: `./Nuke10.0v5 --hiero --script myscript.py` If the script resides in a different directory to the application, specify the file path as well.
--player (Nuke only)	Launches Nuke in HieroPlayer mode.
--log-file	Sets the location of any logfiles created. For example: `./Nuke10.0v5 --hiero --log-file /Desktop/log.txt` See to specify the logfile using an environment variable.

Argument	Result
--log-level	Sets the level of logging produced during operation. For example: `./Nuke10.0v5 --hiero --log-level warning` Log messages are output to screen unless you specify a **--log-file**. There are four levels of detail, on a sliding scale from minimal to verbose: • **error** • **warning** (default) • **message** • **verbose** NOTE: Setting the logging level to **verbose** can produce large log files when **--log-file** is specified. See to set the log level using an environment variable.
--quiet (-q)	Launch the application without displaying the splash screen or startup dialog.
--safe (-s)	Launch the application without loading any plug-ins, Export presets, and so on.
--single-threaded-playback	Launch the application in single-thread mode. This option can solve playback issues on various Linux Fedora flavors.

On Windows, you can also use the same arguments on executables (or their shortcuts) by adding them to the program's Properties. To use a startup argument:

1. Right-click the **C:\Program Files\Nuke10.0v5** icon or the equivalent icon on the Desktop.
2. Click **Properties**.
3. Append the required argument to the **Target** or **.exe** field.

Licensing Hiero and HieroPlayer

The following licensing methods are available:

- **Activation Keys and Node Locked Licenses** - these can be used to license an application on a single machine. They do not work on different machines and if you need them to, you'll have to transfer your license.

  Node locked licenses, sometimes called uncounted licenses, do not require additional licensing software to be installed.
- **Floating Licenses** - also known as counted licenses, enable applications to work on any networked client machine. The floating license is put on the server and is locked to a unique number on that server.

Floating licenses on a server requires additional software to be installed on the server to manage the licenses and give them out to the client stations that want them. This software is called the Foundry Licensing Tools (FLT) and can be downloaded at no extra cost from our website.

- **Subscription Licenses** - subscription licensing differs from traditional node locked or floating licenses in that a single license, or entitlement, is valid on any authorized device up to the entitlement's maximum number of activations.

These instructions run through the basic options for the first two licensing methods, but you can find a more detailed description in the *Foundry Licensing Tools (FLT) User Guide* available on our website www.thefoundry.co.uk/support/licensing/tools/

Obtaining Licenses

Obtaining Licenses

To obtain a license, you'll need your machine's System ID (sometimes called Host ID or rlmhostid). Just so you know what a System ID number looks like, here's an example: 000ea641d7a1.

NOTE: Bear in mind that, for floating licenses, you'll need the System ID of the license server, not the machines on which you intend to run the application.

There are a number of ways you can find out your machine's System ID:

- Launch the application without a license, click **Status**, and then scroll down the error report until you see your System ID.
- Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.
- Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run C:\Program Files\TheFoundry\LicensingTools7.0\Foundry License Utility.exe

When you know your System ID, you can request a license for The Foundry products:

- from The Foundry's Sales Department at sales@thefoundry.co.uk
- from the product pages on our website, such as www.thefoundry.co.uk/products/nuke-product-family
- by launching the application without a license and selecting:
    - **Buy Nuke** - opens a web browser directly to The Foundry website to purchase a license.
    - **Try Nuke** - displays the 15-day trial license download screen. Enter your The Foundry account details or create a new account and follow the on-screen instructions to receive a trial license.

NOTE: By default, if you have installed a temporary license, the application displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior, you can set the FN_DISABLE_LICENSE_DIALOG environment variable to 1 to suppress the warning message about imminent license expiration. See Environment Variables for more information.

Installing Licenses

When you start the application before installing a license, a **Licensing** dialog displays an error, informing you that no license was available. The installation process is dependent on what type of license you requested:

- **License file** - if you requested a license file, typically **foundry.lic**, this option allows you to browse to the file location and install it automatically. See To install a license from disk for more information.
- **Activation Key or license text** - if you requested an Activation Key or license by email, this option allows you to paste the key or license text into the **Licensing** dialog, which then installs the license in the correct directory. See To install an Activation Key or license text for more information.
- **A floating license** - if you requested a floating license to supply licenses to multiple client machines, this option allows you enter the server address that supplies the client licenses.

NOTE: You must install a floating license and additional software on the license server to use this option.

See To install a floating license for more information.

To install a license from disk

1. Save the license file to a known location on disk.
2. Launch Nuke.

   The Licensing dialog displays.
3. Click **Install License** to display the available license installation options.
4. Click **Install from Disk**.
5. Browse to the location of the license file.
6. Click **Open** to install the license automatically in the correct directory.

To install an Activation Key or license text

1. Launch Nuke.

   The Licensing dialog displays.
2. Click **Install License** to display the available license installation options.
3. Click **Activation Key / License Text** and then either:
   - Enter the **Activation Key** string in place of **Insert Activation Key Here**. A license key typically looks something like this:

     `hiero-0101-77d3-99bd-a977-93e9-8035`

OR

- Copy the license text and paste it over the **Copy/Paste license text here** string. License text typically looks something like this:

```
LICENSE foundry hiero_i 2014.1223 permanent 2 share=h min_timeout=30
start=23-jan-2014 issuer=sf issued=23-jan-2014 replace
_ck=6dd78e4c69 sig="60PG452MPDMMM6MJAMRGKNQAN3PEAK8JYTHN45022M0C98H
XFA9N7SAASMRABT8TUJ6FAMX8TWU0"
```

4. Click **Install**.

   The license is automatically installed on your machine in the correct directory.

NOTE: Activation Keys require an internet connection. If you access the internet through a proxy server and cannot connect to the activation server, you may get an error dialog prompting you to either:

Click **Use Proxy** to enter the proxy server name, port number, username, and password. This enables the application to connect to the activation server and obtain a license. The license is then installed automatically, or

Click on the web link in the dialog and use the System ID (also known as hostid) provided to manually activate and install a license.

To install a floating license

If you requested a floating license from The Foundry, you will receive your license key (foundry.lic) in an email or internet download. You should also receive the Foundry License Utility (FLU) application to help you install the license key on the license server machine. The server manages licenses for the *client* machines on your network.

NOTE: The FLU is also available to download from www.thefoundry.co.uk/support/licensing/

1. Make sure you have saved both the license key (foundry.lic) and the FLU application in the same directory.
2. Run the FLU application.

   The license key automatically appears in the FLU window if the FLU and **foundry.lic** are in the same directory.

TIP: If they are not in the same directory, you can either copy and paste the contents of the license key or drag-and-drop the file into the FLU window.

3. Click **Install**.

   This checks the license file and, provided that the license is valid, installs it into the correct directory.
4. In order for the floating license to work, you will need to install the Foundry Licensing Tools (FLT) on the license server machine.

   For more information on how to install floating licenses, refer to the *FLT User Guide*, which you can download from our website www.thefoundry.co.uk/support/licensing/

5. Once your license server is up and running, launch Nuke on the client machine.

   The **Licensing** dialog displays
6. Click **Install License** to display the available install methods.
7. Click **Use Server** and enter the server address in the field provided. The format for the server name is: <port>@<servername>, for example, 30001@red.

NOTE: You must perform steps 5 through 7 on each client machine that requires a Nuke license from the server.

TIP: If you later need to display the Licensing dialog again, you can select **Help** > **License**.

Further Reading

There is a lot to learn about licenses, much of which is beyond the scope of this manual. For more information on licensing, displaying the System ID number, setting up a floating license server, adding new license keys and managing license usage across a network, you should read the *Foundry Licensing Tools (FLT) User Guide*, which can be downloaded from our website, www.thefoundry.co.uk/support/licensing/

Uninstalling Hiero or HieroPlayer

To uninstall Hiero or HieroPlayer, following the instructions below, depending on what platform you're running.

Mac OS X

1. Navigate to **Applications** and delete the **Nuke 10.0v4** folder.
2. Delete, rename, or move your **.nuke** folder, if it exists.

   The **.nuke** folder is found in your home directory, by default:

   ```
   /Users/<login name>/.nuke
   ```

NOTE: The **.nuke** folder may be a hidden folder on your machine. To allow your Mac to display hidden files and folders, type the following command in the Terminal application, press **Return**, and then relaunch the Finder application:

```
defaults write com.apple.finder AppleShowAllFiles YES
```

3. Delete, rename, or move your cached files, which reside in the following directory by default:

   ```
   /var/tmp/nuke
   ```

NOTE: If you specified an alternate directory using the NUKE_TEMP_DIR environment variable, purge those files as well as the default location. See Hiero Environment Variables for more information.

Linux

1. Navigate to **/usr/local/** and delete the **Nuke 10.0v4** folder.
2. Delete, rename, or move your **.nuke** folder, if it exists.

   The **.nuke** folder is found in your home directory, by default:

   `/home/<login name>/.nuke`
3. Delete, rename, or move your cached files, which reside in the following directory by default:

   `/var/tmp/nuke`

NOTE: If you specified an alternate directory using the NUKE_TEMP_DIR environment variable, purge those files as well as the default location. See Hiero Environment Variables for more information.

Windows

1. Navigate to **Start** > **All Programs** > **The Foundry** > **Nuke10.0v5** and select **Uninstall**.

   The **Nuke Uninstall** dialog displays.
2. Click **Yes** to uninstall Nuke.
3. Delete, rename, or move your **.nuke** folder, if it exists.

   The **.nuke** folder is usually found under the directory pointed to by the HOME environment variable. If this variable is not set (which is common), the **.nuke** directory is under the folder specified by the USERPROFILE environment variable, which is generally one of the following:

   drive letter:\Documents and Settings*login name*\

   drive letter:\Users*login name*\

   To find out if the HOME and USERPROFILE environment variables are set and where they are pointing at, enter %HOME% or %USERPROFILE% into the address bar in Windows Explorer. If the environment variable is set, the folder it's pointing at is opened. If it's not set, you get an error.
4. Delete, rename, or move your cached files, which reside in the following directory by default:

   ~\AppData\Local\Temp\nuke\

   Where ~ is equal to %HOME% or %USERPROFILE% as detailed above.

NOTE: If you specified an alternate directory using the NUKE_TEMP_DIR environment variable, purge those files as well as the default location. See Hiero Environment Variables for more information.

Hiero and HieroPlayer Workflow

This chapter describes the main differences between Hiero and HieroPlayer, and an example collaborative workflow using Nuke.

Hiero

In a typical collaborative project environment, Hiero sits in between edit and grading, and finishing and delivery, acting as a hub for visual effects. It is used to locate, preview, and then farm media out to shot-based effects applications (such as Nuke), and take their results and re-integrate them into the sequences for review and comment.

HieroPlayer

HieroPlayer sits next to your compositing and other shot creation software, allowing artists to view their work in the context of a timeline. This collaborative workflow allows multiple artists to work on the same timeline, viewing colleague's work as well as their own.

See Collaborative Project Case Study for more information.

Feature Comparison

Designed to work hand-in-hand in different scenarios, Hiero and HieroPlayer share a number of features, but as the hub, Hiero has a richer feature set than HieroPlayer.

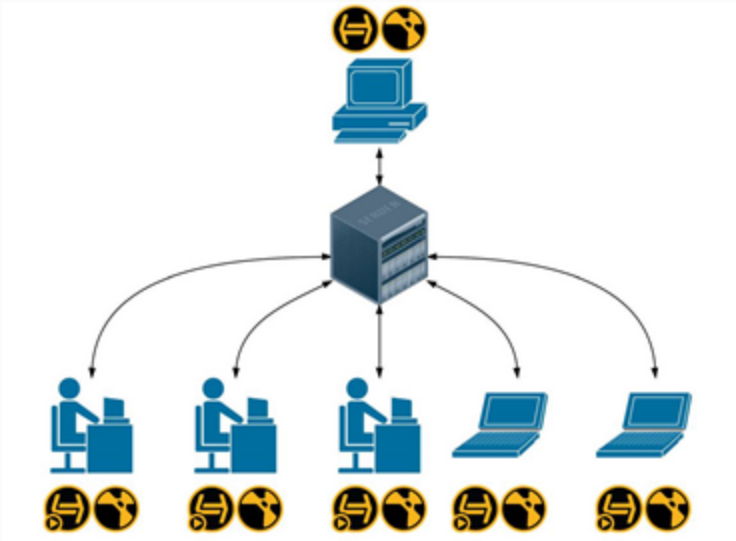
Feature	Hiero	HieroPlayer
Review and Playback - Robust playback & review engine for post production		
Multi-track timeline viewing and editorial workspace, including industry standard tools	●	●
Nuke equivalent format support including OpenColorIO management	●	●

Feature	Hiero	HieroPlayer
Multi-channel audio import and playback	●	●
Extensive review toolset including A/B compare, masks, and color picker	●	●
Realtime image scopes including histogram, waveform, and vector	●	●
Media localization and caching	●	●
Standard jog and shuttle controls	●	●
Track Blending for merging of tracks on the timeline	●	
Annotations in the Viewer and exports for reviewing work in collaborative projects	●	
Broadcast Monitor support	●	
Editing - Standard tools and layouts for editorial.		
Modal editorial tools including equivalent keyboard hotkey interface	●	●
Source/record 2-up Viewer workspace and 3-point editing	●	●
Conform - Simple and flexible ingest of cuts from editorial.		
Conform multi-track timelines from CMX 3600 Edit Decision Lists (EDLs), Final Cut Pro XML, and AAFs including cuts, transitions and retimes	●	
Session-wide spreadsheet containing all sequence events	●	
Shot Management and Export - Manage, distribute and ingest media with ease		
Export sequences, timeline shot structures, clip hierarchies, and EDL/XMLs	●	
Soft Effects directly on the timeline, such as Crop, LUT, and Transform.	●	

Feature	Hiero	HieroPlayer
Transcode, copy, and soft link media	●	
Create template Nuke scripts for easy distribution of work	●	
Automatically update VFX shots in context	●	●
Version shots and snapshot timelines for review and editing	●	●
Hierarchical project and element library management	●	●
Tag shots, frames, and sequences for easy filtering of content including custom metadata	●	●
Open and Scriptable Playback Framework - Flexible enough to fit any pipeline		
Extensive Python API to accomplish most tasks through Python scripting that you can with the Hiero and HieroPlayer user interfaces	●	●
Integrated Pyside enabling fine-grained customization of interface tasks	●	●

Collaborative Project Case Study

As mentioned, Hiero can sit comfortably in a post pipeline as the hub for managing content. The diagram below shows a typical workgroup scenario.



Hiero, HieroPlayer, and Nuke in a collaborative project.

Preparing a Project in Hiero

The first step in Hiero is to conform the EDL or XML from the editor. The conform process pulls together the required source clips and matches them to events in the EDL or XML. Hiero displays these events in a spreadsheet which is linked to a timeline showing the corresponding track items. See Conforming Using Hiero for more information.

Once the conform is complete, you can view your timeline to confirm that the correct clips are present, check the content using Hiero's scopes, add reference tracks, and pass on any pertinent information to the next step in production using tags and notes. See Ingesting Media for more information.

The next step is to make any minor edits to the timeline, including transitions and retimes, swap or rename track items, or examine different versions of clips on the timeline. See Managing Timelines and Versions and Snapshots for more information.

The final step before HieroPlayer steps in is to export and save your project. Exporting from Hiero and saving the project creates placemarker track items for VFX work in a read-only Hiero project (**.hrox** file), preserving the conform work from Hiero. Multiple artists can then work on track items, creating versions which are then automatically updated in HieroPlayer. See Round-Tripping Using the Export Dialog for more information.

Loading a Hiero Project in HieroPlayer

HieroPlayer is most commonly used to open Hiero projects as read-only copies to preserve conform work from Nuke. This way, multiple artists can work on a project without worrying about overwriting a colleagues work.

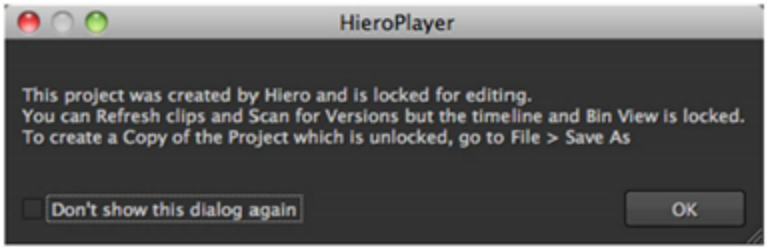
To open a Hiero project in read-only form:

1. Launch HieroPlayer and navigate to **File** > **Open**.

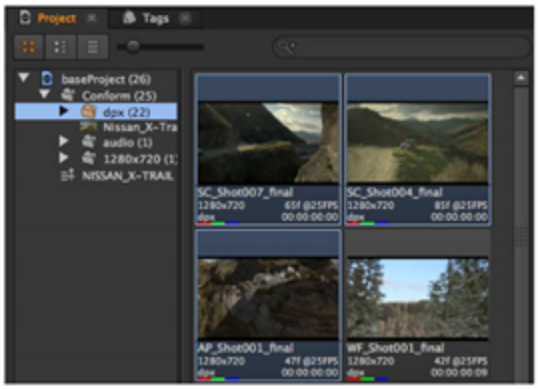
TIP: You may find that the project you require is displayed in the startup dialog under **Recent Projects**. Select the project and click **Open** to quickly access the project.

2. Locate the required Hiero project using the browser and click **Open**.

   A warning displays informing you that the project is read-only, as it was created in Hiero.



3. Click **OK** to dismiss the prompt.
4. Opening a Hiero project in HieroPlayer changes the interface highlight color to light blue to indicate that the project is read-only.



   You can't delete bins, clips, or track items, or make edits on the timeline when the highlight is light blue. You can, however, drag bin clips on to new tracks on the timeline.

5. To save your work, navigate to **File** > **Save as Player Project**. HieroPlayer cannot overwrite Hiero projects.

Opening a Writable Hiero Project

If you want to open a writable version of a Hiero project, you can open the project and save it as a HieroPlayer project. HieroPlayer projects are always readable in Hiero, so don't worry about backward compatibility.

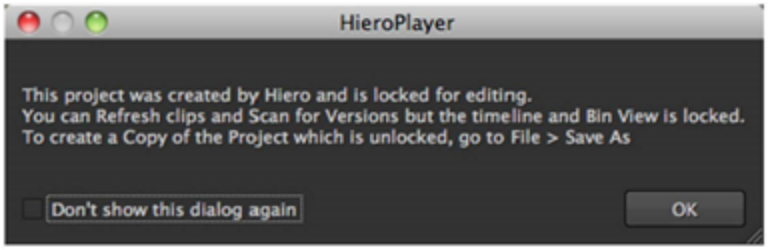
To open a Hiero project in writable form:

1. Launch HieroPlayer and navigate to **File** > **Open**.

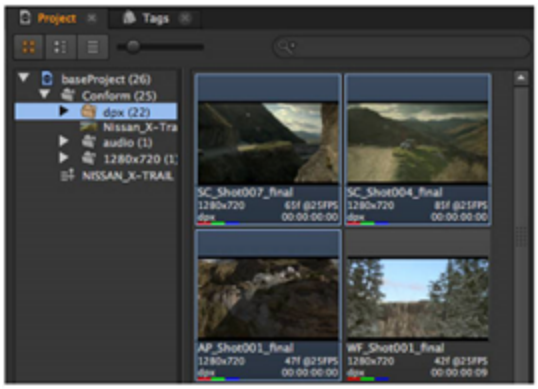
TIP: You may find that the project you require is displayed in the startup dialog under **Recent Projects**. Select the project and click **Open** to quickly access the project.

2. Locate the required Hiero project using the browser and click **Open**.

A warning displays informing you that the project is read-only, as it was created in Nuke.

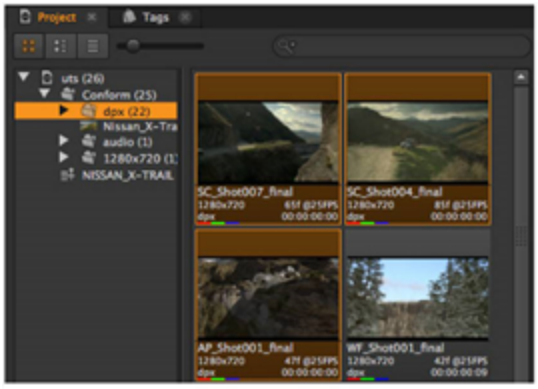


3. Click **OK** to dismiss the prompt.
4. Opening a Hiero project in HieroPlayer changes the interface highlight color to light blue to indicate that the project is read-only.



You can't delete bins, clips, or track items, or make edits on the timeline when the highlight is light blue.

5. Navigate to **File** > **Save as Player Project** and select a save location.
6. The highlight color changes to orange to indicate that the project is now writable.



Customizing Your Workspace

The application interfaces are customizable using floating panes and show/hide functionality, but several default workspaces are supplied for your convenience.

Workspace Overview

Hiero and HieroPlayer ship with a number of different workspaces. These are specific layouts that can be loaded as the current tasks change.

Hiero ships with the following workspaces:

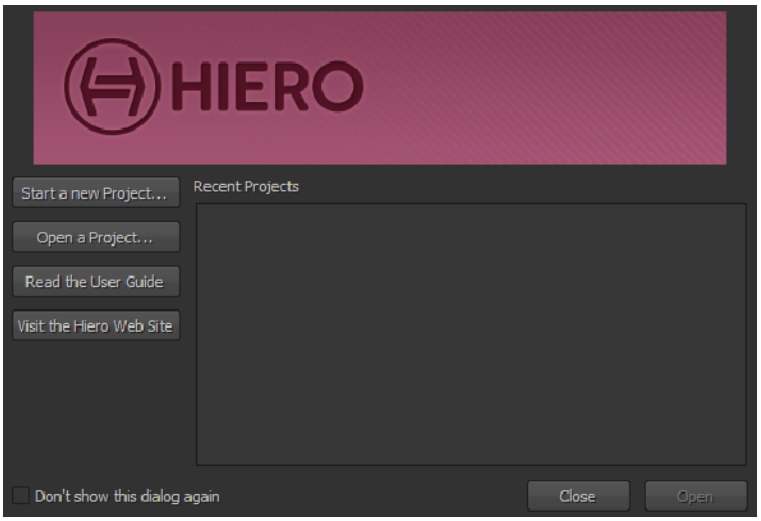
- Hiero's **Conforming** workspace is where the bulk of the work you undertake with Hiero is done. The linked spreadsheet and timeline panes are where you'll really see the power of Hiero.
- The **Editing** workspace provides the tools you'll need to fine-tune your media in Hiero, including 2-up source/record Viewers.
- The **Reviewing** workspace is shared by both applications and is used to confirm your media intent is fully realized. You can add tags and notes, mark In and Out points on clips and timelines, and organize your ingested media into bins as required.
- The **Timeline** workspace is similar to the Conforming workspace, but doesn't include the spreadsheet pane.

HieroPlayer ships with the following workspaces:

- The **Editing** workspace provides the tools you'll need to fine-tune your media, including 2-up source/record Viewers.
- The **Flipbook** workspace consists of a Viewer and Project tab and is used primarily as a review tool in HieroPlayer.
- The **Reviewing** workspace is shared by both applications and is used to confirm your media intent is fully realized. You can add tags and notes, mark In and Out points on clips and timelines, and organize your ingested media into bins as required.
- The **Timeline** workspace is similar to the Editing workspace, but only include a single source Viewer.

NOTE: HieroPlayer doesn't include any Conform functionality and projects loaded from Hiero can't be edited unless they're resaved using **File** > **Save as Player Project**.

When you launch either application, you're presented with a startup dialog.

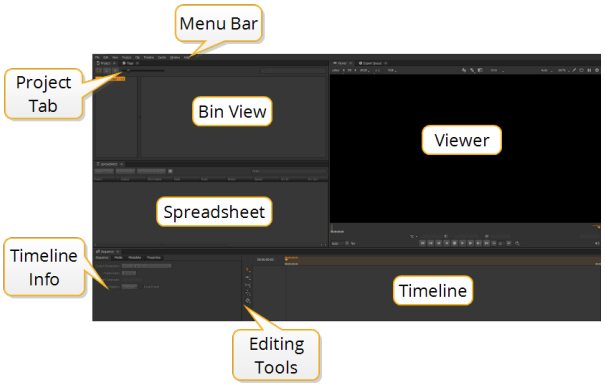


The startup dialog allows you to create a new project, open an existing project, or view the User Guide and website dedicated to Hiero.

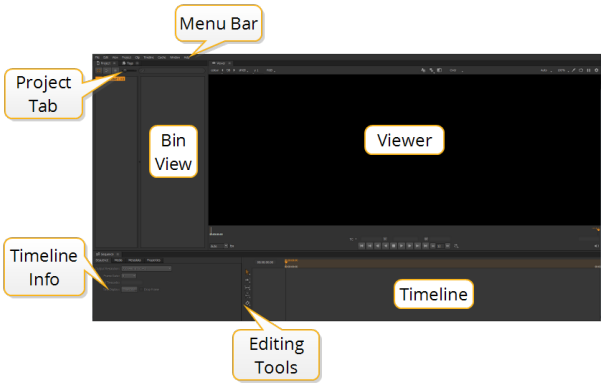
TIP: You can disable this dialog by checking **Don't show this dialog again** or by toggling it off in the dialog.

Select the required option or click **Close** to access the application. Take a moment to familiarize yourself with the default workspaces.

Hiero's default **Conforming** workspace:



HieroPlayer's default **Timeline** workspace:



Feature	Description	Hiero	HieroPlayer
Project Tab	You can manage all aspects of your projects and bins in the Project tab.	●	●

Feature	Description	Hiero	HieroPlayer
Menu Bar	Use the Menu bar to access Hiero's dropdown menus.	●	●
Bin View	The Bin displays the contents of any selected Project tab.	●	●
Viewer	You can display and review your media in the Viewer.	●	●
Timeline Info	The timeline info displays the current timeline's sequence, media, and metadata information.	●	●
Editing Tools	There is a comprehensive set of editing tools provided in Hiero and HieroPlayer. See Timeline Editing Tools for more information.	●	●
Spreadsheet Tab	Use the Spreadsheet tab to display the contents of the timeline in spreadsheet form. Note that the spreadsheet and timeline are linked, mirroring any selections made.	●	
Timeline	The timeline displays the current track including all track items and any effects that have been added.	●	●

Menu Bar Components

The Menu Bar contains various controls, many of which are available through right-click menus, keyboard shortcuts, and toolbars.

For a full list of keyboard shortcuts, buttons, and menu functions, seeAppendix B: Keyboard Shortcuts.

You can switch between workspaces by navigating to **Window** > **Workspace** and selecting **Conforming**, **Editing**, **Reviewing**, **Flipbooking**, or **Timeline**. Alternatively, you can toggle between the default workspaces using **Shift**+**F1**, **Shift**+**F2**, **Shift**+**F3**, and so on.

Any custom workspaces you create are added to the end of the list. You can access the first custom workspace using **Shift+F5**, and so on.

Creating Your Own Workspace

Hiero's interface is comprised of any number of panels. Panels act like containers with different tabs; you can configure panels to contain specific tools, such as the timeline or a Viewer, depending on the task you are presently performing. The default panel configurations are saved as Workspaces (referred to as Layouts in Nuke) and include:

Conforming, Editing, Reviewing, Flipbooking, and Timeline. You can easily create your own custom workspace that suits your needs, and then save it as a custom Workspace for easy recall.

During the customization process, you can:

- Resize your entire workspace or panes independently.
- Split panes to create new work areas, for example two Viewers side-by-side.
- Add and remove panes and tabs as required.
- Float and nest tabs to group similar functions together, for example Histogram, Vector, and Waveform in the same pane.
- Maximize the pane under the mouse cursor by pressing ` (back tick). Press ` again to return to the regular interface.

You can create as many workspaces as you require, one for each project you undertake if necessary. In practice though, you may find that two or three custom workspaces are sufficient.

TIP: You can return to the saved version of a workspace by navigating to **Window** > **Workspace** > **Reset Workspace**.

Resizing Your Workspace

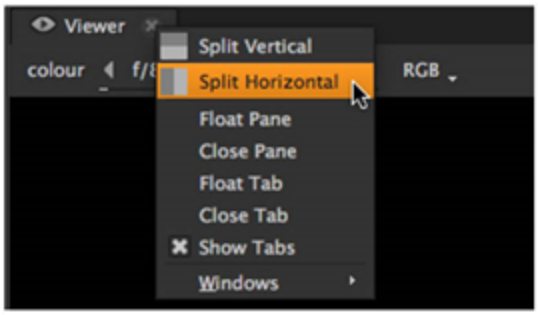
Resizing the interface, panes, and tabs works in much the same way as other software applications:

- To resize the entire interface, drag the resize handle at the bottom right of the application to the required width and height.
- To resize individual panes, hover the mouse over the edges of the required area until the cursor changes to the resize icon. Click and drag the cursor to resize the pane or tab.

Splitting Panes

Splitting panes allows you to organize your workspace into distinct areas delineated by well-defined borders.

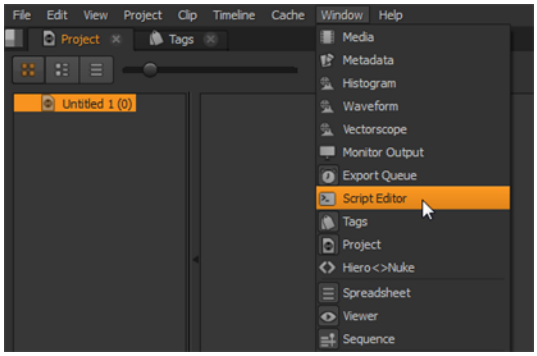
- To split panes, right-click the required pane and select **Split Vertical** or **Split Horizontal**.



Adding and Removing Panes and Tabs

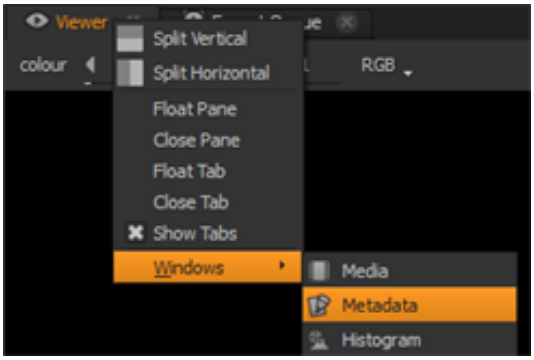
Adding and removing tabs gives you the freedom to personalize your workspace depending on your current project.

- Add new tabs by:
  - Navigating to **Window** and selecting the required tab. The tab is embedded in its default position or added to the interface as a floating window,

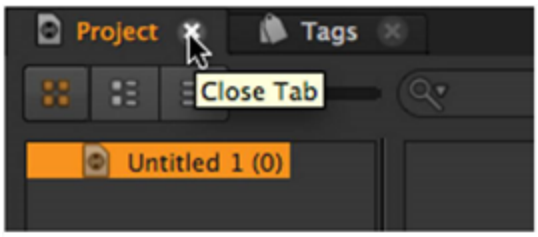


OR

  - Right-clicking the pane in which you want the tab to appear and selecting it from the **Windows** dropdown.

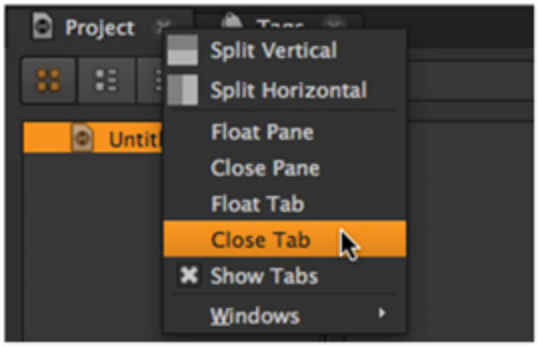


- Close any tab that is not required by:
  - Clicking the **x** on the tab's right-hand side,



OR

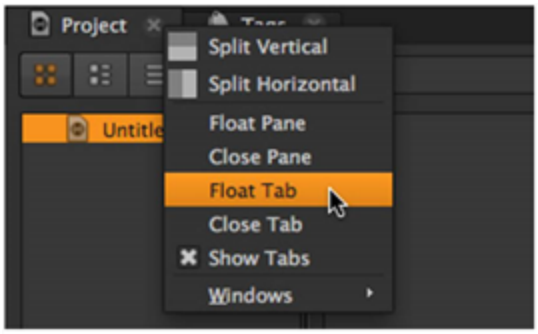
  - Right-clicking the tab name and selecting **Close Pane** or **Close Tab**.



Floating and Nesting

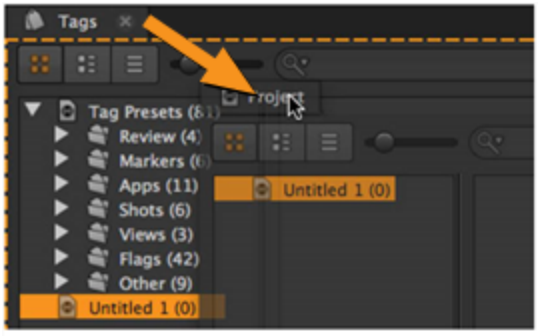
You can move existing panes and tabs to new locations in the interface (to help you organize your project).

- Float a pane or tab by:
  - Right-clicking the tab name and selecting **Float Pane** or **Float Tab**.

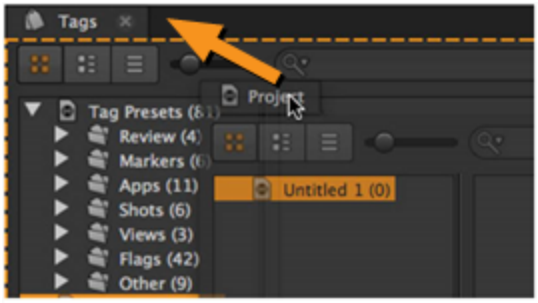


OR

  - Dragging the required tab from its current location.



- Nest any floating pane or tab by dragging it to any existing pane.

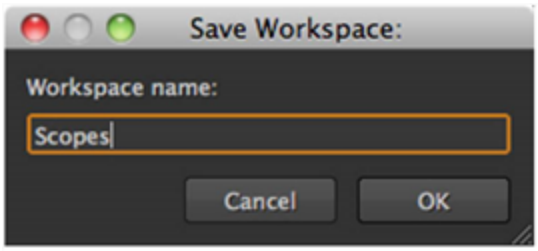


TIP: Use the orange highlight around the destination pane to help you determine where the tab nests.

Saving Workspaces

Once you're happy with the changes you've made to the workspace, navigate to **Window** > **Workspace** > **Save Workspace**.

Enter a name for the workspace, then click **OK** to preserve your workspace as a workspace file (extension **.hws**).



TIP: If you save a workspace called **Conforming**, **Editing**, **Reviewing**, **Flipbooking**, or **Timeline** you can override the defaults supplied with either application by clicking **Save** in the dialog box.

Delete the workspace you created to restore the default layout.

Loading Workspaces

To use a previously saved workspace, navigate to **Window** > **Workspace** and select the custom workspace name you require.

TIP: Alternatively, you can use the workspace keyboard shortcut **Ctrl/Cmd**+**n** (where **n** is equal to the number of the custom workspace).

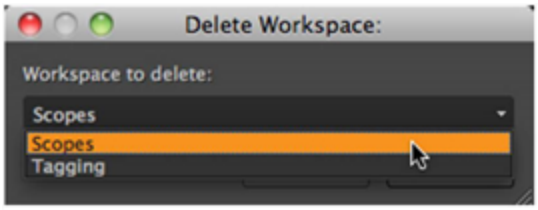
Your pre-saved workspace is loaded.

Deleting Workspaces

You may find that after using Hiero or HieroPlayer on a number of projects, some of the workspaces you created earlier have been superceded by more useful entries. **Delete Workspace** allows you to clear up your saved files, although you can remove the files manually from the save location.

To delete custom workspaces:

1. Navigate to **Window** > **Workspace** > **Delete Workspace**.
2. Select the required workspace from the dropdown menu.



3. Click **OK** to delete the selected entry.

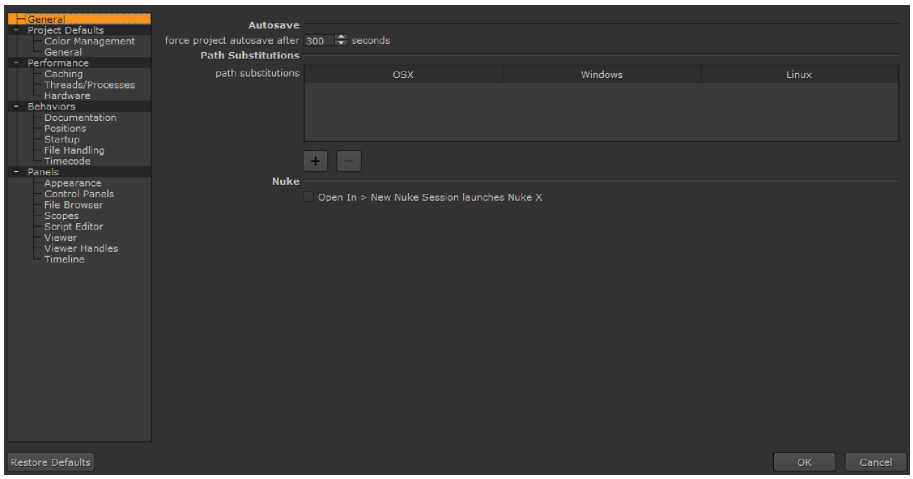
Workspace Preferences

The **Preferences** dialog allows you to make global changes to the way the interface behaves every time you start Hiero or HieroPlayer. Changes you make in the **Preferences** override any local changes when you restart the application. See Appendix A: Preferences

NOTE: Workspace **Preferences** are saved in the **~/.nuke/uistate.ini** file.

To access the **Preferences** dialog, either:

- Navigate to **Hiero** (**HieroPlayer**) > **Preferences** (OS X) or **Edit** > **Preferences** (Linux and Windows), or
- Use the Preferences hotkeys **Shift**+**S**.



Once you've made your selections in the **Preference** dialog, click **OK** to save your changes. Bear in mind that changing some preferences, for example **QuickTime decoders**, **Scopes**, and **Use RED Rocket card**, require you to restart Nuke before they're applied.

NOTE: Click **Restore Defaults** to return to the default **Preference** settings.

Optimizing Read and Decode Performance

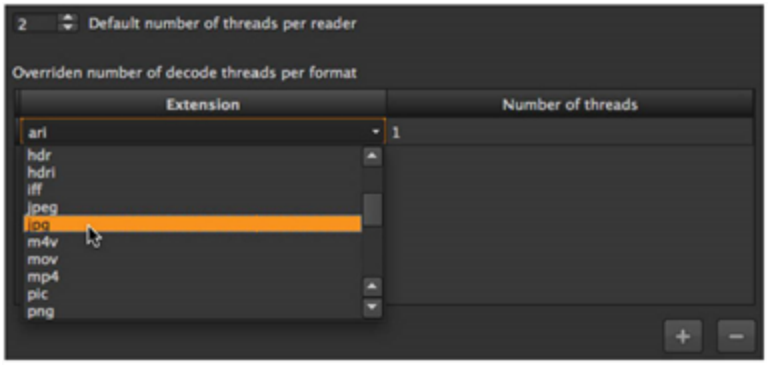
The **Performance** preferences enable you to get the best the results from the hardware you're using by specifying the number of "threads" used for reading and decoding media.

A thread is, at its most basic level, a series of operations (in this case reading and decoding frames) that operates concurrently with other sets of operations. Most media is read intensive, but highly compressed formats like **.jpg** are decode intensive. Increasing the number of threads can decrease the time it takes to perform an instruction. For example, decoding a **.dpx** file using 2 threads, instead of 1, decodes 2 frames in parallel.

Hiero defaults to 4 threads per reader, but as a general rule of thumb, you shouldn't increase the number of threads above the number of cores in your machine.

You can override the **Default number of threads per reader** on a format-by-format basis using the override table in the **Preferences**.

1. Click the  icon to add an entry to the table.
2. In the **Extension** column, click the dropdown to select the file extension to override.



3. Enter the **Number of threads** to use for the selected format.

   For example, **.jpg** files rely heavily on decoding so an override setting between 6 and 8 is recommended. Setting the default threads per helper to 6 is not advisable, except on high specification hardware.

4. Click **OK** to close the **Preferences** and apply the setting immediately, there is no need to restart the application, so feel free to experiment to achieve the best combination for your setup.

Using Helper Threads

Hiero and HieroPlayer also include two additional helper thread settings dedicated to OpenEXR and ARRI files. These helper threads assist the reader threads to improve performance for **.exr** and **.ari** files.

You can change the number of available helpers using the up and down arrows, or by simply entering the number of required helpers in the fields provided under **Preferences** > **Performance** > **Threads/Processes**.

In general, the default setting **0** should automatically assign helper threads correctly. If, however, your project is **.exr**/**.ari** heavy you might consider increasing the number of helper threads.

NOTE: The application must be restarted to apply changes to the ARRI helper setting.

Using Pixel Buffer Objects

Hiero also includes the option to upload textures to the GPU using Pixel Buffer Objects (PBOs), which can decrease upload times from the RAM cache to the graphics card on Windows and Linux, depending on your hardware and driver combination. This option is disabled by default, but you can enable PBOs in the **Preferences** > **Performance** > **Hardware** sub-menu by checking **Enable PBO texture uploads**.

NOTE: Hiero must be restarted for this option to take effect.

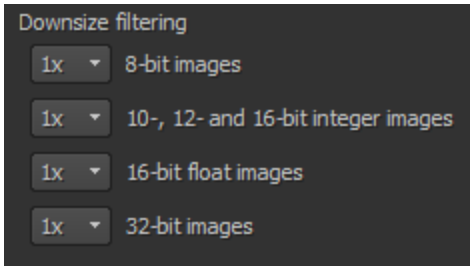
The benefit of enabling PBOs may, depending on your hardware and driver combination, be increased further by enabling or disabling **Expand images from 3 to 4 channels per pixel**, also on the **Preferences** > **Performance** > **Hardware** sub-menu.

NOTE: Results may vary depending on your platform, graphics card, drivers, and source image format.

Using Downsize Sampling

The Viewer **Image Quality** dropdown affects the decode rate and resolution of clips displayed in the Viewer. Lower resolutions decode faster and vice versa.

You can customize this behavior by bit-depth using the **Preferences** > **Performance** > **Threads/Processes** > **Downsize filtering** controls.



Ingesting Media

Hiero handles many file formats, including embedded audio and **.wav** files. For a full list of supported file formats , see Appendix C: File Formats.

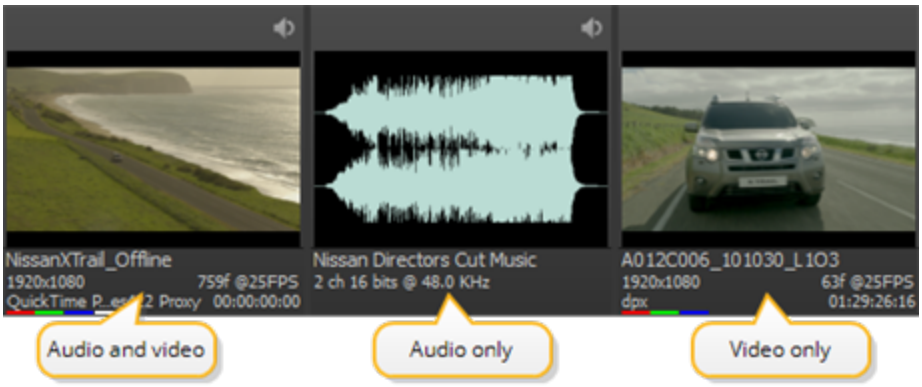
About Clips

The interface sorts your bin clips into three broad categories: Audio and Video, Audio Only, and Video Only. Clips are displayed differently depending on their content, location, and in the case of the Viewer, the current mode.

NOTE: The timeline Viewer currently treats all alpha channels as premultiplied, which can result in the Viewer background being "added" to the image. If you're working with un-premultiplied images, set the Viewer background to **Black**.

NOTE: There is currently no QuickTime audio support on Linux. Support for audio is scheduled for a later release.

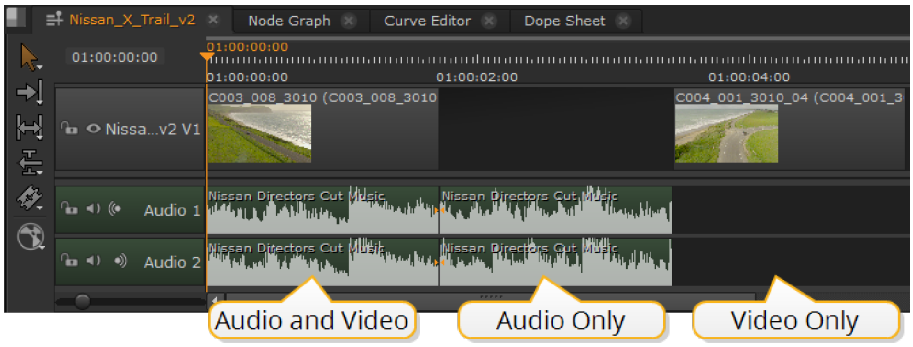
Clips in Bins



NOTE: The colored bars under the thumbnail represent the layers available in the clip, in this case **color**. Other layers include **alpha**, **depth**, and **motion**, similar to Nuke.

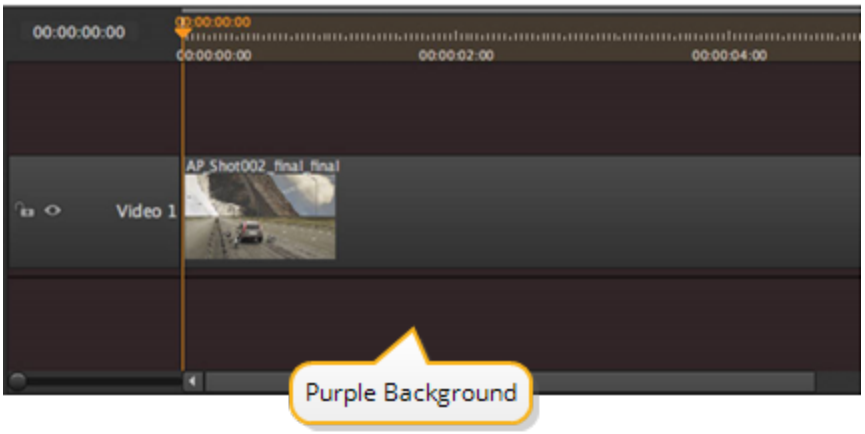
Clips in the Viewer

Clips, or Track Items, on a Timeline



See Managing Timelines for more information.

A Clip Opened in a Timeline



See Using In and Out Markers for more information.

Ingesting Media

Adding media is as simple as drag-and-drop from a file browser or selecting **File** > **Import File(s)** or **Import Folder (s)**. The application imports your media into the bin view providing you with a thumbnail of all of your clips and preserving the original folder and file hierarchy.

The media is soft imported, creating symbolic links to locations on disk. See Using the Copy Exporter for information on how to quickly consolidate your media and projects, or Caching Media Locally to help stabilize playback.

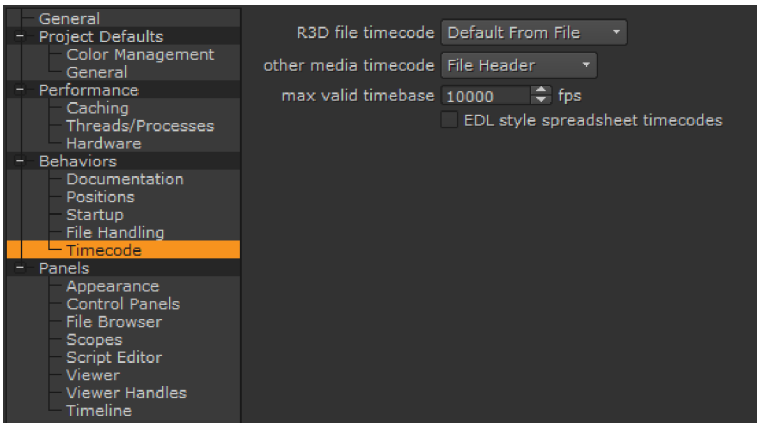
NOTE: Projects containing large amounts of movie files (for example **.r3d** and **.mov**) may exceed the number of available file handles per process, causing problems opening new files or projects and exporting.

You can increase the default limit of 1024 by entering the following command from the terminal, then running the application from the same session:

```
ulimit -Sn 2048
```

Clips with no inherent frame rate information are assigned a frame rate at ingest as specified in the **Preferences**.

1. Open the **Preferences** dialog by pressing **Shift**+**S**.
2. Select **Behaviors** > **Timecode** from the sub-menu on the left.



3. Use the **RED file timecode** dropdown to determine R3D clip behavior:
   - **Default from File** - use the default set by the R3D file in question.
   - **Absolute Timecode** - force the use of the Absolute Timecode as specified in the clip metadata.
   - **Edge Timecode** - force the use of the Edge Timecode as specified in the clip metadata.
4. Use the **other media timecode** dropdown to determine clip behavior for all other clips:
   - **File Header** - the file metadata header is used to derive the timecode, if it exists. This option defaults to **Frame Number** if the header is missing.

- **Frame Number** - ignores the metadata header, even when present, and derives the timecode from the frames in the clip.

5. Set the **max valid timebase** allowed from the image header, above which the value is clamped.

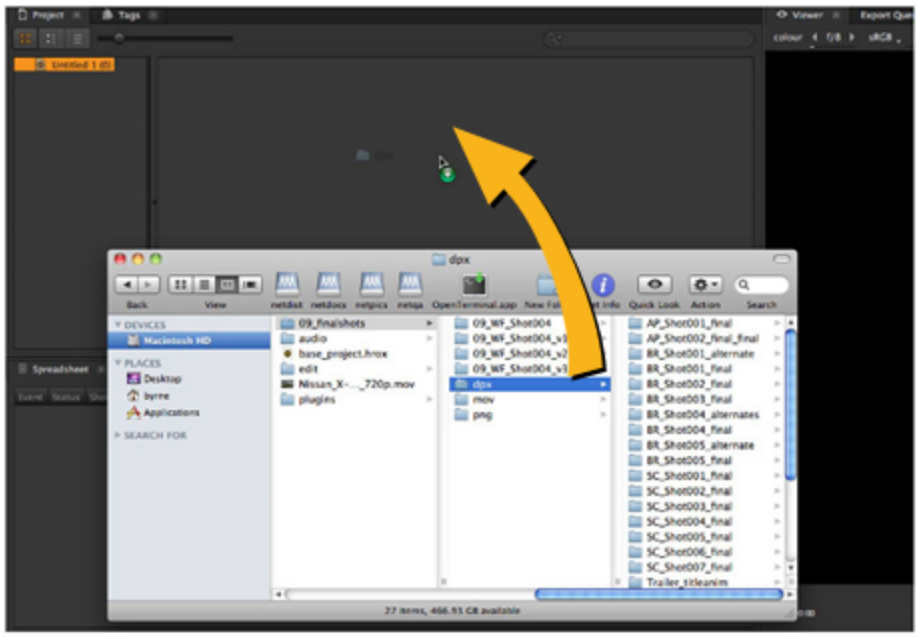
   Image files are often created with application specific timebase values in the header description. This can lead to reading in spuriously high frame rates, and the clamp aims to prevent this from happening.

   If your clips do have extremely high frame rates, increase this value as necessary to avoid clamping.

6. Enable or disable **EDL style spreadsheet timecodes**:
   - When disabled, the **srcOut** and **dstOut** values use the film convention, representing the **last** frame of the cut.
   - When enabled, the **srcOut** and **dstOut** values use the video convention, representing the frame directly **after** the cut.
7. Click **OK** to save your settings.

Using Drag-and-Drop

Locate your media in a file browser and drag the frame range, clip, folder, or folders into the **Project** tab.



Ingest behavior depends on the target:

- Dragging a folder into the **Project** tab automatically ingests all the contents of the folder, including other folders and their contents.
- Dragging a movie file, such as a **.mov** or **.r3d**, automatically ingests the entire clip.
- Dragging a single file or file range, that is part of an image sequence, is controlled by the **Preferences** > **Behaviors** > **File Handling** > **Scan for file sequence range** checkbox:
  - **Enabled** - the default setting, dragging a single file or file range, that is part of an image sequence, creates a clip in the bin view containing all available frames.

For example, dragging frames 1-5 and 11-20 ingests the entire frame range.

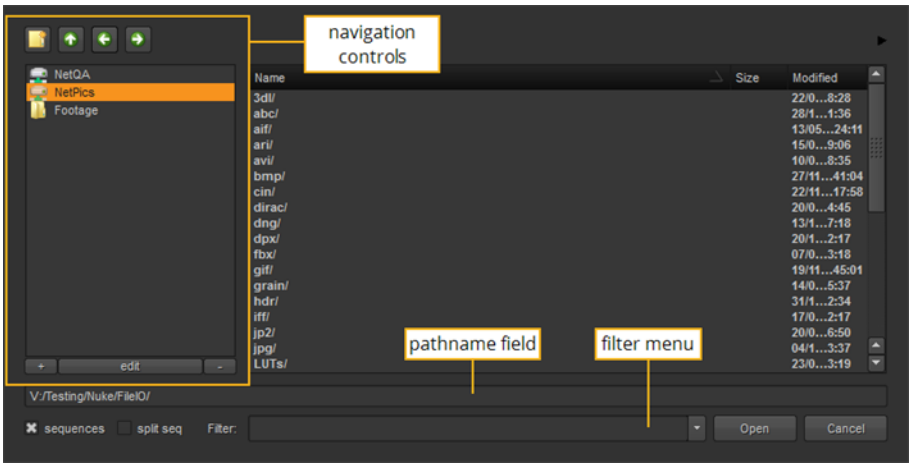
- **Disabled** - only the dragged frame or range is imported into the bin.

  For example, dragging frames 1-5 and 11-20 ingests two distinct clips, one containing 5 frames and one containing 10 frames.

Using the File Browser

If you prefer to work with menus, you can also import clips using the file browser. You can import individual clip files, ranges, or entire folders, depending on the amount of media you intend to use.

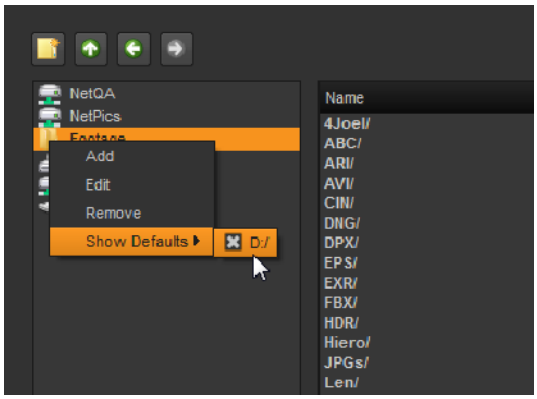
Whenever you load or save files, a browser similar to the one shown below is displayed. The directory navigation buttons let you create or access the directory from which you wish to read or write data.



The navigation controls let you move through the directory structure, bookmark favorite directories, and create new directory folders.

NOTE: If you import folders, use the **Import Options** dialog to filter your ingest using inclusion and exclusion parameters, separated by spaces. The dialog's **Include patterns** field defaults to **{supportedfiles}**, which resolves to a list of all known supported file extensions. To add your own custom extensions to this, you can use **{supportedfiles} *.ext** (replacing .**ext** with your custom file extension).

Windows only: You can show/hide the drives that Windows auto creates by right-clicking the required drive, selecting **ShowDefaults**, and checking or unchecking the drive.

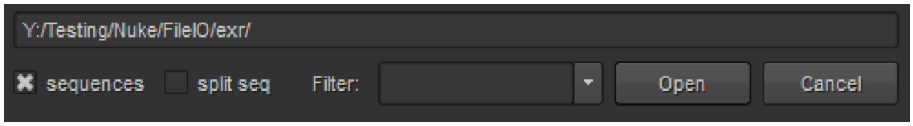


To Use the Navigation Controls

- Click the **Create New Directory** button to create a new directory at your current position in the file hierarchy.
- Click **Up one directory** to go up one directory closer to the root.
- Click **Previous directory** to go back one directory.
- Click **Next directory** to go forward one directory.
- Click the **+** button to add a directory bookmark.
- Click the **edit** button to edit the name or path name to a bookmark.
- Click the **-** button to remove a directory bookmark.

Path Name Field

The path name field displays the current directory path, lets you navigate to a new path, and also enter a file name for scripts and rendered images.



- To navigate to a directory, type the path name in the field.
- To enter a script name, browse to a directory path and enter the file name after the displayed path.
- To limit the file list to specific file types, use the **filter** dropdown menu and **Sequences** checkbox.

To Use the Filter Dropdown Menu and Sequences Checkbox

- Select ***.nk** to display only Nuke script files.
- Select ***** to display all files (except hidden files), regardless of what they're associated with.

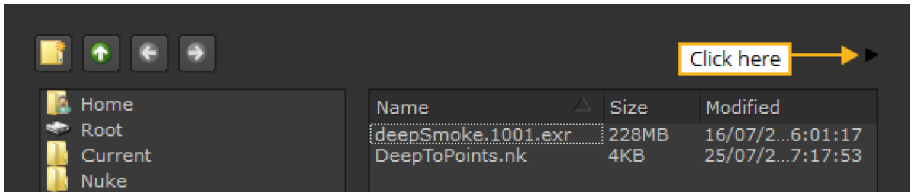
- Select **.* *** to display all files, including hidden files.
- Select ***/** to display directory names, but not their contents.
- Check **sequences** to display image sequences as single titles, as in fgelement.####.cin 1-50 rather than fgelement.0001.cin, fgelement.0002.cin, fgelement. 0003.cin, and so on.

NOTE: File sequences with no file extension (for example, fgelement.0001, fgelement.0002, fgelement.0003, and so on) are not displayed as single titles the first time you view the directory in the File Browser. However, they are displayed as single titles once you have navigated to another directory and back again.

- You can also split incomplete sequences into separate Read nodes using the **split seq** checkbox.

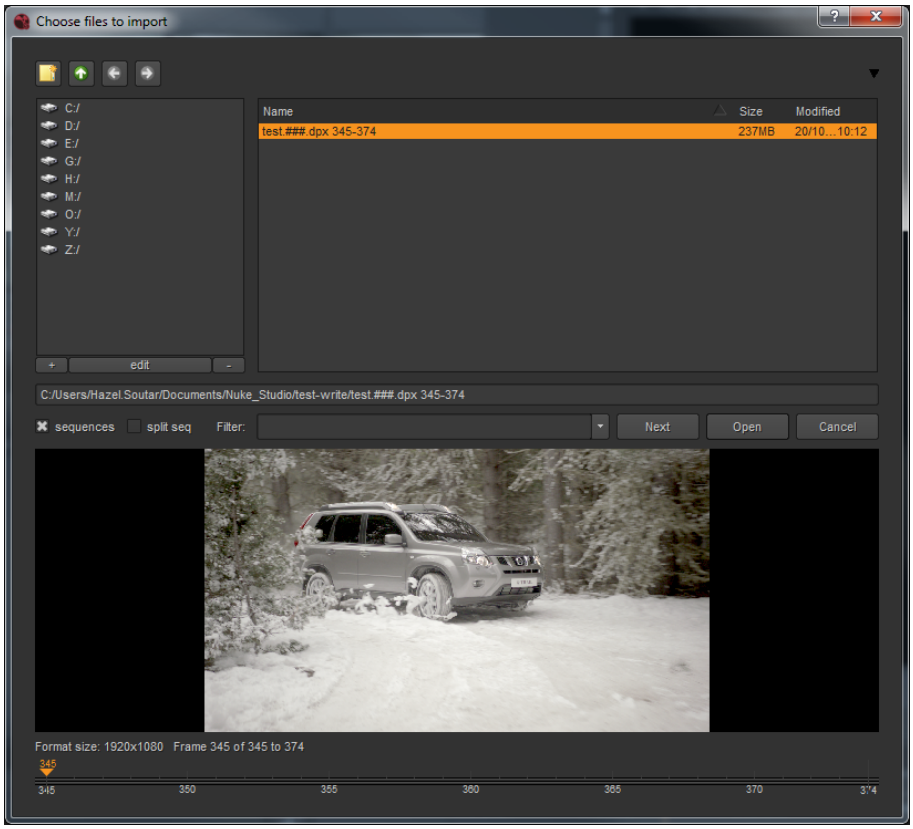
To Preview Files in the File Browser

1. Click the black arrow in the top-right corner of the file browser.



   The file browser expands to include a small viewer.

2. Select the file you want to preview in the file browser to view it.



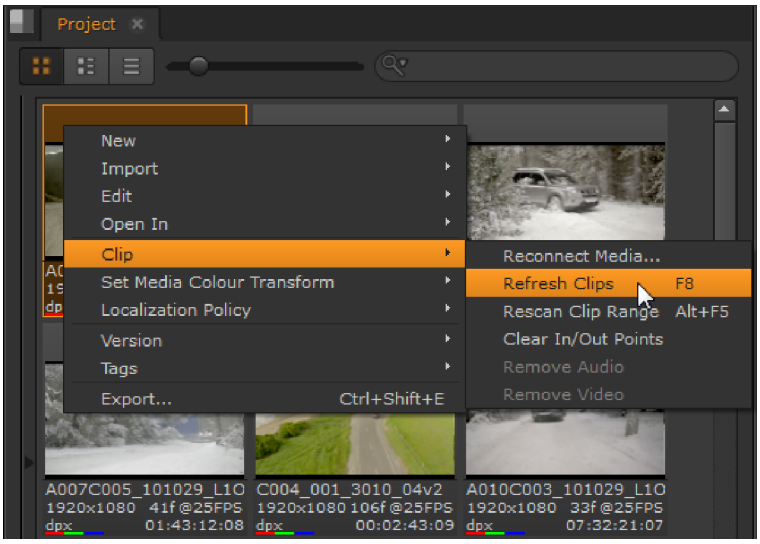
To Select Multiple Files with the File Browser

1. Browse to the folder where the files are located.
2. **Ctrl**+click on all the files you want to open to select them (Mac users **Cmd**+click).
3. You can open files from multiple directories by clicking **Next** and browsing to the next file location.
4. Click **Open**.

   All the selected files open.

Reconnecting and Refreshing Clips

During the post process, media inevitably changes location or form. You can reload or replace your media using the reconnect, refresh, and rescan functions.



Though all three options deal with reloading bin clips, each has a particular use dependent on context:

- **Reconnect Media** - allows you to redirect the filepath when the source file location changes.
- **Refresh Clips (F8)** - allows you to reload the clip when the source file location has not changed, such as when work has been done on the clip offline. Selecting refresh only refreshes the clip's current frame range.
- **Rescan Clip Range (Alt+F5)** - similar to **Refresh Clips**, above, but rescan also checks for additional frames that may have been added to the source file and adds them to the bin clip's frame range.

Caching Media Locally

Hiero has the facility to cache bin files locally, either individually or by setting an automatically localized folder (NUKE_TEMP_DIR/localize, by default), to help guarantee playback stability. Local caching is controlled initially in the **Preferences** dialog, then on a clip-by-clip basis.

To set up your initial caching preferences:

1. Press **Shift**+**S** to open the **Preferences** dialog.
2. Navigate to **Performance** > **Localization** and enter a file path for **auto-localize from**, if required.

   Any files that reside in this directory are automatically cached when ingested in Hiero, providing that the right-click **Localization Policy** is set to **auto**.
3. Enter a file path for **localize to**, with file paths constructed as follows:
   - Replace any leading forward or back slashes with underscores. For example, replace **\\windowspath\to\my\network\file.dpx** with **__windowspath\to\my\network\file.dpx**
   - Replace any Windows drive signifiers (colons) with underscores. For example, replace **t:\my\network\path\file.dpx** with **t_\my\network\path\file.dpx**

NOTE: Leaving this field as the default creates a sub-directory in the **Temp Directory** as the local cache.

4. Enter a value for **limit to (GB)** to control how much disk space is available in the cache directory.

NOTE: Negative values in this field reserve the specified amount of space at all times. For example, -2 stops 2 GB of memory being used for caching.

5. Set the default **localization policy** for new bin clips:
   - **On** - the files are cached, regardless of location, as long as the **limit to (GB)** limit is not breached.
   - **Off** - the files are never cached, regardless of location.
   - **from auto-localize path** - the files are cached if they reside in the **auto-localize from** directory, as long as the **limit to (GB)** limit is not breached.
6. You can specify the time interval (in minutes) before the **auto-localize from** directory is checked for updated versions of the files using the **check for updated files every ## mins** control.

   The default setting checks for new versions of files every 30 minutes, but you can set this control to any value.

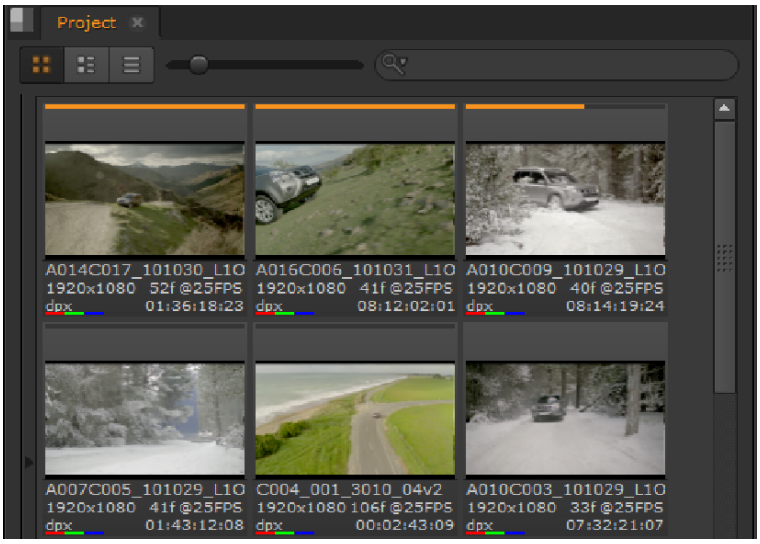
TIP: You can temporarily stop Hiero checking for updated files by enabling **never check for updated files**.

Controlling Localization

As well as the general rules for when files should be localized, you can set localization on a file-by-file basis.

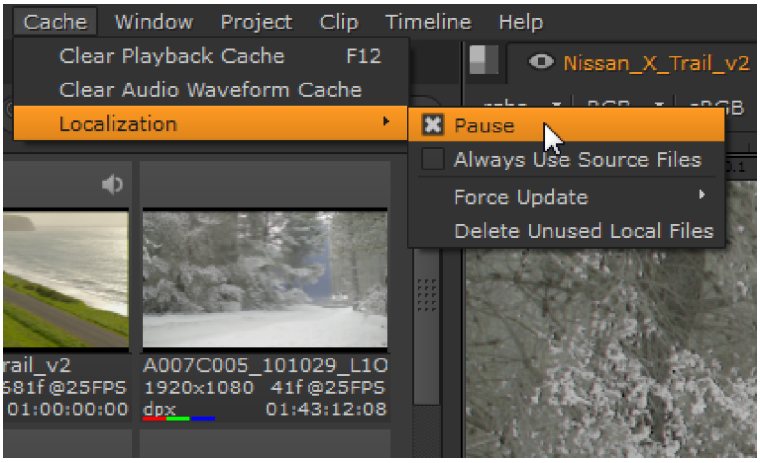
1. Select the clip(s) in the bin view.
2. Right-click and select **Localization Policy** to display the available options:
   - **On** - the files are cached, regardless of location, as long as the **limit to (GB)** limit is not breached.
   - **Off** - the files are never cached, regardless of location.
   - **From auto-localize path** - the files are cached if they reside in the **auto-localize from** directory, as long as the **limit to (GB)** limit is not breached.

   As clips cache, a progress bar displays in the thumbnail. Fully cached clips are marked with an orange bar at the top of the thumbnail.



NOTE: Hiero also features a playback cache, allowing frames to be cached in RAM memory instead of on local disk. See Caching Frames in the Playback Cache for more information.

3. If you need to pause localization temporarily, navigate to **Cache** > **Localization** and select **Pause**.

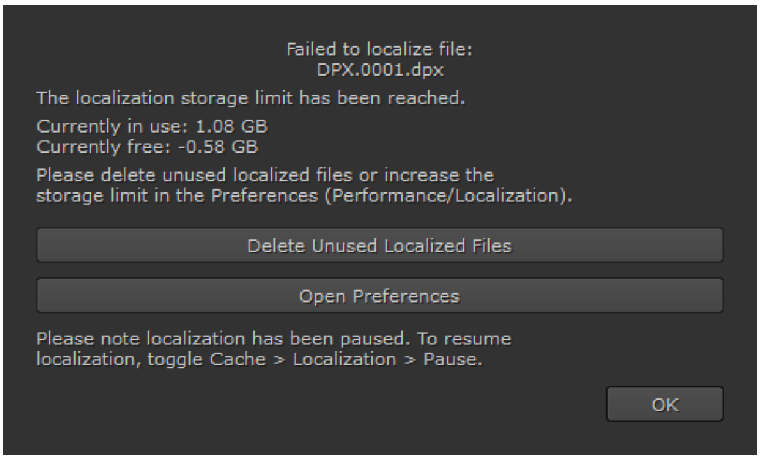


4. If you find that your cache is filling up regularly, you can:
   - Increase the amount of available space for localization by raising the **limit to (GB)** preference,
   - Navigate to **Cache** > **Localization** > **Delete Unused Local Files** (see Deleting Localized Files), or
   - Manually clear files from the cache directory in NUKE_TEMP_DIR/localize, by default.
5. Enable **Always Use Source Files** to ignore all localized files and always read from the source.
6. You can force Hiero to check for updated source files, rather than waiting for the **check for updated files every** interval to expire, by selecting **Force Update** for **All** localized files or just **Selected** bin clips.

NOTE: Each file has its own update time, which is reset whenever the source files are checked.

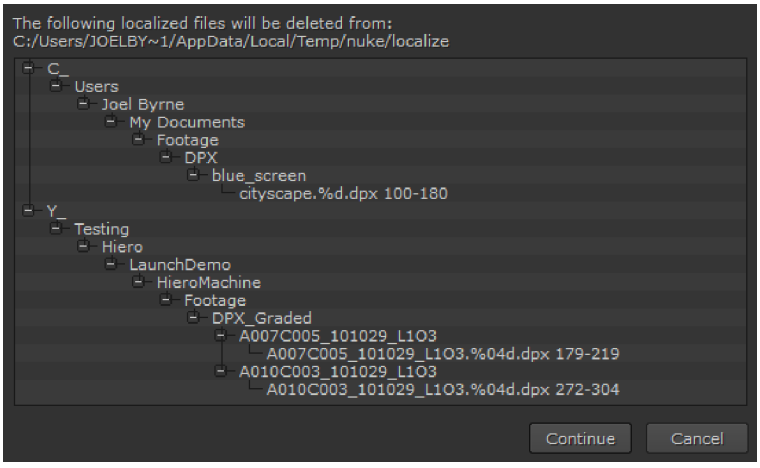
Deleting Localized Files

Localizing a large amount of files can fill up the localization cache quite quickly if you leave the **limit to (GB)** preference at the default 10 GB. When the cache runs out of space, a **Failed to Localize File** dialog displays and localization pauses.



You can delete localized files by clicking **Delete Unused Local Files** (or by navigating to **Cache** > **Localization** > **Delete Unused Local Files**). Hiero displays a dialog containing all the files that are marked for delete.

TIP: You can also open the **Preferences** from this dialog to adjust the localization behavior, such as increasing the **limit to (GB)** preference.



Click **Continue** to delete the localized files or **Cancel** to keep the cached files.

Using the Viewer

Hiero supports two distinct Viewer types: clip and sequence. This chapter describes the difference between the two and how to use them.

Clip Viewers, sometimes referred to as source Viewers, are marked with the  icon and deal exclusively with bin clips. You can set In and Out points and apply tags to the Viewer, but the source clips are unaffected.

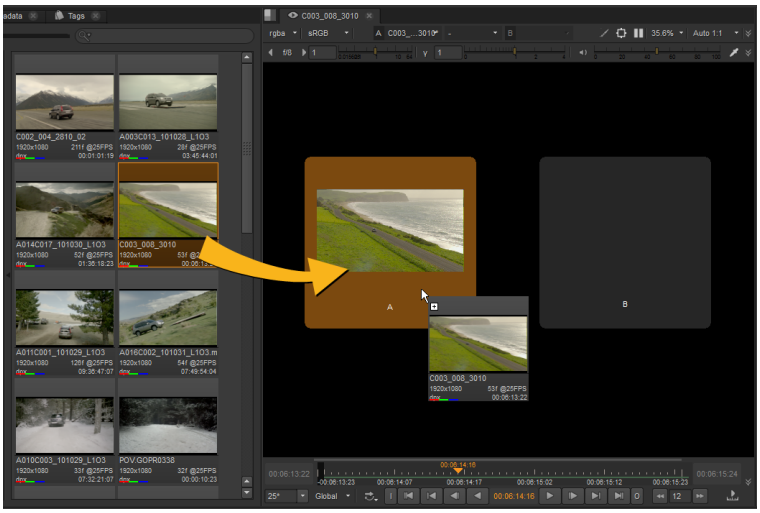
Sequence Viewers, also known as record Viewers, are marked with the  icon and deal with sequences and track items on the timeline. You can set In and Out points and apply tags here too, but you can also edit the track items on the timeline by trimming, retiming, and so on. See Timeline Editing Tools for more information.

The **Editing** workspace combines both clip and sequence Viewers by default, enabling you to add bin clips to the timeline using insert and overwrite functions. See Insert, Overwrite, and 3-Point Editing for more information.

To view your media in a Viewer, simply drag-and-drop a clip or sequence from the **Project** tab on to a Viewer input, or double-click the item to send it to the appropriate Viewer.

NOTE: The Viewer currently treats all alpha channels as premultiplied, which can result in the Viewer background being "added" to the image. If you're working with un-premultiplied images, set the Viewer background to **Black**.

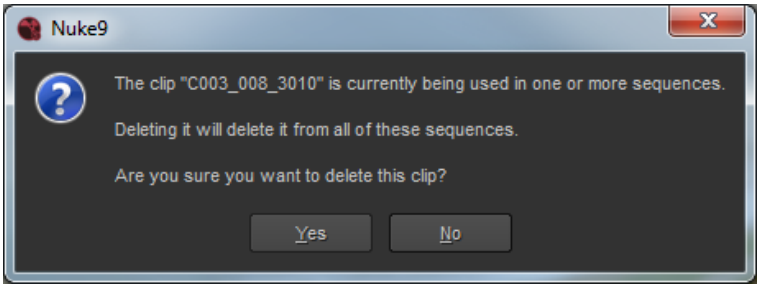
See Appendix A: Preferences for more information.



Deleting Media

To remove media from the bin view, select the clip(s) or bin and press **Backspace** or **Delete**.

If any of the media is in use in a sequence, the following warning displays:



Click **Yes** to delete the media from the bin view, but bear in mind that all instances of the deleted media are removed from your current sequences.

Viewer Tools

The Viewer has two sets of tools for manipulating your media: the Viewer tools and the playback tools. The Viewer tools, located at the top of the Viewer, are used to affect the mouse pointer as you move over the Viewer, and to select Viewer preferences:

Icon	Function	Description
rgba	Layers	Select the layer to output to the Viewer, for example **forward** motion vectors or **disparityL**. Only layers available in the clip are displayed - check the clip's thumbnail to see at a glance which layers are present:  - red color layer. - green color layer. - blue color layer. - alpha layer. - depth layer. - forward motion vector layers. - backward motion vector layers. - all other custom layers, such as disparity. NOTE: You can scroll through available layers using **PgUp** or **PgDn**.
RGB	Channels	Select the channel(s) to output to the Viewer, for example **RGB**, single channel, **Alpha**, or **Luma**.
sRGB	Viewer color transform	Set the colorspace used to display images in the Viewer, for example **sRGB** and **rec709**. NOTE: If you have specified an OpenColorIO configuration file in the **Preferences**, you may have more colorspace choices available.

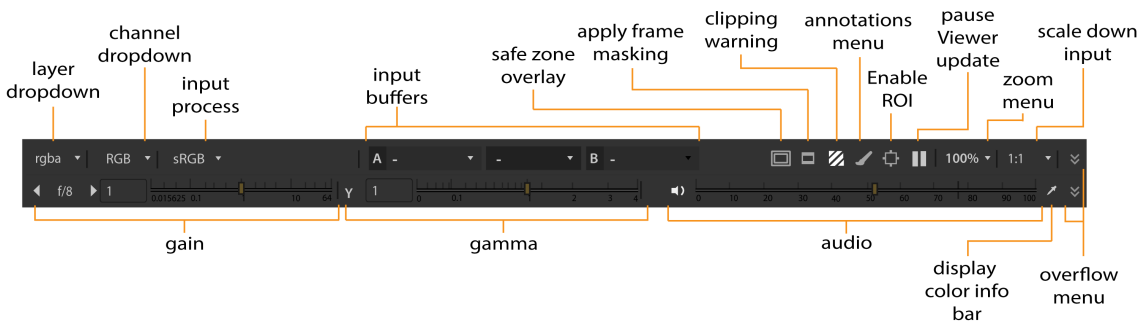
Icon	Function	Description
A/B	Viewer Output	Click the A or B dropdown and select what you want to view. This can be selected tracks or tracks with selected tags. When both Viewer buffers contain an image, enable **wipe** to compare the two images. You can also use the center drop down to set the blend mode between images in the Viewer, for example **Onion Skin** or **Difference**, and the A/B buffer configuration.
	Guides	Enable or disable Viewer overlays: • **title safe** - any text intended for the audience should reside within this zone. • **action safe** - any visual elements intended for the audience should reside within this zone. • **format center** - adds a crosshair in the center of the format currently in the Viewer. • **Format** - adds a red, format-dependent box for the clip or sequence in the Viewer. Sequences support multi-format clips, see Viewing Multi-Format Timelines for more information.
	Mask	Enable or disable a range of Viewer masks, for example **16:9** or **1.85:1**.
	Clipping	Enable or disable Viewer warnings: • **No Warnings** - all clipping warnings are disabled. • **Exposure** - alerts you when the image is under (blue) or over (red) exposed.
	Annotations	Click to enable the Annotations tool bar. Annotations allow you draw and add text to clips in the Viewer. See Annotations for more information.  NOTE: The Annotations button also controls existing annotation visibility.
	ROI	Click and drag to define a Region of Interest (ROI) in the Viewer. The scopes only display information within the ROI, when active.
	Pause playback caching	Pause or release Viewer playback caching, indicated by the green bar under the Viewer.

Icon	Function	Description
Scale		Set the scale applied to the clip in the Viewer, for example **25%**, **75%**, or **Fit**.
Image Quality		Set the Viewer image quality, for example **1:1**, **1:4**, or **1:16**. The default setting, **Auto**, resizes the image dependent on the Viewer zoom level, which may re-cache the image at a higher resolution. NOTE: Image quality, or proxy, for RED clips is dependent on the clip's **Decode Resolution** in the **Media** panel. For example, if you're viewing a 4K file and the **Decode Resolution** is set to **Half Premium**, a 1:1 proxy value is equal to 2K, 1:2 is equal to 1K, and so on.
	Non RT Playback	Sets the Viewer playback mode: • **Play All Frames** - the default setting, plays all frames in real-time (dependent on hardware). • **Skip Frames** - plays frames in real-time skipping where necessary to maintain the frame rate. • **Play All Frames, Buffering** - plays all frames by buffering and playing frames back as they become available.
	See through missing media	When disabled, any offline media on a timeline is treated as a blank clip so the Viewer cannot display the track underneath. This setting also applies to missing frames within a clip. NOTE: This control only affects the current Viewer.

Icon	Function	Description
	View	Select the Viewer display mode, for example **Audio and Video** or **Video Only**.
	Obey Alpha	Allows you to control the alpha channel independent of the Viewer **Blend Mode**. • **Enabled** - any alpha channel present in the image is treated as premultiplied transparency. • **Disabled** - the alpha channel is ignored.
	Audio latency	Sets the audio latency, in milliseconds, for the current Viewer only. Audio latency allows you to correct audio and video synchronization by changing the point at which audio playback starts. Positive values cause the audio track to start earlier in relation to the video track, and vice versa.
	Gain	Adjusts the gain applied to the linear input image before viewing, but doesn't affect your exported image.
	Gamma	Adjusts the gamma applied to the image after the viewing transform, but doesn't affect your exported image.
	Mute / Audio	Click to mute audio output for the current Viewer or use the slider to control the audio output level.  TIP: You can also control volume on a per track and per track item basis. See Audio and the Timeline for more information.
	Color Sample	Enable or disable the RGBA color information bar in the Viewer.  NOTE: The **Color Sample** tool displays color information from the source file, not the colorspace selected in the Viewer color transform dropdown. See Working with Colorspaces for more information.

Timeline Playback Tools

There are many useful tools at the top of the Viewer, some of which allow you to select channels, adjust gain and gamma, and zoom and scale down the image in the Viewer.

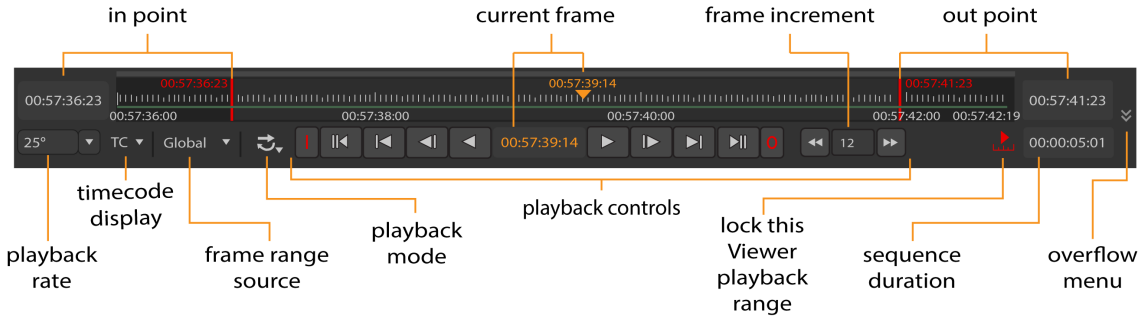


For more information about the tools above the Viewer, see Viewer Tools.

The tools at the bottom of the Viewer allow you to adjust the playback settings, including setting the frame range, selecting the playback mode, and locking the Viewer playback range.

Drag the orange marker along the timeline to quickly cue to a specific frame or timecode. The number of the current frame or timecode appears below the center of the timeline. You can also cue to a frame or timecode by typing its number directly into this field.

TIP: The current frame and in an out point fields accept simple mathematical functions, such as +/-20 to jump forward or backward 20 frames or +/-00002000 to jump forward or backward 20 seconds.



By default, Hiero automatically adjusts the timeline of every Viewer window to show the frame range defined in your Project Settings. If no frame range is defined, the frame range of the first image you read in is used as the global frame range.

Viewer timeline controls also have a frame range source dropdown menu that you can use to define where the timeline gets its frame range from. You can set this menu to **Global**, **Input**, or **Custom**. **Global** is the default setting described above.

The **playback rate** field (frames-per-second) initially displays the project's playback speed. Hiero attempts to maintain this speed throughout playback, although this adjusts depending on the resolution of the imagery and your hardware configuration.

NOTE: The asterisk (*) denotes the **Sequence** playback speed selected using the **Frame Rate** dropdown or, for new projects, the **Project Settings** > **Sequence** > **Frame Rate** dropdown.

In and Out Points

In and Out markers enable you to alter the duration of a clip to just the portions of the source that you require.

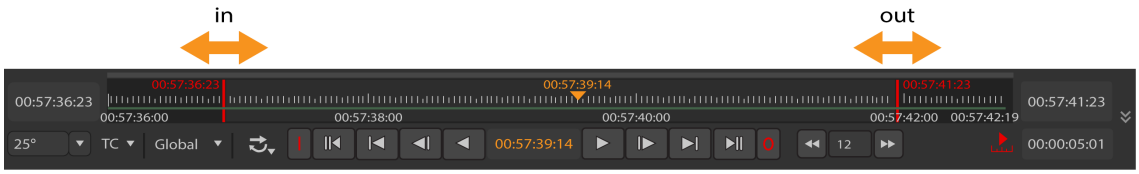
When a clip containing In and Out points is added to a timeline, you can slip the clip around the markers to adjust the clip's output. See Timeline Editing Tools for more information.

You can also use In and Out points to export certain portions of a clip or sequence. See Transcoding for more information.

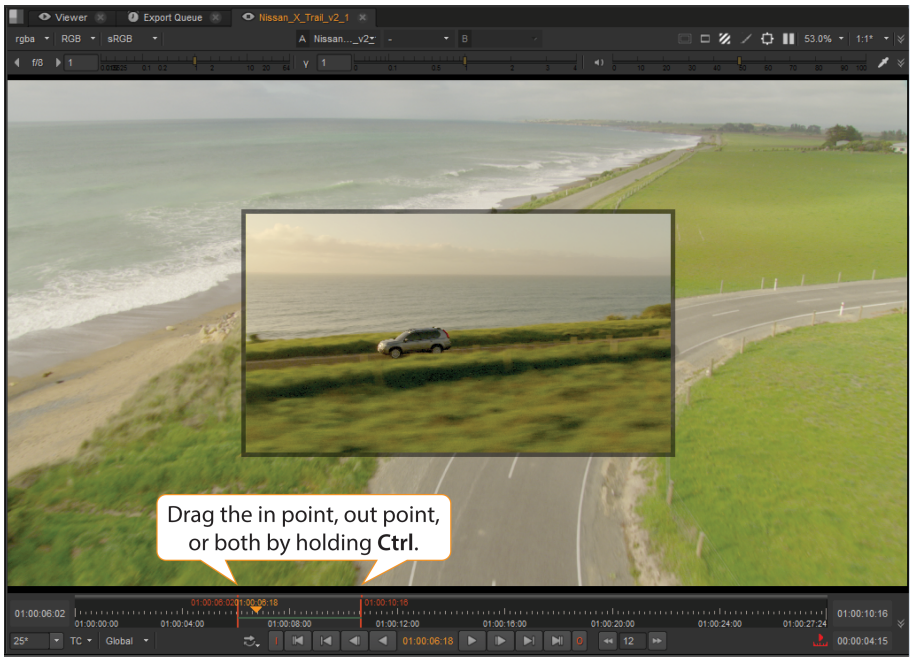
To set In and Out markers:

1. Right-click on the required clip or sequence and select **Open In** > **Timeline View**.
   Clips opened in a timeline have a purple background in the timeline.
2. Move the playhead to the location of the In point and press **I** on your keyboard.
   The In point is marked by the In tab and the time is recorded in the playback controls.
3. Move the playhead to the location of the Out point and press **O** on your keyboard.
   The Out point is marked by the Out tab and the time is recorded in the playback controls.

NOTE: You can also set markers by navigating to **View** > **Mark In** or **Mark Out**, by using the **Timeline** menu to **Mark Selection** or **Mark Clip** dependent on clip selections on the timeline, or by right-clicking a track items and selecting **Open In** > **Viewer**.



Click and drag the markers to adjust their position, or hold **Ctrl**/**Cmd** to move both markers at once, retaining their relative positions. A Viewer preview shows the current frame for the selected marker(s) and a timecode/frame popup helps to set the new position.



Clear the markers from your clip by navigating to **Viewer** > **ClearIn Point** (Alt+I) and **Clear OutPoint** (Alt+O). The markers are removed completely, but you can reapply them by repositioning the playhead and pressing **I** or **O**.

TIP: You can also press **Alt**+**U** to remove both markers at once.

When the playhead is positioned near In and Out markers, the top half of the timecode scale controls the playhead and bottom half controls the markers.

Playback Controls

The **playback rate** field (frames-per-second) initially displays the project's playback speed. The Viewer attempts to maintain this speed throughout playback, although this adjusts depending on the resolution of the imagery and your hardware configuration.

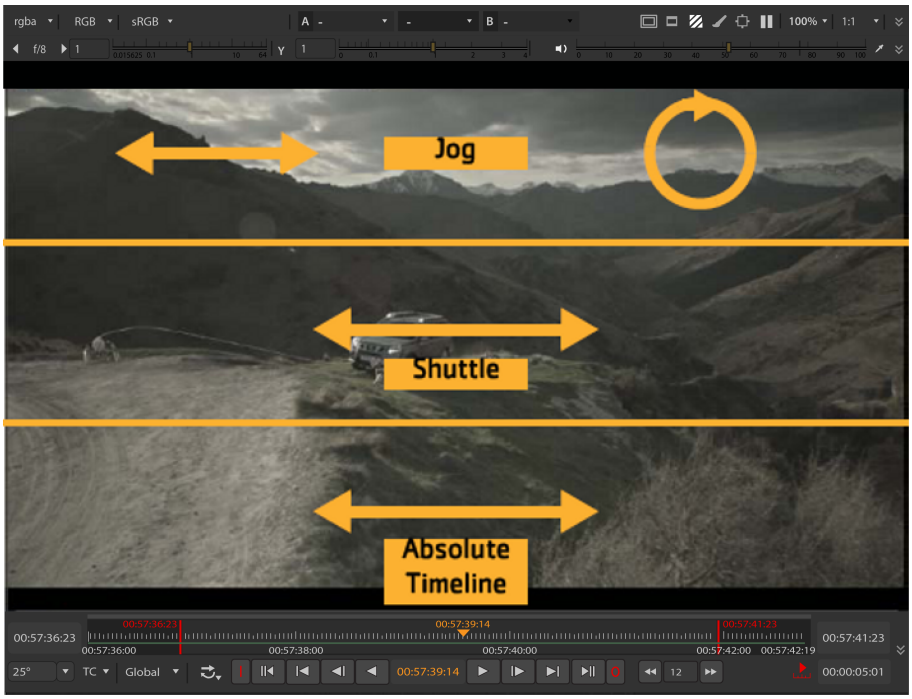
The following table lists the functions of the playback buttons:

Buttons	Functions
	The **Play backward** and **Play forward** buttons play the sequence backward or forward at the script's frame rate. When you press a play buttons, it toggles to a stop a button.

Buttons	Functions
	The **Back 1 Frame** and **Forward 1 Frame** buttons cue the sequence to the previous or next frame.
	The **Previous keyframe** and **Next keyframe** buttons cue the sequence to the script's previous or next keyframe.
	The **First frame** and **Last frame** buttons cue the sequence to the first and last frame.
	The **Frame Increment** field allow you to specify the number of frames by which the Previous increment/Next increment buttons cue the sequence. This is set to 10 frames by default.

The **J**, **K**, and **L** keyboard shortcuts also control playback. The **K** keyboard shortcut is mapped to Pause/Play. **J** and **L** are mapped to backward and forward. Combinations are also supported:

- **K**+**J** - frame backward.
- **K**+**L** - frame forward.
- **K**+drag in the top third of the Viewer - standard jog controls. Dragging the cursor left and right moves the playhead backward and forward, frame-by-frame.
- The jog controls also detect rotary motion to jog through frames. Clockwise motion in the top third of the Viewer, while holding **K**, advances the playhead and anti-clockwise reverses the playhead.
- **K**+drag in the middle third of the Viewer - standard shuttle controls. Dragging the cursor left and right plays backward and forward, with increased frame rate toward the edges of the Viewer.
- **K**+drag in the bottom third of the Viewer - skips the playhead to absolute timeline position.



The **Playback Mode** button lets you control how many times and in what direction the Viewer plays back the sequence. Click the button to toggle between the following modes:

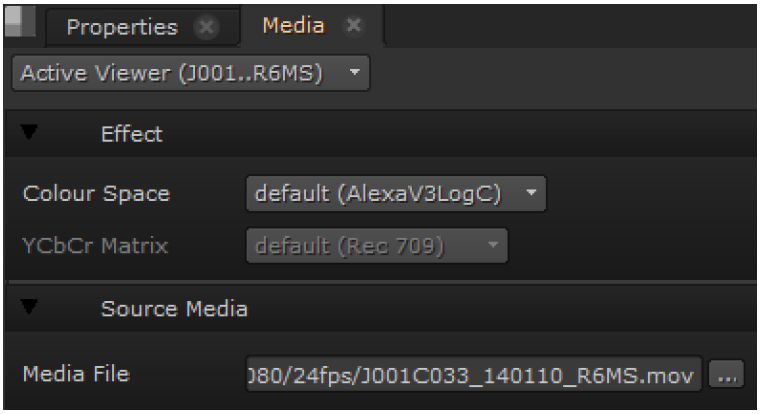
Button	Function
Repeat	Repeatedly plays the sequence in a loop.
Bounce	Repeatedly plays the image back and forth from head to tail.
Stop	Plays once through the section between in and out point and stops at the out point. If these are not marked, then it plays from the beginning to the end of the sequence.
Continue	Plays once from the beginning to the end of the sequence, ignoring any in and out points.

Using the Media Tab

The **Media** tab contains format specific controls dependent on the media currently in the Viewer. If the **Media** tab is not displayed in your workspace, navigate to **Window** > **Media** to open it in a floating window.

NOTE: The **Media** tab allows you to override the Preferences and Project Settings on a per file basis. SeeAppendix A: Preferences and Project Settings for more information.

As an example, **.mov** files allow you to control the **Color Space**, **YCbCr Matrix**, and **Source Media** for clips:



SeeAbout QuickTime Media for more information on QuickTimes.

R3D and ARRIRAW media, however, use their own software development kits (SDKs) to control the extensive settings usually seen on RED and ARRIRAW Cameras, as well as the **Source Media**.

The RED **Decode Resolution** and ARRIRAW **Resolution** and **Proxy** dropdowns control the maximum allowed Viewer resolution, overriding the **Image Quality** setting.

Notes for R3D clips

The following R3D controls have no effect in the default 16-bit half-float decoding mode:

- Shadow
- Contrast
- CustomPDLogBlackPoint, CustomPDLogWhitePoint and CustomPDLogGamma

NOTE: This list is subject to change depending on the R3D software version in use.

Notes for ARRIRAW clips

- ARRIRAW specific controls do not currently work in **LogC** colorspaces.
- Generally, the **Unsqueeze Anamorphic** control should not be enabled because the Viewer expands the image automatically.

Using In and Out Markers

In and Out markers enable you to alter the duration of a clip to just the portions of the source that you require.

When a clip containing In and Out points is added to a timeline, you can slip the clip around the markers to adjust the clip's output. See Timeline Editing Tools for more information.

You can also use In and Out points to export certain portions of a clip or sequence. SeeTranscoding for more information.

To set In and Out markers:

1. Right-click on the required clip or sequence and select **Open In** > **Timeline View**.
   Clips opened in a timeline have a purple background in the timeline.
2. Move the playhead to the location of the In point and press **I** on your keyboard.
   The In point is marked by the In tab and the time is recorded in the playback controls.
3. Move the playhead to the location of the Out point and press **O** on your keyboard.
   The Out point is marked by the Out tab and the time is recorded in the playback controls.

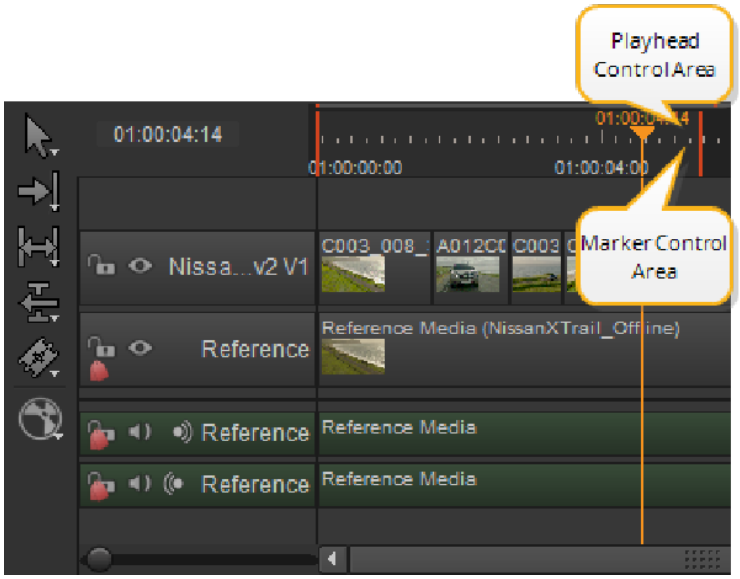
NOTE: You can also set markers by navigating to **View** > **Mark In** or **Mark Out**, by using the **Timeline** menu to **Mark Selection** or **Mark Clip** dependent on clip selections on the timeline, or by right-clicking a track items and selecting **Open In** > **Viewer**.

Click and drag the markers to adjust their position, or hold **Ctrl**/**Cmd** to move both markers at once, retaining their relative positions. A Viewer preview shows the current frame for the selected marker(s) and a timecode/frame popup helps to set the new position.

Clear the markers from your clip by navigating to **View** > **Clear In Point** (Alt+I) and **Clear Out Point** (Alt+O). The markers are removed completely, but you can reapply them by repositioning the playhead and pressing **I** or **O**.

TIP: You can also press **Alt**+**U** to remove both markers at once.

When the playhead is positioned near In and Out markers, the top half of the timecode scale controls the playhead and bottom half controls the markers.



Caching Frames in the Playback Cache

The playback cache places frames in RAM for rapid retrieval during playback, rather than copying the source files locally as with Caching Media Locally.

The green bar under the Viewer represents the contents of the playback cache, a full bar indicating that the entire clip or timeline is currently accessible from RAM, optimizing playback. You can:

- Temporarily disable caching using the pause button above the Viewer, or use the **P** keyboard shortcut.

  Clicking pause again, resumes caching from the playhead position.
- Flush the cache completely by navigating to **Cache** > **Clear Playback Cache**. Caching is automatically paused after flushing, but clicking the pause button resumes caching from the playhead position.

There are also a number of **Preferences** that affect how much RAM is available and when caching should occur. To set the caching behavior:

1. Navigate to **Nuke** > **Preferences** (OS X) or **Edit** > **Preferences** (Linux and Windows),

   OR

   Use the Preferences keyboard shortcut **Shift**+**S**.
2. Select **Performance** > **Caching** and set the total RAM cache available using the **playback cache size** field.

NOTE: You can't set this to a value higher than 80% of the memory available (rounded down to the nearest half-GB). For example, if you have 6 GB of memory available, the maximum cache size available 4.5 GB.

3. Enable **pause caching when the application goes to the background** to pause playback caching when the application loses focus.

   When you click back into Nuke, caching picks up from where it stopped.

4. Enable **clear cache when the application goes to the background** to flush the playback cache when the application loses focus.

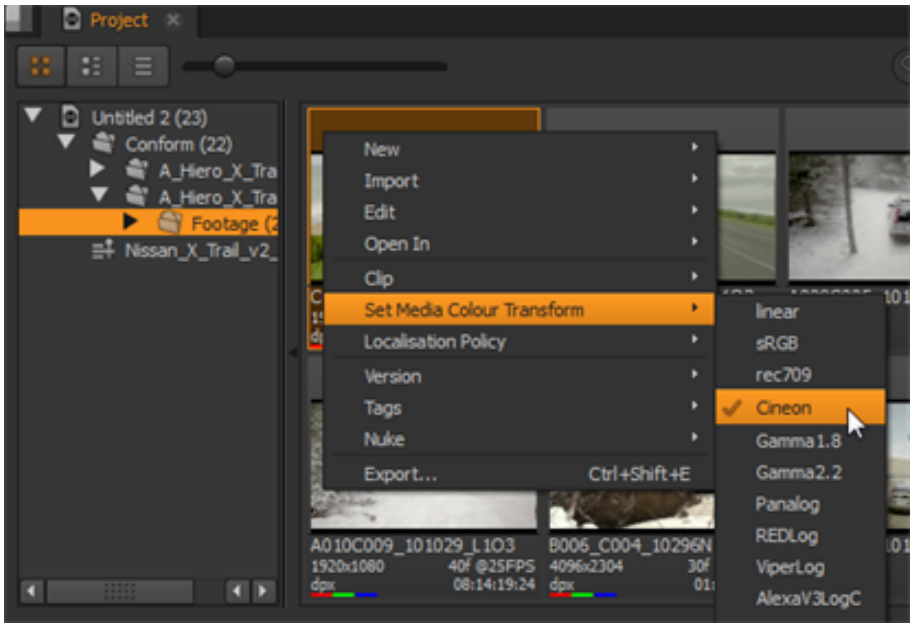
   When you click back into Nuke, caching starts again from the position of the playhead.

Working with Colorspaces

Colorspace changes are applicable to clips in bins and track items, as well as in the Viewer using the **Media** tab.

To apply colorspace changes to clips in bins:

1. Select the clip or clips in the bin view.
2. Right-click a selected clip and navigate to **Set Media Color Transform**.

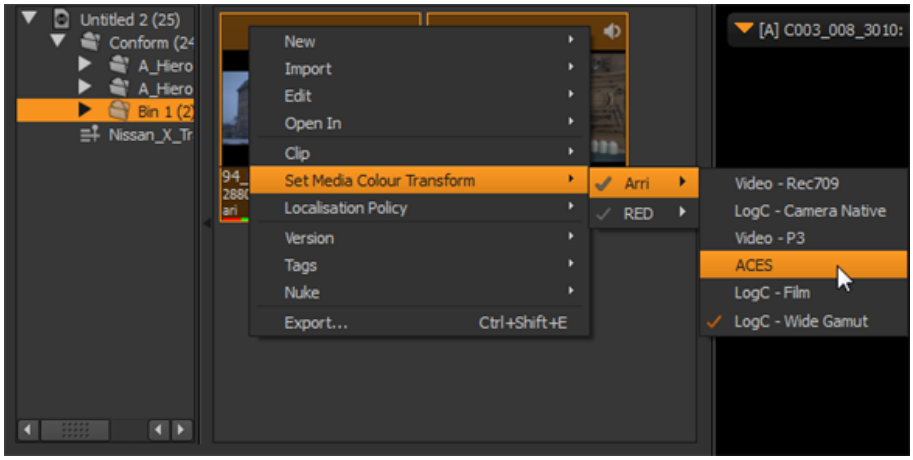


   The current colorspace is highlighted with a tick mark.

3. Select the colorspace to apply to the clip selection.

NOTE: Only colorspaces applicable to the selection are displayed. For example, **REDspace** and **LogC - CameraNative** are only available for R3D and ARRIRAW clips, respectively.

4. Selecting multiple formats supporting different colorspaces, for example R3Ds and ARRIRAW, breaks the available LUTs into sub-menus:



To apply colorspace changes to track items:

1. Select the item(s) on the timeline.
2. Right-click a selected item and navigate to **Set Media Color Transform**.
3. Select the colorspace to apply to the selection.

Previewing on a Broadcast Monitor

The Monitor Out feature allows you to preview Viewer images and audio on an external broadcast video monitor to check the final result, including the correct colorspace and aspect ratio. This option requires additional hardware, such as a monitor output card or a FireWire port.

NOTE: Audio scrubbing is not currently available through monitor output cards. Audio scrubbing is only supported through internal audio output devices.

Our monitor out architecture interfaces directly with the AJA and BlackMagic device drivers, which are unified across their respective hardware lines, meaning all current supported cards for the versions detailed in Appendix D: External Software should work. We've tested the following AJA and Blackmagic hardware:

AJA Cards	SD	HD	2K	UHD	4K	BNC	HDMI	Platforms	Drivers
KONA LHi	●	●	●	●	●	●	●	Win, Mac, Linux	• Windows - 12.41 • Mac -10.6.1 • Linux - ntv2linux-driver-12.3.0.59 or ntv2linux-driver-12.3.0.61
KONA 3G	●	●	●			●	●	Win, Mac, Linux	• Windows - 12.41 • Mac -10.6.1 • Linux - ntv2linux-driver-12.3.0.59 or ntv2linux-driver-12.3.0.61
KONA 4	●	●	●	●	●	●	●	Win, Linux	• Windows - 12.41 • Linux - ntv2linux-driver-12.3.0.59 or ntv2linux-driver-12.3.0.61
KONA iOXT	●	●	●			●	●	Mac OS X 10.9 and 10.10	• Mac -10.6.1

NOTE: The following notes should be taken into account when using the Monitor Out functionality with AJA cards:

- If you're running AJA cards on Linux, you can contact www.aja.com/support to obtain the correct drivers.
- 12-bit monitor output is only supported with dual connection cards, that is cards with two physical connections, not dual links combining two separate streams of data.
- Hiero is unable to send out the right eye separately using the 2nd output cable of KONA 3G cards. Instead, both views are sent through the 1st output and can be viewed using the side-by-side, anaglyph, and interlacing options.

Blackmagic Cards	SD	HD	2K	UHD	4K	BNC	HDMI	Platforms	Drivers
DeckLink SDI	●	●				●		Win, Mac, Linux	Desktop Video 10.7
DeckLink HD Extreme 2	●	●				●		Win, Mac, Linux	Desktop Video 10.7
DeckLink Extreme 3D+	●	●				●	●	Win, Mac, Linux	Desktop Video 10.7
Intensity Pro 4K	●	●		●			●	Win, Mac, Linux	Desktop Video 10.7

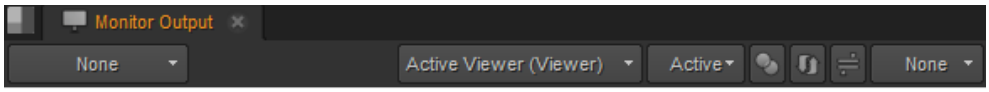
Blackmagic Cards	SD	HD	2K	UHD	4K	BNC	HDMI	Platforms	Drivers
DeckLink Studio 4K	●	●	●	●	●	●	●	Win, Mac, Linux	Desktop Video 10.7
DeckLink 4K Extreme	●	●	●	●	●	●	●	Win, Mac, Linux	Desktop Video 10.7
DeckLink 4K Extreme 12G	●	●	●	●	●	●	●	Win, Mac, Linux	Desktop Video 10.7

Some monitor out cards allow you to extend or mirror your desktop so that Hiero's user interface is visible on the monitor. Please refer to your card's documentation for more information.

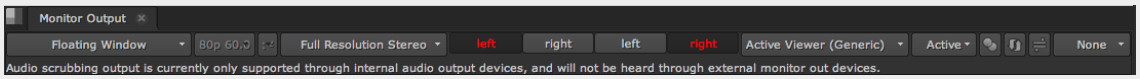
To preview output on an external broadcast video monitor:

1. Navigate to **Window** > **Monitor Output**.

   The **Monitor Output** toolbar displays in a floating pane.



NOTE: If you're working with multi-view footage, additional controls display to determine the stereo mode and view to output.



See Stereoscopic Projects for more information.

2. Select the external device you want to use from the output device dropdown. All available devices are automatically detected and listed in this menu, along with the following default options:
   - **None** - disables the monitor out feed.
   - **Floating Window** - opens a pseudo output monitor window, without the need for a monitor device and card. This is intended for full-screen use without displaying any of the interface.
3. Select the Viewer to feed to the output monitor using the source viewer dropdown. Selecting **Active Viewer** always displays the current Viewer.
4. Select the view mode using the A/B selection dropdown.

NOTE: For multi-view/stereo footage, selecting **A/B** mode in this dropdown forces the monitor to output the timeline Viewer settings and the view to output controls are disabled.

5. Click  to apply the active Viewer's filtering, gamma, and gain to the monitor output.
6. Click  to flip the output vertically.

7. Click  to switch between full-range 0-255 (default) and 16-236 (ITU-R BT.610-4). This button can correct the image output for certain monitor out cards.
8. Select the colorspace to apply to the image, **sRGB** in the example shown. If you've specified an OCIO configuration file in the preferences, these custom LUTs are also applicable.

NOTE: If you plan to use the OCIO config file specified during exports, ensure that the **Preferences** > **Project Defaults** > **Color Management** > **Export** > **use OCIO nodes when exporting to a Comp** checkbox is enabled.

Using Scopes

Hiero provides scopes to help you evaluate your media. There are a number of global controls (**Preferences** > **Panels** > **Scopes**) that affect how the Scopes display information:

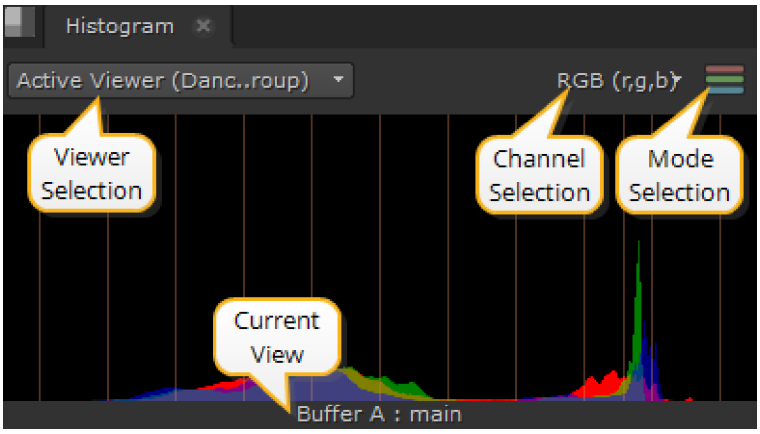
- **black point** - sets the black out of range warning level.
- **white point** - sets the white out of range warning level.
- **luma/chroma encoding** - sets the video standard to use when converting RGB to luma or chroma values in the scope displays, either **REC601** or **REC709**.
- **Include viewer color transforms** - when enabled, scope data includes the applied Viewer color transforms (gain, gamma, and LUT). When disabled, scope data does not include the applied Viewer color transforms. This may slow down rendering, as it may require image calculation.
- **Force full frame** - When enabled, scopes display data for the full frame, regardless of what portion of that frame is displayed in the Viewer. When disabled, scopes only display data for the current area requested by the Viewer rather than the full frame.

To open a scope, navigate to **Window** > **New Scope** and select the required scope from the list.

Histogram

The **Histogram** provides three color channel and luma channel information that describes the distribution of red, green, blue, and luma pixels throughout the current frame.

The Histogram graphs the number of pixels at each brightness level, and from left to right, the areas of the Histogram represent shadow, mid tones, and highlights.



TIP: You can pan the view area by holding **Alt**, or the middle mouse button, and dragging in the panel.

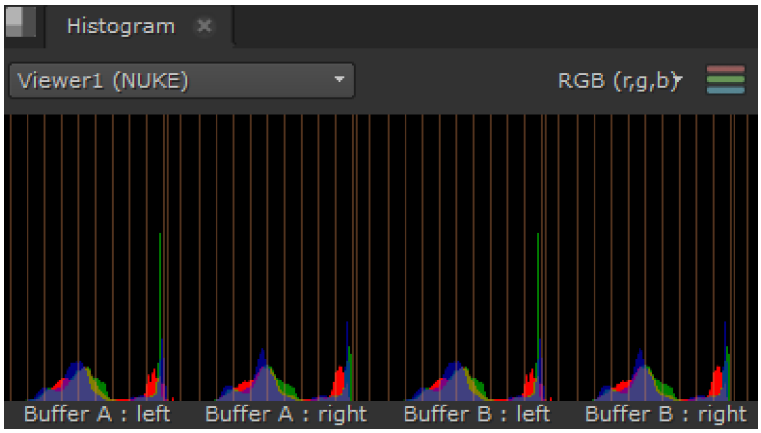
There are also **Viewer** and **Channel** selection controls on the **Histogram** tab:

- **Viewer selection** - if you have multiple Viewers open, use the dropdown menu to associate Histogram output to the required clip.

  The default value, **Active Viewer**, automatically displays details on the last Viewer you selected.
- **Channel selection** - select the channels to output. The default setting displays RGB, but you can also view channels separately.
- **Mode selection** - select the mode to output. The default setting displays ganged RGB, but you can also view the channels separately.
- **Current View** - describes the view currently displayed in the scope, whether it's the A or B buffer and the view. The view defaults to **main**, unless **main** has been replaced in multi-view scripts or projects.

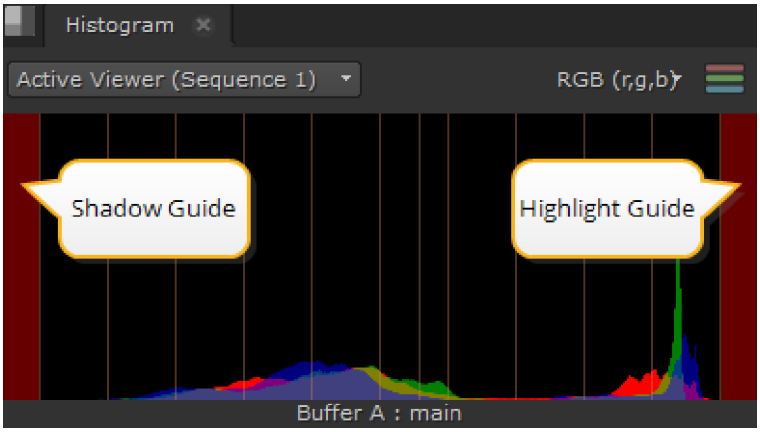
  Depending on which Viewer tools and views you have active, you can have up to four scopes displayed at once.

  For example, with two stereo Read nodes, one in each input buffer, and **wipe** and **Side by Side** active, the scopes display something like this:



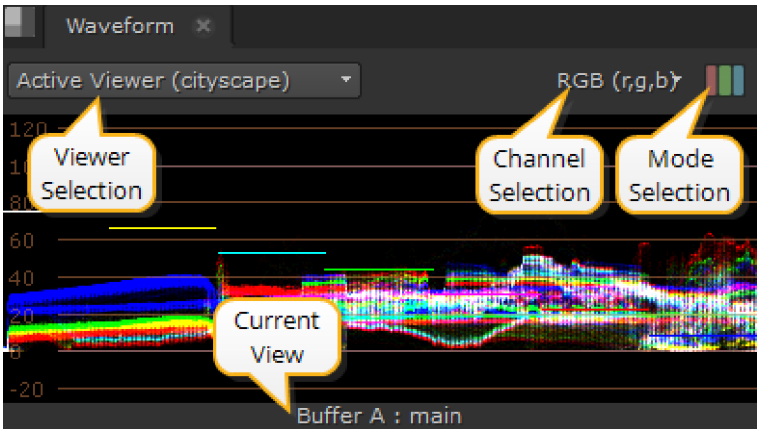
The scopes feature global customizable guides to help you view your clips. Navigate to **Preferences** > **Panels** > **Scopes** and enter values between **0** and **1** for the **Black** and **White** points. Note that this also sets the values for the Waveform display.

The guides at the edges of the Histogram turn red to warn you when the distribution is out of range:



Waveform

The **Waveform** scope provides information on clip luminance, or brightness, which you can use to decide whether the clip is over or under exposed. The white traces represent luminance values from 0 - 100% (black through the spectrum to white). The higher the waveform, the brighter the image in the Viewer.



TIP: You can pan the view area by holding **Alt**, or the middle mouse button, and dragging in the panel.

The upper white marker is used to measure when over exposure could be a problem. If your waveform has a lot of traces over the white marker, you should consider reducing the brightness of the clip. The opposite is true of the lower black marker.

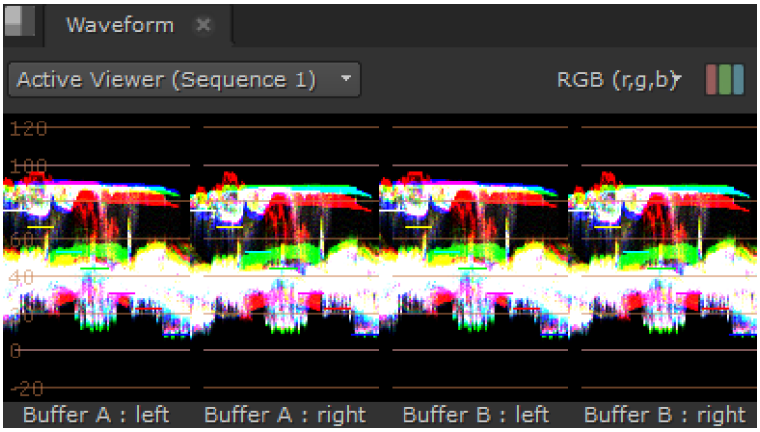
There are also **Viewer** and **Mode** selection controls on the **Waveform** tab:

- **Viewer selection** - if you have multiple Viewers open, use the dropdown menu to associate Waveform output to the required clip.

  The default value, **Active Viewer**, automatically displays details on the last Viewer you selected.
- **Channel selection** - select the channels to output. The default setting displays RGB, but you can also view channels separately.
- **Mode selection** - select the mode to output. The default setting displays ganged RGB, but you can also view the channels separately.
- **Current View** - describes the view currently displayed in the scope, whether it's the A or B buffer and the view. The view defaults to **main**, unless **main** has been replaced in multi-view scripts or projects.

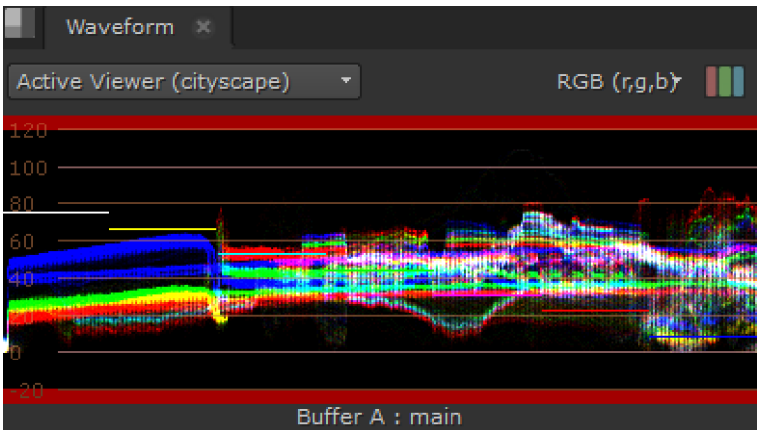
  Depending on which Viewer tools and views you have active, you can have up to four scopes displayed at once.

  For example, with two stereo Read nodes, one in each input buffer, and **wipe** and **Side by Side** active, the scopes display something like this:



The scopes feature global customizable guides to help you view your clips. Navigate to **Preferences** > **Panels** > **Scopes** and enter values between **0** and **1** for the **Black** and **White** points. Note that this also sets the values for the Histogram display.

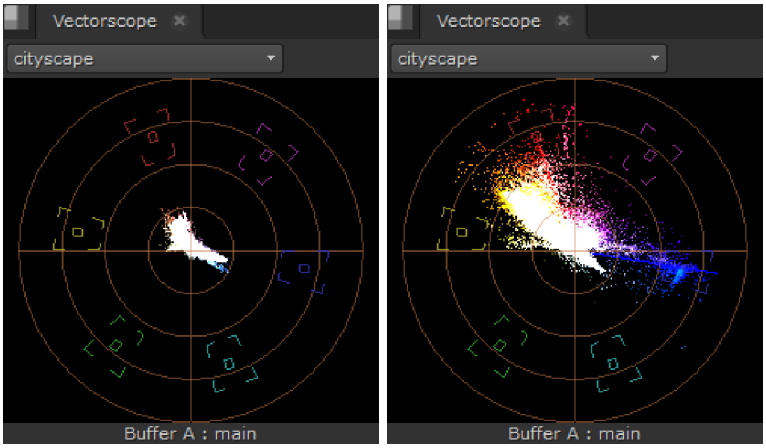
The guides at the top and bottom of the Waveform turn red to warn you when the distribution is out of range:



Vector

The **Vector** scope displays color, saturation, and hue information for the current frame. Similar to color wheels, Vector scopes display information radially, from the center outward. The farther from the center the data spans, the more saturation is represented.

In the image on the left, you can see that the frame represented contains mostly yellows and reds, but the values are not oversaturated. The image on the right represents a badly saturated frame. Notice the spill of red traces distributed toward the edge of the scope pass the target (the highlighted square).



Normal saturation. High Saturation.

TIP: You can pan the view area by holding **Alt**, or the middle mouse button, and dragging in the panel.

There is also a **Viewer** selection control and Current View label on the **Vectorscope** tab:

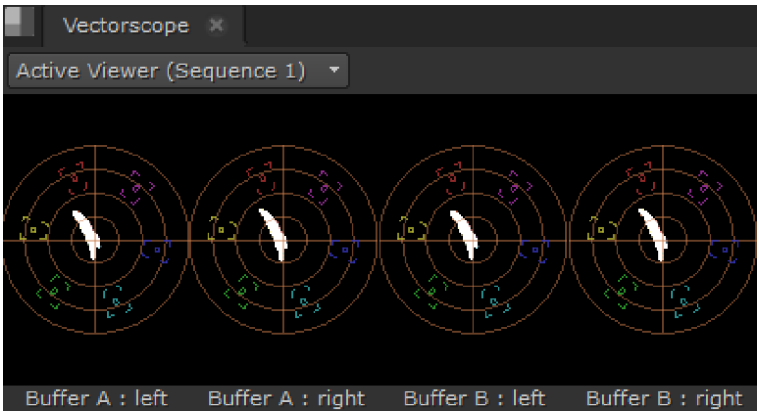
- **Viewer selection** - if you have multiple Viewers open, use the dropdown menu to associate Vector scope output to the required clip.

  The default value, **Active Viewer**, automatically displays details on the last Viewer you selected.

- **Current View** - describes the view currently displayed in the scope, whether it's the A or B buffer and the view. The view defaults to **main**, unless **main** has been replaced in multi-view scripts or projects.

  Depending on which Viewer tools and views you have active, you can have up to four scopes displayed at once.

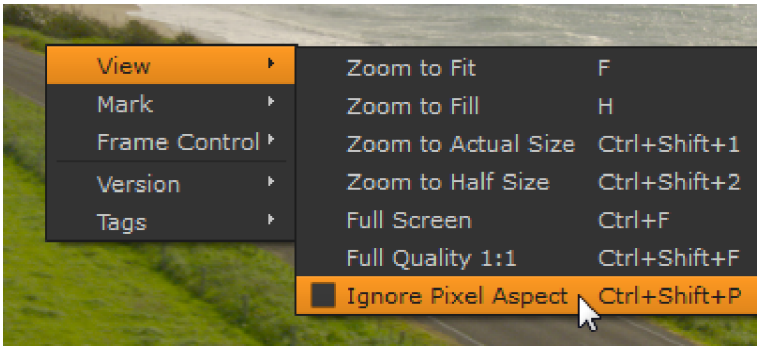
  For example, with two stereo Read nodes, one in each input buffer, and **wipe** and **Side by Side** active, the scopes display something like this:



About Anamorphic Media

The Viewer automatically recognizes anamorphic clips and displays them with the correct aspect ratio.

If for any reason you want to display an anamorphic clip with a 1:1 aspect ratio, right-click in the Viewer displaying the clip and enable the **Ignore Pixel Aspect** checkbox, or use the **Ctrl**/**Cmd**+**Shift**+**P** keyboard shortcut.

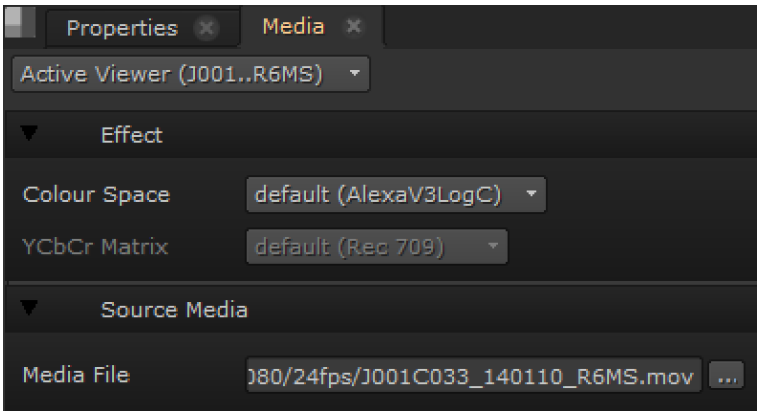


About QuickTime Media

Working with **.mov** files can be unpredictable when compared to other formats, so Hiero gives you a few QuickTime options when reading and writing **.mov** files.

Hiero attempts to select the 'best fit' combination by reading an extended list of metadata key/value pairs from the QuickTime header, including **nclc atom**, **gama atom**, and **ProRes** codec headers.

If you place a clip in the Viewer, or open a track item in the Viewer, and open the **Media** tab, you'll see that Hiero has a number of media-specific controls that you can manually override if the 'best fit' is not what you're looking for:



- **YCbCr Matrix** - sets the way Y'CbCr is converted to RGB. You can choose to use the new **Rec 601** and **Rec 709** or the **Legacy** encoding methods, which are the methods used previously in Hiero.
- **Codec** - sets the codec used to read (write already had a similar control) the QuickTime file.

  The codec dropdown defaults to a codec appropriate for the QuickTime in question, where available, and only lists those that declare themselves able to read the file.
- **Pixel Format** - sets the read and write pixel format, which includes bit depth, colorspace, pixel packing, and ranges.

  This setting defaults to the best format accepted by the codec, allowing Nuke to perform the conversion to RGB without the use of an unknown QuickTime transform, where possible. RGB pixel types rely on QuickTime to do the conversion from Y'CbCr when dealing with a non-RGB codec.

In addition to the **nclc**, **gama**, and **ProRes** data Hiero, and by extension Nuke, also write additional metadata into the file headers during export, retaining your QuickTime preferences. This combined metadata represents myriad potential QuickTimes preferences, so Hiero reads the available metadata in the following order, reverting down each level as the level above is unavailable or set to a reserved or unknown value:

- The Foundry specific metadata
- ProRes header data
- nclc atom data
- gama atom data
- The defaults associated with the chosen codec

In this way, the worst case scenario is that you end up with the chosen codec class' default values.

About RED Media

When working with RED clips, using a RED Rocket card can increase the rendering speed significantly, especially at higher resolutions.

NOTE: The RED Rocket icon is only visible if you have a RED Rocket installed.

The RED Rocket icon has three states:

	**Inactive** - the RED Rocket card is inactive.
	**Firmware error** - there is a problem with the card firmware. Hover the mouse over the icon for more information.
	**Active** - the RED Rocket card is present and active.

To modify the RED Rocket options:

1. Click the  icon in the **Viewer**.

NOTE: You must have **use RED Rocket** enabled in the **Preferences** > **Performance** > **Hardware** dialog to access these options. See Appendix A: Preferences for more information.

The **RED Rocket Settings** dialog displays.

2. Temporarily disable the RED Rocket card by deselecting **Use RED Rocket card**. Unlike the option in the **Preferences** dialog, changing this setting does not affect the application at startup.
3. Click **OK** to save your settings.

NOTE: Projects containing large amounts of movie files (for example **.r3d** and **.mov**) may exceed the number of available file handles per process, causing problems opening new files or projects and exporting.
You can increase the default limit of 1024 by entering the following command from the terminal, then running the application from the same session:

```
ulimit -Sn 2048
```

Synching to VBlank on Linux

Hiero automatically accounts for tearing that can occur due to NVIDIA and OpenGL issues on Linux, but with dual screen setups, you need to specify which screen to synchronize. The __GL_SYNC_DISPLAY_DEVICE environment variable enables you to specify the sync device by appending the screen device name to the variable.

To determine your screen names:

1. From a command line, enter:

```
nvidia-settings
```

The **NVIDIA X Server Settings** dialog box displays.

2. Open up the **GPU** dropdown to display the screen device names.

3. Make a note of the device names, for example, **DFP-0** or **CRT-1**.

   Set the __GL_SYNC_DISPLAY_DEVICE environment variable value to the device name as described in Setting Environment Variables.

Using Tags

Tags are used by Hiero to quickly sort or filter clips and track items for better visibility, organization, and export.

Introduction

Tags are used to mark shots of a particular type or content as you organize your project. The default tags supplied include **Approved**, **Note**, **Reference**, and other general purpose tags. You can also create custom tags by right-clicking in the **Tags** tab or by pressing **Ctrl**/**Cmd**+**Y**. You can apply tags to clips, track items and Comp track items, individual frames, sequences, and tracks.

Clip and track item tags and notes can be added to exports using the burn-in feature. See Adding Burn-in Text to Exports for more information.

Tags can also be converted to Final Cut Pro or Premiere markers during export to XML. See Exporting EDLs and XMLs for more information.

Using Quick Tags

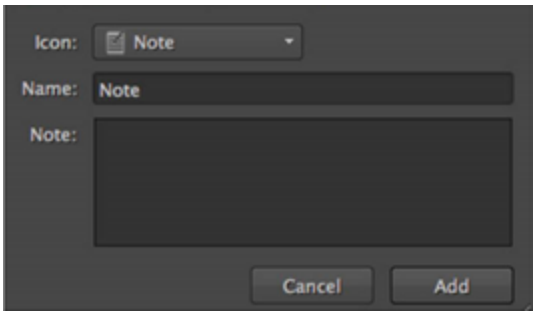
Quick tags allow you to add tags, depending on context, by right-clicking a selection and then choosing the type of tag to apply. If you're tagging a large amount of media, you might find it more convenient to use the drag-and-drop methods described later on.

Quick tags are accessible from bins, spreadsheets, Viewers, and timelines for single or multiple selections.

1. Select the target clips or sequences.
2. Right-click a highlighted selection, go to **Tags**, and choose the required action, dependent on context.

   For example, bin items only allow you to **Tag Selection**, whereas track items allow you to **Tag Shot Selection**, **Tag Tracks**, or **Tag this Sequence**

   Once you've selected the tag type, the **Add Tag** dialog displays.



3. Select the icon to represent the tag using the **Icon** dropdown.
4. Enter a **Name** and **Note** as required.
5. Click **Add** to mark your selections with the chosen tag.

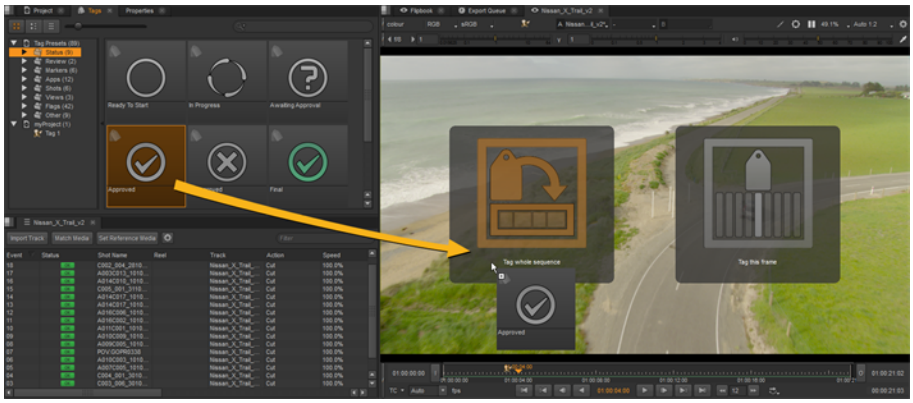
   SeeCreating Custom Tags and Removing Tags for more information.

Tagging Using the Viewer

To apply a tag using the Viewer:

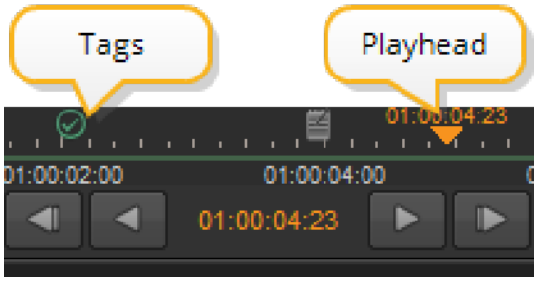
1. Click the **Tags** tab, or navigate to **Window** > **Tags**.

   The **Tags** panel displays.
2. Drag-and-drop the required tag from the **Tags** panel to the Viewer.



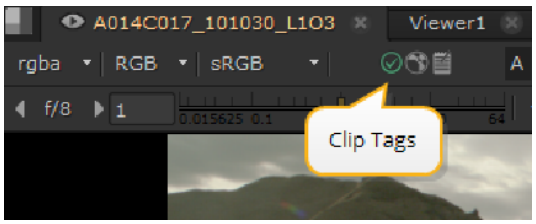
Depending on whether you're looking at a clip or sequence, drop the tag on **Tag this frame**, **Tag whole clip**, or **Tag whole sequence** as required.

Tags applied to frames appear above the playback tools in the Viewer frame slider.



TIP: You can use **Alt**+**Shift**+ **,** (comma) or **.** (period) to skip to the previous or next tag on the current clip. You can also reposition tags by dragging them along the Viewer timeline.

Tags applied to clips are displayed above the Viewer.



Tagging Track Items

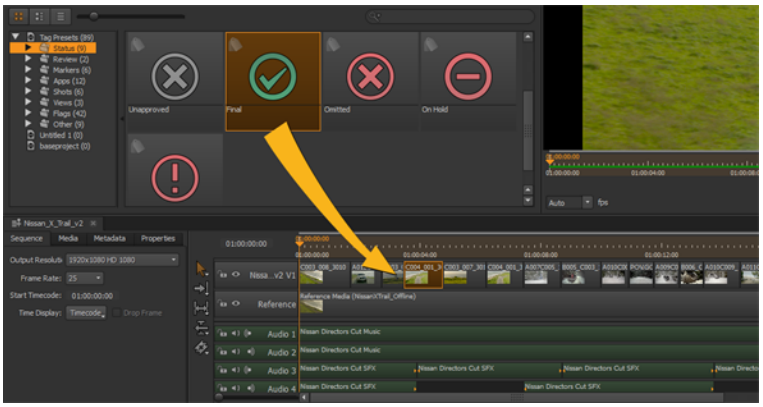
To apply a tag to a track item on the timeline:

1. Click the **Tags** tab, or navigate to **Window** > **Tags**.

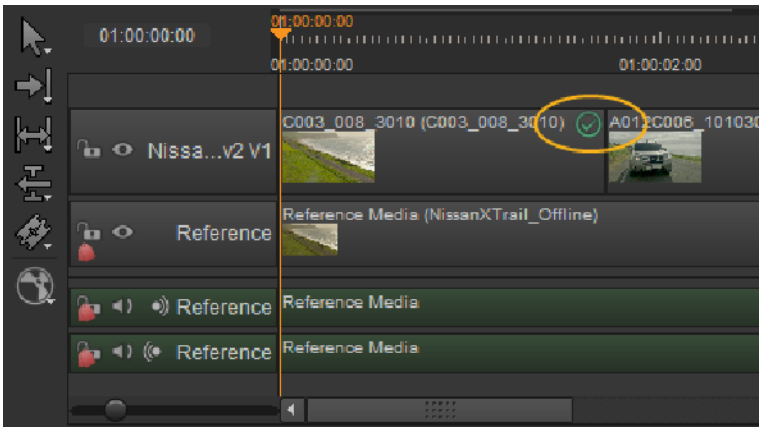
   The **Tags** panel displays.

2. Drag-and-drop the required tag from the **Tags** panel to the timeline.

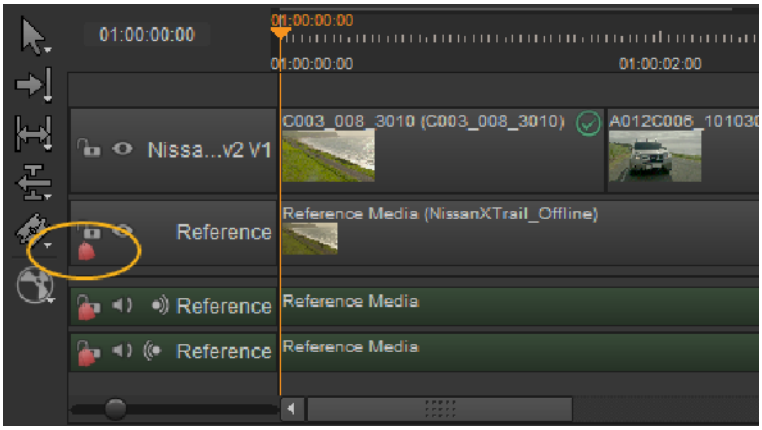
   Depending on where the tag is dropped, you'll mark a track item (or items if you make multiple selections) or a track.



Tags applied to track items appear on the right of the selected item(s) on the timeline.



Tags applied to tracks appear in the track header on the left of the timeline.



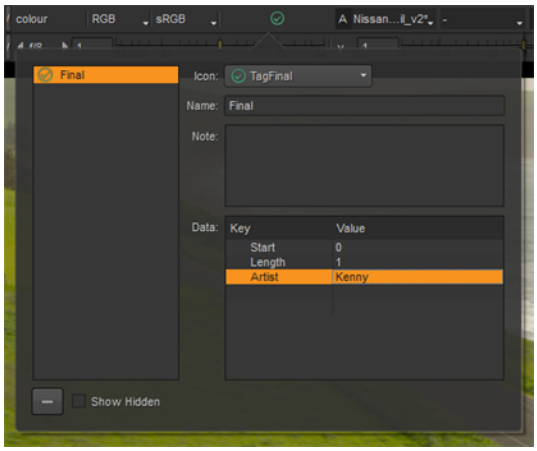
Adding Notes to Tags

In some cases, a simple tag on a frame or clip may not contain all the information that you wish to pass on to the next stage of production. Adding notes to a tag can provide that extra detail.

WARNING: To delete a note, don't click the - button because this refers to the tag. Instead, simply delete the notes in the window and click outside the note dialog.

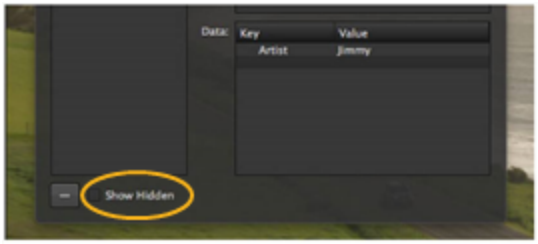
1. Add notes to tags by clicking on the required tag and entering text or editing the metadata keys and values.

   The example shows a note and metadata key "Artist" added to a clip tag, but you can add notes to frame and timeline tags in the same way.



2. Click outside the dialog to save the note.

Hiero allows you to "hide" tags using the Python API. Hidden tags are not displayed in the interface, unless you enable **Show Hidden** in the Tags popup, but the notes and metadata are still accessible.



Navigate to **Help** > **Documentation** > **Hiero Python Developer's Guide** for more information on creating hidden tags.

Filtering and Flagging Media Using Tags

You can search for clips containing certain tags, for example, if you wanted to find all clips that you tagged as **Approved**.

There are two types of tag search you can perform: **Filter** and **Flag**. Select the desired search type by clicking the magnifier icon in the **Project** tab.

- **Filter** - displays all objects that contain the specified tag. This is the default search method.
- **Flag** - displays all objects and marks the items that don't match the search tag.

Drag the required tag from the **Tags** panel into the search box and select the bin or bins you want to Filter or Flag.

TIP: If you have more than one search criteria, click the icons in the search box to display a brief description of the icons.
Filters and flags persist until you change the search criteria or click the **x** icon in the search box.

The following examples show **Filtering** a bin to display only clips with the **Notes** tag applied and **Flagging** all clips that don't have the **Notes** tag applied.

Filtering...

...Flagging.

Creating Custom Tags

You may find that you require a specific tag or suite of tags that are not provided by default. Creating custom tags allows you to really control the organization of your media, and you can even create your own tag icons.

NOTE: Custom tags can only be created in the **Tags** panel.

To create a custom tag:

1. Click the **Tags** tab, or navigate to **Window** > **Tags**.
2. Select your project and navigate to **Project** > **New Tag**, or press **Ctrl**/**Cmd**+**Y**.
   The new tag is placed in the selected project.
3. Double-click the tag to open the **Edit Tag** dialog box.
4. Click the **Icon** dropdown menu to select an icon for the custom tag.

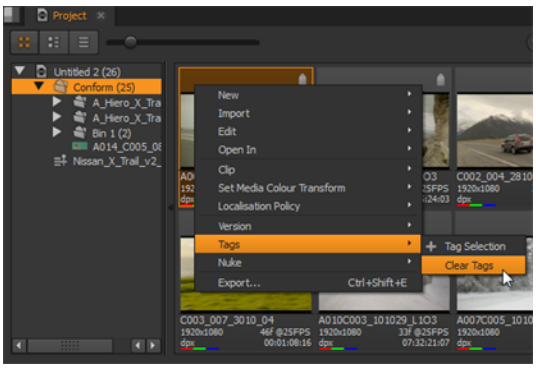
TIP: You can import your own image for the tag by selecting **Custom** to open the browser.

5. Enter a description for the tag in the **Name** field.
6. Click **OK** to save your changes.

Removing Tags

To remove a tag from a frame or clip, click the tag and then click  .

You can remove all tags from a clip or selection of clips by right-clicking your selections in the bin and choosing **Tags** > **Clear Tags**.



To remove a tag from a track or track item, click on a tag icon and select the required tag to remove.

Click  to remove your selection.

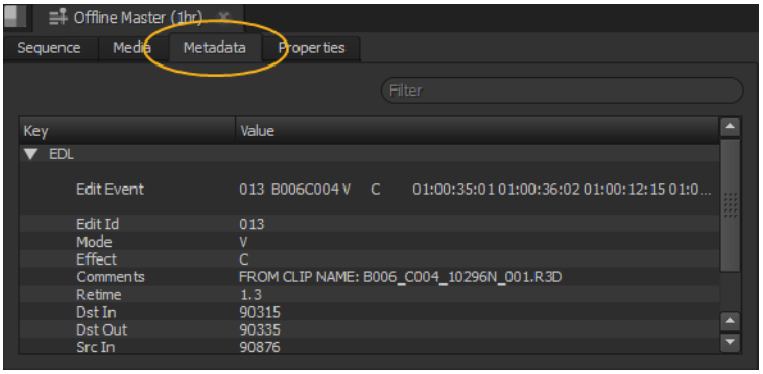
Viewing Metadata

Metadata is information that describes media content, separate from the clip itself, in the form of a table on the **Metadata** tab. Types of metadata include **Duration**, **File Size**, and the **Path** to the location of the source media.

Clip and Track Item Metadata

To view metadata for a bin clip, right-click the clip and select **Open In** > **Metadata View**, or press **Alt**+**D**.

To view metadata for a track item, select the **Metadata** tab in the timeline panel and click on the item to examine.

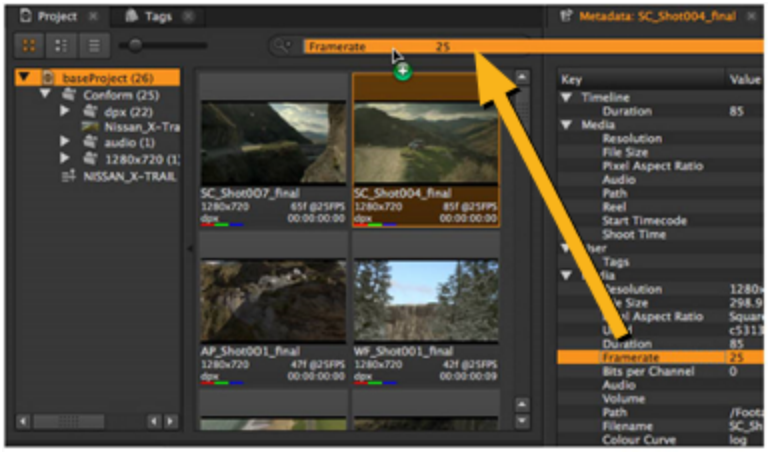


Filtering and Flagging Media Using Metadata

If searching your project using tags has not filtered your media effectively, you can search for clips containing certain metadata. For example, if you wanted to find all clips that had a particular resolution or frame rate.

To filter or flag using metadata:

1. Right-click the clip that contains the required metadata key and select **Open In** > **Metadata View**, or press **Alt**+**D**.
2. Drag-and-drop the required key from the **Metadata** panel to the bin view search box.



3. Use the metadata key as a filter or flag as described in Filtering and Flagging Media Using Tags.

Conforming Using Hiero

Conforming describes the process of matching up the footage from a shoot with the required edit decisions to create a meaningful timeline.

Introduction

Hiero accepts sequences either from EDLs (edit decision lists), AAFs (advanced authoring format), or Final Cut Pro XML files from a specified directory structure containing the source media files. Hiero attempts to conform the media, warning you if there are missing media.

Hiero conforms EDLs into single tracks, and AAFs and XMLs into multi-track timelines. You can either conform into a brand new timeline, or into an existing timeline by adding new tracks. For example, when conforming multiple EDLs into the same timeline, you would add new tracks for each EDL sequence conformed.

Project Settings

A good place to start work is by defining default **Project Settings** before importing sequences, particularly in the case of EDLs as they may not contain frame rate information. **Project Settings** only apply to the current project and override **Preferences** settings.

NOTE: You can modify **Project Settings** later on, for example, when you're ingesting media.

To define Project Settings:

1. Navigate to **Project** > **Edit Settings**.

   The **Project Settings** dialog displays.
2. Click the **General** sub-menu to set the project **Name**.
3. Click the **Sequence** sub-menu to set the default timeline **Output Resolution**, **Frame Rate**, and **Start Timecode**.
4. Click the **Views** sub-menu to set up multi-view or stereo projects. See Stereoscopic Projects for more information.
5. Click the **Color Management** sub-menu to manage the display and file colorspaces for this project.

   See Color Management Settings for more information.

TIP: Use the options in **Preferences** > **Project Defaults** > **Color Management** to apply them to all new projects.

6. Click the **RED Settings** sub-menu to define the **Default Video Decode Mode** for new R3D files in the current project. This setting overrides the **Preferences** > **Behaviors** > **File Handling** > **default red clip video decode mode** control for existing projects. SeeAppendix A: Preferences for more information.

NOTE: Changing this setting does not change the decode setting for R3D media that has already been imported.

   The dropdown contains a sliding resolution scale from **FullPremium** to **SixteenthGood**, but bear in mind that higher resolutions are slower to decode.

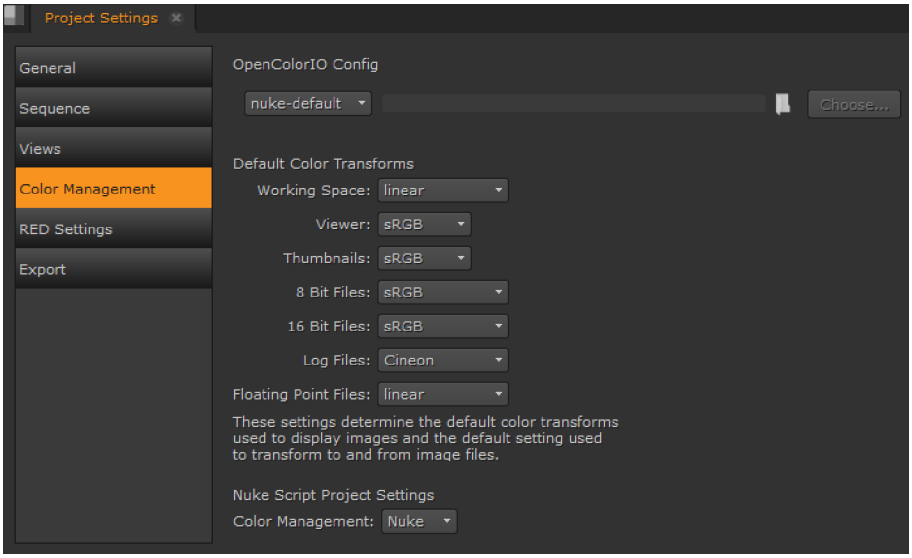
7. Lastly, click the **Export/Roundtrip** sub-menu to select the default **Shot Preset** to use when exporting.

Color Management Settings

Hiero uses OpenColorIO for color management. All of the colorspaces in Hiero, whether those shipped with the application or custom colorspaces are defined in OCIO config files.

Depending on the OCIO config file that you are working with, there are a number of colorspace options and roles (aliases to colorspaces) that you can set in Hiero. There are also default options, which change depending on what file type you are working with. When the default option is selected, the colorspace that Hiero has set for it is listed in brackets.

TIP: Use the options in **Preferences** > **Project Defaults** > **Color Management** to apply them to all new projects.

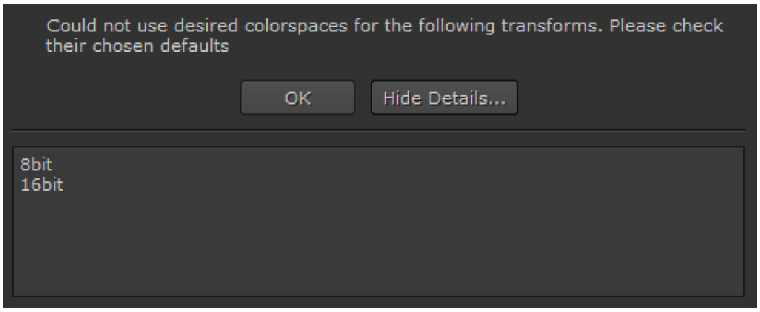


1. Set the OpenColorIO Config you want to use for this project.

Hiero ships with a number of default configurations, but you can:

- use a custom OCIO config file by selecting **custom** from the **OpenColorIO Config** dropdown and then entering the file path, or
- add your own config to your **.nuke** file. See Adding OCIO Configurations for more information.

Changing the configuration updates the **Default Color Transforms** accordingly. If the selected configuration is invalid for certain transforms, a warning displays. For example, if you choose the shipped **iff** configuration, the **8-bit** and **16-bit** transforms are not compatible.



In this case, the non-compatible transforms are set to the **raw** colorspace.

2. The **Working Space** transform determines what colorspace files should be converted to, on import, and from, during export - it's the colorspace used by Hiero under the hood.

NOTE: In earlier releases of Hiero, this colorspace was hidden because **linear** was always chosen as the **Working Space**. You may find that some operations work better in colorspaces other than **linear**. For example, some transforms work better in the **CLog** colorspace.

3. You can use **Default Color Transforms** dropdown menus to override how clips in the Viewer, thumbnails, and so on are converted to and from the **Working Space**.
4. The **Nuke Script Project Settings** dropdown determines whether Hiero uses the LUTs read from the configuration specified or the **Nuke** native LUTs during export. Selecting **OCIO** makes the relevant OCIO LUTs available to the Read and Write nodes in scripts on a per project basis.

   All configurations except **nuke-default** automatically switch this control to **OCIO**.

When the **Nuke** is selected, Reads and Writes work the same as in previous versions of Nuke, with no integrated OCIO transforms. When **OCIO** is selected:

- Reads and Writes use OCIO transforms, with no Nuke built-in LUTs applied to the image.
- Read and Write colorspace controls are populated with the list of colorspaces defined in your currently selected OCIO config.
- The **default LUT settings** dropdowns are also populated with the list of colorspaces or display transforms defined in your OCIO config. The default value for each menu match the defaults in a Hiero project with the same config. These defaults can be overridden using Python callbacks. See the following path for the default implementation that ships with Nuke:
  `<install_dir>/plugins/nuke/colorspaces.py`

- The **working space** dropdown allows you to change the colorspace that Nuke uses internally for its image processing. This automatically sets the **in** colorspace of Write nodes and Viewer Processes, and the **out** colorspace for Read nodes. This defaults to the scene **linear** role defined in your OCIO config.
- Hiero-created comps no longer contain automatically injected OCIOColorspace nodes. Instead, OCIO Color Management is automatically set in the comp's **Project Settings**, and the correct OCIO colorspace is set directly into the Read and Write nodes.

Adding OCIO Configurations

You can add your own OCIO configurations to Hiero as they become available, such as new versions of ACES. You can also add legacy configs for backward compatibility.

1. Navigate to the location of your **.nuke** file as shown by platform. You may have to create a **.nuke** folder if it doesn't exist.
   - Linux: /users/login name/.nuke
   - Mac OS X: /Users/login name/.nuke
   - Windows: ~\.nuke

NOTE: On Windows, the **.nuke** folder can be found under the directory pointed to by the HOME environment variable. If this variable is not set (which is common), the **.nuke** directory is under the folder specified by the USERPROFILE environment variable - which is generally of the form *drive letter:*\Documents and Settings\login name\ or *drive letter:*\Users\login name\

To find out if the HOME and USERPROFILE environment variables are set and where they are pointing at, enter **%HOME%** or **%USERPROFILE%** into the address bar in Windows Explorer. If the environment variable is set, the folder it's pointing at is opened.

2. Recreate the following structure within your **.nuke** folder:
   `~/plugins/OCIOConfigs/configs/<config name>`
3. Copy the contents of the config into the **config name** named folder. There should be a **luts** folder and **.ocio** file at the bare minimum.
4. If Hiero is already running, relaunch the application to apply the change.
5. You can now select your configuration from the **Project Settings** > **Color Management** > **OpenColorIO Config** dropdown.

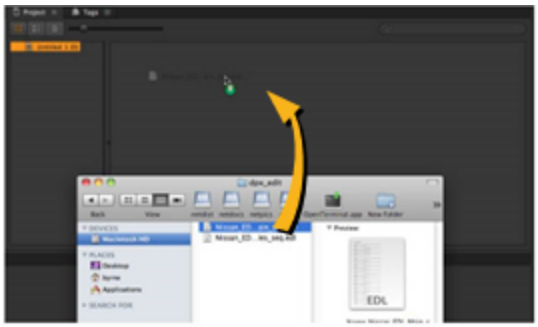
Importing Sequences

Hiero allows you to import your EDL, AAF, and XML sequences in one of two ways, depending on your preferences. Either:

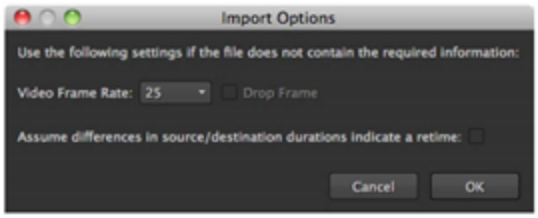
- Navigate to **File** > **Import EDL/XML/AAF**, use the browser to locate the EDL, AAF, or XML, and then select the file and click **Open** to import the sequence.

OR

• Drag-and-drop the EDL, AAF, or XML files directly from a file browser into the interface.



If you're importing an EDL, bear in mind that there is no guaranteed frame rate information included in the file, so an **Import Options** dialog displays.



1. Select the correct frame rate and use the following check boxes, if required:
   • **Drop Frame** - when enabled, the EDL is assumed to contain drop file information. SeeTimeline Playback Tools for more information.
   • **Assume differences in source/destination durations indicate a retime** - when enabled, any disparity between the source clip (Src) and track item (Dst) duration is treated as a retime.
2. Click **OK** to import.

   XMLs and AAFs imported into Hiero support transform and crop edit decisions implemented in third-party applications, such as Adobe Premiere or Apple Final Cut Pro. XMLs also support retimes. The information in the **.xml** or **.aaf** is interpreted using soft effects, such as Transform and Crop, and TimeWarp for non-linear retimes. Constant linear retimes are handled in the same way as in previous versions of Hiero.

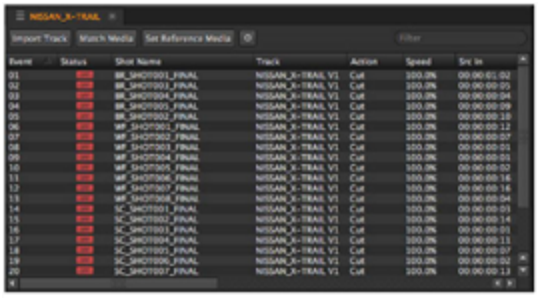
NOTE: Non-linear animation curves from **.xml** may not appear as expected when imported, but the keyframes are identical to the source. As a result, you may need to adjust the handles on curves to match footage between keyframes in the Curve Editor or Dope Sheet.

See the *Nuke User Guide, Getting Started, Using the Compositing Environment, Animating Parameter* section or the Nuke Online Help for more information.

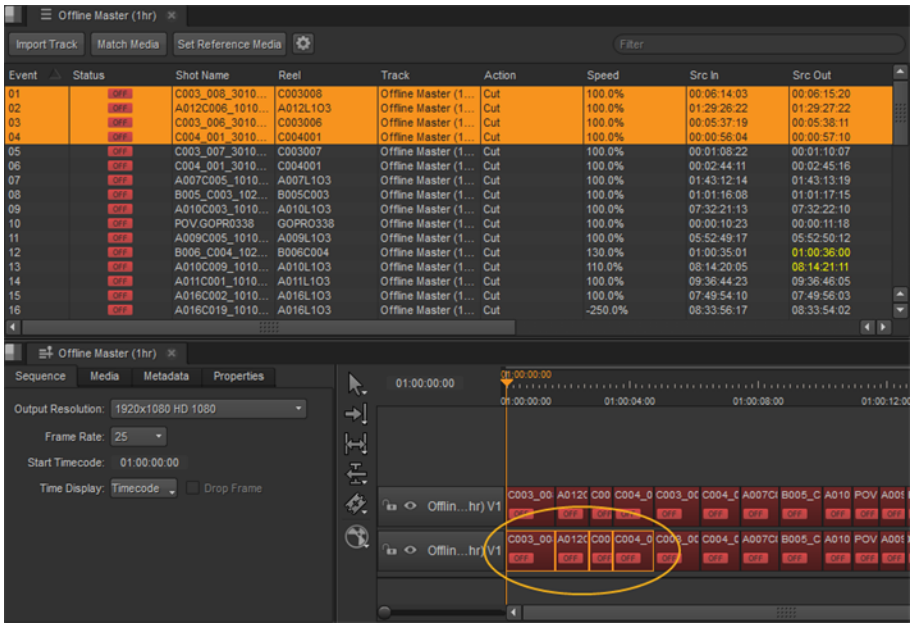
Additionally, Premiere Pro **.xml** exports only support constant, linear retimes. As a result, retimed track items on the Nuke Studio timeline may not match those on the Premier Pro timeline, because certain non-linear retime data is not written into the exported **.xml** file.

After importing the EDL, AAF, or XML the **Conforming** workspace displays and the spreadsheet and timeline are populated with offline clips - media with an unknown location.

NOTE: The **Event** column represents the clip's position on the timeline, not its event number from the edit.



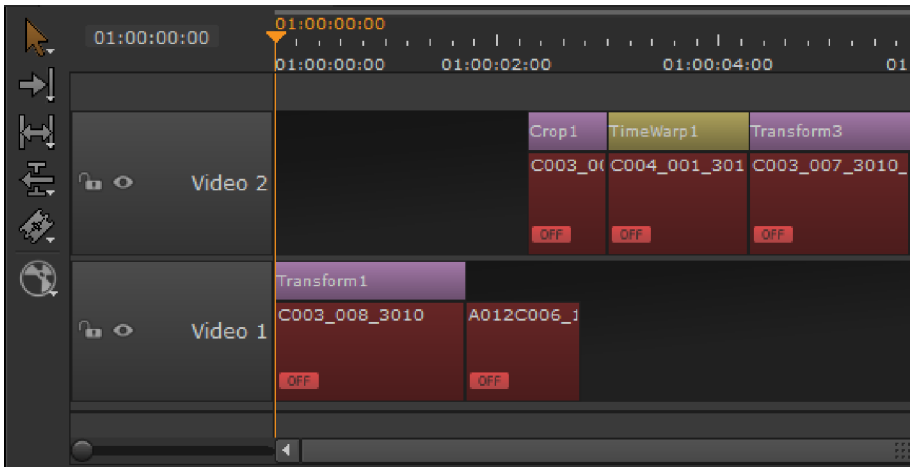
Notice that clicking entries in the spreadsheet highlights the corresponding track items on the timeline?



The spreadsheet, timeline, and Viewer are linked together when viewing sequences. If suitable screen real estate exists within the current workspace, double-clicking a sequence forces the associated panel to open automatically. If you want to close a single panel in a linked group, hold the **Alt** modifier while closing the linked panel, otherwise all panels in the group are closed.

NOTE: If you imported an XML sequence, you may find that Hiero has automatically matched media for you.

Any transform, crop, or retime edit decisions from third-party software **.xml** and **.aaf** files are repesented using soft effects. These effects are imported along with the track item to which they're associated.



Conforming Sequences

Once your EDL, AAF, or XML sequences are imported, it's time to begin the conform process to match the offline track items in your spreadsheet with the source clips on disk. You can conform sequences by searching on disk or by pre-ingesting the required clips into Hiero.

NOTE: Projects containing large amounts of movie files (for example **.r3d** and **.mov**) may exceed the number of available file handles per process, causing problems opening new files or projects and exporting.
You can increase the default limit of 1024 by entering the following command from the terminal, then running the application from the same session:

```
ulimit -Sn 2048
```

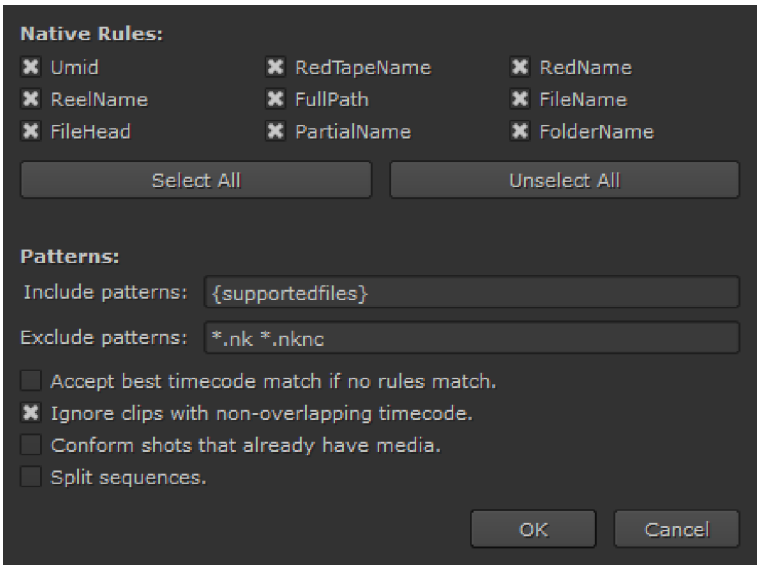
Conforming Using a Browser

To conform a sequence using a browser:

1. After importing a sequence, click **Match Media** on the spreadsheet and use the browser to locate the source folder containing the correct media.

NOTE: **Match Media** can also be used on selected events in the Spreadsheet view.

2. Click **Open** to display the **Conform Options** dialog.



Hiero uses a set of conform **Rules** and file name **Patterns** to match candidate media files on disk to the events, or track items, in a sequence:

- **Rules** - sets the offline media properties to match to the corresponding spreadsheet entry during conform.

  Rules that rely on information that doesn't exist in the event or candidate clip are ignored, and some rules compound others to identify a better match.

Rule	Description
Umid	Match a file's unique material ID (UMID) – that is written into the file's metadata on creation – to the candidate media's UMID. If either, or both, lack a UMID this rule is ignored.
RedTapeName	Match a RED-style camera reel name from the event to the candidate media name.
RedName	Look for a RED-style camera file name in the event that matches the candidate media name.
ReelName	Look for the event's reel name in the candidate's media name.
FullPath	Match the event's entire filepath to the candidate media's entire filepath.
FileName	Match only the event's file name (no path) to the candidate media's file name.
FileHead	Match the event's file name head (no path, file extension, or padding) to the candidate media's file name.
PartialName	Look for the event's name in the candidate media's name and vice versa.
FolderName	Look for the event's name in the filepath of the candidate media.

All rules are enabled by default, but you may occasionally need to disable rules if they cause incorrect matches between a particular edit and set of source clips.

TIP: Use the **Select/Deselect All** buttons to quickly enable or disable rules.

- **Patterns** - sets the inclusion and exclusion parameters during the conform, separated by spaces. For example, ***mov *dpx** would only include or exclude **.mov** and **.dpx** files.

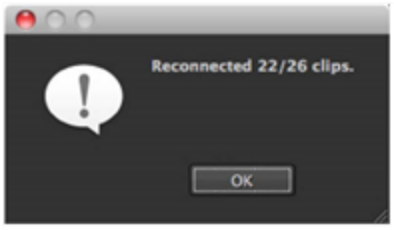
  You could also conform by name, such as **BR_Shot***, which would only include or exclude source clip names starting with that string.

TIP: It's always a good idea to be as specific as possible with search locations during conforms, but if the need arises, conform **Rules** and **Patterns** can save time.

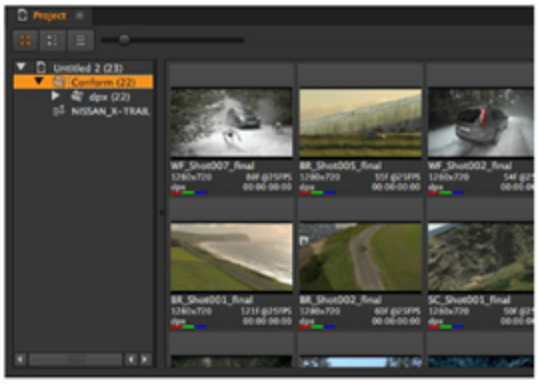
3. Enable **Accept best timecode match...** to use the nearest source timecode match to conform the event, if no rules are matched.
4. When **Ignore clips with non-overlapping timecodes** is enabled, any potentially matching source clip whose timecode doesn't overlap the track item in question at all is ignored.
5. Check **Conform shots that already have media** if you want to update all timeline track items. By default, the application doesn't try to conform events that are not offline.
6. When **Split sequences** is enabled, any non-contiguous file sequences found by the conform are split into separate clips, in the same way as when the **split seq** option is enabled in the file browser.
7. Click **OK** to begin the conform process.

   Hiero attempts to conform the edits with the selected media.

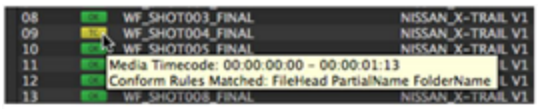
   A dialog box informs you of the success rate once the conform is complete.



Successfully matched media is placed in a new **Conform** bin in the project.



NOTE: You can display the conform Rules matched for each spreadsheet object by hovering the cursor over the required entry.

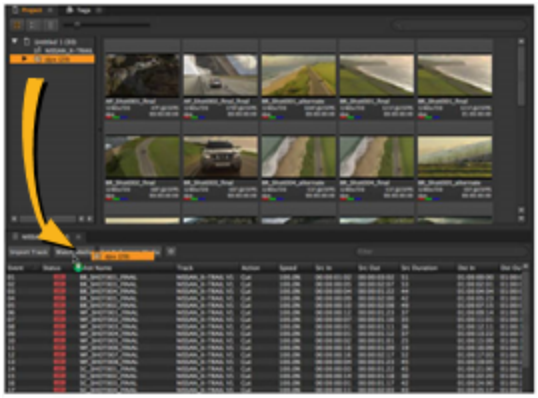


Conforming with Pre-ingested Media

To conform with pre-ingested media:

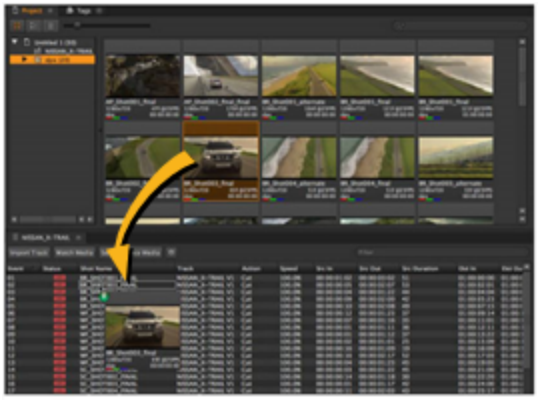
1. If your source media has been ingested, you can drag-and-drop media from the bin view onto the **Match Media** button.

   See Ingesting Media for information on getting media into Hiero.



2. Follow the **Conform Options** instructions described previously to complete the conform process.

   If you want to conform a single entry in the spreadsheet, drag-and-drop the media from the bin view onto the required entry in the spreadsheet.



   Conforming individual, pre-ingested media doesn't require **Conform Options** because Hiero already knows the exact location of the media and trusts your decision to replace a track item.

About the Media Spreadsheet

All events in a sequence are displayed in an easy to read format in the spreadsheet including status, the track it resides on, length, and the source file location.

After conforming, you can use the spreadsheet to locate bin clips or replace track items in the timeline, as well as massage timecodes if they are invalid.

The media spreadsheet displays each entry's current media state:

-  - the media was successfully conformed and its timecode is correct.
-  - the media was successfully conformed, but the timecode is currently incorrect.
-  - the media could not be conformed.

NOTE: Any source or destination field highlighted in yellow indicates that the entry has been rounded down for display purposes.

See Managing Timelines for more information on importing tracks and reference media.

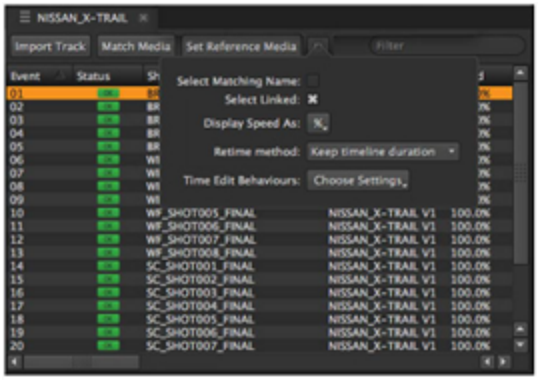
Sorting and Custom Columns

The spreadsheet can be organized in much the same way as accounting spreadsheets:

- Right-click the column headers to display the list of default columns available. Enable or disable each column using the checkboxes.
- Click the required column to sort the spreadsheet in ascending or descending order, as indicated by the arrow in the column header.
- Drag-and-drop column headers to reorder the spreadsheet as required.
- Add custom columns, such as Tags, using the Python API. See **Help** > **Documentation** for more information on the Python API.

Spreadsheet Controls

There are also a number of controls, accessed by clicking the cog icon, that determine the spreadsheet's appearance and behavior.

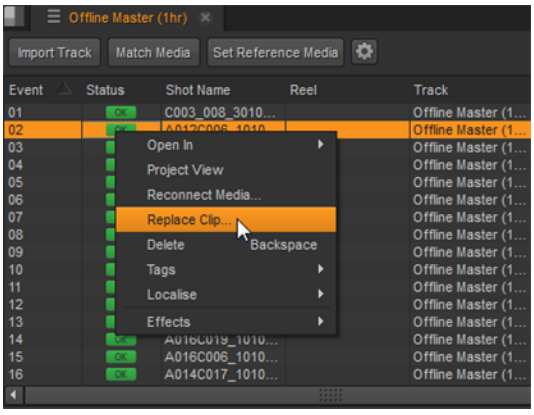


- **Select Matching Name** - when enabled, selecting an item in the spreadsheet highlights all items with the same name.
- **Select Linked** - when enabled, selecting an item in the spreadsheet highlights other items linked to it, such as audio tracks ingested with video tracks.
- **Display Speed As** - sets the unit used in the Speed column of the spreadsheet. Select either **fps** (frames per second) or **%** (the percentage of the media frame rate).
- **Retime method** - sets the type of **Speed** retime applied on the timeline.
- **Time Edit Behaviors** - sets how source and destination **In**, **Out**, and **Duration** are calculated.

  SeeRetiming Clips for more information on retime methods and Timeline Editing Tools for source/destination calculations.

You can locate, display, reconnect, or rename track items directly from the spreadsheet.

- Hold **Alt** and click an entry to move the playhead to the track item's **In** point on the timeline.
- Hold **Alt** and double-click an entry to move the playhead to the track item's **In** point on the timeline and zoom to fit the timeline view.
- Right-click a spreadsheet entry and select the required option:



  - **Open In** - the associated bin clip opens in the selected location, such as a Viewer.
  - **Project View** - the associated clip is highlighted in the bin view.
  - **Reconnect Media** - attempt to reconnect the media from a specified location on disk, such as when the source was originally on a drive that is no longer connected.

- **Replace Clip** - replaces the selected entry with a specified source clip. Hiero assumes that any source clip you choose is acceptable, regardless of timecode.
- **Delete** - deletes the selected entries from the spreadsheet and timeline.
- **Tags** - allows you to add tags to your selection directly from the spreadsheet view. SeeUsing Quick Tags for more information.
- **Localize** - allows you to control the localization of clips, tracks, and sequences from the spreadsheet. See Caching Media Locally for more information.
- **Effects** - provides access to soft effects directly from the spreadsheet. See Soft Effects for more information.

Adjusting Timecodes

You can easily adjust single or multiple event timecodes:

1. Select the invalid entry or entries in the spreadsheet.
2. Double-click in the **Src In** column.
3. Adjust the timecode as required. You can enter **absolute** or **relative** timecode values:
   - **Absolute** - absolute timecodes contain eight digits and specify the new timecode for the event, regardless of the current timecode.

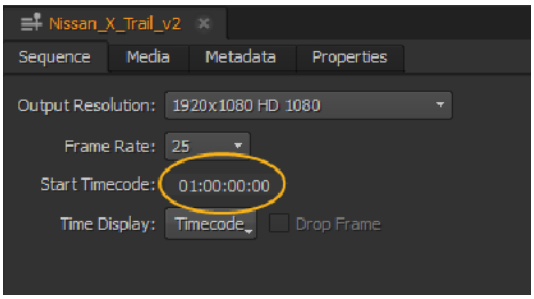
Example	Result
01:05:43:21	Sets the timecode at 1 hour, 05 minutes, 43 seconds, and 21 frames
01054321	

   - **Relative** - uses **+** and **-** values to alter the timecode relative to its current value. You can also use **h**, **m**, and **s** to denote hours, minutes, and seconds.

Current Position	Example	Result
01:05:43:21	+1h	02:05:43:21
	-110	01:05:42:11
	+10000	01:06:43:21
	-6m	00:59:43:21

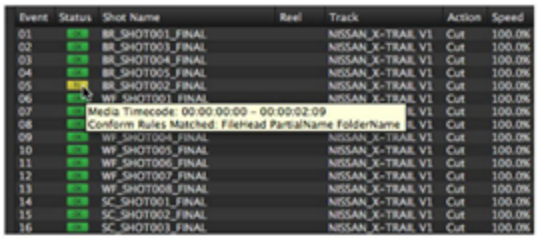
The media changes state to  .

NOTE: Timelines start at 01:00:00:00 by default, but you can change this to any value using the **Sequence** panel.



If you're not sure what the timecode should be, you can:

• Hover the mouse over the target entry in the spreadsheet to view a timecode tooltip.

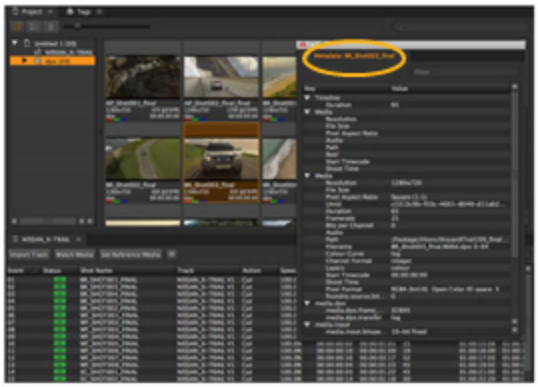


OR

• Examine the bin clip's metadata and calculate the correct **Src In**:

1. Right-click the required entry and select **Project View**.
2. Right-click the clip in the bin and select **Open In** > **Metadata View**, or press **Alt**+**D**.

   The selected clip metadata is displayed in a floating pane.



Renaming Shots on the Timeline

Once you've conformed your edit, you may want to rename track items on the timeline sequentially for clarity.

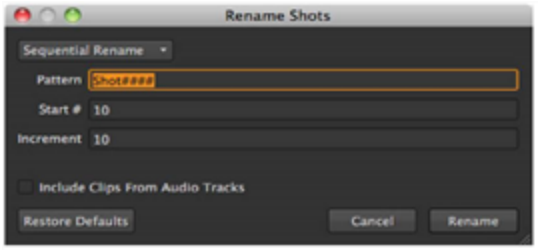
To rename track items:

1. Select the track items to rename using the timeline or spreadsheet view.

2. Right-click on the timeline and select **Editorial** > **Rename Shots**.

TIP: You can also navigate to **Timeline** > **Rename Shots** or use the **Alt**+**Shift**+**/** keyboard shortcut.

The **Rename Shots** dialog displays.



3. Select the rename type from the dropdown:
   - **Simple Rename** - all shots are replaced by the **New Name** specified.
   - **Find and Replace** - a simple find and replace shot name. All selected shots containing the specified **Find** pattern are substituted with the **Replace** pattern.
   - **Sequential Rename** - rename shots sequentially using the **Pattern**, **Start #**, and **Increment** fields.
   - **Match Sequence** - allows you to select a sequence to copy shot names from, providing that they use the same track items. For example, renaming track items on a 30 second timeline to mirror the shot names from a 60 second timeline.

NOTE: You can only use sequences that reside in the same project and track items that have overlapping frame ranges.

   - **Clip Name** - all shot names are replaced by the name of the source clip they reference. This option can be used to revert previous rename operations.
   - **Change Case** - the case of all shot names is changed, as specified by the **Case** dropdown. For example, selecting **Title Case** capitalizes the first character of each word.
4. Rename operations also accept token substitutions. The following tokens are recognized:

Token	Resolves to
{clip}	The name of the source clip referenced by the target track item.
{event}	The EDL event number associated with the target track item.
{fps}	The frame rate of the sequence containing the rename target.
{sequence}	The name of the sequence containing the rename target.
{shot}	The name of the track item.
{track}	The name of the track containing the rename target.

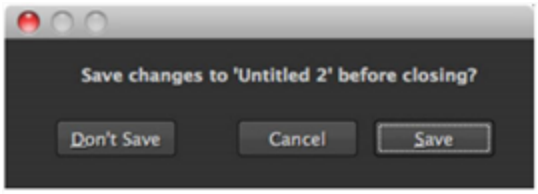
5. Enable **Include Clips From Audio Tracks** to rename audio track items as well as video track items.
6. Click **Rename**.

   The selected track items are renamed as specified.

Saving and Loading Projects

You can save your work in a project using the **.hrox** file extension. Projects can contain **.nk** scripts in the form of track items added by using **Create Comp Clips** during round-tripping. See Building VFX Tracks and Comp Clips for more information.

If you quit the application without saving, you'll be prompted to save or discard your changes:



Click the required button or press **D** for **Don't Save** or **S** to **Save**.

NOTE: If you have a **.nk** script open in the same session, a second prompt is displayed so you can save your script as well.

To save a project:

1. Navigate to **File** > **Save Project** or **Save Project As...**

   OR

   Use the **Ctrl**/**Cmd**+**S** or **Shift**+**Ctrl**/**Cmd**+**S** keyboard shortcuts respectively.

   The **Save Project** dialog box displays.
2. Browse to the save location and enter a name for the project.
3. Click **Save**.

   Your project is saved to the location specified and appends the **.hrox** file extension automatically.

To load a project:

1. Navigate to **File** > **Open Project**.

TIP: If you need to open a project that you worked on recently, you can select **Open Recent Project** to quickly locate your work.

   OR

   Use the **Ctrl**/**Cmd**+**O** keyboard shortcut.

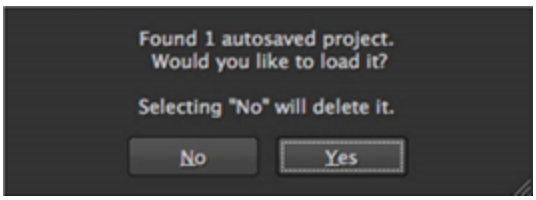
   The **Open Project** dialog box displays.

2. Browse to the file location and click **Open**.
   Your project opens and populates the necessary panel automatically.

Autosaved Projects

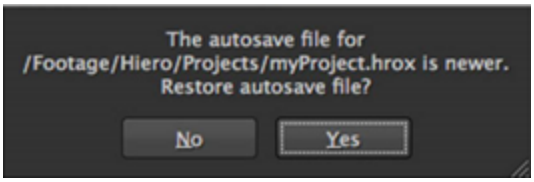
The autosave function creates a temporary project save file at 5 minute intervals, but you can adjust **force project autosave after** in the **Preferences** > **General** dialog. See Appendix A: Preferences for more information.

At startup, the application scans for autosaved projects and displays a prompt if autosaves exist.



Click **Yes** to load the autosave or **No** to ignore and delete it.

Opening a project also uses the autosave functionality. If the autosave is more recent than the saved project file, a prompt displays:



Click **Yes** to load the autosave file or **No** to load the original project file.

NOTE: Clicking **No** does not delete the autosaved project in this case.

Stereoscopic Projects

The title of this chapter is slightly misleading, as Hiero isn't actually limited to stereoscopic views, but rather provides multi-view support for as many views as you need. The views do not have to be stereo pairs, but since that is the most obvious application, this chapter mainly deals with stereoscopic projects.

Quick Start

In many ways, Hiero lets you work on stereoscopic material just like you would on any other images. For example, the Timeline Editing Tools work the same for stereo views in the Viewer as they do for regular clips. However, there

are also a few stereo-specific settings that you need to be aware of when viewing stereoscopic material. The following teaches you how to set up your stereo project, read in, and view your images.

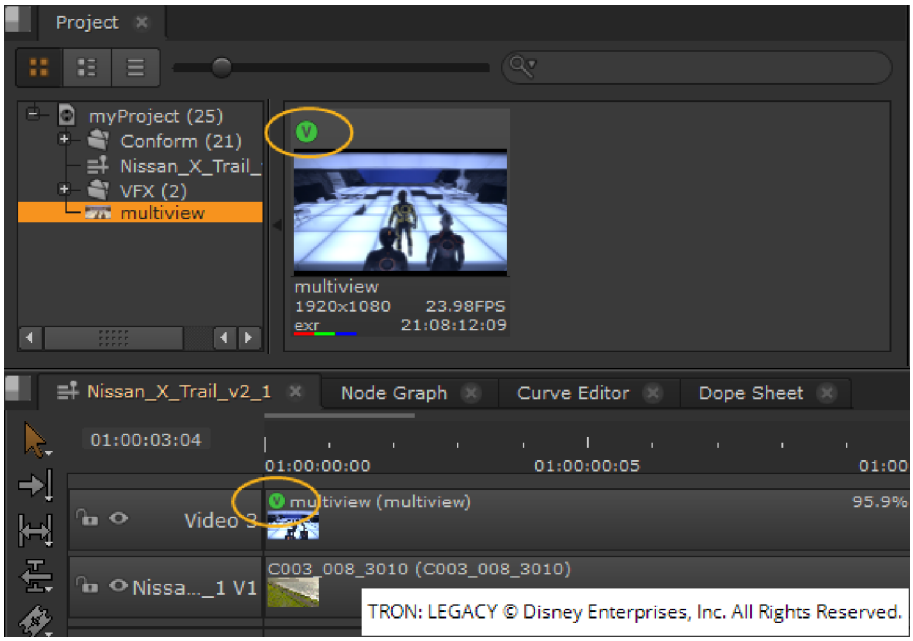
In the current release, there are a few restrictions to stereo projects which will be addressed in future releases:

- Only multi-view **.exr** and **.mov** files are currently supported. Separate files per view, such as _left and _right **.dpx** files, are not supported in the Timeline environment.
- Create Comp Clips does not support multi-view sequences and track items. Creating comps from multi-view sequences and track items displays a dialog offering to create the comp with the first available view.

Here's a quick overview of the workflow:

1. The first step in working with stereo footage in Hiero is to set up views for them in your project settings (navigate to **Project** > **Edit Settings**). Click **Set up views for stereo** on the **Views** tab to do this. For more information, see Setting Up Views for the Project.
2. You can then import your stereo footage into Hiero just as you would regular clips. For more information, see Ingesting Media.

   Multi-view clips and track items are marked with a  to distinguish them from regular items.



3. In the Viewer, you can select which view to display with the **views** buttons. For more information, see Displaying Views in the Viewer.

Setting Up Views for the Project

You can import your footage and let Hiero create the views automatically or set up views in advance in the project settings. This allows you to process the individual views separately or both views together, and see the effect of your changes on each view.

If you are likely to need the same views in several projects, you may want to save the views you create in a **template.nk** script file. For more information on how to do this, see the *Nuke User Guide* or the Online Help here.

Creating Views Automatically

NOTE: Automatic view creation is not implemented for multi-view **.mov** files. See Creating and Managing Views Manually for information on how to create the views.

1. Import your multi-view files as normal. See Ingesting Media for more information.

   The **Create missing views?** dialog displays.

2. Click **Add Views**, **Replace Views**, or **No**:

   • **Add Views** - add the views in the incoming clip to those that exist in the project.

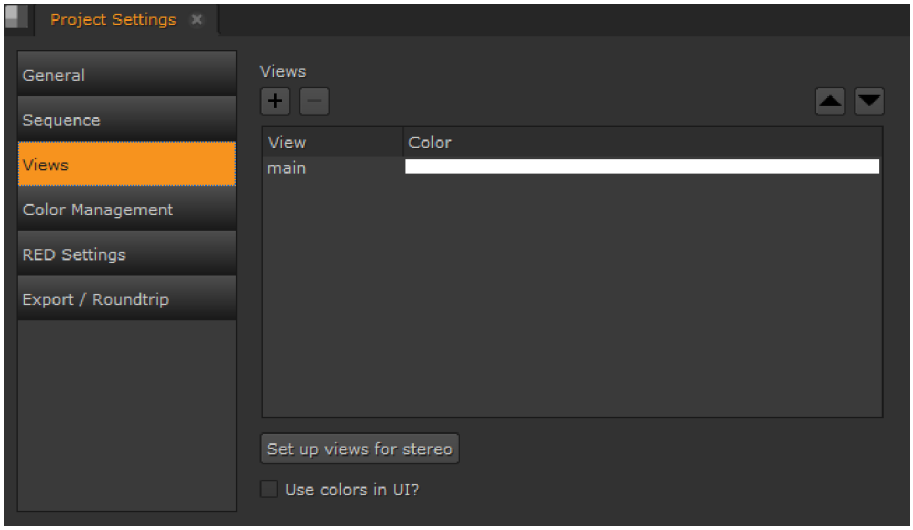
   • **Replace Views** - replace all existing project views with those in the incoming clip.

   • **No** - import the clip and display only the first view in the file, retaining any existing views in the project.

   You can now access the views in your project from the **view** dropdown menu of certain **Properties** panel controls. You'll also notice that each view has its own button in the Viewer controls.

Creating and Managing Views Manually

1. Select **Project** > **Edit Settings**.
2. Go to the **Views** tab. The available views are listed in the **Views** panel.



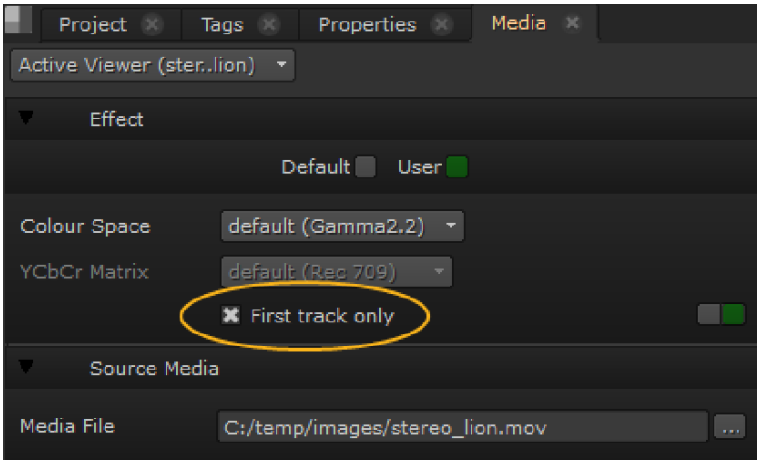
3. If you want to remove the view called **main** and add views called **left** and **right**, click the **Set up views for stereo** button. The two views are assigned colors. To change the colors, double-click on the color field and select another color from the color picker that opens.
4. Enable **Use colors in UI** to apply the selected color for each view to the associated button above the Viewer.
5. If you want to add other new views, click the **+** button.
6. To delete an unnecessary view, select the view from the list and click the **-** button.
7. To move a view around in the list of views, click the up and down arrows above the views panel.

You can now access the views in your project from the **view** dropdown menu of certain **Properties** panel controls. You'll also notice that each view has its own button in the Viewer controls.

Multi-View QuickTime Files

Multi-view **.mov** files only display one view by default. To enable all views in a multi-view **.mov** file:

1. Navigate to **Window** > **Media** and disable **First track only**.



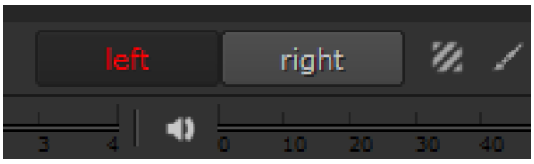
   You'll notice that the **.mov** in the bin is now marked with V to denote multiple views.
2. You can now switch between views using the buttons above the timeline Viewer.

Displaying Views in the Viewer

You can only display the views that exist in your project settings. To see a list of these views, or to add or delete views, select **Project** > **Edit Settings** and go to the **Views** tab. For more information, see Setting Up Views for the Project.

To Display a Particular View

1. Double-click the clip or sequence to load it in the Viewer.
2. On top of the Viewer controls, click the view to display. In the example, **left** or **right**.



NOTE: Hiero lists the views in **.exr** files in the order they appear in the clip's header, so a view named '**left**' may not always be the first view displayed above the Viewer.
If your views do not appear in the correct order, you can rearrange them in the **Project** > **Edit Settings** > **Views** tab. See Setting Up Views for the Project for more information.

TIP: You can also press the **;** (semicolon) and **'** (forward single quote) keys to move between different views in the Viewer.

To Display Two Views Next to Each Other

1. Right-click in the Viewer and select the **Stereo Modes** menu.
2. Select on of the following options:
   - **Side by Side** - displays the views side by side at the correct aspect ratio, and adds selection controls above the Viewer.
   - **Squeezed Side by Side** - displays the views side by side and squeezed to fit the format horizontally, and adds selection controls above the Viewer.
   - **Squeezed Above by Below** - displays the views above and below each other and squeezed to fit the format vertically, and adds selection controls above the Viewer.

To Display a Blend Between Two Views

1. Right-click in the Viewer and select the **Stereo Modes** menu.
2. Select on of the following options:
   - **Interlace H** - displays the views interlaced horizontally, and adds selection controls above the Viewer.
   - **Interlace V** - displays the views interlaced vertically, and adds selection controls above the Viewer.
   - **Checkerboard** - displays the views using an alternating checkerboard pattern (one pixel from left and one pixel from right), and adds selection controls above the Viewer.
   - **Anaglyph** - displays the views simultaneously using a red hue for left and green hue for right, and adds selection controls above the Viewer.
   - **Flicker** - displays both views alternately, and adds selection controls above the Viewer.

Selecting Which Views to Apply Changes To

By default, Hiero applies any changes you make to all views of the processed soft effect. To apply changes to a particular view only (for example, the left view but not the right), you must first split the view off in the effect's controls.

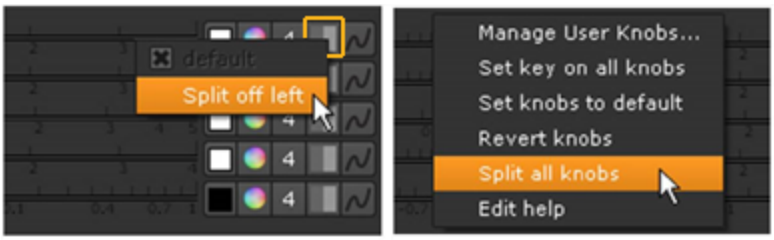
This can be useful when you want to perform the same operation on both views but use different values for each.

Splitting Views Off

Hiero allows you to split views off in order to apply changes to the existing views separately.

To Split a View Off

1. Insert a soft effect (for example, ColorCorrect) in the timeline.
2. Select the view you want to make changes to using the buttons above the timeline Viewer.
3. Open the effect's controls and click the view button  next to the control you want to adjust.
4. Select **Split off [view name]**. For example, to apply changes to a view called **left**, select **Split off left**. You can also split all the effect's controls by selecting **Split all knobs** from the right-click menu.



An eye appears on the split view button  . Any changes you make using the control in question are only applied to the view you chose to split off. Changes to controls that have not been split off are still applied to all views.

To Show Separate Values for Each View

Once you have split off a view, you can apply changes to the existing views separately. Click on the small arrow on the left side of a control you have split off. This divides the control so that you can see the values for each view.

Adjusting the split control for only the current view and for all views separately.

To Unsplit Views

1. In the effect's controls, click the **view** button  .
2. From the menu that opens, select **Unsplit [view]**. For example, to unsplit a view called **left**, you'd select **Unsplit left**.
3. Repeat step 2 for all views you want to unsplit.

   The view is unsplit, and all changes you made after splitting it off are lost.

Managing Timelines

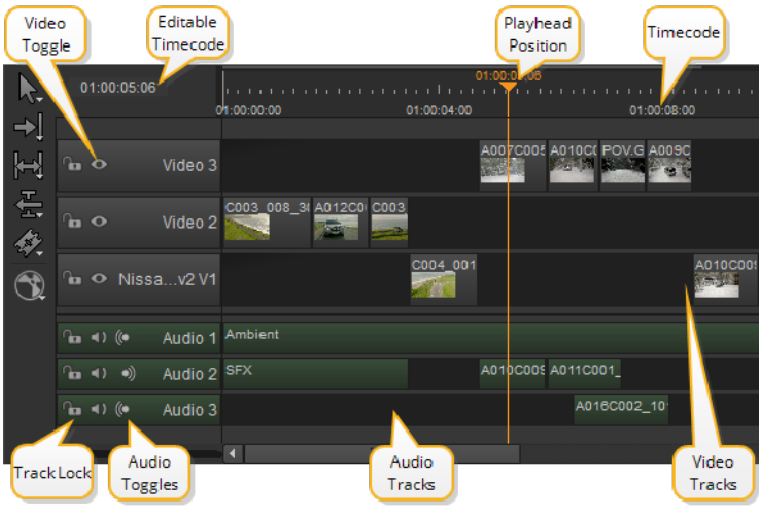
Timelines contain video and audio track items that reference the source clips in your project. Once the conform process is complete, the timeline displays your clips in context and enables you make finer edits.

Introduction

Timelines can contain any number of video sequences and audio tracks with each track containing track items that reference the source clips in your project - making changes to track items in the timeline does not affect the original source clip.

Hiero also features real-time soft effects on the timeline and the ability to add track items containing **.nk** scripts. SeeSoft Effects and Building VFX Tracks and Comp Clips for more information.

NOTE: Conformed EDLs only support one video sequence. If you've created multiple EDLs from the same edit, you can add each one into the timeline using the right-click **New Track** > **New Track(s) from EDL/XML** option or the **Import Track** button in the spreadsheet tab. See Adding Tracks to the Timeline.



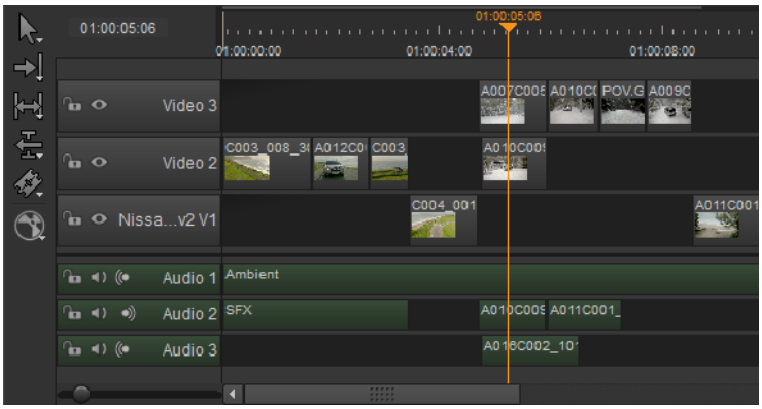
- **Video Toggle** - quickly turn off and on video tracks during playback. Hold **Alt** and click to solo the selected track.
- **Editable Timecode** - manually enter the required playhead position or use the up and down arrow keys or mouse scroll wheel to increment the playhead position.
- **Playhead Position** - displays the playhead location synchronized with the contents of the Viewer.

- **Timecode** - displays the timecode or frame number depending on the **Time Display** mode selected. You can adjust the scale using the Scale Slider or by using the mouse wheel.
- **Video Tracks** - contain all video sequences for the current timeline.
- **Audio Tracks** - contain all the audio clips for the current timeline.
- **Audio Toggles** - quickly mute audio or set the track output during playback to left, right, or mono.
- **Track Lock** - secure the selected track to disable all editing tools.

TIP: Selecting tracks while holding **Ctrl**/**Cmd** allows tools to affect multiple tracks at once, such as locking, disabling, and resizing tracks.

Video tracks in multi-track timelines are read from the highest number track downward, for example Video 3, Video 2, Video 1. As a result, if video is present on track 3, video on track 2 in the same time slice is obscured.

In this example, although the playhead crosses clips on two video tracks, only the clip in Video 3 is displayed in the Viewer.



Audio tracks, on the other hand, can be played back simultaneously - all three audio tracks crossed by the playhead in the example play back together, creating a complete audio backing for the video.

TIP: Enabling **Preferences** > **Panels** > **Timeline** > **show frame end marker** draws an extra line on the timeline to the right of the playhead, indicating the end of the current frame.

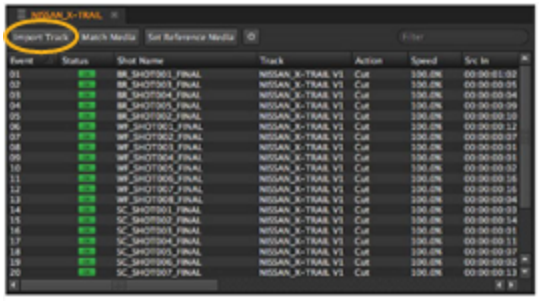
Adding Tracks to the Timeline

You can add empty tracks to existing timelines or import other EDL, AAF, or XML edits - effectively another sequence within the timeline.

To import EDL, AAF, or XML edits:

1. Select the required sequence in the project bin, right-click, and select **Import** > **New Track(s) from EDL/XML**, OR

2. Click **Import Track** in the spreadsheet tab.



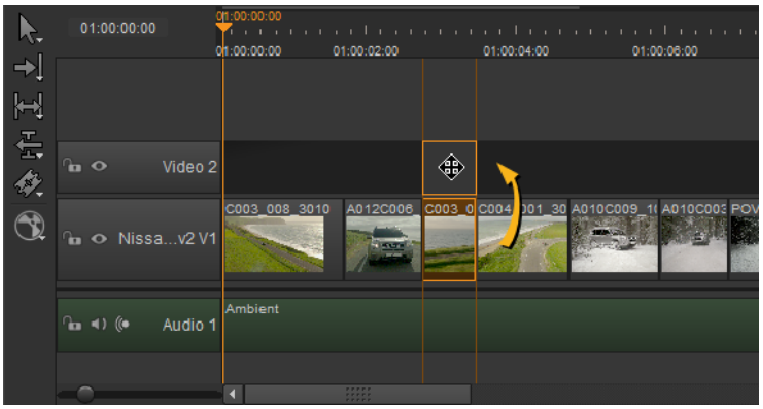
3. Use the browser to locate the EDL, AAF, or XML files, select the file(s) and click **Open** to import the sequence.

NOTE: If you're importing EDLs, bear in mind that there is no guaranteed frame rate information included in the file. Select the correct frame rate then click **OK** in the dialog supplied.

4. Conform the new track as described in Conforming Sequences.

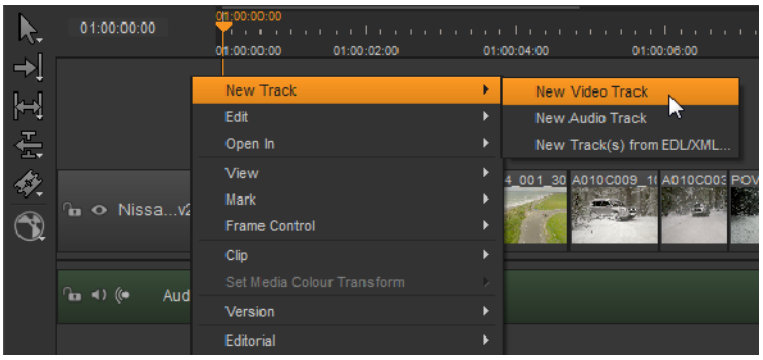
To add new tracks:

• Drag-and-drop a clip above or below existing tracks as shown,



OR

• Right-click in the timeline and select **New Track** > **New Video Track** or **New Audio Track**.



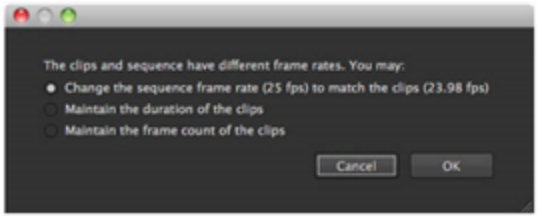
NOTE: You can also collapse and expand existing tracks using the right-click **Editorial** menu, and resize the track header to accommodate longer track names.

Adding Clips to the Timeline

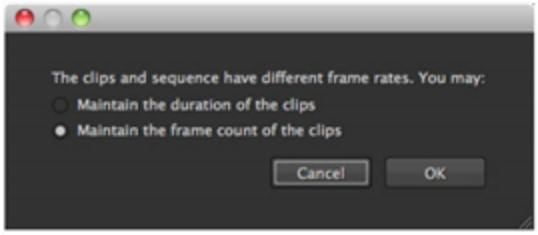
The timeline allows you to add clips by simple drag-and-drop from either the Viewer or bins. Using the Viewer restricts you to a single clip, the current clip, but you can drag as many clips as you like from bins.

TIP: You can create a new sequence by dragging a clip to an empty timeline pane.

New timelines pick up their frame rate from the **Project** > **Edit Settings** > **Sequence** sub-menu by default. Dropping a clip with a different frame rate on a new timeline displays a warning:



However, if the timeline is already populated and the clip you're adding doesn't have the same frame rate as the timeline, you're prompted to choose whether the clip's duration or frame count is retained.



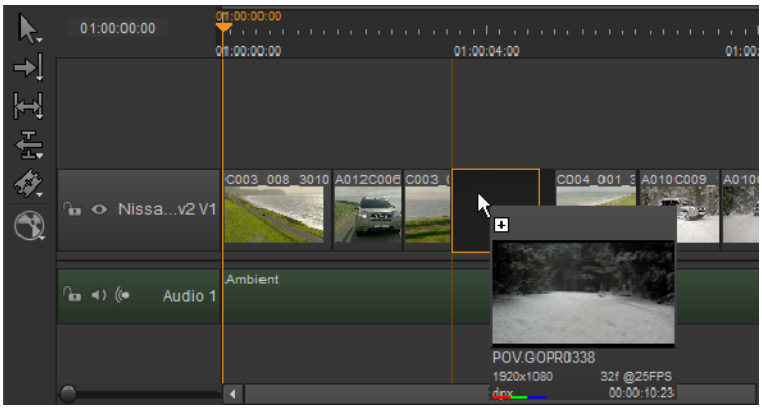
Take care not to overwrite existing track items - the most recent clip overlays any existing track item. To avoid this, do one of the following:

- Move the playhead to the target area of the timeline in the record Viewer  , load the required clip in a source Viewer  , and then use **Insert** (N) or **Overwrite** (M) to place the clip into the timeline at the playhead position on the lowest, unlocked track available.

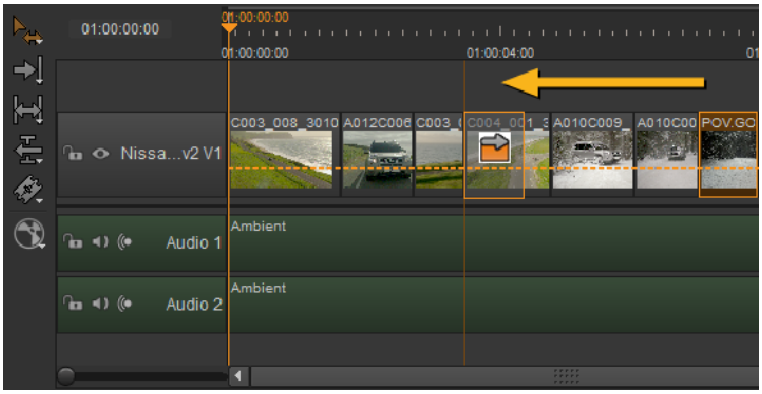
NOTE: You can only **Insert** or **Overwrite** using clips from the current project.

See Insert, Overwrite, and 3-Point Editing for more information on source/record editing.

- Use the **Multi** or **Move/Trim** tools to make space for the new clip and then drag-and-drop it in to the space (see Using the Move/Trim Tool for more information).



- Drag-and-drop the new clip at the end of the sequence, then using the **Multi** or **Move/Trim** tools,drag the new clip to an existing transition, hold down the **Alt** modifier, and drop the clip to **Ripple** all other track items down the timeline.



TIP: Enabling **Preferences** > **Panels** > **Timeline** > **show frame end marker** draws an extra line on the timeline to the right of the playhead, indicating the end of the current frame.

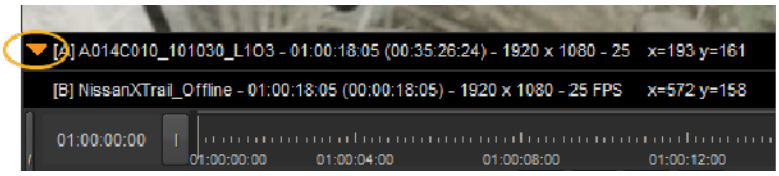
Audio and the Timeline

Audio tracks on the timeline are handled in much the same way as video tracks. By default, linked audio and video tracks are edited at the same time, but you can lock either track and move them independently or hold **Alt** to select a single track, if required.

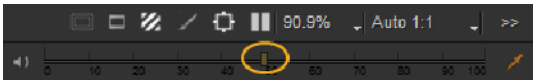
NOTE: Although you can import and edit multi-channel audio, during playback audio is mixed to 48 KHz stereo output.

NOTE: Hiero does not currently support any QuickTime audio on Linux. Support for audio on Linux is scheduled for a later release.

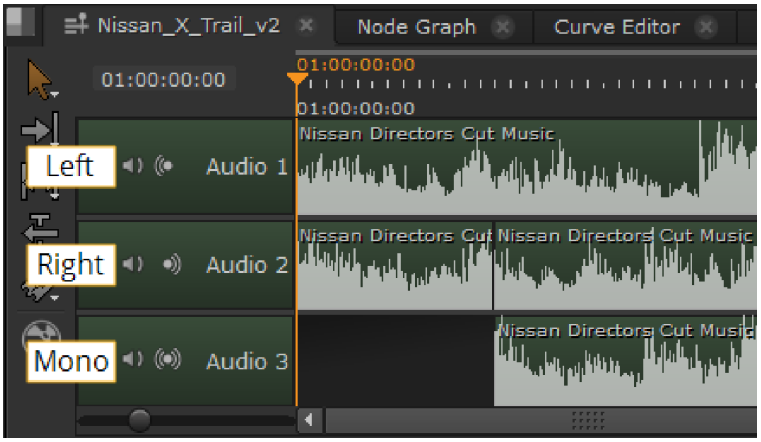
When both Viewer inputs contain clips, the audio output is set by the orange marker in the color picker information bar, displayed by clicking  . In the following example, input A is providing the audio output:



The volume slider in the upper-right corner of the Viewer controls the output level for that Viewer only.

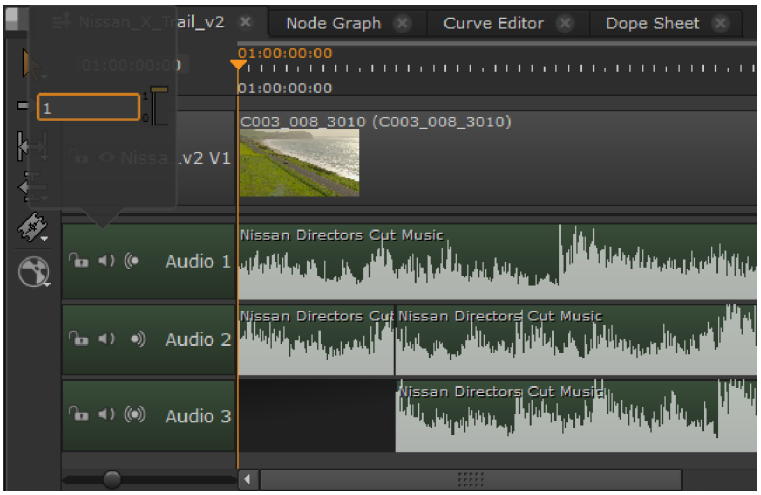


Audio output for track items can be toggled between left, right, and mono using the audio toggles in the track header. Click on the icon to cycle between outputs:



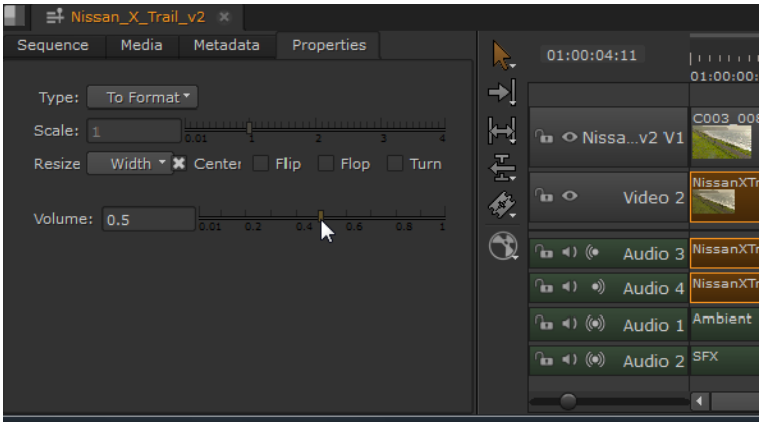
You can also control audio on a per track and per track item basis. Audio track headers and track items have independent volume controls in the timeline and **Properties** tab.

• **Track headers** - click and hold the mute icon on the header to display the volume slider.



• **Track items** - select an audio track item and click on the **Properties** tab to display the Volume control.

TIP: You can control the volume on multiple track items simultaneously by holding **Ctrl**/**Cmd** and selecting the required items before adjusting the volume slider.



The **Preferences** > **Panels** > **Viewer (Sequence)** sub-menu contains audio controls allowing you to control the volume level for all new Viewers. See Appendix A: Preferences for more information.

NOTE: If the frame rate drops too low, audio is automatically muted and the speaker changes to the no audio playback icon.

WAV Track Items

Audio can be recorded at the same time as shooting the video or it can be unrelated to the shoot, for example sound effects or music. You can add **.wav** clips to the timeline in two ways:

• **Drag-and-drop** - drag your **.wav** clip to a timeline audio track and drop it in to place.

• Navigate to **File** > **Import File(s)** or **Import Folder(s)**.

TIP: You can also use the **Ctrl**/**Cmd**+**I** and **Ctrl**/**Cmd**+**Shift**+**I** keyboard shortcuts.

Use theTimeline Editing Tools to move the clip into place and set its output.

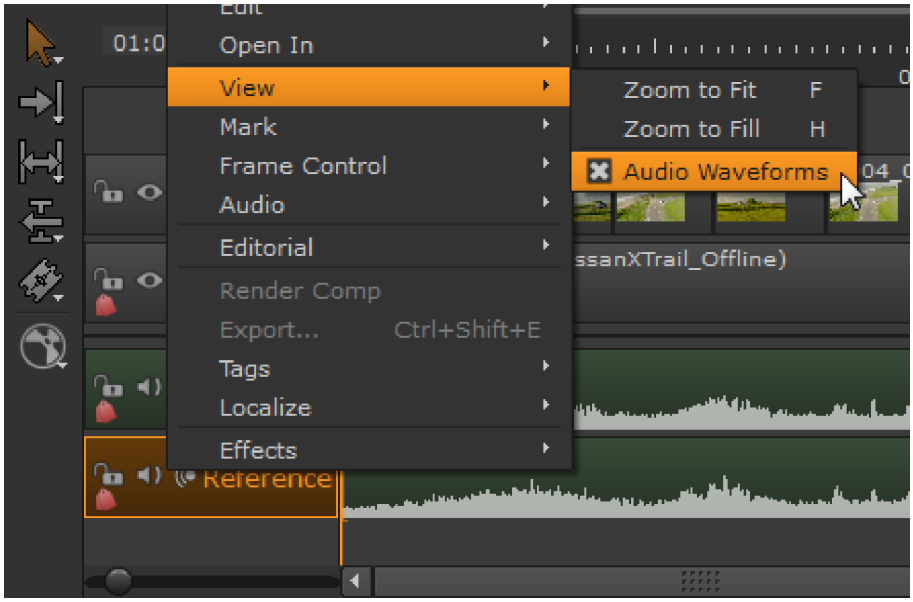
Displaying Audio Waveforms

Visualizing an audio waveform helps synchronization with video events, and Hiero displays waveforms in the timeline by default.

Audio track items are manipulated in the same way as video track items, so using waveforms in conjunction with the Timeline Editing Tools on page 153 enables you to quickly synchronize audio and video events. Audio track items

also support **Fade In**, **Fade Out**, and **Dissolve** transitions in the same way as video. See Adding Transitions for more information.

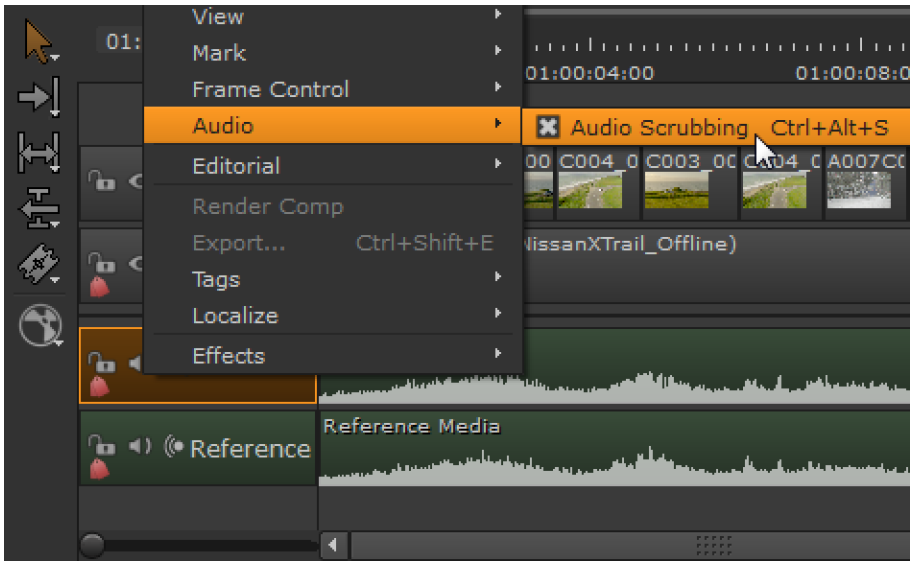
You can toggle the waveform display on and off by right-clicking in the timeline and selecting **View** > **Audio Waveforms**. You can also control how the waveform appears, when enabled. Open the **Preferences** and navigate to **Panels** > **Timeline** to toggle between full and **half waveforms**.



Displaying waveforms in audio-heavy projects can cause significant slow down on the timeline, so Hiero includes a preference to limit how much system memory is available for waveform display. In the Preferences, navigate to **Performance** > **Caching** > **Audio Waveforms** and set the **waveform memory** control to the required amount.

Audio Scrubbing

Hiero's timeline supports audio scrubbing, allowing you synchronize audio and video more easily while scrubbing the playhead. Audio scrubbing is enabled by default, but you can disable it by right-clicking in the timeline tab and clicking **Audio** > **Audio Scrubbing** or by pressing **Ctrl**/**Cmd**+**Alt**+**S**.



Audio track items cache temporarily to increase responsiveness during scrubbing. If you need to clear the audio cache, navigate to **Cache** > **Clear Audio Cache**.

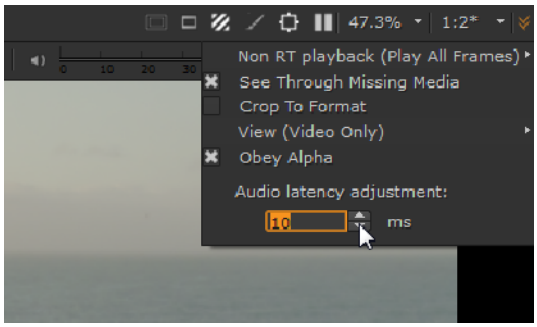
NOTE: Audio scrubbing is not currently available through monitor output cards. Audio scrubbing is only supported through internal audio output devices.

Synchronizing Audio and Video

Hiero allows you to massage the synchronization between audio and video tracks using audio latency adjustment during playback in the Viewer, or by a default amount in the **Preferences** > **Panels** > **Viewer (Sequence)** sub-menu.

NOTE: Latency adjustments can take a few seconds to affect the audio track.

1. Mark a portion of the timeline containing the target audio and video track items using In and Out markers.
2. Press  or use the **L** keyboard shortcut to begin playback.
3. Click the Viewer settings icon and increment the latency using the controls in the popup.

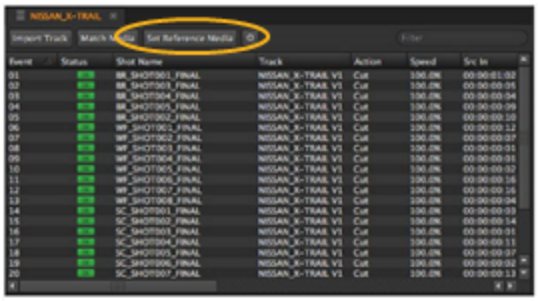


4. Adjust the latency until the tracks are in sync.

Using Reference Media

Importing a reference version of your timeline enables you to compare your current timeline against the reference media to avoid issues with continuity, missed frames, and so on.

To import reference media, click **Set Reference Media** and use the browser to locate the required file.



The reference media is automatically imported into **Reference** tracks, pushing existing tracks outward, and marked with the **Reference Media** tag.

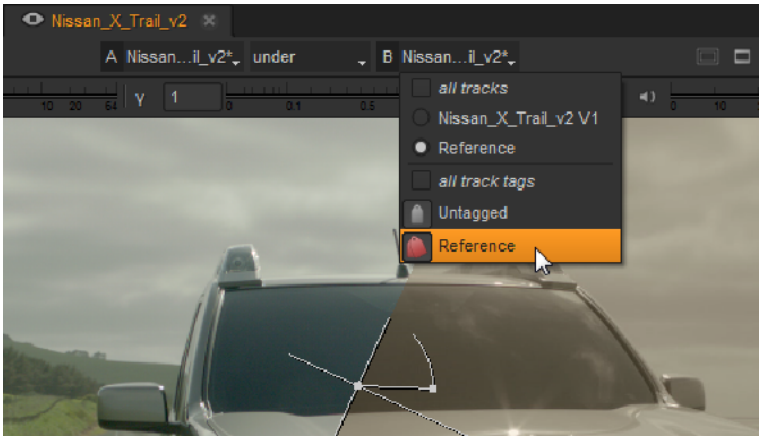
After importing the reference media, use the show/hide icon or A/B input tools to compare the current timeline against the reference clip. SeeComparing Media for more information.

Comparing Media

The Viewer A/B tools allow you to quickly compare media using the two Viewer input buffers. Select a clip, sequence, track item or track and press 1 or 2 to place your selection in the Viewer input buffers. You can also drag-and-drop items into the input buffers using the Viewer hotspots.

NOTE: The Viewer currently treats all alpha channels as premultiplied, which can result in the Viewer background being "added" to the image. If you're working with un-premultiplied images, set the Viewer background to **Black**. See Appendix A: Preferences for more information.

When the Viewer input buffers contain sequences, the A and B dropdowns control what is displayed in the Viewer using track names and tags. Selecting a track or tag from the dropdown displays the selected media in the Viewer.

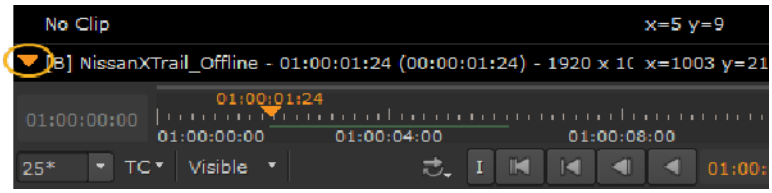


Use the **wipe**, **stack**, **horizontal**, and **vertical** modes to control how the buffers are displayed in the Viewer.

NOTE: If you're working in a multi-view project, using stereo footage for example, you can set which view is output in the A and B buffers using the Views buttons over the Viewer. See Displaying Views in the Viewer for more information.

The **wipe** and **stack** modes also allow you to blend the two buffers together, and in the case of **wipe** mode, provides a handle in the Viewer to quickly wipe between the two inputs.

The color picker overlay  displays a description of the contents of the A and B inputs, or **No Clip** when there is no clip at the playhead, for instance, when there is a gap in a timeline or if a track is disabled.



The orange triangle in the overlay denotes the clip currently supplying audio and timecode information in the Viewer.

Viewing Multi-Format Timelines

Initially, sequences have an **Output Resolution** applied across all video tracks on a timeline. You can apply this resolution project-wide through **Project** > **Edit Settings** > **Sequence** or to individual sequences using the timeline **Sequence** > **Output Resolution** control.

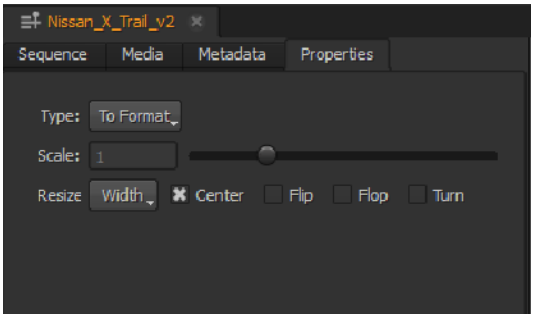
In the real world, however, clips are often of different formats so Hiero provides clip-by-clip formatting options to help you standardize sequences more easily.

Reformatting applied to track items on a timeline carries over into any export, including **Create Comp Clips**. The reformat options in the **Export** dialog are applied after the transforms applied here. See Exporting from Hiero for more information.

NOTE: Track items default to **Resize Type** > **Width** when you change the format of the sequence.

To apply format changes:

1. Select the track item(s) to reformat on the timeline.
2. Click the **Properties** tab on the timeline pane to display the reformat options.



3. Select the reformat **Type** from the dropdown:
   - **Disabled** - no reformatting is applied.
   - **To Format** - enables the **Resize Type** and orientation controls. **To Format** controls how a clip is resized and its orientation. The following **Resize Types** are supported:
     - **None** - no resize is applied.

• **Width** - scale the original until its width matches the format's width. Height is then scaled to preserve the original aspect ratio.

• **Height** - scale the original until its height matches the format's height. Width is then scaled to preserve the original aspect ratio.

• **Fit** - scale the original until its smallest side matches the format's smallest side. The original's longer side is then scaled to preserve original aspect ratio.

• **Fill** - scale the original until its longest side matches the format's longest side. The input's shorter side is then scaled to preserve original aspect ratio.

• **Distort** - to scale the original until all its sides match the lengths specified by the format. This option does not preserve the original aspect ratio, so distortions may occur.

You can also change the clip orientation:

• **Center** - centers the clip within the format dimensions.

• **Flip** - flips the clip the X axis.

• **Flop** - flops the clip on the Y axis.

• **Turn** - rotates the clip 90 degrees clockwise.

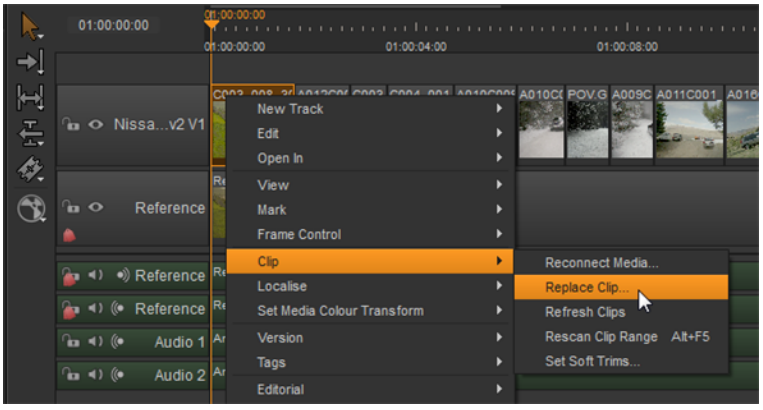
• **Scale** - enables the **Scale** controls. **Scale** allows you to directly control the size of the clip without changing its aspect ratio. Use the slider or enter a value in the field provided to scale the clip.

TIP: You can enable the **Format** guide in the Viewer controls to overlay the current format as a red box.

4. You can crop the clip outside the format by enabling **Crop to Format** in the Viewer controls.

Refreshing and Replacing Track Items

During the post process, media inevitably changes location or form. Hiero can reload or replace your media using the refresh, rescan, reconnect, and replace functions.



Though all four options deal with reloading track items, each has a particular use dependent on context:

• **Reconnect Media** - allows you to redirect the file path when the source file location changes.

- **Replace Clip** - replaces the selected track item with a specified source clip. Hiero assumes that any source clip you choose is acceptable, regardless of timecode.
- **Refresh Clips (F8)** - allows you to reload the track item when the source file location has not changed, such as when work has been done on the clip offline. Selecting refresh only refreshes the clip's current frame range.
- **Rescan Clip Range (Alt+F5)** - similar to **Refresh Clips**, above, but rescan also checks for additional frames that may have been added to the source file and adds them to the track item's frame range.
- **Set Soft Trims** - sets the files handles on the selected clip(s). SeeSetting Soft Trims for more information.

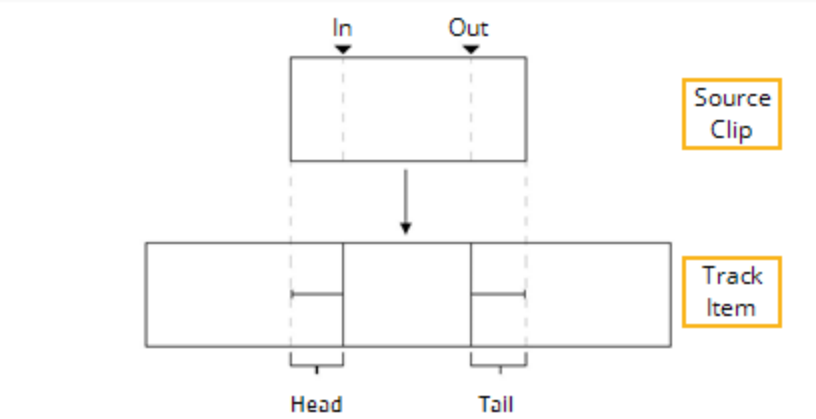
Setting Soft Trims

Soft Trims limit the handles on track items to a pre-defined amount, simulating In and Out points on the source clips, allowing you to use other timeline tools on the track items such as **Slip Clip** and **Slide Clip**.

To set Soft Trims on a track item(s):

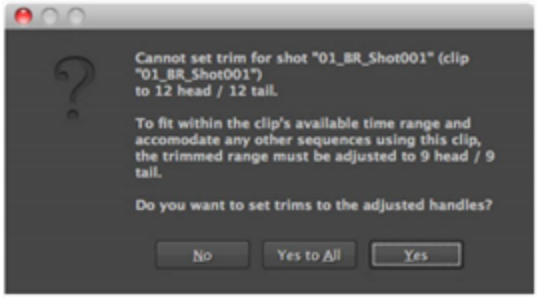
1. Select the track item(s) on the timeline.
2. Right-click and select **Clip** > **Set Soft Trims**.

   The **Set Soft Trims** dialog displays.
3. Set the number of frames to add to the head and tail of each track item:



   - **Use full available range** - sets the handles to the full extent of the source clip frame range.
   - **Use Frames** - adds the specified number of frames to the head and tail of the track item(s).
4. Click **OK** to add the specified number of handles.

   If the handles requested are not within the available frame range, a warning dialog displays with a suitable correction for each selected track item.



Click **Yes** to accept, or **No** to abort the operation.

NOTE: With track items used in multiple sequences, click **Yes to All** to accept the correction in all instances.

Enabling and Disabling Track Items

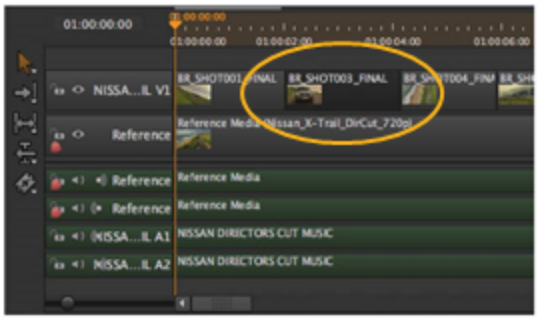
You can temporarily enable or disable tracks and track items on the timeline to selectively view your media without removing track item(s), for example if you wanted to view to lower level video tracks within a timeline.

To enable or disable a track or track item(s):

1. Select the item(s) you want to enable or disable.
2. Right-click on a highlighted item and select **Editorial** > **Disable Track** or **Disable Items** to disable the selection.

TIP: You can also use the **D** keyboard shortcut to disable or enable your selection.

Disabled items appear black, and are effectively removed from the timeline.



3. Right-click the item and select **Enable Clip**, or press **D** again, to re-enable the clip.

Adding Transitions

Hiero supports basic video and audio fade transitions as well as dissolves between track items on the same track. Transitions come in three flavors:

• **Fade in** - fades in from black on a single track item.

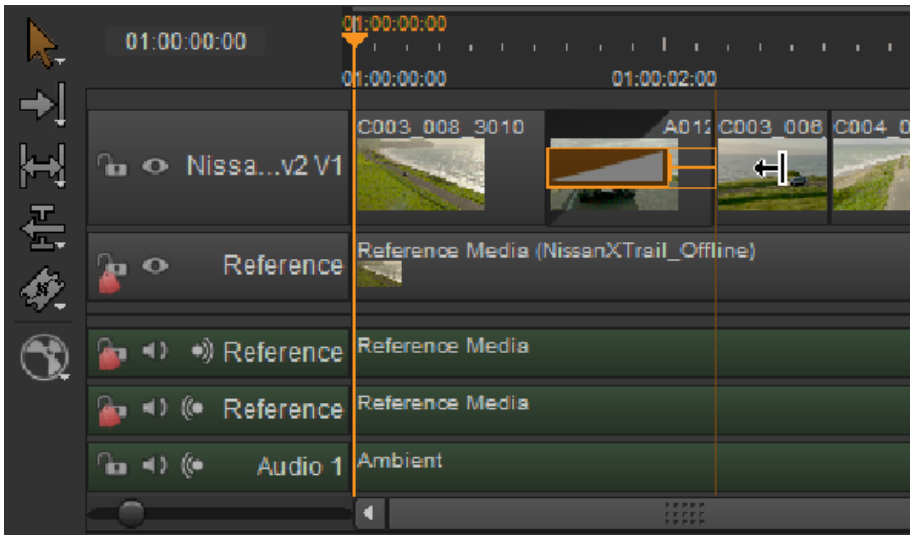
• **Fade out** - fades out to black on a single track item.

• **Dissolve** - fades out from one track item and into the next, by merging frames.

TIP: Once a transition is in place, it can be nudged in the same way as an edit using the **Ctrl**/**Cmd**+←→ keyboard shortcuts, providing the required handles exist.

To add a fade transition:

1. Right-click the target track item and select **Editorial** > **Add Transition** > **Fade In**, **Fade Out**, **Audio Fade In** or **Audio Fade Out** to add the fade icon.
2. Adjust the fade by dragging the fade icon using the **Multi Tool** or **Move/Trim** tool.



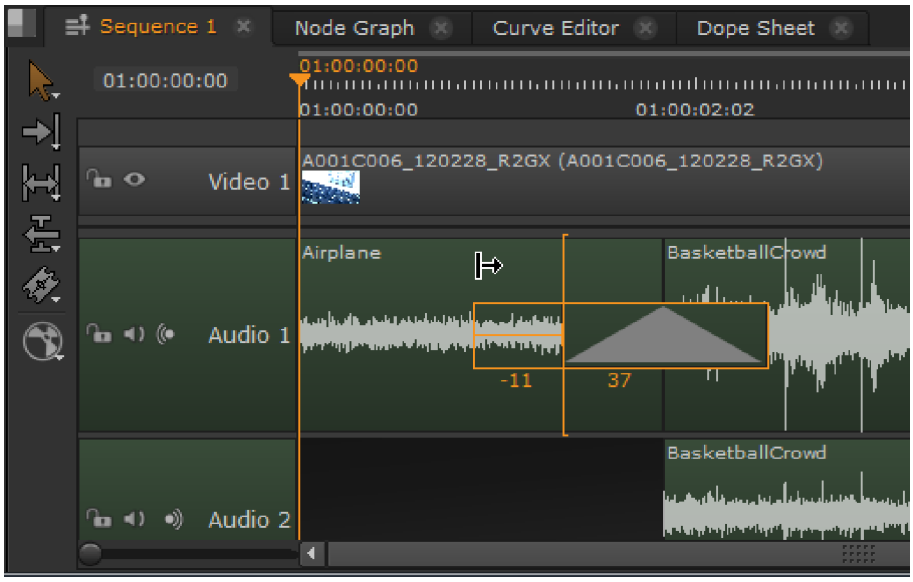
To add a dissolve transition:

NOTE: You can only add dissolves between track items when they're on the same track and have sufficient handles available on both sides of the transition.

1. Select the **Multi Tool** or **Roll Edit** tool and hover the mouse pointer over an edit between two track items.

TIP: Clicking and holding the edit point displays available handles as a red overlay.

2. Right-click and select **Editorial** > **Add Transition** > **Dissolve** or **Audio Crossfade**, or use the **Ctrl**/**Cmd**+**T** keyboard shortcuts, to add the dissolve icon to the edit.
3. Adjust either side of the dissolve by dragging the icon, in a similar way to using the **Multi Tool** or **Move/Trim** tool.



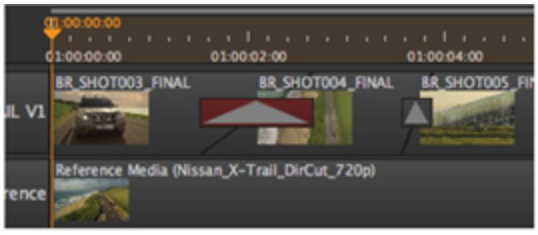
Invalid Transitions

Transitions are controlled in a similar way to track items, in that you can drag-and-drop them, but with the following restrictions:

- A fade can not be dragged past the ends of the track item it's attached to, and if the item is deleted, the fade is deleted with it.
- Dissolve ends can not be dragged past the ends of the track items they are attached to, and if both items are deleted, then the dissolve is also deleted.

  If only one of the track items linked by the dissolve is deleted, the transition remains so that another item can be placed on the other side.

Invalid transitions are colored red on the timeline. In most cases, adjusting the length of the transition should be enough to correct the error.



Retiming Clips

In addition to transitions, Hiero supports constant retimes on track items. Decreasing the speed of a track item causes frames to play more than once, whereas increasing the speed skips frames.

NOTE: Audio is not currently supported for retimes and is automatically muted to avoid playback problems.

To retime track items using the **Speed** column in the spreadsheet:

1. Select the required event(s) in the spreadsheet view.
2. Click the cog icon and select the required **Retime method**:
   - **Keep source duration** - the track item length is altered on the timeline depending on the retime applied.

     For example, retiming a track item to 50% renders frames 1, 1, 2, 2, 3, 3, 4, 4, and so on in the Viewer, and as a result, the item's length is doubled on the timeline.

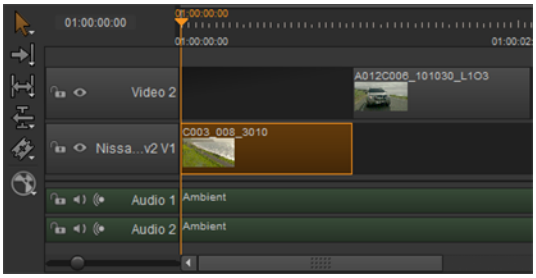
     Retiming a track item to 200% renders frames 1, 3, 5, 7, and so on in the Viewer, but the item's length is halved on the timeline.
   - **Keep timeline duration** - the track item length on the timeline is maintained regardless of the retime applied.

     For example, retiming a track item to 50% renders frames 1, 1, 2, 2, 3, 3, 4, 4, and so on in the Viewer, but the item's length on the timeline remains the same, effectively removing the second half of the item.

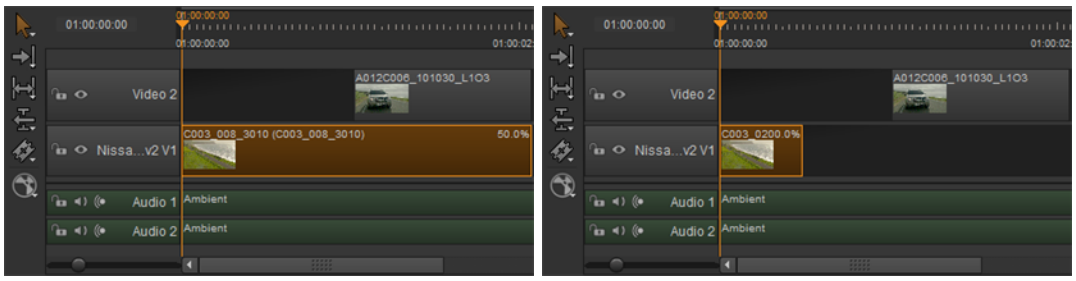
     Retiming a track item to 200% renders frames 1, 3, 5, 7, and so on in the Viewer, but the item's length on the timeline remains the same. If no extra frames are available from the source, the item is filled with black frames.
3. Double-click the **Speed** column and enter the retime value.

The following example shows a track item and the results of 50% and 200% retimes with the **Keep source duration** and **Keep timeline duration** methods selected.

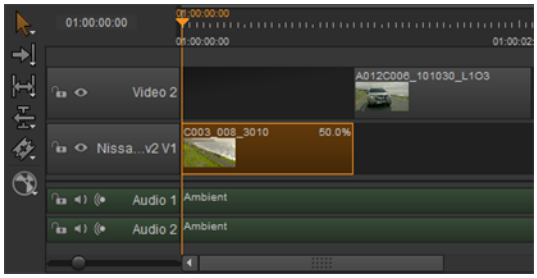
Notice that the **Keep timeline duration** method doesn't change the length of the track item on the timeline and inserts blank filler frames on the 200% retime?



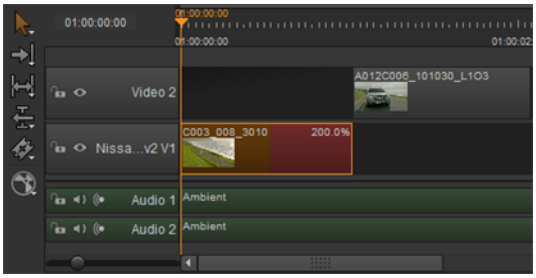
Original clip



50% **Source** retime



200% **Source** retime



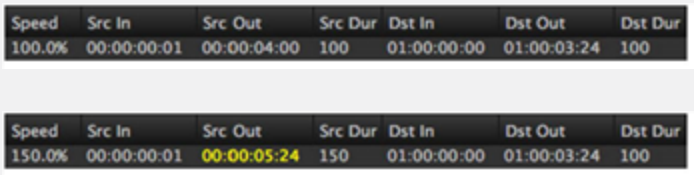
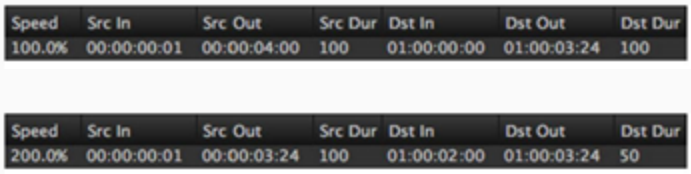
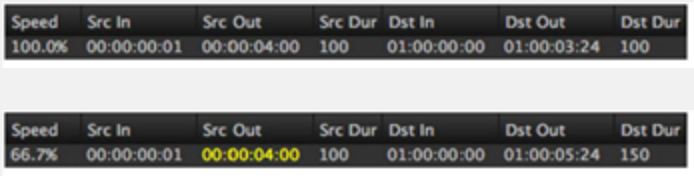
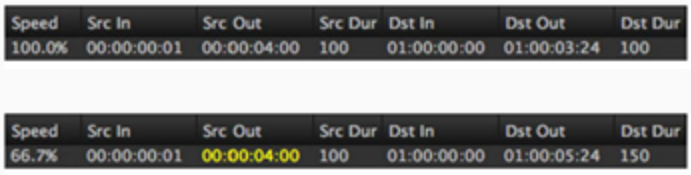
50% **Destination** retime

200% **Destination** retime

You can also retime track items using the **Src**, **Dst**, and **Duration** columns of the spreadsheet, though the calculation method depends on the **Time Edit Behaviors** applied.

1. Select the event(s) in the spreadsheet view.
2. Click the cog icon and select the required **Time Edit Behaviors**:

Modify	Using	Result
Src In	Retime	Adjusts the event's **Src In** and retimes the remaining frames to maintain **Dst Duration**. Before and after a 2 second **Src In** increase: Speed 100.0% | Src In 00:00:00:01 | Src Out 00:00:04:00 | Src Dur 100 | Dst In 01:00:00:00 | Dst Out 01:00:03:24 | Dst Dur 100 Speed 50.0% | Src In 00:00:02:01 | Src Out 00:00:04:00 | Src Dur 50 | Dst In 01:00:00:00 | Dst Out 01:00:03:24 | Dst Dur 100
Src Out	Retime	Adjusts the event's **Src Out** and applies a retime to maintain **Dst Duration**. Before and after a 2 second **Src Out** increase: Speed 100.0% | Src In 00:00:02:01 | Src Out 00:00:06:00 | Src Dur 100 | Dst In 01:00:00:00 | Dst Out 01:00:03:24 | Dst Dur 100 Speed 151.0% | Src In 00:00:00:01 | Src Out 00:00:06:00 | Src Dur 151 | Dst In 01:00:00:00 | Dst Out 01:00:03:24 | Dst Dur 100

Modify	Using	Result
Src Dur	Retime	Adjusts the event's **Src Dur** and **Src Out**, and applies a retime to maintain **Dst Duration**. Before and after a 50 frame **Src Dur** increase: 
Dst In	Retime	Adjusts the event's **Dst In** and retimes the remaining frames to maintain the relationship between **Dst In** and **Out**. Before and after a 2 second **Dst In** increase: 
Dst Out	Retime	Adjusts the event's **Dst Out** and retimes the remaining frames to maintain the relationship between **Dst Out** and **In**. Before and after a 2 second **Dst Out** increase: 
Dst Dur	Retime	Adjusts the event's **Dst Dur** and **Dst Out**, and applies a retime to accommodate the new **Dst Duration**. Before and after a 50 frame **Dst Dur** increase: 

3. Adjust the values as required to retime the track item(s) by the specified amount.

NOTE: Any source or destination field highlighted in yellow indicates that the entry has been rounded down for display purposes.

To retime a track item using the **Timeline** menu:

1. Select the required track item(s) on the timeline.
2. Navigate to **Timeline** > **Retime**.

   The **Clip Speed** dialog displays.
3. Enter the required retime value as a percentage.
4. Select the required retime method using the dropdown:
   - **Keep timeline duration** - the track item length on the timeline is maintained regardless of the retime applied. When increasing speed, if no extra frames are available from the source, the track item is filled with black frames.
   - **Keep source duration** - the track item length is altered on the timeline depending on the retime applied. For example, a 200% retime halves the length of the item.
   - **Anchor current frame** - the track item length on the timeline and the current frame's position are maintained after the retime. When increasing speed, if no extra frames are available from the source, the track item is filled with black frames.
5. Click **OK** to retime the track item(s).

Using Freeze Frames

The freeze frame feature enables you to create track items of any length using a single frame. To achieve this, the application takes the first frame of the track item and applies a 0% retime, which is reversible by applying a 100% retime.

To freeze frame track items:

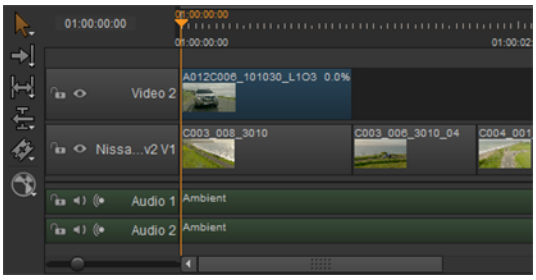
1. Select the target item(s) on the timeline.
2. Right-click the item and select **Editorial** > **Make Freeze Frame**,

   OR

   Navigate to **Timeline** > **Make Freeze Frame**.

NOTE: Freeze Frames can also be created using the spreadsheet retime modes to modify **Src Dur** to 0, or make **Src In** and **Src Out** equal.

3. The selection is retimed to 0% and colored blue on the timeline for easy identification.



4. Use the **Multi Tool** or **Slip Clip** to set the freeze frame from the available range.
5. Drag the item's edit points, using the **Multi Tool** or **Move/Trim** as required, to set the length of the track item. There's no upper limit for the length of a freeze frame track item.

Blending Tracks on the Timeline

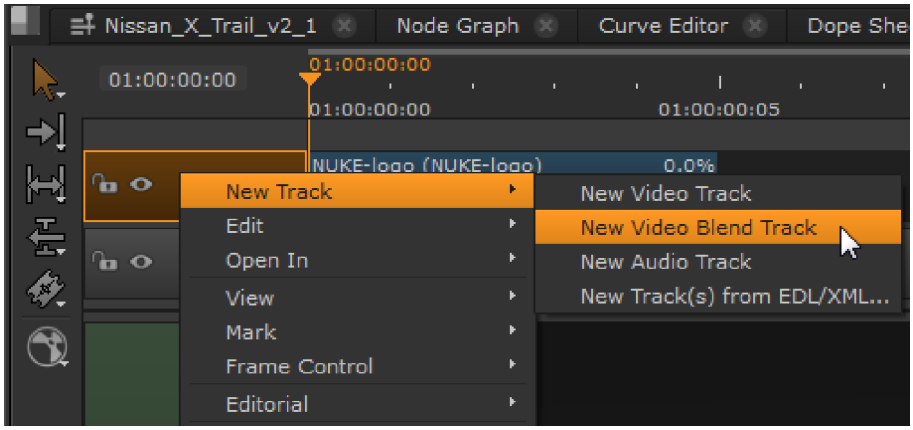
Hiero allows you to perform simple merges between tracks in the timeline, for example overlaying a logo on a track item, without heading into Nuke. Tracks that are designated as blend tracks have a blue colored header in the timeline for convenience, and are blended using a simple **over** operation, identical to Nuke's Merge node **over** operation.

NOTE: The Viewer currently treats all alpha channels as premultiplied, which can result in the Viewer background being "added" to the image.

You can add soft effects to blended tracks as normal (see Soft Effects for more information) and blended tracks are included along with the track item in Export operations, again using a Merge node set to **over** in Nuke's Node Graph. See Exporting from Hiero and using **Create Comp Clips** during round-tripping Building VFX Tracks and Comp Clips for more information

To add a new blend track, do the following:

1. Right-click in the timeline and select **New Track** > **New Video Blend Track**.

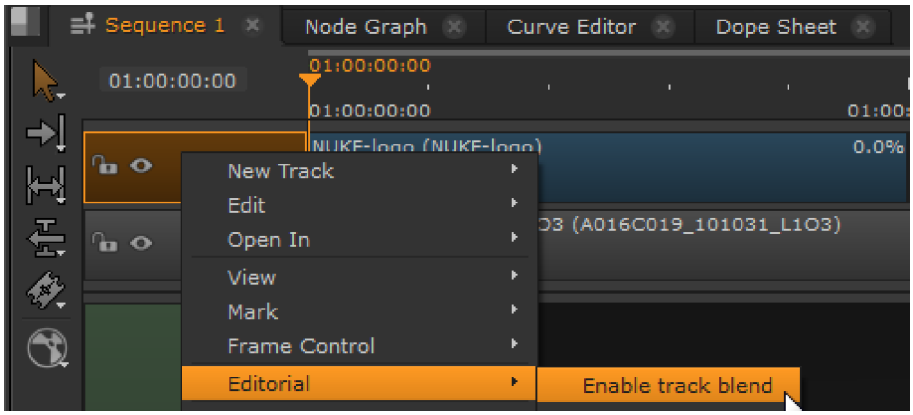


A new track is added at the top of the track stack, colored blue to indicate that it's going to be blended over the track below.

2. Add the required track item to the blend track as you would any other track item. See Adding Clips to the Timeline for more information.

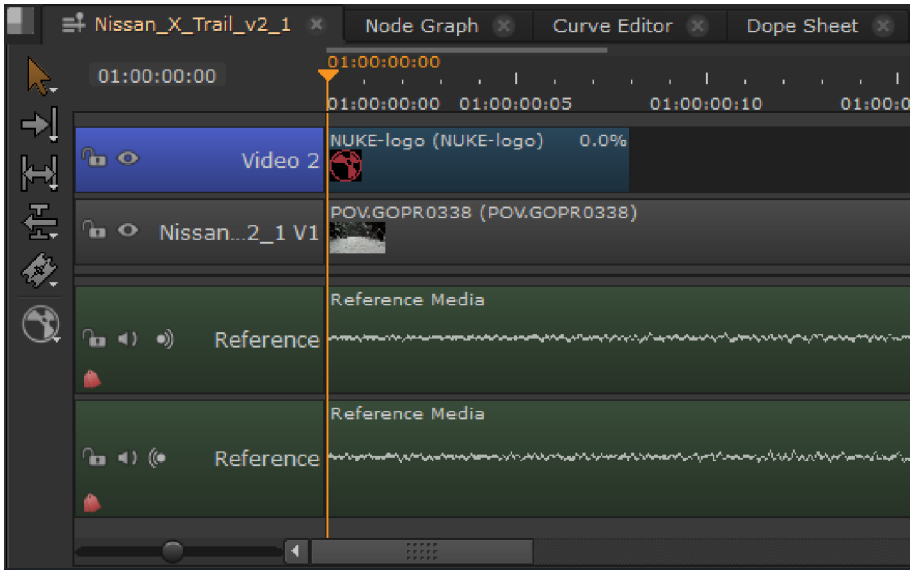
To designate an existing track as a blend track, do the following:

1. Right-click in the header of the target track and select **Editorial** > **Enable track blend**.



The selected track is converted into a blend track, colored blue to indicate that it's going to be blended over the track below.

2. You can add track items to the blend track as you would any other track item. See Adding Clips to the Timeline for more information.



The Viewer displays the higher track blended over the track below.

Soft Effects

You can add soft effects to your timeline in any of the workspaces. A soft effect is a real-time effect, processed on GPU instead of CPU.

You can also add custom plug-in or gizmo soft effects to the **Add Effect** menu using Python. There are a few rules concerning valid custom soft effects, such as they must have a GPUEngine implementation, and they must be registered after creation. An example of how to register a plug-in or gizmo as a custom soft effect is located in:
`<install_directory>/pythonextensions/site-packages/hiero/examples/custom_soft_effect.py`

See **Help** > **Documentation** for more information.

Available Soft Effects

Below is a brief summary of the available soft effects. These are similar to the tools in Nuke's Node Graph. See the *Nuke Reference Guide* for more information about them.

Soft Effect	Summary
Transform	Allows you to translate, rotate, scale, and skew track items from a single control panel.
Mirror	Allows you to flip the input image around the center of the format area. A flip on the x axis mirrors the image vertically. A flop on the y axis mirrors the image horizontally.
Crop	Allows you to cut out the unwanted portions of the image area. You can fill the cropped portion with black or adjust the image output format to match the cropped image.
TimeWarp	Allows you to slow down, speed up, or even reverse selected frames in a clip without necessarily altering its overall length. WARNING: TimeWarp effects are only allowed on tracks with clips as they are linked to the clips.
Grade	Allows you to define white and black points by sampling pixels from the Viewer. For example, you can use this for matching foreground plates to background plates.

Soft Effect	Summary
LUT	Allows you to uses the OpenColorIO library to load a colorspace conversion from a file (usually a 1D or 3D LUT) and apply it. You can also load other file-based transformations, for example an ASC ColorCorrection XML.
CDL	Allows you to apply an ASC CDL (American Society of Cinematographers Color Decision List) grade based on the OpenColorIO Library. For more information, see http://opencolorio.org
Colorspace	Allows you to convert images from one colorspace to another, for example from Nuke's native colorspace to other color spaces more appropriate to a given process or intended display device. This supports RGB, HSV, YUV, CIE, and CMS formats (and various sub-formats). It can adjust for different primaries, white point, and different encodings.
ColorCorrect	Allows you to make quick adjustments to saturation, contrast, gamma, gain, and offset. You can apply these to a clip's master (entire tonal range), shadows, midtones, or highlights. You can control the range of the image that is considered to be in the shadows, midtones, and highlights using the lookup curves on the **Ranges** tab. However, do not adjust the midtone curve - midtones are always equal to 1 minus the other two curves.
Text	Allows you to add text overlays on your images. You can simply type in the text you want to have displayed or use Tcl expressions (such as **[metadata values]**) or Tcl variables to create a text overlay. Text overlays can also be animated using animation layers in the Groups tab, so that their properties (such as position, size, and color) change over time.

Soft Effect	Summary

Burn-In	Allows you to quickly add standard burn-in elements on the timeline. You can control the color, opacity, font, scale, and so on, as well as use the dropdowns to determine what element is added from the file or sequence metadata.
	
	You can also reference custom metadata from track items. For example:
	`hiero/tags/Approved`
	
	Extracts the **Approved** tag from the track item. You can also append **note** to include any notes associated with the tag:
	`hiero/tags/Approved/note`
	
	NOTE: You must precede spaces and slashes in the tag name with \\ (backslashes) to enable Hiero to process the tag name correctly. For example:
	`hiero/tags/Blue\\ Screen/note`
	
	You can also add burn-in through the **Export** dialog, see Adding Burn-in Text to Exports for more information.

ChromaKeyer	Allows you to pull a quick chroma key from green or bluescreen areas of your footage. Use the **screen color** selector to choose a color from the **Source** input to use as the blue/green screen color. To remove blue/green spill from the foreground object, use the **despill** controls to pick skin tones from the source. Use the **matte** parameters to improve the matte.

Soft Effect	Summary

BlinkScript	Allows you to run the The Foundry's Blink framework on the timeline, enabling you to write code once and run it on any supported device.
	
	WARNING: BlinkScript is very flexible, as there are no restrictions on the code you can write within a kernel. As a result, code complied from the Kernel Source can cause Nuke to crash, so please use caution!
	
	The BlinkScript soft effect supports a subset of the functionality available in the full BlinkScript node:
	• You can't publish your kernels to Groups or Gizmos.
	• Due to the way stacks of soft effects are processed in Hiero, the BlinkScript soft effect only contains one input source and produces only one output.
	• Currently, the BlinkScript soft effect only supports eAccessPoint data access, which means that only one point from the input can be accessed at a time, and only one point from the output can be written, for each iteration position.
	• The following functions are not supported by the BlinkScript effect:
	  • log10
	  • round
	  • rsqrt
	  • abs for integer types
	  • modf(a, *b)
	  • sign
	  • rcp
	  • max, min, and clamp for integer types
	  • median, atomicInc and atomicAdd.
	• The only data types supported by the BlinkScript effect are **int**, **float**, and **bool**.
	
	NOTE: The BlinkScript soft effect supports both *pixel-wise* and *component-wise* kernels, but the former is preferred for performance reasons. For more information about this and a more detailed description of the language, see http://docs.thefoundry.co.uk/nuke/100/BlinkKernels/

Adding Sequence-Level Soft Effects

WARNING: Please keep in mind the following:

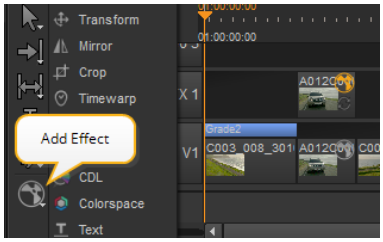
- Sequence-level soft effects are only permitted on the same track as clips if they're trimmed to exactly match the in and out points of individual clips. In this case, each effect is linked to a specific clip.
- Soft effects can be trimmed arbitrarily if they're on tracks with no clips.

As well as adding soft effects using the spreadsheet view (see next section), the timeline provides some additional ways to add soft effects. You can either:

- Right-click a track item on the timeline, select **Effects** and then select the soft effect you want to apply.

  OR

- Select a track item on the timeline, click the **Add Effect** button (see screenshot) to the left of the timeline, and then select the soft effect you want to apply.



NOTE: You can add a soft effect to multiple track items by selecting the required track items first and then right-clicking on one of them and selecting the soft effect you want to add. A soft effect is added to each of the selected track items. You can also add a single soft effect for the whole track by right-clicking on the track header and then selecting the soft effect you want to add.

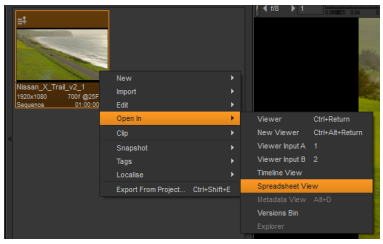
NOTE: TimeWarp effects are only allowed on tracks with clips (and therefore linked to clips).

Using the Spreadsheet View

You can add soft effects using the spreadsheet view in any workspace by doing the following:

1. To open the spreadsheet view in any workspace, select **Window** > **New Spreadsheet View**.
2. Right-click a sequence in the bin view.

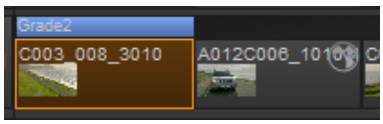
   This opens a context menu.
3. If the spreadsheet view is not already populated in the context menu, select **Open In** > **Spreadsheet View**.



This loads the sequence in the spreadsheet view that you previously opened.

4. Right-click an event from the list in the spreadsheet view and select **Effects** to open a list of all available soft effects.
5. Select the required soft effect from the **Effects** list.

   The sequence-level soft effect is then displayed above the track item and is color coordinated. For example, if the effect appears in blue/violet on the timeline, the corresponding effect properties are highlighted in the same color in the **Properties** pane.



When you insert a soft effect, its properties panel opens automatically. If you have it open, the effect properties panel displays in the **Properties** pane. If the **Properties** pane is not open, the effect's properties panel appears as a floating dialog.

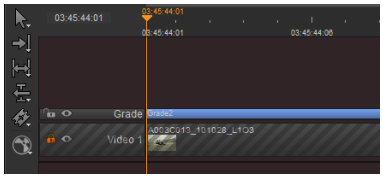
Adding Clip-Level Soft Effects

WARNING: Soft effects added at clip-level, must match the length of the track item on the locked track. Any soft effect that is trimmed beyond the end of a track item, or a different length from the track item is marked with red hashing to show that it is invalid.

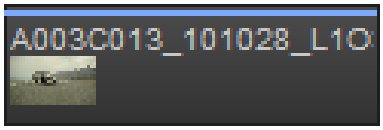
You can add clip-level soft effects on the timeline, by doing the following:

1. Right-click the track item or a bin clip that you want to add a soft effect to.
2. Select **Open In** > **Timeline View**.
3. Click the **Effects** menu icon and select the soft effect you want to apply. For example, you can select **Grade**.

   The soft effect is then displayed above the track item as a colored box.

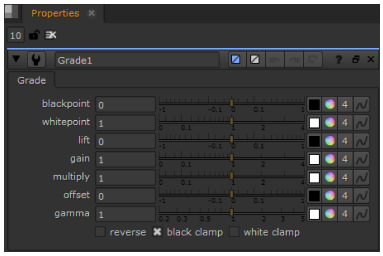


When you close the timeline view of the track item – as it is a clip-level soft effect – the soft effect is displayed as a colored line within the top of the track item. The color of the line displayed reflects the highest soft effect added to the track item.



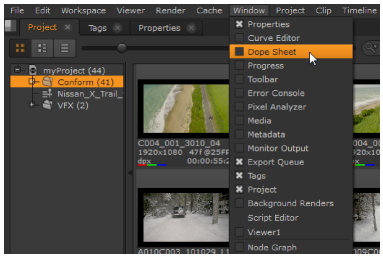
Soft Effect Controls

Adding an effect displays the associated controls in the **Properties** panel, similar to Nuke nodes. Adjusting the controls affects the track items underneath the effect in real-time. For example, adding a Grade effect at sequence level displays the Grade controls in the **Properties** panel.



See the *Nuke User Guide* > *Using the Compositing Environment* > *Properties Panels* section, the *Nuke Reference Guide*, or the Online Help for more information on node controls.

If you intend to animate soft effect controls using keyframes, you can use the Curve Editor and Dope Sheet to fine-tune the output. To add the Curve Editor or Dope Sheet to the interface, navigate to **Window** and select the required panel.



See the *Nuke User Guide Getting Started* > *Using the Compositing Environment* > *Animating Parameters* section or the Online Help for more information.

Editing Sequence-Level Soft Effects

You can copy, move, and cut soft effects just like you can with track items in the timeline. You can perform these actions by either accessing them from **Edit** in the right-click menu, or by using the keyboard shortcuts. You can copy soft effects to different tracks, and different sequences, but not different projects.

Moving

You can move a sequence-level soft effect by simply clicking and dragging the soft effect to a different track item, or even onto a different video track.

Copying

Hiero allows you to copy a sequence-level soft effect above the original to create a stack, to a different track, or to a different sequence. You can also copy a sequence-level soft effect to a track item open in the timeline view, therefore pasting it as a clip-level soft effect. You can copy a soft effect by doing the following:

1. Select the soft effect you want to copy by clicking it.
2. Select **Edit** > **Copy** (or **Ctrl**/**Cmd**+**C**).
3. Move the playhead to where you want to paste the copy.
4. Select **Edit** > **Paste** (or **Ctrl**/**Cmd**+**V**).

Cloning

Hiero allows you to clone a sequence-level soft effect. This copies the soft effect and links it to the original, which means when one of these is edited, the changes are reflected in the other one. You can clone a soft effect to a different track or even a different sequence. You cannot clone a soft effect in different projects.

To clone a soft effect:

1. Select the soft effect you want to clone by clicking on it.
2. Select **Edit** > **Copy** (or press **Ctrl**/**Cmd**+**C**).
3. Move the playhead on the timeline to where you want to place the new clone.
4. Select **Edit** > **Clone** (or press **Alt**+**K**).

   The new clone is placed at the current playhead position on the timeline. You can repeat steps 3 and 4 to create multiple clones that are all linked, at different places on the timeline.

   Clones are indicated by a **C** highlighted in red in the left of the soft effect.

NOTE: Cloning animation in soft effects is not supported.

Copying as Clone

You can also copy a sequence-level soft effect as a clone. This means, when you paste a new copy of the soft effect above a selected track item, it is automatically linked to the original soft effect as a clone. Therefore, any changes made to either of the cloned soft effects, are reflected in the other.

To copy a soft effect as a clone, do the following:

1. Select the soft effect you want to copy as a clone by clicking on it.
2. Select **Edit** > **Copy as Clones** (or press **Ctrl**/**Cmd**+**K**).
3. Click on the track item that you want to clone the soft effect to.
4. Select **Edit** > **Paste** (or press **Ctrl**/**Cmd**+**V**).

   The soft effect is copied as a clone on your selected track item. You can repeat steps 3 and 4 to create multiple clones that are all linked above different selected track items.

   Clones are indicated by a **C** highlighted in red in the left of the soft effect.

NOTE: Cloning animation in soft effects is not supported.

Decloning

To declone a soft effect, simply click on the clone you want to declone and select **Edit** > **Declone** (or press **Alt**+**Shift**+**K**).

NOTE: For more information about copying, moving, and cutting soft effects, see Timeline Editing Tools .

Deleting

To delete a soft effect, simply right-click on it and select **Edit** > **Delete** (or press **Backspace**).

Editing Clip-Level Soft Effects

To edit a clip-level soft effect, you first need to open the track item with the applied soft effect, in the timeline view. You can do this by right-clicking the track item and selecting **Open In** > **Timeline View**. You can then copy, delete or move the clip-level soft effect in exactly the same way as sequence-level soft effects.

You can copy and paste the clip-level soft effect on top of the original, creating a stack in the timeline view. When you close the timeline view, stacked clip-level soft effects are displayed as a single line within the top of the track item. Hiero allows you to copy a clip-level soft effect, return to the full sequence, and then paste it as a sequence-level soft effect. You can also paste a clip-level soft effect to another track item open in the timeline view.

NOTE: You cannot clone clip-level soft effects.

Enabling and Disabling Soft Effects

You can choose to disable and re-enable soft effects from the output. To enable or disable a sequence-level soft effect, select the soft effect by clicking on the colored box and then pressing **D**. To enable or disable a clip-level soft effect, you first need to open the track item – that includes the soft effect – in the timeline view. Then you can select the soft effect and press **D**.

Annotations

Annotations can be used as quick instructions for a compositor to implement in Nuke. You can add annotations to a clip, a section marked with in and out points, or a whole sequence.

Annotations can be exported with a Nuke Comp and can then be viewed and/or deleted in the Compositing environment. When all the suggested changes have been made to the script in the Compositing environment, this can be saved as a new comp version and then rendered back to the Timeline environment. If you want to add new annotations to the rendered Nuke Comp, you can choose to re-export annotations only.

Workflow

The following steps show an example of Hiero workflow for annotations:

1. In the Viewer, open the Annotations menu.

   See The Annotations Menu for more information for more information about it.
2. Add an annotation to a track item(s) at sequence or clip-level, by using the Annotation menu tools.

   See Adding Annotations for more information.
3. You can choose to edit a sequence or clip-level annotation after it has been created. See Editing Sequence-Level Annotations or Editing Clip-Level Annotations for more information.
4. Create a Nuke Comp of the track item with the annotations, ensuring annotations are enabled in the export settings.
5. Open the Nuke Comp in an external Nuke application.

   See Viewing Annotations in Nuke for more information.
6. After the suggested changes are made in the in the external Nuke, select **File** > **Save New Comp Version**.
7. Return to the timeline, and version up the Nuke Comp by right-clicking it and selecting **Versions** > **Version Up**.

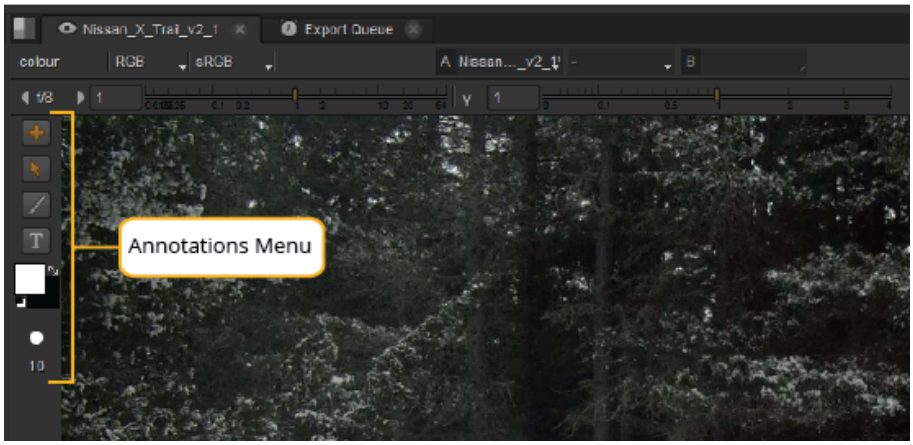
   The Nuke Comp is versioned up. Depending on your **Preferences** > **Performance** > **Threads/Processes** > **Rendering** > **background renders** setting, the comp may need rendering manually.
8. You can add new annotations to the rendered Nuke Comp by ensuring you select the **Clip** radio button and then using the Annotations menu tools.
9. After adding the new annotations, right-click the rendered Nuke Comp and select **Export** > **Re-Export Annotations**.
10. Open the rendered Nuke Comp in an external Nuke application.
11. Double-click the Precomp node to open its properties and version it up. For example, if the file path has **v01.nk** at the end, change it to **v02.nk**. See Re-Exporting Annotations from the Timeline for more information.
12. Display the Precomp in the Viewer.

    Your new annotations are displayed.

The Annotations Menu

You can open the Annotations menu by selecting the paint brush icon  at the top-right of the Viewer.

The Annotations menu displays down the left side of the Viewer.



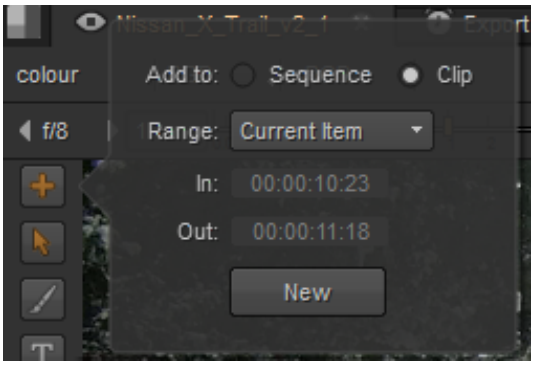
NOTE: Annotations on sequences and track items are only visible when you have the Annotations menu open.

Adding Annotations

To add an annotation, do the following:

1. After you have opened the Annotations menu, move the playhead on the timeline to where you want to add your annotation.
2. Click the **+** (addition) icon.

   A dialog is displayed containing annotation options.



3. You can choose which level you want to add your annotation to, sequence or clip-level, by selecting either the **Sequence** or **Clip** radio buttons.

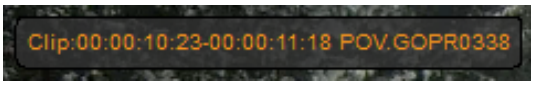
   When you add an annotation to the clip level, a turquoise line is displayed within the top of the track item. When you apply an annotation to the sequence level, a turquoise box appears above the selected section on a separate **Annotations** track.

4. From the **Range** dropdown select one of the following:
   - **Current Item** - Applies the annotation to the track item at the current playhead position.
   - **Current Frame** - Applies the annotation to the frame at the current playhead position.
   - **In/Out Points** - Applies the annotation to in and out points that have already been marked on the timeline.
   - **All** - Applies the annotation to the whole track.
   - **Custom** - When you select this from the **Range** dropdown, the in and out point fields within the dialog, become active. You can then use these to set the section that you want your annotation to appear on.

NOTE: The timecode displayed in the In and Out fields is derived from the clip's metadata, not its position in the sequence.

5. When you have set where you want your annotation to appear, click **New**.

   A label is added to the location of your annotations, detailing the clip timecode and name.



   You can click and drag this label to place it anywhere in the Viewer.

6. To draw in your annotation, select the paint brush tool from the Annotation menu.

   This is highlighted orange when selected.

7. Before drawing in the Viewer, you can set the brush and paint settings:
   - Select the brush and/or background color by clicking the paint colors icon  .

     This opens a color wheel that allows you to select the color and brightness, and an opacity slider underneath that you can use to set the opacity of the paint.

   - Select the paint brush size icon 

to set the required brush size. You can either use the slider to drag to your required brush size, or enter it into the brush size field.

NOTE: You can also edit these settings after drawing by clicking the selection tool in the Annotations menu, selecting the lines that you've drawn in the Viewer, and then adjusting the paint brush settings.

8. Click and drag in the Viewer to draw with your selected brush settings.

9. To add text to your annotation, click the text icon in the Annotations menu and then click anywhere in Viewer to enter your required text.

   A text dialog appears allowing you to type your required text, align it horizontally and vertically, and adjust the text size. You can then click and drag the text box to anywhere in the Viewer.

Enabling and Disabling Annotations

You can choose to disable and re-enable annotations from the output. To enable or disable a sequence-level annotation, simply select the annotation by clicking on the turquoise box and then pressing **D**. To enable or disable a clip-level annotation, you first need to open the track item – that includes the annotation – in the timeline view. Then you can select the annotation and press **D**.

Editing Sequence-Level Annotations

You can choose to edit, copy, move, and delete any annotations that were added on the sequence-level.

To remove an annotation from the sequence-level, simply select the turquoise box representing the annotation you want to move from the Annotation track, right-click and select **Edit** > **Delete** (or press **Backspace** or **Delete** on the keyboard).

To copy an annotation that was added at sequence level:

1. Select the annotation and then click **Edit** > **Copy** (or press **Ctrl**/**Cmd**+**C**). You can also access these tools in the right-click menu.
2. Move the timeline playhead to the position where you want to paste the annotation.
3. Select **Edit** > **Paste** (or press **Ctrl**/**Cmd**+**V**).

NOTE: You can also copy and paste annotations, that were added at sequence-level, between different sequences.

To move an annotation that was added at sequence level, you can simply click and drag it to the required location. You can also drag annotations to different track levels.

You can trim an annotation at either end by hovering the cursor over one end of the annotation until it changes into the trim icon:

Then click and drag to where you want to trim the annotation to.

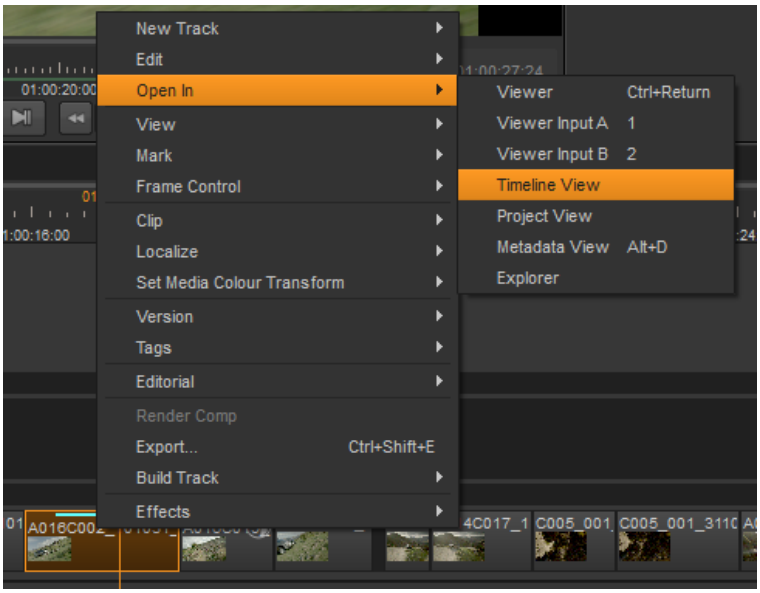
To edit the actual annotation, you can use the selection tool in the Annotations menu to select the annotation in the Viewer and move it, delete it, or replace it.

Editing Clip-Level Annotations

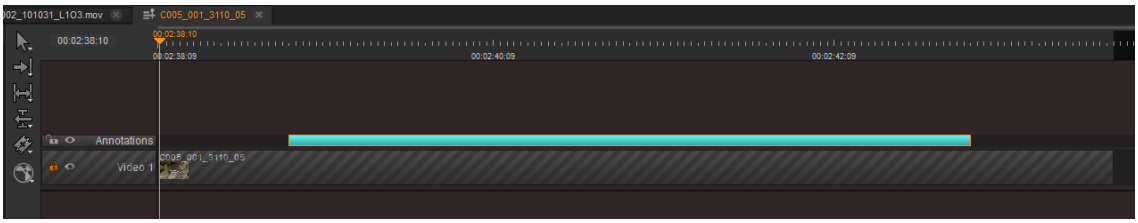
You can choose to move, trim, and simply delete clip-level annotations.

To edit a clip-level annotation, you first need to open the annotated track item as a timeline. To do this:

1. Right-click the track item with the annotation you want edit.
2. Select **Open In** > **Timeline View**.



The track item opens in the Timeline View, and the annotation now appears as on a separate level from the video. To view the annotation in the Viewer, ensure the Annotation menu is open.



To move a clip-level annotation from the Timeline view, hover the cursor over the annotation until it changes into a move icon:

Then simply click and drag it to where you want to move it to.

You can trim an annotation at either end by hovering the cursor over one end of the annotation until it changes into the trim icon:

Then click and drag to where you want to trim the annotation to.

To delete the annotation, click the turquoise box and select **Edit** > **Delete** (or press **Backspace** or **Delete** on the keyboard).

To edit the actual annotation, you can use the selection tool in the Annotations menu to select the annotation in the Viewer and move it, delete it, or replace it.

Viewing Annotations in Nuke

If you want to view annotations in an external Nuke application, you need to ensure annotations are enabled when creating a Nuke Comp. You can do this by either opening the **Export** dialog or the **Project Settings** dialog and checking the option **Basic Nuke Shot With Annotations** is selected. See using **Create Comp Clips** during round-tripping under Building VFX Tracks and Comp Clips for more information.

To create a Nuke Comp with annotations, do the following:

1. Create a Nuke Comp by right-clicking on the track item that you want use to create a Nuke Comp, and selecting **Export**.

   The **Export** dialog opens.
2. In the **Using Local export preset** setting in the middle-top of the dialog, ensure **Basic Nuke Shot With Annotations** is selected. Also, in the **Tracks For This Export** section in the bottom-left of the dialog, ensure either **all tracks** is selected, or that the **Annotations** checkbox is selected with certain tracks.
3. Click **Export**.

   A message warns that you've changed the export templates and asks whether you want to keep them.
4. Click **Yes** or **No**.

   See Building VFX Tracks and Comp Clipsfor more information on bringing Nuke Comps back into Hiero.

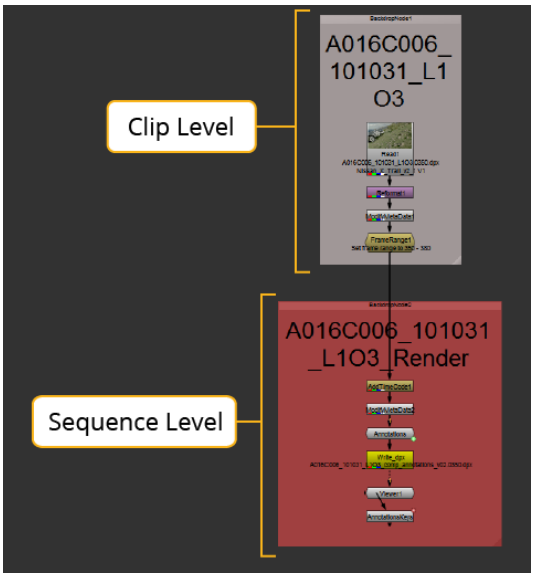
Viewing the Annotation Node Group

If you wish, you can view the annotations in an external Nuke by doing the following:

1. Double-click the Precomp node to open its properties panel, and the click **Open**.

   This opens the contents of the Precomp node as a node tree in a new instance of Nuke.
2. Ensure you have the Node Graph tab selected.

   The node tree displays in two parts. The top part represents the clip-level settings and the bottom part represents the sequence-level settings. Depending on where you set your annotation to be, an Annotations node group is displayed in the node tree.



3. Double-click the Annotations node group to open its properties panel.
4. In the top-right of the node properties, click the node structure icon  to display the contents of the node group.

   This displays the contents of the Annotations node group in a new Node Graph tab.

Re-Exporting Annotations from the Timeline

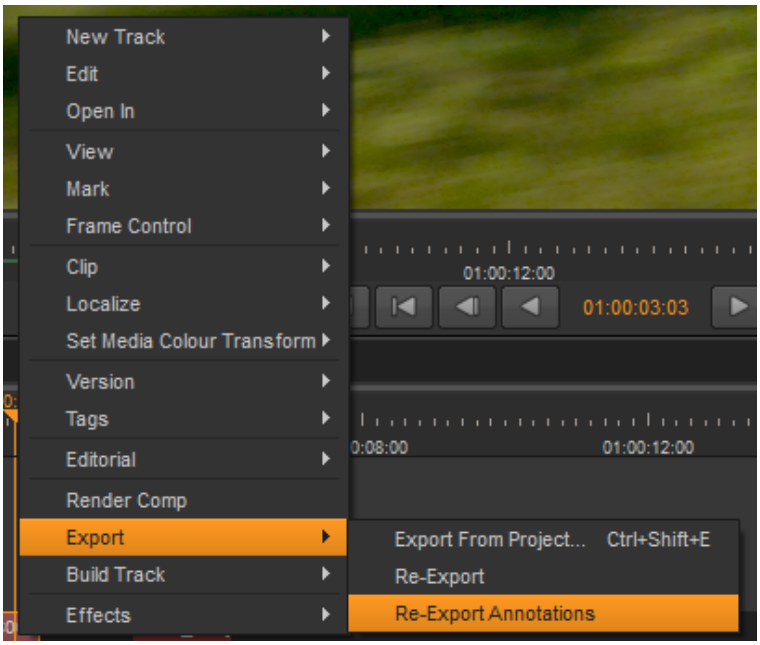
You may want to add new annotations after the Nuke Comp has been edited and rendered. In this case, you can re-export the annotations only.

To re-export annotations, do the following:

1. Move the playhead to the rendered Nuke Comp.
2. Press the **+** in the Annotations menu at the side of the Viewer, and select the **Clip** radio button.

> TIP: You cannot add sequence-level annotations to a Nuke Comp.

3. Add an annotation using the brush or text tools in the Annotation menu.
4. Right-click the Nuke Comp, and select **Export** > **Re-Export Annotations**.



5. Return to the Nuke script and double-click the Precomp node to open its properties, and version it up.

   For example, if the file path has **v01.nk** at the end, change it to **v02.nk**. You can also version up the Precomp node by doing one of the following:

   • Select the Precomp node and press **Alt**+**Up Arrow**.

   • Select the Precomp node and click **Edit** > **Node** > **Filename** > **Version Up**.

6. Ensure the Precomp node is connected to a Viewer node.

   Your new annotation is now visible in the Viewer.

Timeline Editing Tools

The timeline editing tools allow you to manipulate your track items directly in the timeline, in single- or multi-view projects, using a series of modal editorial tools that complement the **Multi Tool**. Select the tool you need for the job and then select a new tool and continue editing.

Introduction

The timeline editing tools are grouped for convenience - each tool group contains several tools and you can cycle between them by clicking the tool or using keyboard shortcuts. The editing tools work the same way in single- and multi-view timelines.

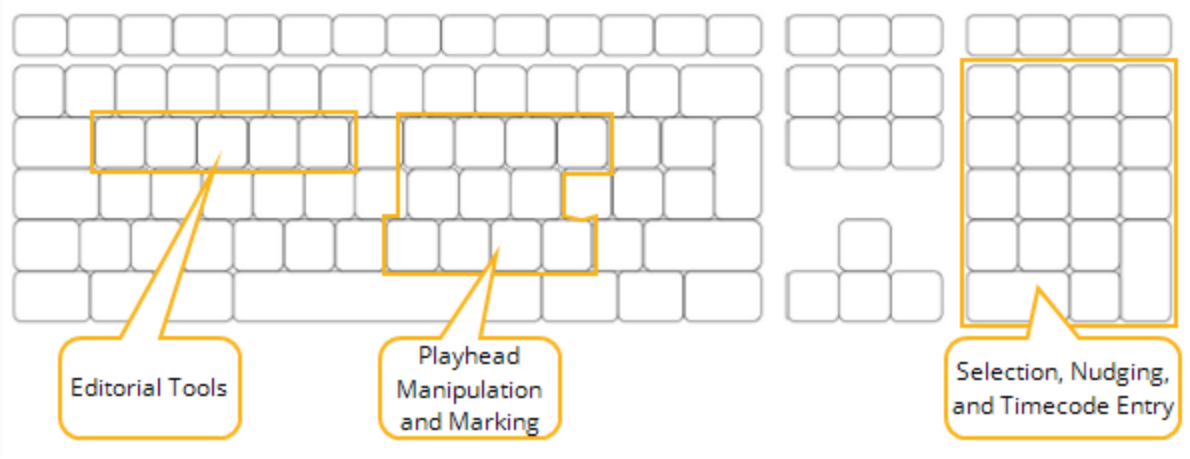
Icon	Tools	Description
	Multi Tool	The **Multi Tool**'s functionality is equivalent to most of the other tools combined, but doesn't require modal tool selection.
	Move/Trim	The **Move/Trim** tool allows you to manipulate the position of a track item or its output by adding or removing handles.
	Select	The marquee **Select** tool allows you to make multiple selections quickly by lassoing track items. Hold **Shift** to add to the selection and **Alt** to subtract from the selection.
	Selection by Track	The track selection tools allow you to quickly select multiple items depending on the initial selection. For example, the **Select Track to Right** tool selects all track items to the right of the target track item, within a single track.
	Slip Clip	The **Slip Clip** tool allows you to shift a track item's In and Out points by the same amount and in the same direction, retaining the original duration but altering the timeline output.
	Slide Clip	The **Slide Clip** tool allows you to move a track item in relation to the item before and/or after the target item, without changing its length or timeline output.
	Roll Edit	The **Roll Edit** tool enables you to roll a single edit within the available handles, shortening one track item while lengthening the other, but keeping the overall duration the same.

Icon	Tools	Description
	Ripple Edit	The **Ripple Edit** tool operates similarly to the trim function of the **Move/Trim** tool, except that downstream track items are rippled to automatically close any resulting gaps in the timeline.
	Retime Clip	The **Retime Clip** tool allows you to trim a track item's In or Out point and automatically retime the clip to fill the new track item duration.
	Razor	The **Razor** and **Razor All** tools allow you to cut track items in to separate parts so you can remove sections or rearrange items on the timeline.
	Join	The **Join** tool can only be used on edit points between two razored track items, denoted by the yellow arrows at the edit.

TIP: Enabling **Preferences** > **Panels** > **Timeline** > **show frame end marker** draws an extra line on the timeline to the right of the playhead, indicating the end of the current frame.

The modal editorial tools are mapped to the **Q**, **W**, **E**, **R**, and **T** keyboard shortcuts when the timeline is the active tab.

NOTE: For a full list of keyboard shortcuts, please see Appendix B: Keyboard Shortcuts.



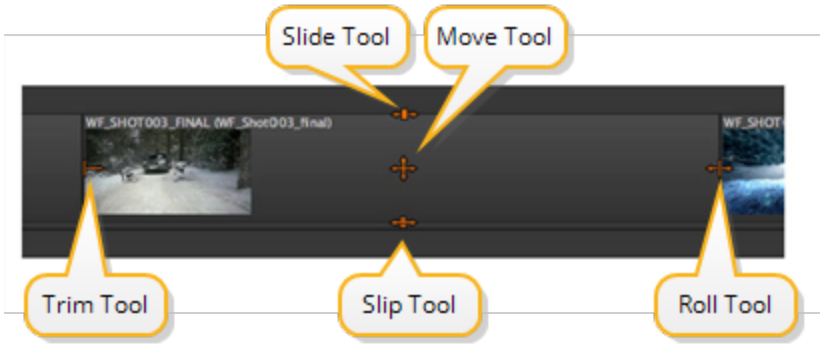
Pressing a keyboard shortcut multiple times selects the tools within each mode. For example, pressing **E** twice, rapidly in succession activates **Slide Clip**. Pressing them slowly in succession does not achieve the same result, but instead, remains on the first item in the menu. This allows you to activate a tool without knowing the current state of tool selection.

- mapped to **Q**, cycles through **Multi Tool**, **Move/Trim**, and **Select**.
- mapped to **W**, cycles through **Track Selection** tools.

- mapped to **E**, cycles through **Slip Clip** and **Slide Clip**.
- mapped to **R**, cycles through **Roll Edit**, **Ripple Edit**, and **Retime Clip**.
- mapped to **T**, cycles through **Razor**, **Razor All**, and **Join**.

Using the Multi Tool

Unlike the other editing tools available, the **Multi Tool** changes function depending on the position of your pointer in relation to the track item(s) selected.



The **Multi Tool**'s functionality is equivalent to most of the other tools combined, but doesn't require modal tool selection:

- **Move** - placing the mouse in the center of a track item activates the tool. Drag the selected track item to the required position on the timeline.
- **Trim** - placing the mouse at the left or right of the track item activates the tool. Drag the edit point to the new position and release the mouse to complete the trim.

  See Using the Move/Trim Tool for more information.
- **Select** - click-and-drag to marquee select clips. Hold **Shift** to add to your selection or **Alt** to subtract.

  See Using the Selection Tools for more information.
- **Slip** - placing the mouse at the bottom of the track item activates the tool and displays the slip handles. Drag the track item to the new position and release the mouse to complete the slip.

  See Using the Slip Clip Tool for more information.
- **Slide** - placing the mouse at the top of the track item activates the tool and displays the slide handles. Drag the track item to the new position and release the mouse to complete the slide.

  See Using the Slide Clip Tool for more information.
- **Roll** - placing the mouse on the edit between track items activates the tool and displays the handles. Drag the edit to the new position and release the mouse to complete the roll.

  See Using the Roll Edit Tool for more information.
- **Razor** - when using the Multi Tool, Razor cuts are menu driven. Navigate to **Timeline** > **Razor Selected** or **Razor All** to make cuts at the current playhead position.

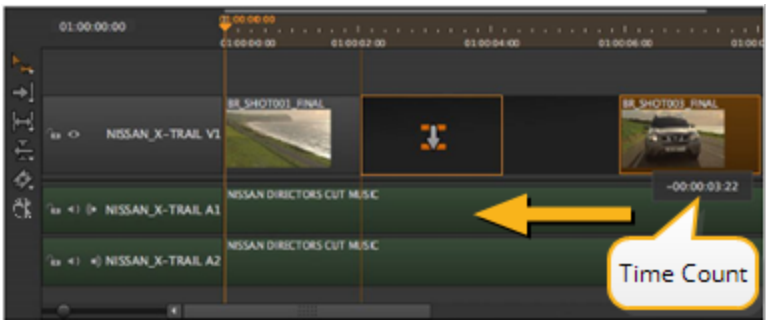
See Using the Razor and Join Tools for more information.

Using the Move/Trim Tool

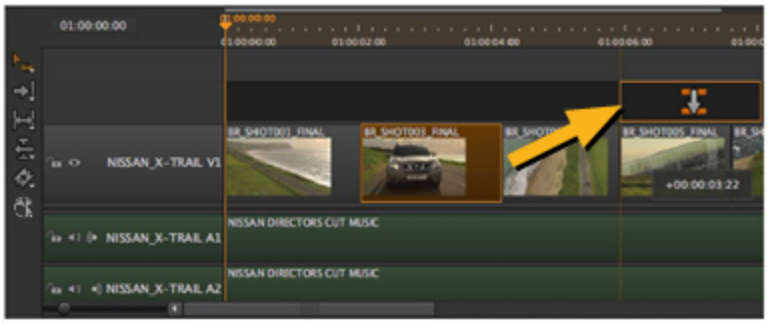
The **Move/Trim** tool allows you to manipulate the position of a track item or its output by adding or removing handles. Activate the **Move/Trim** tool by clicking the tool or pressing **Q** twice.

Moving Track Items

Click and drag the selected track item(s) to the required position on the timeline. A time count popup, in conjunction with the snap to edit function, helps you to reposition the track item(s) accurately.



You can also move track items up and down the track hierarchy using drag-and-drop or the **Alt**+**,** (comma) and **Alt**+**.** (period) keyboard shortcuts.



The following table describes the **Move/Trim** tool's modifiers and actions:

Mode	Method	Indicator	Description
Overwrite	drag-and-drop		The default move mode. The dragged track item overwrites any items that are present in the move location.
Ripple	drag then hold **Alt** and drop		Drag-and-drop track items on top of other items without overwriting content - items are pushed down the timeline to accommodate the move.
Duplicate	hold **Alt** and drag then release **Alt** and drop		Copy the track item, then drag-and-drop on top of other items overwriting existing content - items are **not** pushed down the timeline to accommodate the move.
Ripple and Duplicate	hold **Alt** then drag and drop while holding **Alt**		Copy the track item, then drag-and-drop items on top of others without overwriting content - items are pushed down the timeline to accommodate the move.

NOTE: On Linux, hold **Ctrl**+**Alt** for **Duplicate** and **Ripple Duplicate** modifiers.

Action	Keyboard Shortcut	Description
Delete	**Backspace**	Delete the selected track item(s) or gap(s).
Ripple Delete	**Shift** + **Backspace**	Remove the selected track item(s) and ripple items down stream to close gaps in the timeline. NOTE: The ripple effect may not close gaps entirely, because Hiero does not allow linked tracks to become desynchronized during rippling.

If you need to nudge track items horizontally by just a frame or two, you can select the items on the timeline and press **,** (comma) to nudge it left or **.** (period) to nudge it right. Press **Shift**+**,** (comma) or **.** (period) to nudge the track item horizontally by the **Frame Increment** set under the Viewer.

NOTE: You cannot overwrite other track items on the timeline horizontally using the nudge keys. However, vertical nudging (**Alt**+**,** and **Alt**+**.**) overwrites other tracks.

To Move Track Items Using the Spreadsheet View:

1. Select the required events in the spreadsheet view.
2. Click the cog icon and select the required **Time Edit Behaviors**:

Modify	Using	Result
Dst In	Move Destination	Adjusts the event's **Dst In** and **Out** by the same amount, moving the track item's position on the timeline by the specified amount, while maintaining Speed. Before and after a 2 second **Dst In** increase: Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:00:00 | 01:00:03:24 | 100 Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:02:00 | 01:00:05:24 | 100
Dst Out	Move Destination	Adjusts the event's **Dst Out** and **In** by the same amount, moving the track item's position on the timeline by the specified amount, while maintaining Speed. Before and after a 2 second **Dst Out** increase: Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:00:00 | 01:00:03:24 | 100 Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:02:00 | 01:00:05:24 | 100

3. Adjust the **Dst In** or **Dst Out** to move the track item(s) by the specified amount.

Trimming Track Items

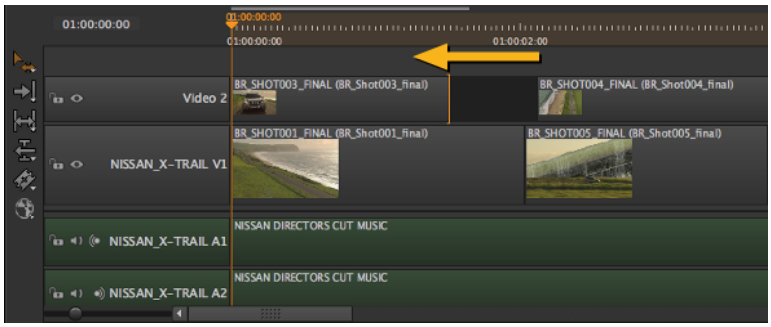
Click-and-drag the edit point to the new position and release the mouse to complete the trim.

TIP: Use the **Ripple Edit** tool, activated by pressing **R** twice, to ripple downstream track items automatically.

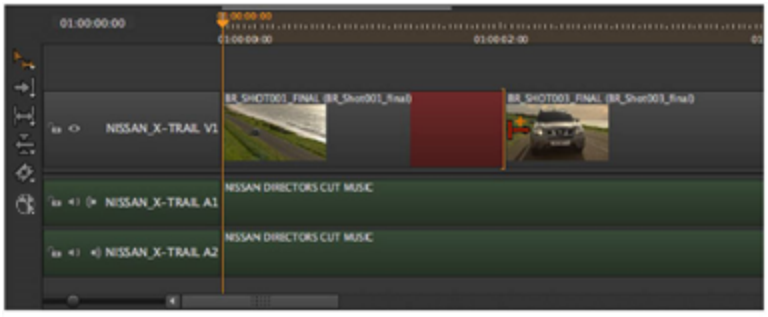
The Viewer displays the new In or Out point (depending on whether you're adjusting the beginning or end of the track item), allowing you to accurately gauge the new output.

NOTE: Trimming multiple track items simultaneously trims each item by the same amount and in the same direction.

Alternatively, click an edit point and nudge the edit using the **Ctrl/Cmd**+←→ keys or hold **Shift** to nudge by the **Frame Increment** set under the Viewer.



By holding **Ctrl/Cmd** and dragging an edit, you can add blank frames past the end of the track item's handles. Blank frames are colored red on the timeline for clarity:



To Trim Track Items Using the Spreadsheet View:

1. Select the required events in the spreadsheet view.
2. Click the cog icon and select the required **Time Edit Behaviors** depending on whether you're using the In or Out points or duration:

Modify	Using	Result
Src In	Trim In	Trims the event's **Src In**, **Dst In**, and **durations** while maintaining speed. Before and after a 2 second **Src In** increase: Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:00:00 | 01:00:03:24 | 100 Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:02:01 | 00:00:04:00 | 50 | 01:00:02:00 | 01:00:03:24 | 50
Src Out	Trim Out	Trims the event's **Src Out**, **Dst Out**, and **durations** while maintaining speed. Before and after a 2 second **Src Out** increase: Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:00:00 | 01:00:03:24 | 100 Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:06:00 | 150 | 01:00:00:00 | 01:00:05:24 | 150
Src Dur	Trim Out	Trims the event's **Src Dur**, **Dst Dur**, and **Src/Dst Out** while maintaining speed. Before and after a 50 frame **Src Dur** increase: Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:04:00 | 100 | 01:00:00:00 | 01:00:03:24 | 100 Speed | Src In | Src Out | Src Dur | Dst In | Dst Out | Dst Dur 100.0% | 00:00:00:01 | 00:00:06:00 | 150 | 01:00:00:00 | 01:00:05:24 | 150

Modify	Using	Result
Dst In	Trim In	Trims the event's **Dst In**, **Src In**, and **durations** while maintaining speed. Before and after a 2 second **Dst In** increase: Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:00:01 00:00:04:00 100 01:00:00:00 01:00:03:24 100 Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:02:01 00:00:04:00 50 01:00:02:00 01:00:03:24 50
Dst Out	Trim Out	Trims the event's **Dst Out**, **Src Out**, and **durations** while maintaining speed. Before and after a 2 second **Dst Out** increase: Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:00:01 00:00:04:00 100 01:00:00:00 01:00:03:24 100 Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:00:01 00:00:06:00 150 01:00:00:00 01:00:05:24 150
Dst Dur	Trim Out	Trims the event's **Dst Dur**, **Src Dur**, and **Dst/Src Out** while maintaining speed. Before and after a 50 frame **Dst Dur** increase: Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:00:01 00:00:04:00 100 01:00:00:00 01:00:03:24 100 Speed Src In Src Out Src Dur Dst In Dst Out Dst Dur 100.0% 00:00:00:01 00:00:06:00 150 01:00:00:00 01:00:05:24 150

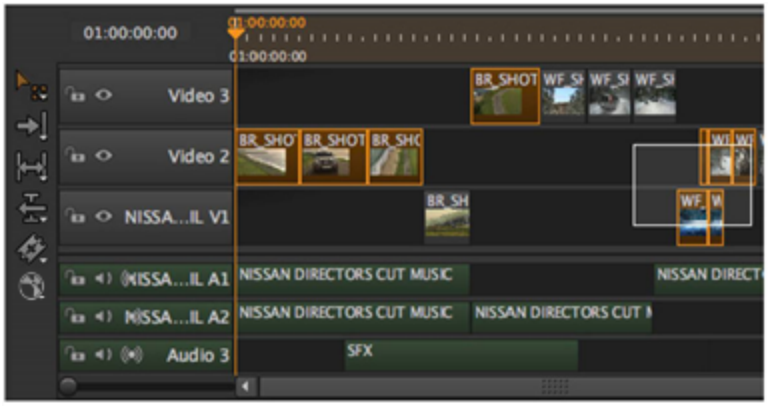
3. Adjust the values as required to trim the track item(s) by the specified amount.

Using the Selection Tools

The timeline editing tools include a marquee selection tool and several context dependent track selection tools.

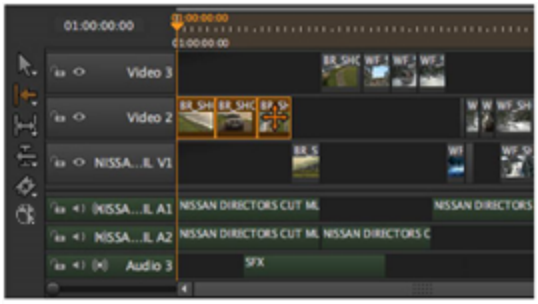
The marquee **Select** tool, activated by clicking the tool or pressing **Q** three times, allows you to make multiple selections quickly by lassoing track items.

Hold **Shift** to add to the selection and **Alt** to subtract from the selection.

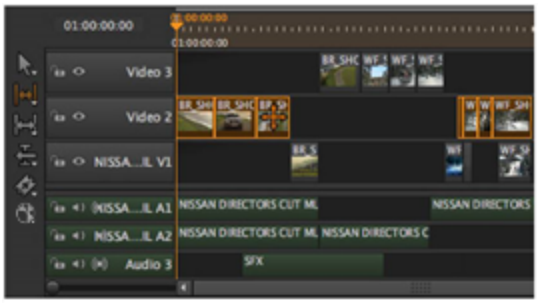


The track selection tools, activated by clicking the tool or by pressing **W**, selects multiple items depending on the initial selection:

- **Select Track to Right** or **Left** - all track items right or left of the target track item are selected, within a single track.



- **Select All in Track** - all track items on the target track are selected, regardless of the item selected.



- **Select All Tracks Right** or **Left** - all track items right or left of the target item are selected, regardless of which track they occupy.

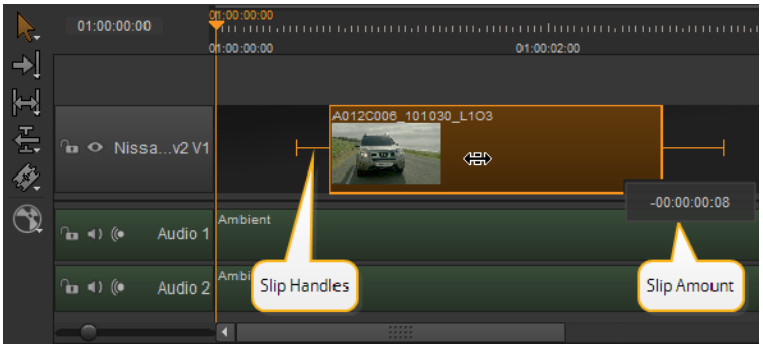
Using the Slip Clip Tool

The **Slip Clip** tool allows you to shift a track item's In and Out points by the same amount and in the same direction, retaining the original duration but altering the timeline output. Activate the **Slip Clip** tool by clicking the tool or pressing **E**.

NOTE: The target track item must have handles to use the **Slip** tool.

The **Slip Clip** tool displays different Viewer previews depending on whether the playhead is on the target track item or not, but the basic principles are the same.

Click the target clip to display the available handles and then drag the track item to the new position. Release the mouse to complete the slip.



NOTE: Using the **Slip Clip** tool does not move the track item on the timeline, only the output is changed.

Alternatively, nudge the slip using the **,** (comma) or **.** (period) keys or hold **Shift** to nudge by the **Frame Increment** set under the Viewer.

TIP: If you're using the **Multi Tool**, you can nudge using the "slip bar" by clicking at the bottom the track item.

The following Viewer previews are displayed, depending on the playhead position:

NOTE: The Viewer background always displays the playhead's current position.

- When the playhead is not currently on the target track item, the Viewer displays the **In** frame (1) and **Out** frame (2), allowing you to accurately gauge the new output.

- When the playhead is on the target track item, the Viewer displays the **In** frame (1), the **current** frame (2), and **Out** frame (3), allowing you to accurately gauge the output of the track item against the current frame.

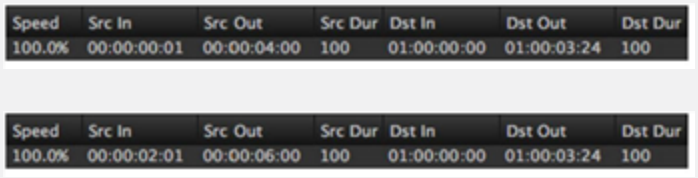
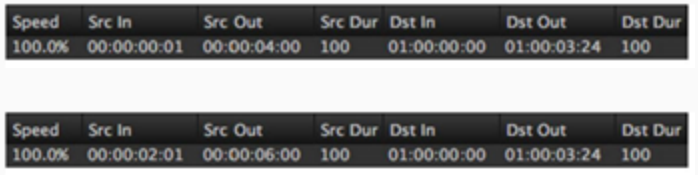
- When the playhead is on the target track item and A/B compare is active, the Viewer displays the target track item (1) and the reference track item (2), allowing you to synchronize your working track against the reference track.

Slipping Using the Spreadsheet View

You can slip track items using the **Src In** and **Src Out** columns of the spreadsheet:

1. Select the required event in the spreadsheet view.

2. Click the cog icon and select the required **Time Edit Behaviors** depending on whether you're using the In or Out point:

Modify	Using	Result
Src In	Slip Source	Adjusts the **Src In** and **Src Out** by the same amount, slipping the event while maintaining speed. Before and after a 2 second **Src In** increase: 
Src Out	Slip Source	Adjusts the **Src Out** and **Src In** by the same amount, slipping the event while maintaining speed. Before and after a 2 second **Src Out** increase: 

3. Adjust the **Src In** or **Src Out** to slip the track item(s) by the specified amount.

Using the Slide Clip Tool

The **Slide Clip** tool allows you to move a track item in relation to the item before and/or after the target item, without changing its length or timeline output. Activate the **Slide Clip** tool by clicking the tool or pressing **E** twice.

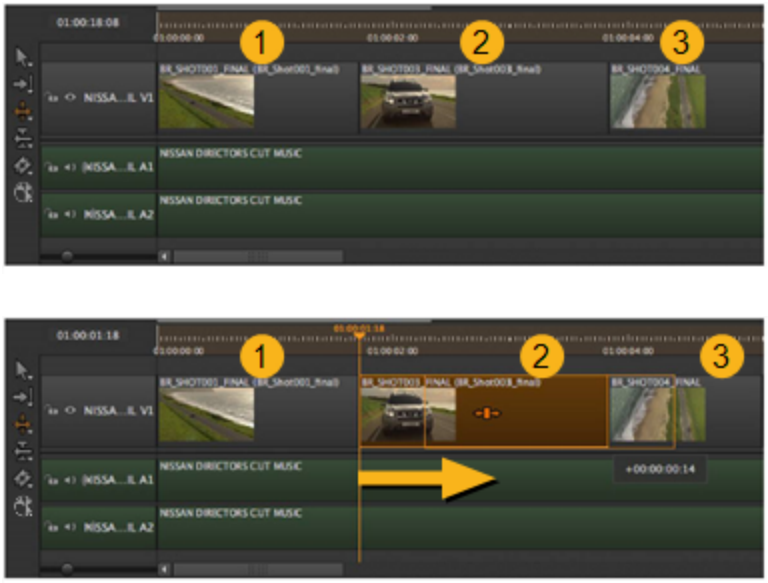
The track item either side of the target are shortened or lengthened within the limits of their handles to accommodate the slide.

NOTE: The surrounding track items must have handles to use the **Slide** tool.

Click the target track item and then drag it to the new position and release the mouse to complete the slide.

For example, if you slide the target track item (2) five frames to the right, the preceding item (1) ends five frames later and the next item (3) starts five frames later.

The first image shows a timeline containing three track item, and the second shows the same track items with the target (2) sliding to the right.



The Viewer displays the new end point of the previous track item on the left and the new start point of the next track item on the right, allowing you to accurately gauge the slide.

The two center images (2) represent the start and end frames of the target track item, which don't change.

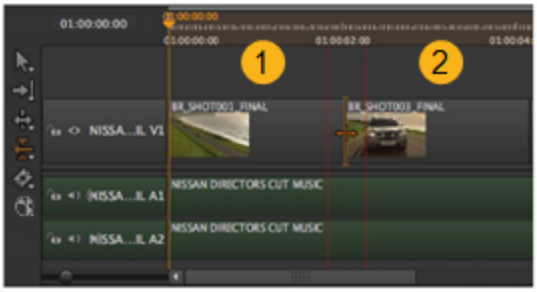
Using the Roll Edit Tool

The **Roll Edit** tool enables you to roll a single edit within the available handles, shortening one track item while lengthening the other, but keeping the overall duration the same. Activate the **Roll Edit** tool by clicking the tool or pressing **R**.

NOTE: At least one of the target items must have handles to use the **Roll** tool.

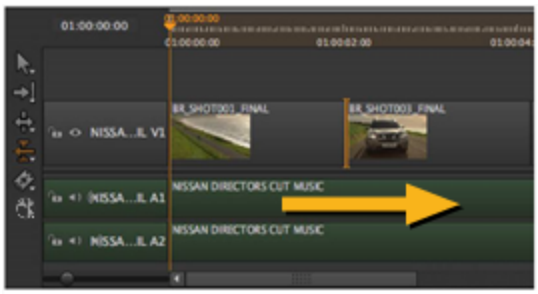
1. Click an edit point between two track items to display the available handles as a red overlay.
2. Drag the edit to the new position and release the mouse to complete the roll.

For example, if you roll five frames at the end of one track item (1), the next item (2) starts five frames later. The first image shows a timeline containing two track items, and the second shows the same items with the edit point "rolled" to the right.



The Viewer displays the pre-edit track item on the left and the post-edit item on the right, allowing you to accurately gauge the new position of the edit.

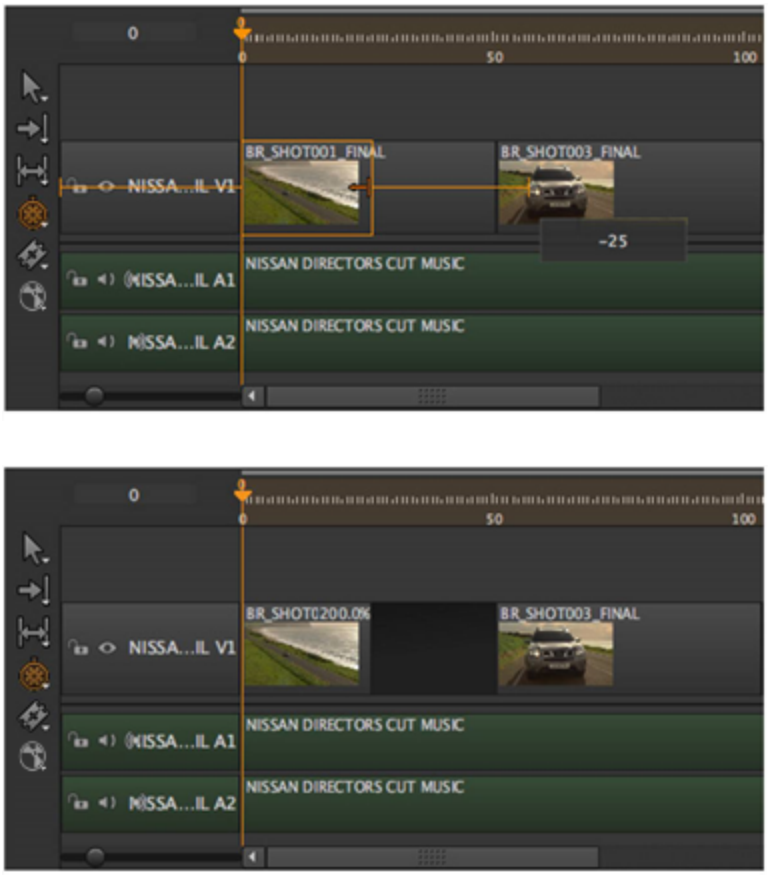
Alternatively, click the edit point between the track item and nudge the edit using the **,** (comma) or **.** (period) keys or hold **Shift** to nudge by the **Frame Increment** set under the Viewer.



Using the Retime Clip Tool

The **Retime Clip** tool allows you to trim a track item's In or Out point and automatically retime the clip to fill the new track item duration. Activate the **Retime Clip** tool by clicking the tool or pressing **R** three times.

Click-and-drag the edit point to the new position and release to complete the trim and retime. For example, trimming a 50 frame track item to 25 frames retimes the clip to 200%.



Alternatively, click an edit point and nudge the edit using the **,** (comma) or **.** (period) keys or hold **Shift** to nudge by the **Frame Increment** set under the Viewer.

TIP: By holding **Ctrl/Cmd** and dragging an edit, you can retime past the end of the track item's handles.

Using the Razor and Join Tools

The **Razor** tools allow you to cut track items in to separate parts so you can remove sections or rearrange items on the timeline. Activate **Razor** and **Razor All** by clicking the tool or pressing **R**.

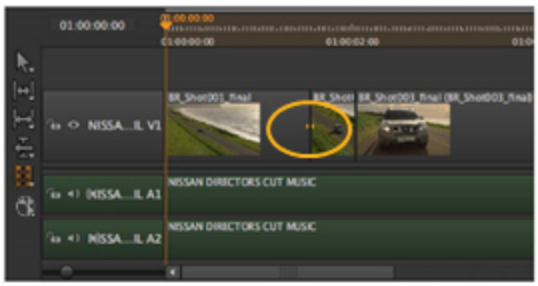
Place the cursor on the target track item, and if the cut is permissible, click to razor the track item or all track items depending on which tool you have selected.

TIP: The Razor cursor indicates whether a cut is permissible or not, such as on existing edits.

You can also apply cuts at the playhead position from the menu bar using **Timeline** > **Razor Selected**, or all tracks using **Timeline** > **Razor All**.

TIP: Use the **C** (with the track item under the playhead selected) and **Shift**+**C** keyboard shortcut, or the right-click context menu, to perform the respective cuts.

The **Join** tool can only be used on edit points between razored track items, denoted by the yellow arrows at the edit.



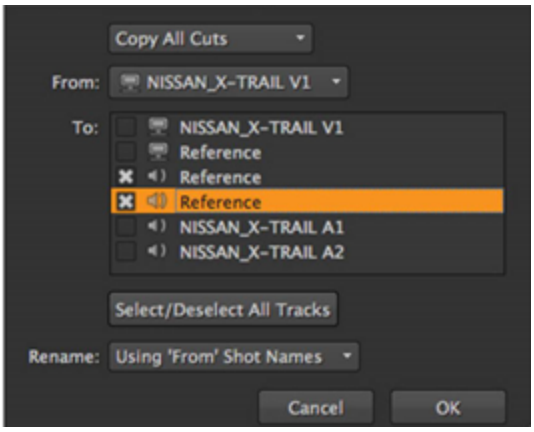
Copying Cuts Between Tracks

The **Copy Cuts** function allows you to quickly apply cuts from one track to other tracks on the timeline. For example, in the timeline shown, you could copy the cuts from the second video track to the Reference audio tracks.

To copy cuts:

1. Select the track items containing the cuts to copy, or if you intend to copy all the cuts from a track you don't need to make a selection.
2. Right-click in the timeline and select **Editorial** > **Copy Cuts**.

   The **Copy Cuts** dialog displays.



3. If you made a selection on the timeline, use the dropdown to select **Copy All Cuts** or **Copy Selected Cuts** as required.

   This dropdown is not displayed if no track items were selected.
4. Click the **From** dropdown to select the source track.
5. Check all the destination tracks in the **To** field to which you want to copy the cuts.
6. Choose whether or not the resulting track items are named identically to the source track.

   Selecting **None** retains the destination clip name.
7. Click **OK** to copy the cuts to the destination track(s).

Insert, Overwrite, and 3-Point Editing

Insert and **Overwrite** edits are applied at the current playhead position by default, but the use of In and Out points in the clip Viewer and/or sequence Viewer can give you greater control over the result. 3-point editing, makes use of In and Out points in the clip Viewer and an In or Out in the sequence Viewer to control where the clip is placed on the timeline.

Inserting Clips

By default, **Insert** places the entire contents of the clip Viewer into the timeline at the current playhead position, on the lowest available track. All track items downstream of the playhead are rippled to make room for the clip. No items are overwritten or removed.

Pre-insert timeline

Post-insert timeline

NOTE: If the playhead is not positioned at an edit point, or there are track items on other tracks, the **Insert** action cuts the track item(s) at the playhead and ripples the cut downstream.
For example, the Post-insert image shows the audio track item being cut and rippled, even though it doesn't reside on the same track.

You can select a track before inserting if you don't want to target the lowest available track. Even if the target track is empty, track items on all other unlocked tracks are rippled by the same amount.

You can also use In and Out points to control where the clip is inserted and how many frames are included. See 3-Point Editing for more information.

To insert a clip at the playhead:

1. Navigate to **Workspace** > **Editing** to display the 2-up Viewer layout.
2. Double-click your sequence in the bin view to load it into the right-hand sequence Viewer .
3. Double-click the source clip to load it into the left-hand clip Viewer .
4. Place the playhead at the required edit point or timecode and select the target track, if necessary.
5. Navigate to **Clip** > **Insert**, or press **N**, to insert the clip into the timeline.
   All track items downstream of the clip are rippled to make room for the duration of the edit.

To insert a clip at an In or Out point:

1. Navigate to **Workspace** > **Editing** to display the 2-up Viewer layout.
2. Double-click your sequence in the bin view to load it into the right-hand sequence Viewer .
3. Double-click the source clip to load it into the left-hand clip Viewer .
4. Place an In or Out point on the timeline to determine the clip's position:
   - **In point** - the source clip is inserted so that the first frame is at the In point specified.
   - **Out point** - the source clip is inserted so that the last frame is at the Out point specified.
5. Navigate to **Clip** > **Insert**, or press **N**, to insert the clip into the timeline.
   All track items downstream of the In or Out point are rippled to make room for the duration of the edit.

Overwrite Edits

Unlike inserting, **Overwrite** does not incorporate downstream ripple and doesn't alter the length of your sequence. Any track items you overwrite are destroyed, though they can easily be recovered from the source clips in the bin view.

Pre-overwrite timeline Post-overwrite timeline

You can select a track before overwriting if you don't want to target the lowest available track.

You can also use In and Out points to control what the clip overwrites and how many frames are included. See 3-Point Editing for more information.

To overwrite at the playhead:

1. Navigate to **Workspace** > **Editing** to display the 2-up Viewer layout.
2. Double-click your sequence in the bin view to load it into the right-hand sequence Viewer .
3. Double-click the source clip to load it into the left-hand clip Viewer .
4. Place the playhead at the required edit point or timecode and select the target track, if necessary.
5. Navigate to **Clip** > **Overwrite**, or press **M**, to overwrite from the playhead for the duration of the source clip.

   All track items under the source clip are overwritten.

To overwrite from an In or Out point:

1. Navigate to **Workspace** > **Editing** to display the 2-up Viewer layout.
2. Double-click your sequence in the bin view to load it into the right-hand sequence Viewer .
3. Double-click the source clip to load it into the left-hand clip Viewer .
4. Place an In or Out point on the timeline to determine the clip's behavior:
   - **In point** - the source clip begins overwriting from its first frame at the In point specified downstream for the duration of the clip.
   - **Out point** - the source clip begins overwriting from its last frame at the Out point specified upstream for the duration of the clip.
5. Navigate to **Clip** > **Overwrite**, or press **M**, to overwrite from the In or Out point for the duration of the source clip.

   All track items under the source clip are overwritten.

3-Point Editing

Setting the output of a source clip and then editing the clip into a timeline at a specific point is sometimes referred to as 3-point editing. Using this method, you can insert and overwrite edits in an existing timeline or quickly construct scratch timelines from your bin clips.

Firstly, set the output of your source clip using In and Out points in a clip Viewer, then set the reference In or Out point on your timeline to determine the clip's position. Finally, add the clip to the timeline using **Insert** or **Overwrite**.

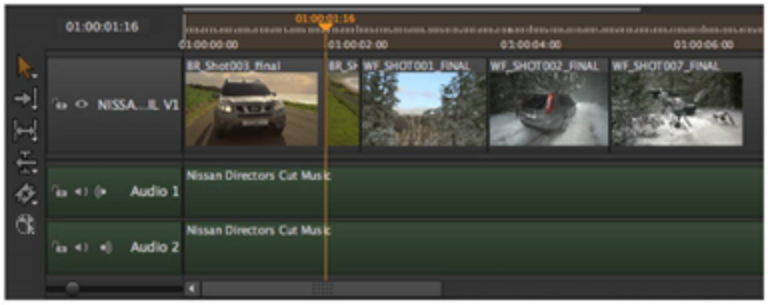
TIP: You can set both In and Out points on the timeline, but bear in mind that there may be insufficient source frames for the range specified. If this is the case, blank frames are added and highlighted in red.

You can select a track before editing if you don't want to target the lowest available track. When inserting, even if the target track is empty, track items on all other unlocked tracks are rippled by the same amount.

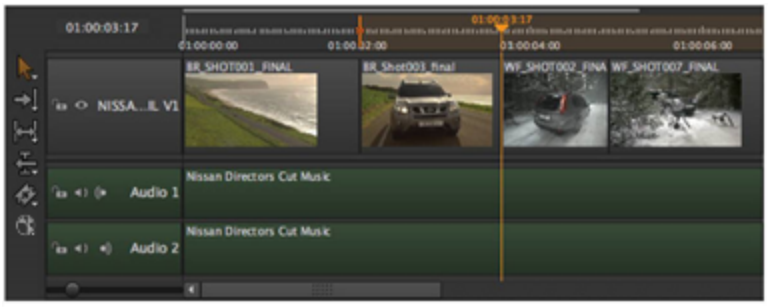
1. Navigate to **Workspace** > **Editing** to display the 2-up Viewer layout.
2. Double-click the required source clip to load it into the left-hand clip Viewer .
3. Set the required frame range using In and Out points.
4. Double-click your sequence in the bin view to load it into the right-hand sequence Viewer .
5. Set In and/or Out points on the timeline to specify where the clip should be added and use **Insert** (N) or **Overwrite** (M) as required.

   As an example, assuming your clip Viewer and timeline are represented by the following image, and the Overwrite function is used:

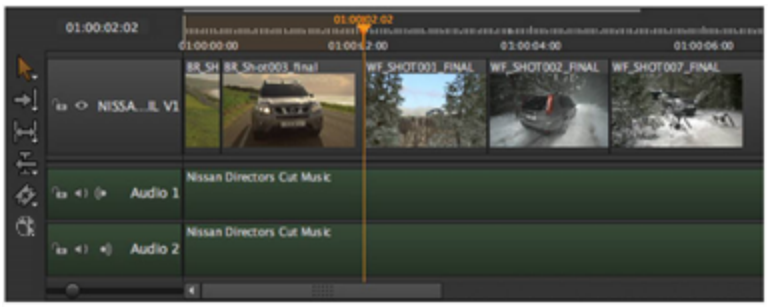
- **No In or Out points** - insert or overwrite at the current playhead position, for the range currently set in the clip Viewer.



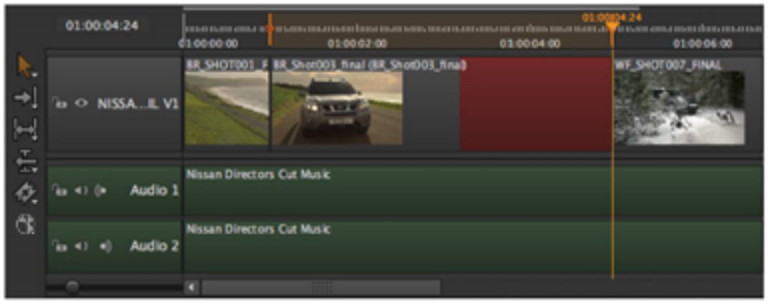
- **In point but no Out point** - insert or overwrite from the In point position downstream, for the range currently set in the clip Viewer.



- **Out point but no In point** - insert or overwrite from the Out point position upstream, for the range currently set in the clip Viewer.



- **In and Out points** - insert or overwrite at the current In point position, for the duration set by the timeline's In and Out points. If there are insufficient source frames for the range specified, blank frames are added highlighted in red.



Versions and Snapshots

In addition to the regular project save and restore options, Hiero can record the different states of your workflow as you progress using versions and snapshots.

Introduction

Versions are children of clips. You can have any number of versions per clip as long as they follow the correct naming conventions, as shown in Using Versions. Versions can only be applied to bin clips and track items and can be swapped in and out without overwriting existing work.

Snapshots are time-stamped copies of a sequence, allowing you to save its current state without the inconvenience of saving the entire project. When you restore a snapshot, a warning displays prior to the restore reminding you that edits since the snapshot was taken are lost. See Using Snapshots for more information.

Using Versions

Versions can be added to clips and track items to allow greater flexibility in your workflow. You can have as many versions as required and cycle through them quickly using keyboard shortcuts.

NOTE: You cannot use versions when a clip is opened as a timeline, that is, by using the right-click **Open In** > **Timeline View** option.

The application relies on specific file naming or folder structure conventions to discover versions:

Convention	Description	Example
File name constants		
Clip name	The file name base must remain the same.	**myClip**_v1.0001.dpx **myClip**_v2.0001.dpx **myClip**_v3.0001.dpx

Convention	Description	Example
Version prefix	The delineation between the file name and version information must be either _ (underscore) or **.** (period) and remain the same for all versions.	myClip_v1.0001.dpx myClip_v2.0001.dpx myClip_v3.0001.dpx
File name variables		
Version padding	The version number padding in the clip name can be increased or decreased.	myClip_**v1**.0001.dpx myClip_**v002**.0001.dpx myClip_**v03**.0001.dpx
Frame padding	The frame padding in the clip name can be increased or decreased.	myClip_v1.**01**.dpx myClip_v1.**1**.dpx myClip_v1.**0001**.dpx
Extension	The file format is interchangeable. See Appendix C: File Formats for more information.	myClip_v1.01.**png** myClip_v1.0001.**dpx** myClip_v1.**mov**

NOTE: If the file extension is a movie format, such as **.r3d** or **.mov**, the **Frame padding** can be omitted.

Folder name constants		
Root folder	The root folder name must remain the same for all folders containing versions.	**~/version/**v1/myClip_v1.0001.dpx **~/version/**v2/myClip_v2.0001.dpx **~/version/**v3/myClip_v3.0001.dpx
Folder name variables		
Version padding	The version number padding in the folder name can be increased or decreased.	09_WF_Shot004_**v1** 09_WF_Shot004_**v002** 09_WF_Shot004_**v03**

Versions in Bins

Versions behave similarly in both bins and sequences, and in both cases, you first have to ingest an existing version.

Ingest and locate the versioned clip, then:

1. Right-click and select **Version** > **Scan for Versions** to search for available versions.

   A dialog box lets you know how many versions were discovered.

2. Use the right-click **Version** menu to:

   • Go to the next **Version Up** or **Version Down**.

   • Go to the **Minimum** or **Maximum Versions**.

> TIP: You can also use the **Alt**+**Up**/**Down Arrow** keyboard shortcuts to increment versions or **Alt**+**Shift**+**Up**/**Down Arrow** to go to the maximum or minimum.

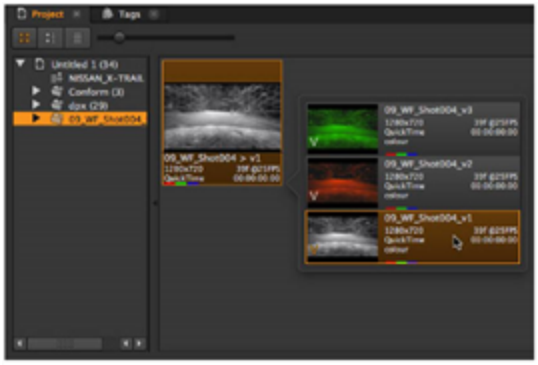
   When you reach the end of the discovered versions, incrementing the version automatically scans for new versions that may have become available.

3. For bin clips only, you can right-click the clip and select **Open In** > **Versions Bin** to display all discovered versions of the target clip.

   The versioning conventions may allows clips into the Version Bin that you weren't expecting. You can disable versions by selecting them and pressing **D** or by selecting the **Set Active Version** of a clip using the right-click **Version** menu.

   The **Active Version** is the version displayed when you drag the source clip to the timeline, denoted by the orange **V** in the top left-hand corner of the thumbnail.

4. Once you've sorted all the available versions, select a clip in the bin view and press **V** to display all versions for that clip in a convenient window.



5. Select the required clip to set the **Active Version** and apply it to the clip.

Versions in Sequences

As mentioned previously, versions behave similarly in both bins and sequences, but swapping versions in sequences allows you to compare results more easily.

NOTE: You cannot use versions when a clip is opened as a sequence, that is, using the right-click **Open In > Timeline View** option.

Locate the ingested version clip and drag it to the timeline, right-click and select the **Version** menu:

- **Scan For Versions** to locate new versions of the clip.
- **Version Up** or **Version Down** to increment the version by one.
- Go to the **Minimum** or **Maximum Version**.

TIP: You can also use the **Alt** +**Up**/**Down Arrow** keyboard shortcuts to increment versions or **Alt**+**Shift**+**Up**/**Down Arrow** to go to the maximum or minimum.

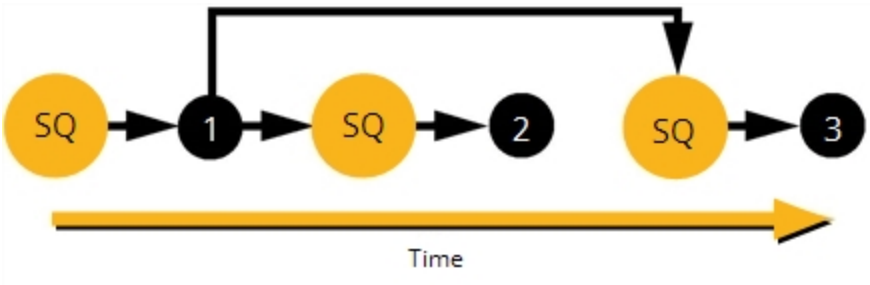
Once you've scanned for versions, select a track item on the timeline and press **V** to display all available versions for that item in a convenient window.

Select the required track item version to set the **Active Version**.

Using Snapshots

Within a project you can save the current state of a sequence as a snapshot, including a comment or tag to describe that snapshot. You can see what snapshots exist for a sequence in the bin view and flip it back to any previously saved state.

An example workflow might appear as follows:

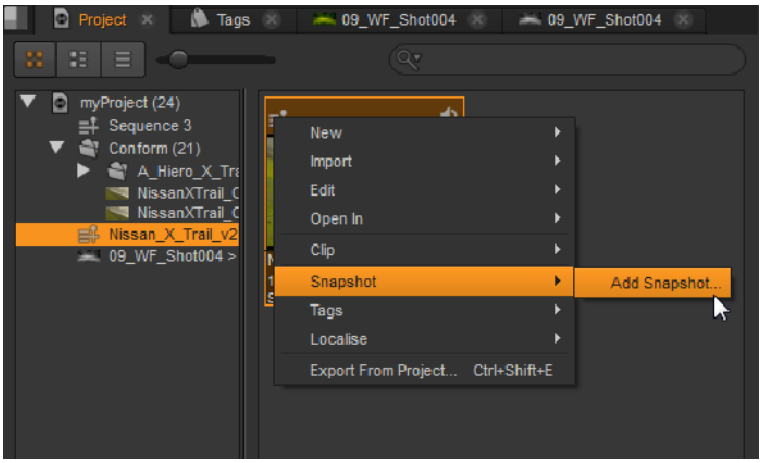


1. Two snapshots of the sequence (SQ) are recorded after edits. See Creating Snapshots.
2. Snapshot 1 is then restored. See Restoring Snapshots.
3. Further edits are made, then the sequence is recorded as snapshot 3.

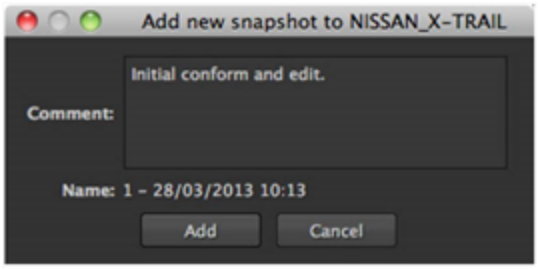
Creating Snapshots

To create a snapshot for a sequence:

1. Locate the sequence in the bin view.
2. Right-click the sequence and select **Snapshot** > **Add Snapshot**.

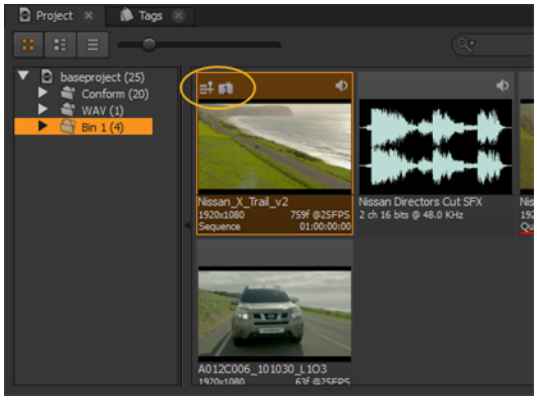


The **Add new snapshot** dialog box displays.



3. Enter a comment, or use the default date and time supplied.
4. Click **Add** to create the snapshot.

   Snapshots are indicated in the bin view with a camera icon containing the number of snapshots available.

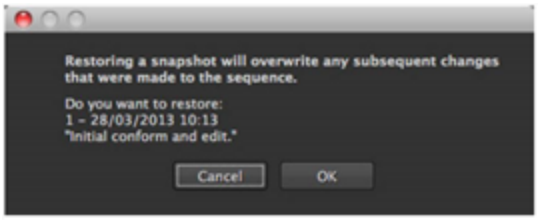


Restoring Snapshots

To restore a snapshot:

1. Locate the sequence in the bin view.
2. Right-click the sequence and select **Snapshot** > **Restore Snapshot**.
3. Select the required snapshot from the list.

   A warning displays reminding you that edits since the snapshot was taken are lost.



4. Click **OK** to restore the sequence to the point at which the snap was recorded.

Exporting from Hiero

This chapter deals primarily with shot management and export functionality when you're farming out shots or sequences to other artists. It also deals with the presets, which dictate how **Create Comp Clips** passes data between Hiero and Nuke.

The export suite can transcode, export clip selections from a timeline or bin, write out EDLs and XMLs, or bake out an entire timeline as a single clip in your required delivery format. The **Export** presets are also used to manage how **Create Comp Clips** sends clips back and forth between Hiero and Nuke using **Local** and **Project Presets**.

Hiero ships with several context-sensitive and ad hoc export options:

- Exporting Sequences and Track Items - the process of preparing a sequence or individual track items for export and paving the way for VFX work to come back into Hiero.
- Transcoding - converts one file format to another. You can transcode sequences, timeline selections, and clips from the bin view.
- Ad Hoc Exports - an umbrella covering exports that you might not perform on a per project basis, such as EDL or XML exports.

With the addition of Python bindings to perform the same functions, this infrastructure provides a massive amount of flexibility, whether your pipeline is GUI or command line orientated.

NOTE: Hiero is non-destructive and can slot into your pipeline if you setup your shot template to mirror the existing file structure.

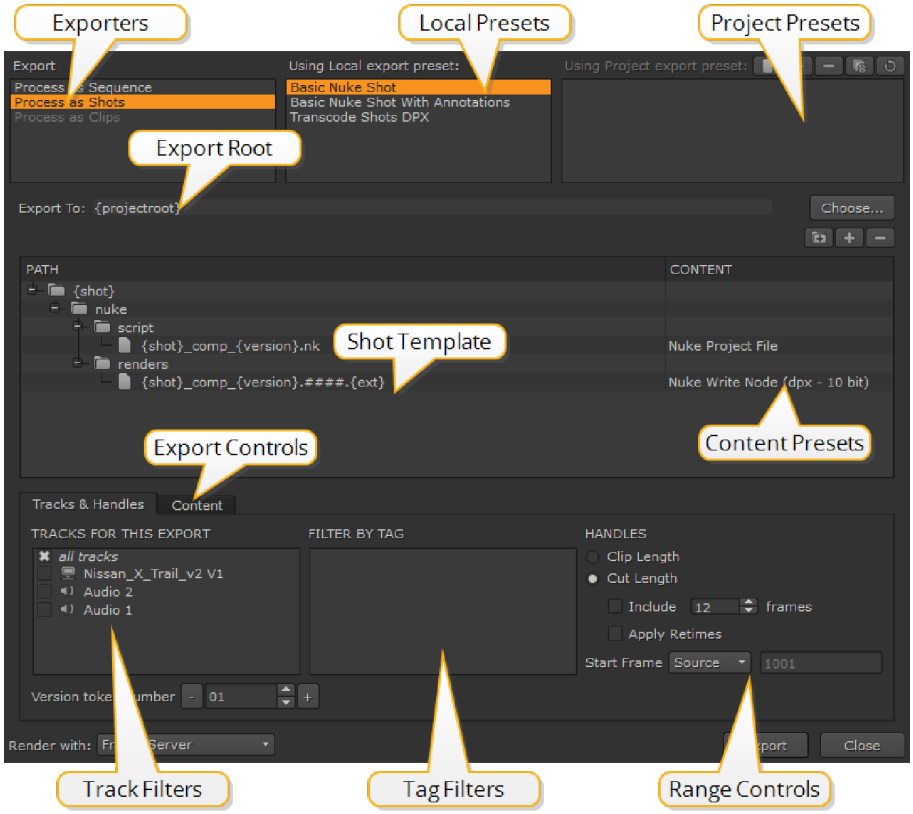
Round-Tripping Using the Export Dialog

A round-trip describes the process of exporting clips to another application, in this case Nuke, and then paving the way back into Hiero to conform the new VFX clips.

Introduction to the Export Dialog

Hiero uses presets and shot templates to perform export operations, including round-tripping and EDL/XML creation. The **Export** dialog controls what is exported and where, and whether or not to expect versioned clips as part of a round-trip from Nuke.

The Shot Template is also used to create the presets used during **Create Comp Clips**, passing track items from Nuke and sending rendered Write nodes from the Node Graph back to Hiero.



Hiero uses **Content Presets** in all shot templates, enabling you to create commonly used export conditions, which are then available across all projects. Some presets are only available with certain exporters, for example, the **EDL Exporter** preset cannot be used with **Process as Shots** exports.

You can filter your exports using the **Tracks for this Export** and **Filter by Tag** lists, exporting only certain tracks or track items marked with a particular tag. See Using Tags for more information.

For your convenience, Hiero ships with a number of ready-made **Content Presets**, but you can edit these as required:

- **Transcode Images** - defines transcode parameters allowing you to save your most-used file type conversions.
- **Nuke Project File** - defines the script name and paths used by Nuke Read and Write nodes during a round-trip or **Create Comp Clips**.
- **Nuke Write Node** - defines the render format for Nuke Write nodes. Add multiple Nuke Write Node presets to create multiple Write nodes in the resulting Nuke script.
- **Nuke Annotations File** - defines the script name and paths used by Nuke Write nodes and Precomp group during a round-trip or **Create Comp Clips**.
- **Render with** - selects how Hiero renders your export: **Single Render Process** or **Frame Server**. This dropdown defaults to **Frame Server** using the number of slave processes specified in the **Preferences** > **Performance** > **Threads/Processes**. If you set this preference to **0**, Hiero relies on external machines set up as render slaves. See Using the Frame Server on External Machines for more information.
- **EDL Exporter** - used to export a sequence to the EDL format.

- **SymLink Exporter** - creates symlinks to the location of the source files, rather than making copies.
- **XML Exporter** - used to export a sequence to XML format.
- **Copy Exporter** - creates copies of the source files to a specified location, rather than symlinking.
- **Audio Export** - copies any audio tracks to **.wav** files in a specified location.

Using Local and Project Presets

Presets are containers for export preferences, such as file structure and format, and filters for tracks, tags, and frame range. Two types of **Presets** are available to construct commonly used export tasks:

- **Local Presets** - these presets are used to set up round-trips between artists on different platforms and also to manage passing files between the Timeline and Nuke. Local Presets are saved in a Task Presets folder using the XML file format.
- **Project Presets** - you can drag-and-drop **Local Presets** into this panel to save the preset within a project **.hrox** file. This option is designed for collaborative work, allowing you to quickly share your export presets.

Using the Shot Template

The shot template sets up the folder hierarchy and naming conventions for export presets such as **Basic Nuke Shot with Annotations** and **Transcode Clip DPX**, and how **Create Comp Clips** sends clips back and forth between Hiero and Nuke. Any folders added to the template are created during export unless they already exist, in which case the export writes to the existing structure.

Nuke Studio ships with default templates for your convenience, but you can quickly create custom templates using folders and “tokens”, which are replaced with the relevant information during export.

TIP: A useful auto-expansion feature can save time when creating folder structures in the shot template. Simply type the required folder structure in the first field of the shot template, then press enter to create the specified hierarchy.

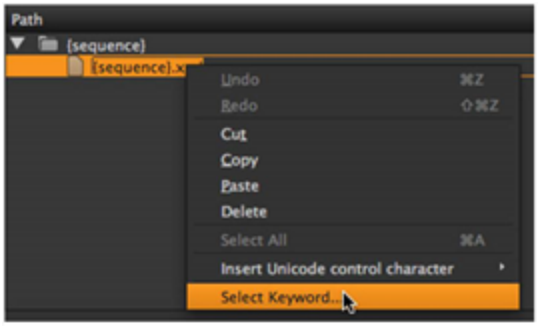
Exports can resolve the following tokens:

Token	Resolves to
{ampm}	The local equivalent of either AM or PM.
{binpath}	The bin structure to preserve. Including this token recreates your bin structure upto the nearest parent bin.
{clip}	The name of the clip used in the shot processed.

Token	Resolves to
{day}	The local weekday name, abbreviated to Mon, Tue, and so on.
{DD}	The day of the month as a decimal, 01, 02, and so on.
{event}	The timeline event number associated with the track item to process.
{ext}	The extension of the file to output, such as **.dpx** or **.mov**
{filebase}	The base of the clip name to process. For example, the filebase of Shot01_####.dpx is Shot01_####.
{fileext}	The format of the clip to process, such as **.dpx** or **.mov**
{filehead}	The source clip filename not including frame padding or extension. For example, the filehead of Shot01_####.dpx is Shot01.
{filename}	The source clip name of the media to process.
{filepadding}	The source filename padding, which you might use for formatting frame indices.
{filepath}	The full file path to the source media referenced in the export.
{fullbinpath}	The full bin structure to preserve. Including this token recreates the bin structure upto the project level.
{fullday}	The local full weekday name.
{fullmonth}	The local full month name.
{hierotemp}	The temp directory as specified in the Preferences.
{hour12}	The export start time hour component (12-hour clock).
{hour24}	The export start time hour component (24-hour clock).
{MM}	The month of the year as a decimal, 01, 02, and so on.
{minute}	The export start time minute component.
{month}	The local month name, abbreviated to Jan, Feb, and so on.
{project}	The name of the parent project of the export item.
{projectroot}	The root export file path as specified in the Project Settings.
{second}	The export start time second component.

Token	Resolves to
{sequence}	The sequence name to process.
{shot}	The name of the track item to process.
{timestamp}	The export start time in the 24-hour clock format (HHMM).
{track}	The name of the track to process. Exporting EDLs using this token generates a separate EDL for each track.
{user}	The current username.
{version}	The string **v#**, defined by the number (#) set in the Version section of the export dialog
{YY}	The year of the century as a decimal, 01, 02, and so on.
{YYYY}	The year, including century.

TIP: After double-clicking the path column, right-click and choose **Select Keyword** to display a list of available export tokens, though only valid tokens for the current selection are listed.



Token substrings are valid if you need to extract a certain part of an evaluated string. For example, if **{shot}** resolves to JB100, then:

- {shot [0:2] } - resolves to JB
- {shot [-3:] } - resolves to 100

Similarly, anything within the outer brackets is evaluated as a Python string. For example, if **{shot}** resolves to JB_10_20, then:

- {shot.split('_') [0] } - resolves to JB
- {shot.split('_') [2] } - resolves to 20

Custom Shot Templates

The shot template enables you to create as many Nuke Read and Write nodes as required for a project. A typical use case might be creating **.jpg** clips for review and **.dpx** resolution clips for finishing.

TIP: A useful auto-expansion feature can save time when creating folder structures in a template. Simply type the required folder structure in the first field of the template, then press enter to create the specified hierarchy.

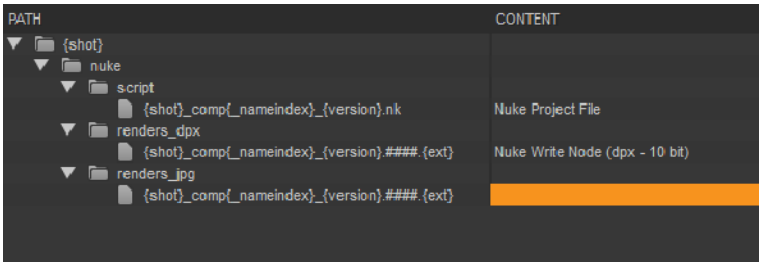
Multi-format Exports

The following example describes how to build a shot template to export a sequence of **.mov** clips, create **.dpx** and **.jpg** Write nodes in Nuke, and bring the **.dpx** clips back into the timeline.

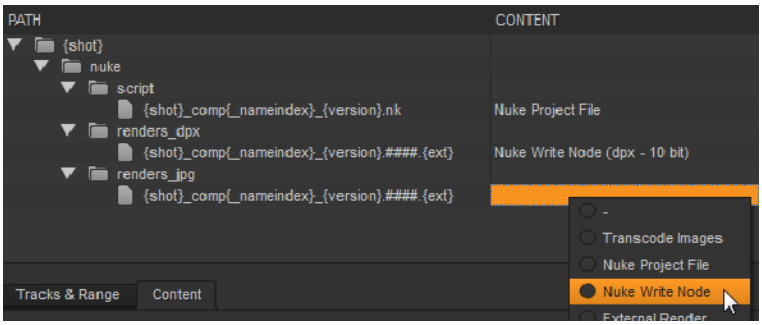
1. In the **Export** dialog, select **Basic Nuke Shot** in the **Local Presets** panel to auto-complete the shot template with the preset values.
2. Click **Duplicate selected preset** and give the new preset a name.
3. Rename the **renders** folder **renders_dpx**.
4. Select the **nuke** folder and click the folder icon to add a new folder. Name the new folder **renders_jpg**.
5. Select the **renders_jpg** folder and click  to add a new entry.
6. Replace the **{filename}** token with **{shot}_comp{_nameindex}_{version}.####.{ext}**, the same as the existing entry under **renders_dpx**.

NOTE: The **####** marks represent frame numbers for image sequences. If you were creating **.mov** clips, they'd be omitted.

The shot template should look something like this:

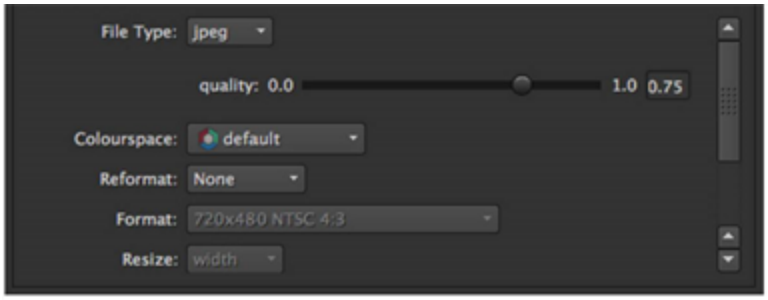


7. Click the **Content** column and select **Nuke Write Node**.



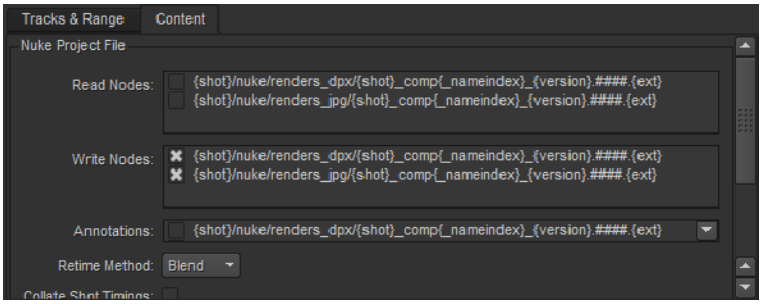
NOTE: When using a third party application to produce the VFX work, select **ExternalRender** instead of **Nuke Write Node**.

8. In the **Content** settings tab, use the **File Type** dropdown to select **jpeg**.



Notice that the settings available change depending on the **File Type** selected?

9. Click **Nuke Project File** in the shot template and check that both **Write** nodes are enabled.

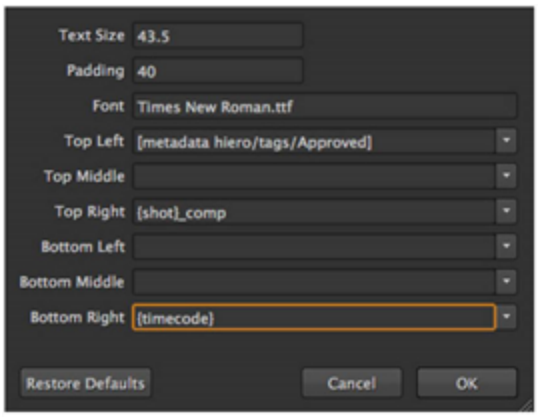


10. Set up the rest of the export as described in Exporting Sequences and Track Items and click **Export**.

Adding Burn-in Text to Exports

Hiero can burn-in text during the export process using a simple Nuke gizmo. The gizmo contains controls for the font style and fields denoting the position of the text. You can also add burn-in directly on timeline using the Burn-In soft effect. See Soft Effects for more information.

NOTE: The **Font** field only accepts the full file path and name of the font file to use. For example, on Mac OS X ~/Library/Fonts/Verdana.ttf



You can mix-and-match the following methods to create burn-in text:

- Enter text manually, what you see is what you get in the burn-in.
- Use any of the tokens valid in the shot template as burn-in tokens. For example:

  `{shot}_comp`

  Extracts the shot name from the timeline and appends **_comp**.

  SeeUsing Local and Project Presets for more information.
- Use metadata from tags applied to clips and track items. For example:

  `[metadata hiero/tags/Approved]`

  Extracts the Approved tag from the clip or track item. You can also append **note** to include any notes associated with the tag:

  `[metadata hiero/tags/Approved/note]`

NOTE: You must precede spaces and slashes in the tag name with \\ (backslashes) to enable Hiero to process the tag name correctly. For example: **[metadata hiero/tags/Blue\\ Screen/note]**

TIP: If you're not sure what metadata keys and values are available on a track item, you can add a Text soft effect containing the Tcl expression **[metadata values]** to display all metadata in the Viewer. SeeSoft Effects for more information.

Adding Additional Nodes During Export

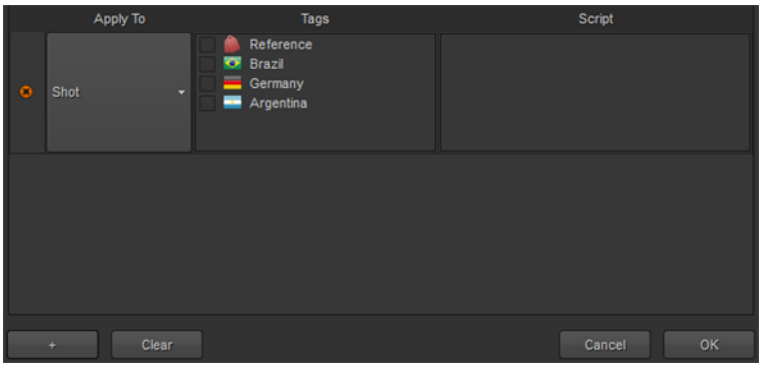
Hiero can include additional nodes, in any **Nuke Project File** or **Transcode** export in the Shot Template, by simply copying and pasting scripts from the Node Graph.

You can add nodes to shots, tracks, or sequences, or include them as unconnected ad hoc nodes in the script, filtered by tags if necessary.

1. In the **Content** tab, scroll down to the **Additional Nodes** control and click **Edit**.

   The **Additional Nodes Setup** dialog displays.

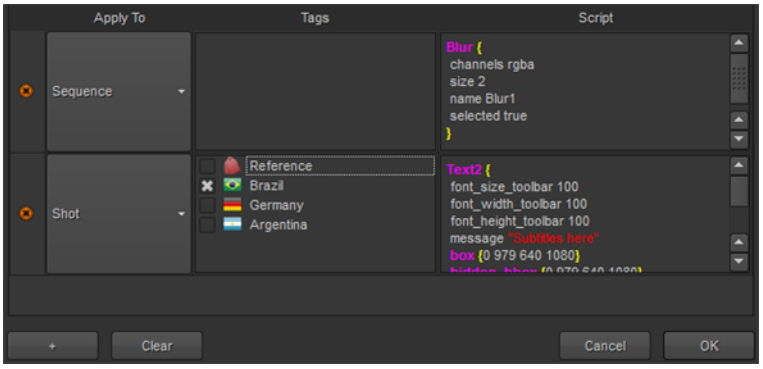
2. Click  to add an entry.



3. Click the **Apply To** field and select what the current entry applies to:
   - **Shot** - the additional nodes are added to the script for each shot in the export.
   - **Track** - the additional nodes are added to the script for each track in the export.
   - **Sequence** - the additional nodes are added to the script for the entire sequence.
   - **Unconnected** - the additional nodes are added to the script, but are not connected to the export node tree.
   - **None** - temporarily disables the current entry.
4. Select the **Tags** that you intend to use to filter which items receive the additional nodes.

   If you want to affect only the Reference track, for example, select the Reference tag. All items without that tag are ignored.
5. Copy and paste a node from the Node Graph into the **Script** panel.

NOTE: If you need more than one node, you might consider creating a Group in the Node Graph and pasting that into the **Script** panel.



6. Click **OK** to accept the additional nodes.
7. Select the **Additional Nodes** checkbox and complete the export process as described <Some Xref>.

Using the Frame Server on External Machines

Although Hiero is capable of rendering frames internally, running the Frame Server on an external machine can accelerate the process considerably by sharing work across a network of machines.

NOTE: The Frame Server requires a Hiero license (nukestudio_i) on the main workstation, but only a Nuke render license (nuke_r) on the slave machines.

If you want to use an interactive license (nuke_i) on the slave machines, add the **--useInteractiveLicense** argument to the **runframeserver.py** command described below.

Configuring the Frame Server on External Machines

Hiero's Frame Server can be set up on an external machine (or a number of machines) to render from your Nuke Studio session. To do this, you need to run the **runframeserver.py** script on the external machines, found inside the Python site-packages, with specific command line arguments.

WARNING: In order for everything to work smoothly, you'll need to ensure that both your external slave machines and main Hiero session can read and write files to a shared location, such as an NFS share.

Depending on platform this can be done by manipulating your default **umask** setting, but be aware that this alters the permissions of the created files.

Additionally, Mac OS X and certain Linux distributions, such as RHEL, can not function as the main workstation if the firewall is blocking the communication port 5560. You can configure the firewall to allow certain ports through the firewall using the **iptables** command, but use caution when doing so. For example:

```
sudo iptables -I INPUT -p tcp --dport 5560 --syn -j ACCEPT
```

Please refer to the documentation on firewalls for your particular platform for more information.

The Frame Server uses a number of worker processes on the external machine, each of which requires allocated resources, such as threads, memory, and so on. There are a number of arguments that you must pass to **runframeserver.py** for the server to work correctly:

- **--numworkers** - this is the number of concurrent Nuke processes that are launched when you run this server render node.
- **--numworkerthreads** - the number of threads that each worker is allocated. This is similar to setting the **-m** argument when running Nuke from the command line.
- **--nukeworkermemory** - the amount of memory, in MB, allocated to each frame server worker.

• **--workerconnecturl** - the TCP port address of the main workstation you want to serve. For example:

```
tcp://bob:5560
```

where **bob** is the resolved hostname of a machine you wish to serve. You can also use an IP address.

TIP: To ensure that you're entering a valid URL, try using the **ping** command to see if you get a response.

• **--nukepath** - the path to the Nuke application on the slave workstation.

TIP: On Windows, if there are spaces in the file path, remember to place the path in quotes. For example, **--nukepath="C:\Program Files\Nuke10.0v5\Nuke10.0.exe"**

On a Linux slave machine, an example command prompt entry running from the install directory might look like this:

```
./python ./pythonextensions/site-packages/foundry/frameserver/nuke/runframeserver.py --
numworkers=2 --nukeworkerthreads=4 --nukeworkermemory=8096 --
workerconnecturl=tcp://bob:5560 --nukepath=./Nuke10.0
```

On a Windows slave machine, an example command prompt entry running from the install directory might look like this:

```
python.exe pythonextensions\site-packages\foundry\frameserver\nuke\runframeserver.py --
numworkers=2 --nukeworkerthreads=4 --nukeworkermemory=8096 --
workerconnecturl=tcp://bob:5560 --nukepath=Nuke10.0.exe
```

In the examples, we specify that the slave uses two Nuke workers, with four threads and 8 GB RAM each, and are slaved to the main Hiero workstation running on **bob**.

TIP: If your slave machines run a different OS than your main Hiero machine, you can use the **--remap** command line argument to convert file paths between them. The host file path is read first followed by the slave file path. Hiero expects all file paths to use **/** (forward slash) between directories. For example:

```
--remap "P:/,/mnt/renders/"
```

converts host paths beginning with **P:/** (Windows style) to slave paths beginning with **/mnt/renders/** (Linux style).

You can check that the Frame Server and workers are connected by running the following lines in the Script Editor on the main workstation:

```
from hiero.ui.nuke_bridge.nukestudio import frameServer
print [worker.address for worker in frameServer.getStatus(1).workerStatus]
```

Successful connections should report something similar to the following in the output panel:

```
['Worker 0 - henry.local - 192.168.1.11', 'Worker 0 - bob.local - 192.168.1.111',
'Worker 1 - henry.local - 192.168.1.11']
```

Where **henry.local** is the name of the remote slave, and **bob.local** is the name of the main Hiero session.

NOTE: If the workers cannot contact the Frame Server, an exception is printed in the Script Editor's output panel.

Frame Server Logs

Broker and Worker logging can to help diagnose Frame Server issues. The logs are written to NUKE_TEMP_DIR/logs by default, and take the form:

```
broker.log
worker-0.log
worker-1.log
worker-2.log
```

NOTE: Running the Frame Server using Python, as described above, always writes log files to the specific OS temporary directory. For example, on Windows C:\temp is used.

TIP: You can use the FRAMESERVER_LOG_DIR environment variable to force Frame Server logs into a different location. See Setting Environment Variables for more information.

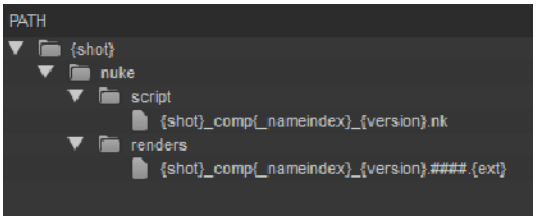
Exporting Sequences and Track Items

1. Select an entire sequence in the bin view, or track items in the timeline, and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Shots** from the **Export** list.
3. Select the **Basic Nuke Shot** preset under **Local Presets** to auto-complete the shot template or select **Project Shot Template** to use the **Project Settings** template.

NOTE: You can build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons. Simply copy an existing template and edit as required.

Basic Nuke Shot creates a folder for each clip, or shot, containing **nuke**, **script**, and **renders** folders.



The tokens in the **Basic Nuke Shot** template break down as follows:

- **{shot}** simply extracts the track item names as they appear in the timeline.

- **{shot}_comp{_nameindex}_{version}.nk** extracts the track item name for each clip and the version selected in the **Tracks and Handles** controls. For example, **Shot01_comp_v03.nk**
- **{shot}_comp{_nameindex}_{version}.####.{ext}** appends padding and the specified file extension. For example, **Shot01_comp_v03.0001.dpx**

NOTE: The **{_nameindex}** token is included to avoid conflicts with non-unique shot names.

4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.
5. Proceed toNuke Project File Settings to determine the Nuke script's behavior.

Nuke Project File Settings

NOTE: Custom shot presets can only be selected from the **Project Settings** if they contain a **Nuke Project File** and **Nuke Write Node** Content preset.

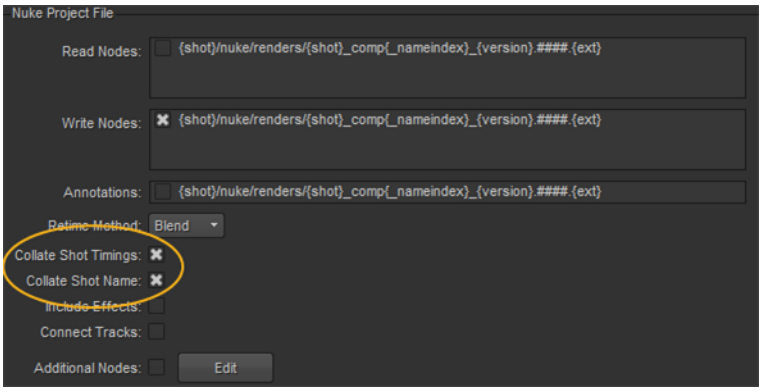
1. Click the **Nuke Project File** Content preset to display the script settings.
2. Check which path from the shot template should be used for the Nuke Write node. In this case:

   {shot}/nuke/renders/{shot}_comp{_nameindex}_{version}.####.{ext} to resolve the render path where Hiero expects to find the files when they're rendered.

NOTE: If you included a **Nuke Annotations File** Content preset, enable the **Annotations** Precomp creator. See Annotations for more information.

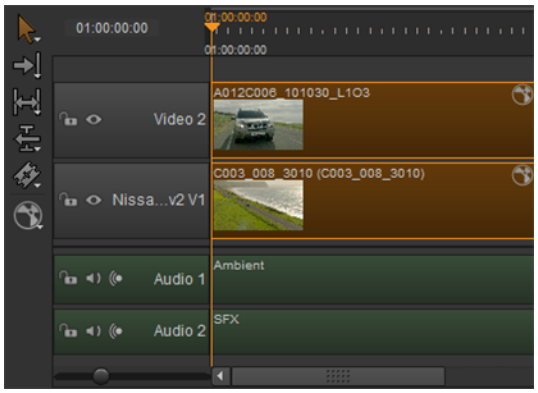
3. If you're exporting retimed media, set how you want the Nuke script to handle the retime:
   - **None** - no retime is applied.
   - **Motion** - vector interpolation is used to calculate the in between frames. This is the most accurate retime method, but takes longer to render.
   - **Frame** - the nearest original frame is displayed.
   - **Blend** - a mix between two frames is used for the in between frames. This is quick to render and is useful when tweaking the timing in the Curve Editor before setting the method to **Motion**.
4. Enable **Collate Shot Timings** or **Collate Shot Names** to create additional Nuke Read nodes in the same script for clips that would normally be hidden by clips higher up the track hierarchy or clips on the same track with the same track item name.

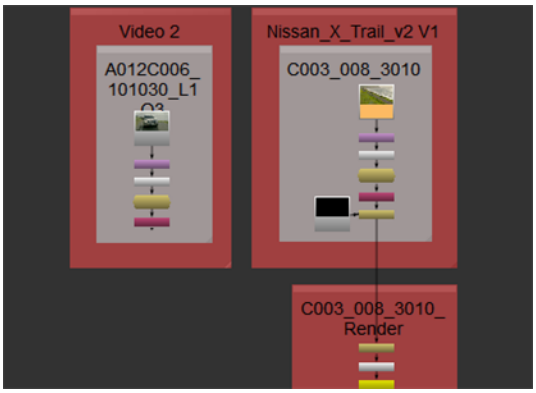
NOTE: If you have a Read node selected, you can't enable the **Collate** functions.



For example:

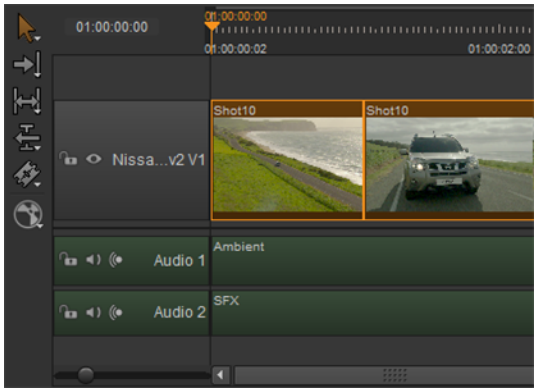
• Items on track 1 that would otherwise be hidden by track 2.

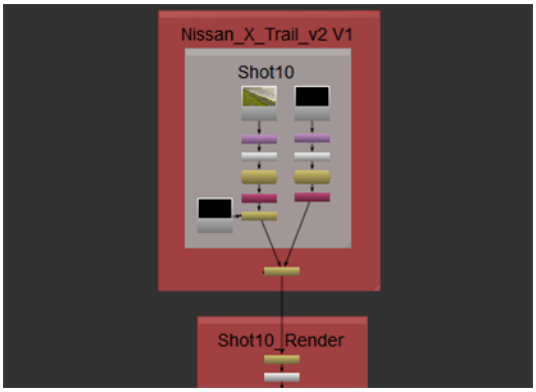




Timeline environment Compositing environment

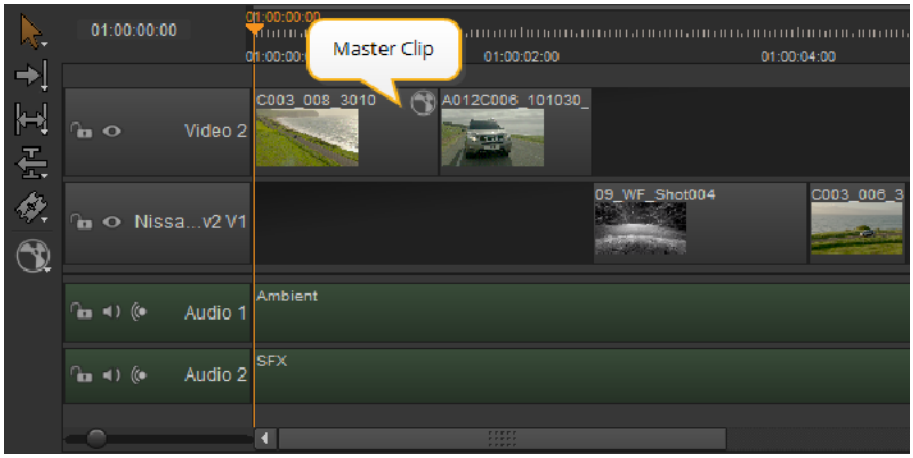
• Two items on the same track with the same shot name.



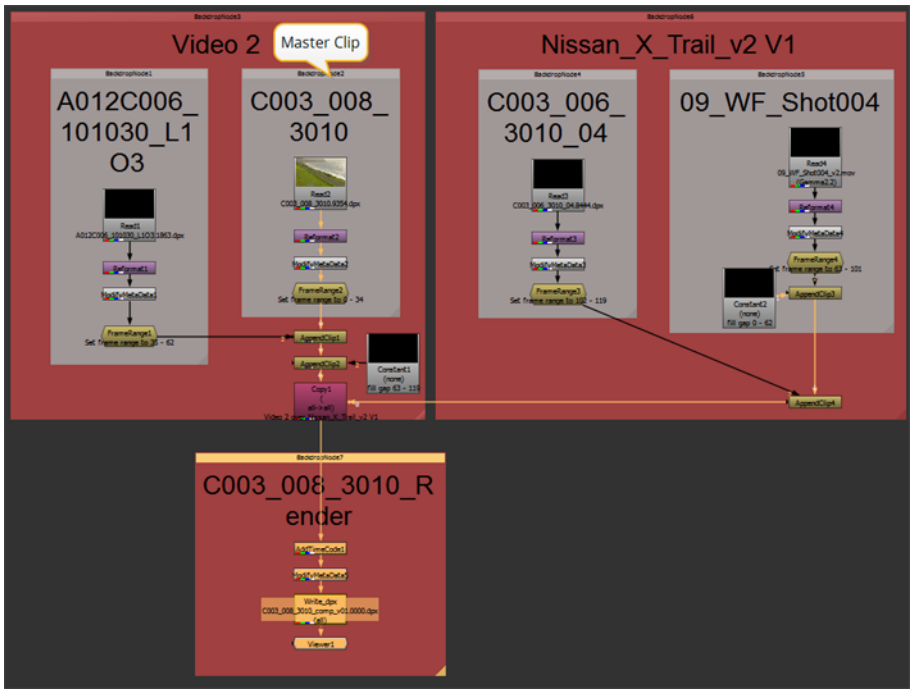


Timeline environment Compositing environment

5. Soft Effects added to track items in your export are included in the resulting Nuke script by default. If you don't need the soft effects, disable **Include Effects** to omit them from the Nuke script. See Soft Effects for more information.
6. Shots on different tracks are not connected to the master clip render by default. If you want all the exported clips to be connected to the Nuke script Write node, enable **Connect Tracks**.



Exporting these track items with **Connect Tracks** enabled...



...produces this script in the Compositing environment.

7. If you want to add additional nodes to the script on export, enable **Additional Nodes** and click **Edit**. See Adding Additional Nodes During Export for more information.
8. Proceed to Nuke Write Node Settings to determine the Write node's behavior.

Nuke Write Node Settings

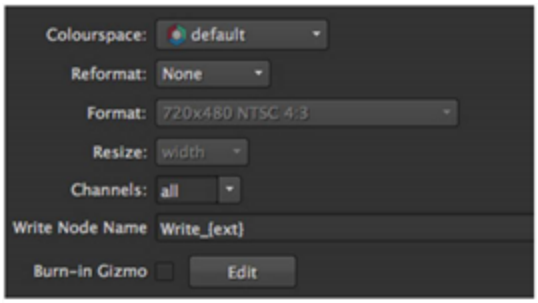
NOTE: Custom shot presets can only be selected from the **Project Settings** if they contain a **Nuke Project File** and **Nuke Write Node** Content preset.

1. Click the **Nuke Write Node** Content preset to display the write settings.
2. Select the **file type** to render using the dropdown and complete the relevant fields, dependent on the **file type** selected.

NOTE: Selecting **mov** from the dropdown provides additional QuickTime specific controls, allowing you to choose a **codec**, **encoder**, and in some cases, **YCbCr Matrix**. The matrix control enables you to use the new **Rec 601** and **Rec 709** or the **Legacy** encoding methods, which are the methods used previously in Nuke. There's also an Advanced dropdown containing **mov32** and **mov64** encoder specific controls.

Similarly, selecting **exr** provides an additional metadata dropdown allowing you to export or round-trip selected metadata along with your **.exr** output.

3. Set the following controls common to all file types:



- **Colorspace** - use the dropdown to set the colorspace to render, such as **linear**, **REDLog**, or **raw**.
- **Reformat** - select the required reformatting option to enable the **Format** dropdown.
- **Format** - sets the format to render out in Nuke, such as **1920x1080 HD 1080**.

TIP: Select **Custom...** to create formats that don't appear in the list of presets.

- **Resize** - sets the method by which you want to preserve or override the original aspect ratio:
  - **width** - scales the original until its width matches the format's width. Height is then scaled in such a manner as to preserve the original aspect ratio.
  - **height** - scales the original until its height matches the format's height. Width is then scaled in such a manner as to preserve the original aspect ratio.
  - **fit** - scales the original until its smallest side matches the format's smallest side. The original's longer side is then scaled in such a manner as to preserve original aspect ratio.
  - **fill** - scales the original until its longest side matches the format's longest side. The input's shorter side is then scaled in such a manner as to preserve original aspect ratio.
  - **distort** - scales the original until all its sides match the lengths specified by the format. This option does not preserve the original aspect ratio, so distortions may occur.
- **Channels** - set the channels to export using the dropdown.

NOTE: The default, **all**, exports all channels in the image, so any Nuke Read nodes created have **auto alpha** enabled by default.

If you want to export a non-standard channel, type the name of the channel into the field manually.

- **Write Node Name** - if you intend to create more than one Nuke Write node, define the name here. The default, **Write_{ext}**, appends the individual Write nodes with the file extension being written. You can, however, use any of the tokens Nuke Studio recognizes.
- **Burn-in Gizmo** - when enabled, text burn-in is applied to the media using a Nuke gizmo. Click **Edit** to define the information applied during burn-in. See Adding Burn-in Text to Exports for more information.

4. Proceed to Tracks, Range, and Handles Settings to select which items are processed during export.

Tracks, Range, and Handles Settings

The **Tracks and Range** or **Tracks and Handles** tabs (depending on export type) in the **Export** dialog allow you to select the frame range or track items to export.

1. Select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
2. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.
3. If you're exporting a sequence, set the **Range** controls as required:
   - Select **Whole Sequence** or **In/Out Points** to export only the selected frames.
   - Set how clip **Start Frames** are derived using the dropdown menu:
     - **Sequence** - use the sequence's start frame.
     - **Custom** - specify a start frame for all clips using the field to the right.
4. If you're exporting shots, set the **Handles** controls as required:
   - **Clip Length** - exports the full clip length available, as if the clip was opened as a Viewer.
   - **Cut Length** - exports only the cuts included on the timeline.

NOTE: Selecting **Cut Length** allows you to add handles to each clip, up to the maximum available source clip length.

- Check **Apply Retimes** to export any retimes present on the timeline.

NOTE: When **Apply Retimes** is disabled, which is the default state for **Create Comp Clips**, any TimeWarp soft effects are not included in the resulting Nuke script. When the new track item is created through **Build Track from Export Tag**, TimeWarp soft effects are copied from the original track item to the new one.

- Set how clip **Start Frames** are derived using the dropdown menu:
  - **Source** - use the source clip's start frame.
  - **Custom** - specify a start frame for all clips using the field to the right.

5. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: See Using Versions for more information on how versioning works in Hiero.

6. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
   - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
   - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
   - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
7. Click **Export**.

   The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

   Once the export is complete, the file structure specified in the shot template is created. You can then import the Nuke clips on a separate track when they're ready.

TIP: Click the magnifying glass icon to reveal the file structure in a browser window.

When clips are exported from Hiero, they are marked with a Nuke tag flagging which clips have an export history. Clips tagged in this way can be used to build VFX tracks quickly as described in Building VFX Tracks and Comp Clips.

Building VFX Tracks and Comp Clips

When the compositing work is complete, the clips are ready to re-ingest. The shot template defines where the Nuke files reside, so all you need to do is instruct Hiero to build tracks from previous exports. See Building Tracks From Export Structure for more information.

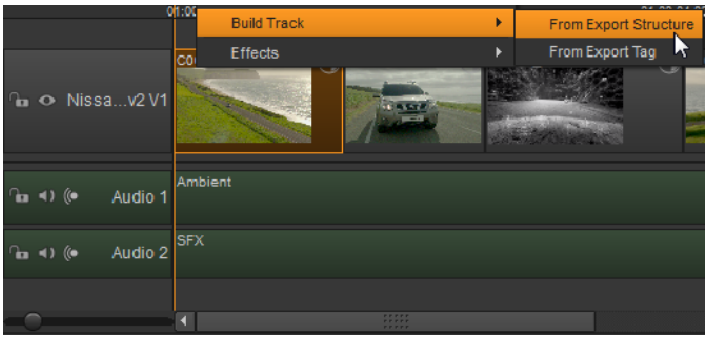
Alternatively, if you have a history of rendered VFX clips, different versions and so on, you can also build tracks from export tags to select from a list of available clips. This method allows you to add **Comp Clips** to the timeline, which act as containers for Nuke **.nk** scripts, or placeholders for Nuke renders. See Building Comp Clips From Export Tags or Building Render Placeholders From Export Tags for more information.

Building Tracks From Export Structure

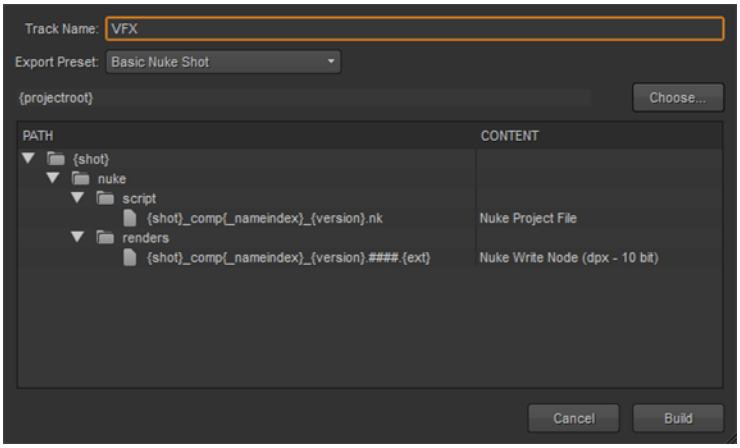
1. Select the required clips on the timeline and right-click to display the context sensitive menu.

TIP: You may find it easier to select clips in the spreadsheet and then right-click on the timeline.

2. Click **Build Track** > **From Export Structure**.



The **Build Track From Export Structure** dialog displays.



3. Enter a **Track Name** or use the default **VFX**.
4. Select an **Export Preset** using the dropdown menu. In this case, select the same preset used during the export.
5. Enter the file path of the **Export Root** directory or click **Choose** and browse to the location.

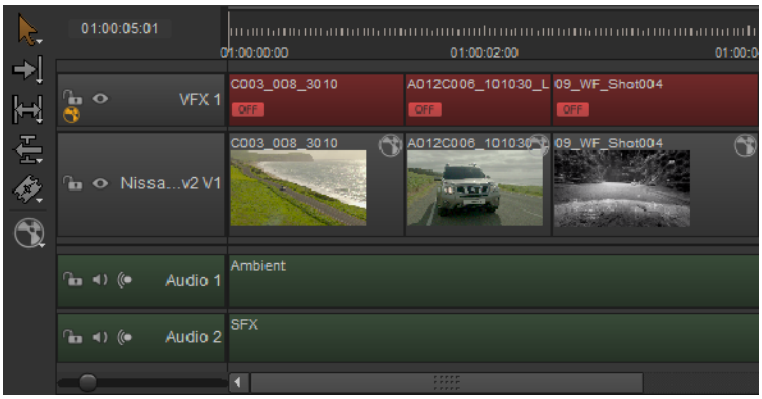
NOTE: The root directory is the location entered in **Export To** when exporting the project.

6. Select the Content preset you intend to ingest from the shot template. In this case, the **Nuke Write Node**.
7. Click **Build** to create the VFX track.

NOTE: Hiero warns you if no selection is made in the **Contents** column.

Hiero automatically creates a new track containing the VFX clips, if they exist, or offline place holders if the clips are a work in progress.

If a track item already exists in any of the target tracks, a new track is created to hold the new track items.



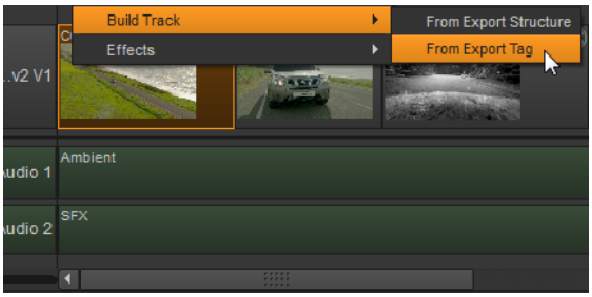
The clips are automatically updated when work is complete as long as they are saved with the expected name and location, as specified in the shot template.

Building Comp Clips From Export Tags

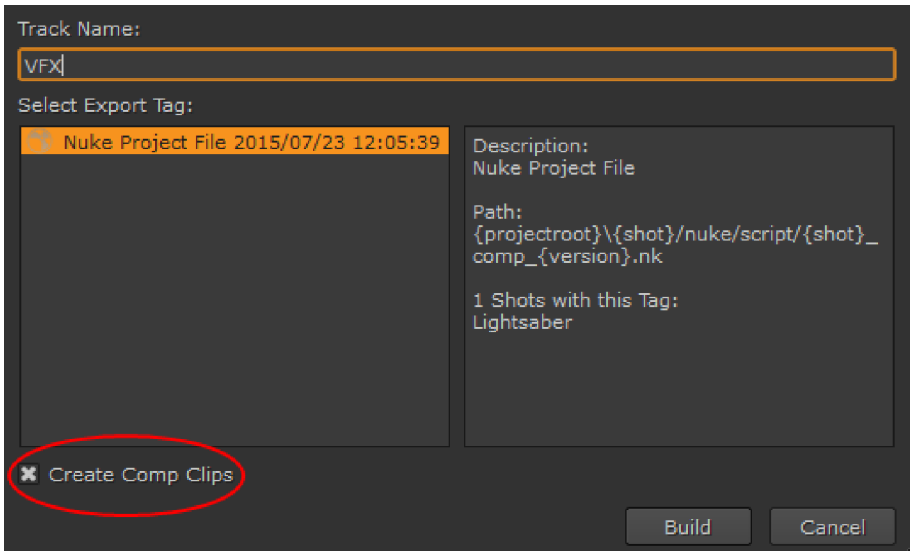
When you build a track from an export tag, Hiero imports Comp Clips containing the Nuke script, by default. Comp Clips are track items that reference Nuke scripts, rather than being placeholders for offline clips as in the Building Render Placeholders From Export Tags workflow.

1. Select the required clips on the timeline and right-click to display the context sensitive menu.

TIP: You may find it easier to select clips in the spreadsheet and then right-click on the timeline.



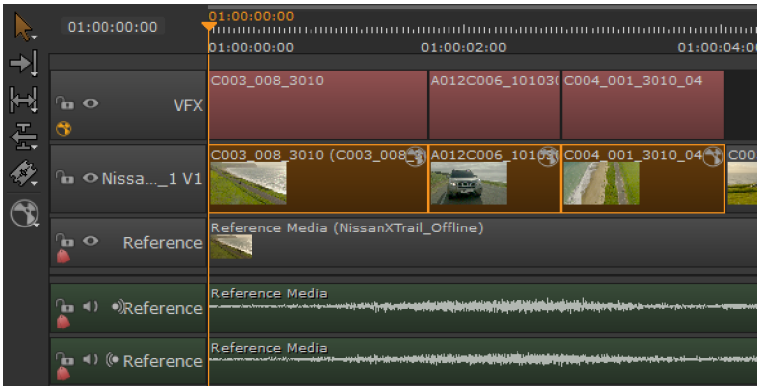
2. Click **Build Track** > **From Export Tag**.
   The **Build Track From Export Tag** dialog displays.
3. Enter a **Track Name** or use the default **VFX**.
4. Select the required export tag in the left-hand panel to display tag information in the right-hand panel.
   Hiero imports the **.nk** Comp Clip by default.



If you just want to import the offline renders when they're finished, disable the **Create Comp Clips** checkbox. See Building Render Placeholders From Export Tags for more information.

5. Click **Build** to create the VFX track.

   Hiero automatically creates a new track containing the Comp Clips. If a track item already exists in any of the target tracks, a new track is created to hold the new track items.



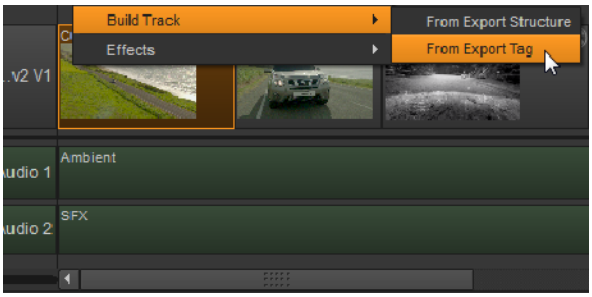
6. You can **Ctrl**/**Cmd**+double-click Comp Clips to open them in an external Nuke to make edits as required.

Building Render Placeholders From Export Tags

When you build a track from an export tag, you can choose to import the renders from the .**nk** script, rather than Comp Clips which contain the Nuke script.

1. Select the required clips on the timeline and right-click to display the context sensitive menu.

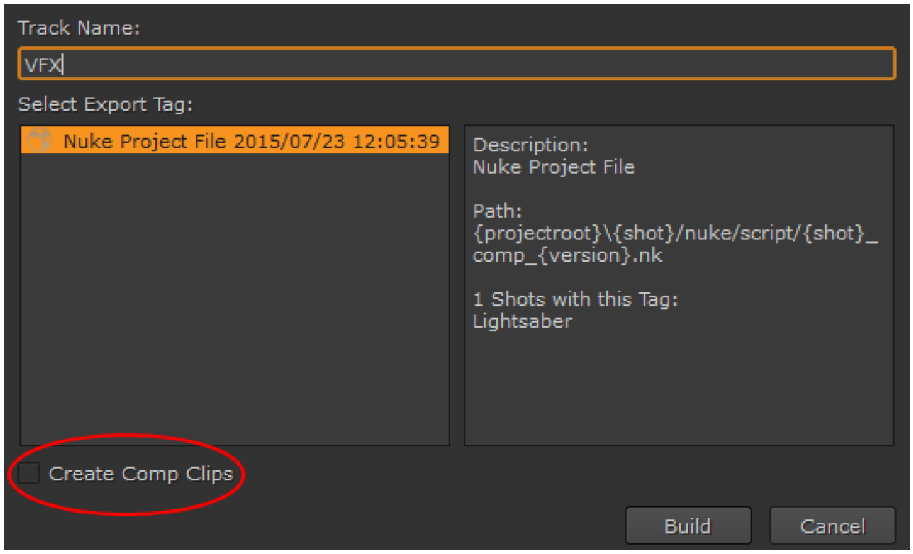
TIP: You may find it easier to select clips in the spreadsheet and then right-click on the timeline.



2. Click **Build Track** > **From Export Tag**.

   The **Build Track From Export Tag** dialog displays.

3. Enter a **Track Name** or use the default **VFX**.
4. Select the required export tag in the left-hand panel to display tag information in the right-hand panel.
5. Disable the **Create Comp Clips** checkbox to import the offline renders when they're finished.



   If you want to import the **.nk** Comp Clips, enable the **Create Comp Clips** checkbox. See Building Comp Clips From Export Tags for more information.

6. Click **Build** to create the VFX track.

   Hiero automatically creates a new track containing the VFX clips, if they exist, or offline place holders if the clips are a work in progress.

   If a track item already exists in any of the target tracks, a new track is created to hold the new track items.

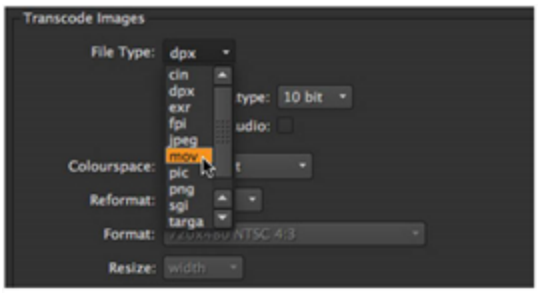
Transcoding

Transcoding in Hiero uses a background render process to convert one file format to another. You can transcode sequences, timeline selections, and clips from the bin view.

Transcoding a Sequence

1. Select a sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Sequence** and the preset you intend to use, or the default **dpx** preset.
3. Enter the **Export To** directory or click **Choose...** and browse to the location.
4. Edit the shot template as necessary to control the export file structure.
5. Click the **Content** column to select a format to transcode to using the **File Type** dropdown.



   The controls exposed depend on the transcode you're applying.
6. Complete the **File Type** specific controls. For example, selecting **dpx** exposes the **datatype**, **transfer**, **Big Endian**, and **Fill** settings.
7. Complete the general controls common to all file types:
   - **Include Audio** - when enabled, any audio tracks are exported alongside the video.
   - **Colorspace** - use the dropdown to set the colorspace to render, such as **linear**, **REDLog**, or **raw**.
   - **Reformat** - select the required reformatting option to enable the **Format** dropdown.

- **Format** - sets the format to render out in Nuke, such as **1920x1080 HD 1080**.

TIP: Select **Custom...** to create formats that don't appear in the list of presets.

- **Resize** - sets the method by which you want to preserve or override the original aspect ratio:
  - **width** - scales the original until its width matches the format's width. Height is then scaled in such a manner as to preserve the original aspect ratio.
  - **height** - scales the original until its height matches the format's height. Width is then scaled in such a manner as to preserve the original aspect ratio.
  - **fit** - scales the original until its smallest side matches the format's smallest side. The original's longer side is then scaled in such a manner as to preserve original aspect ratio.
  - **fill** - scales the original until its longest side matches the format's longest side. The input's shorter side is then scaled in such a manner as to preserve original aspect ratio.
  - **distort** - scales the original until all its sides match the lengths specified by the format. This option does not preserve the original aspect ratio, so distortions may occur.

8. Select the **Channels** to export from the dropdown. If you want to export a non-standard channel, type the name of the channel into the field manually.
9. Select the **Retime Method** to apply, if applicable.
10. Check **Keep Nuke Script** if you require the **.nk** files after the transcode operation.
11. Enable the **Burn-in Gizmo** to burn-in text using a Nuke gizmo. Click **Edit** to define the information applied during burn-in. See Adding Burn-in Text to Exports for more information.
12. Specify any **Additional Nodes** required during export by clicking **Edit**. SeeAdding Additional Nodes During Export for more information.

Tracks and Range Settings

1. Click the **Tracks and Range** tab and select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
2. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.
3. If you set in and out point on the sequence, enable In/Out Points to export only the selected frames.
4. Set how clip **Start Frames** are derived using the dropdown menu:
   - **Sequence** - use the sequence's start frame.
   - **Custom** - specify a start frame for all clips using the field to the right.
5. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: See Using Versions for more information on how versioning works in Hiero.

6. Set how Hiero should render your export using the **Render with** dropdown. The following options are available:
   - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.

- **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
- **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.

7. Click **Export**.

   The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

   Once the export is complete, the file structure specified in the shot template is created containing the transcoded files.

TIP: Click the magnifying glass icon to reveal the exported file in a browser window.

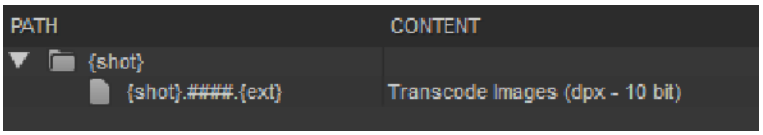
Transcoding a Sequence as Shots

1. Select the required sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.

2. Select **Process as Shots** and use the default, **Transcode Shots DPX**, or build a shot template using the **Path** and **Contents** fields and the folder and +/- buttons.

   The default:



   Creates a folder for each track item or {shot}, containing a clip with the {shot} name and the required file padding (####) and extension {ext}.

3. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.

4. In the Content tab, complete the **File Type** specific and general controls common to all file types as described in Transcoding a Sequence .

5. Click the **Tracks and Handles** tab, select the **Tracks For This Export** by enabling or disabling the tracks in the list. Nuke Studio exports **all tracks** by default.

6. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.

7. Set the **Range** and **Handles**, as required:

   - **Clip Length** - exports the full clip length available, as if the clip was opened as a Viewer.
   - **Cut Length** - exports only the cuts included on the timeline.

NOTE: Selecting **Cut Length** allows you to add handles to each clip, up to the maximum available source clip length.

8. Check **Apply Retimes** to export any retimes present on the timeline.

NOTE: When **Apply Retimes** is disabled, which is the default state for **Create Comp**, any TimeWarp soft effects are not included in the resulting Nuke script. When the new track item is created through **Create Comp** or **Build Track from Export Tag**, TimeWarp soft effects are copied from the original track item to the new one.

9. Set how clip **Start Frames** are derived using the dropdown menu:
   - **Source** - use the source clip's start frame.
   - **Custom** - specify a start frame for all clips using the field to the right.
10. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: SeeUsing Versions for more information on how versioning works in Hiero.

11. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
    - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
    - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
    - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
12. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

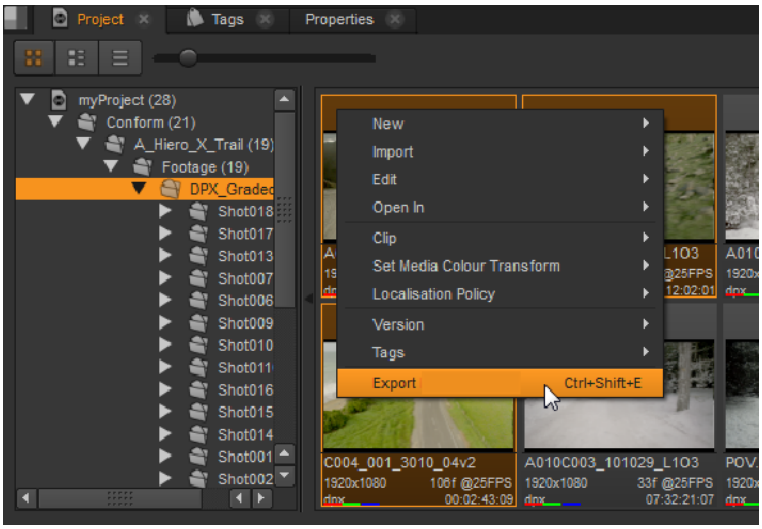
    Once the export is complete, the file structure specified in the shot template is created. You can then import the Nuke clips on a separate track when they're ready.

TIP: Click the magnifying glass icon to reveal the file structure in a browser window.

Transcoding from the Bin View

To transcode directly from the bin view:

1. Select the bin(s) to export from the bin view.
2. Right-click a highlighted bin and select **Export...**



The **Export** dialog displays.

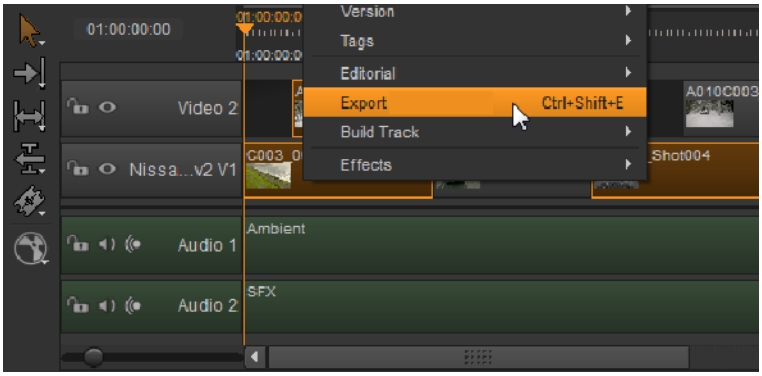
3. Select **Process as Clips** and modify the shot template, if required.
4. Follow the steps underTranscoding a Sequence to complete the export.

Transcoding Timeline Selections

Transcoding an entire timeline can be time consuming, or even unnecessary, if all you're looking for is a new version of a selection of track items.

To transcode a selection of clips from a timeline:

1. Select the required track items on the timeline.
2. Right-click a highlighted item and select **Export...**



The **Export** dialog displays.

3. Refer to Transcoding a Sequence to complete the export.

Ad Hoc Exports

This section covers exports that you might not perform on a per project basis, such the EDL or XML Exporters and Copy Exporter. Exporters are available for sequences, track items, and clips as described in the following table.

Exporter	Source		
	Sequences	Track Items	Bin Clips
EDL Exporter	●		
XML Exporter	●		
Audio Exporter	●	●	●
Copy Exporter		●	●
SymLink Exporter		●	●

Exporting EDLs and XMLs

Hiero supports export to EDL and XML using very similar methods, the main difference being that EDL doesn't support multiple video tracks in a single file whereas XML does.

NOTE: Hiero can read AAF files, but not write them out.

To export to EDL or XML:

1. Select a sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Sequence** from the Processors list.
3. Select the **CMX 3600 EDL** or **Final Cut Pro XML** preset, or duplicate one and create your own preset.

NOTE: EDLs only support one video track per file. If you have more than one track, include the **{track}** token in the shot template to write out an EDL for each track preset.

For example, **{filename}_{track}.{ext}** might produce a separate EDL for each track on your timeline called **myTimeline_Video1.edl**, **myTimeline_Video2.edl**, and so on.

4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.

5. If you're exporting to EDL, set the additional EDL Exporter controls in the **Content** tab, if required:
   - **Reel Name** - define the reel name written into the EDL, independent of the clip's reel name.

     Enter text or standard shot-level tokens in this field. See Using the Shot Template for more information.

     If the field is left blank, the reel name from the clip is used or the name of the track item, if no reel name exists.
   - **Truncate Reel Name** - restricts the **Reel** name to eight characters.
   - **Use Absolute Path** - adds the full file path for each clip to the EDL comments field.
   - **From Clip Name** - define the text appended to "from" comment fields in EDLs, such as ***FROM CLIP NAME**. Text and/or standard shot-level tokens are valid in this field: {shot}, {clip}, {track}, {sequence}, {event}, {fps}, and the default {filename}.

     OR

     If you're exporting to XML, you can enable **Include Markers** to convert any frame tags present in the sequence to markers in Final Cut Pro or Premiere. See Tagging Using the Viewer for more information on adding tags to frames.
6. Click the **Tracks and Range** tab and select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
7. If you set in and out point on the sequence, enable **In/Out Points** to export only the selected frames.
8. Set how clip **Start Frames** are derived using the dropdown menu:
   - **Sequence** - use the sequence's start frame.
   - **Custom** - specify a start frame for all clips using the field to the right.
9. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: SeeUsing Versions for more information on how versioning works in Hiero.

10. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
    - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
    - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
    - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in

the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.

11. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

    Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the exported file in a browser window.

Using the Audio Exporter

The Audio Exporter allows you write audio to separate **.wav** files. You can extract audio from whole sequences, track items, and clips.

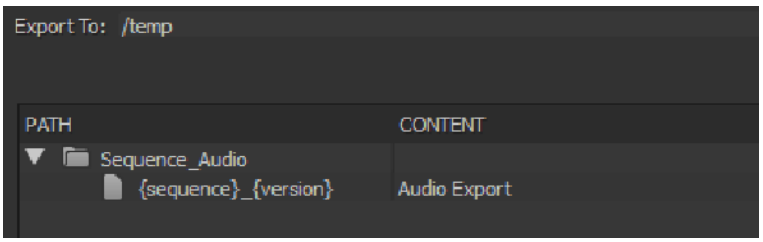
Exporting Audio from Sequences

1. Select a sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Sequence** from the Export list.
3. Select the **Log10 Cineon DPX** preset, duplicate it, and give it a name.
4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.
5. Build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons.

   An example shot template is shown below:



6. Click the **Tracks and Range** tab and select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
7. If you set in and out point on the sequence, enable **In/Out Points** to export only the selected frames.
8. Set how clip **Start Frames** are derived using the dropdown menu:

   • **Sequence** - use the sequence's start frame.

   • **Custom** - specify a start frame for all clips using the field to the right.
9. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: SeeUsing Versions for more information on how versioning works in Hiero.

10. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
    - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
    - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
    - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
11. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

    Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the exported file in a browser window.

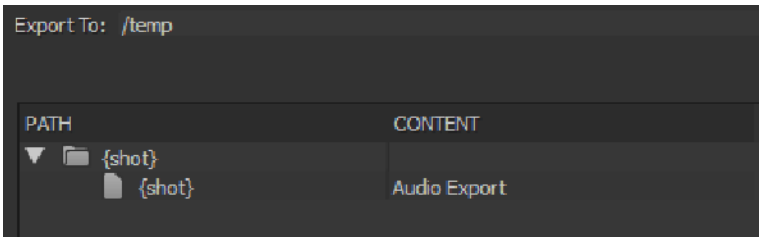
Exporting Audio from Track Items

1. Select the required track items in the timeline and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Shots** from the Export list.
3. Select the **Transcode Shots DPX** preset, duplicate it, and give it a name.
4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.
5. Build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons.

   An example shot template is shown below:



6. Click the **Tracks and Handles** tab and select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
7. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.
8. Set the **Range** and **Handles**, as required:
    - **Clip Length** - exports the full clip length available, as if the clip was opened as a Viewer.

- **Cut Length** - exports only the cuts included on the timeline.

NOTE: Selecting **Cut Length** allows you to add handles to each clip, up to the maximum available source clip length.

9. Check **Apply Retimes** to export any retimes present on the timeline.

NOTE: When **Apply Retimes** is disabled, which is the default state for **Create Comp**, any TimeWarp soft effects are not included in the resulting Nuke script. When the new track item is created through **Create Comp** or **Build Track from Export Tag**, TimeWarp soft effects are copied from the original track item to the new one.

10. Set how clip **Start Frames** are derived using the dropdown menu:
    - **Source** - use the source clip's start frame.
    - **Custom** - specify a start frame for all clips using the field to the right.
11. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: SeeUsing Versions for more information on how versioning works in Hiero.

12. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
    - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
    - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
    - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
13. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

    Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the exported file in a browser window.

Exporting Audio from Bin Clips

1. Select the required bin clips navigate to **File** > **Export...**

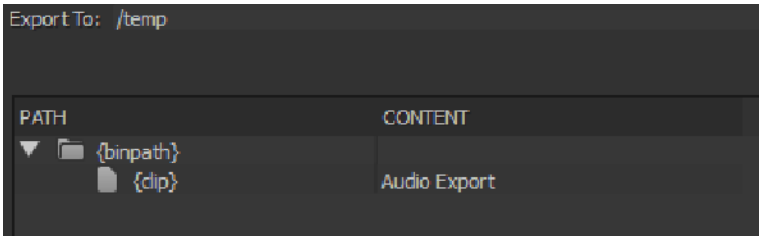
   The **Export** dialog displays.
2. **Process as Clips** is selected automatically from the Export list.
3. Select the **Transcode Clips DPX** preset, duplicate it, and give it a name.

4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.

5. Build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons.

   An example shot template is shown below:



6. Set how clip **Start Frames** are derived using the dropdown menu:
   - **Source** - use the source clip's start frame.
   - **Custom** - specify a start frame for all clips using the field to the right.
7. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: See Using Versions for more information on how versioning works in Hiero.

8. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
   - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
   - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
   - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
9. Click **Export**.

   The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

   Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the exported file in a browser window.

Using the Copy Exporter

Copying media from various locations is very time consuming and can waste disk space. The Copy Exporter allows you to consolidate sequences containing only your project media in a named file structure using the shot template.

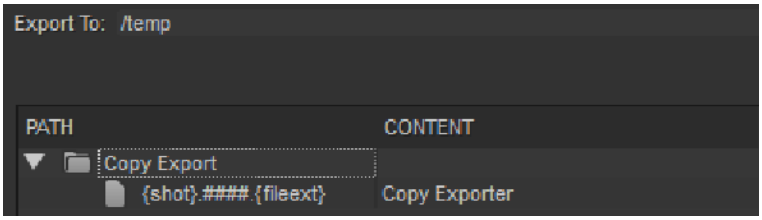
To copy media to a named location:

1. Select a sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Shots** from the Export list.
3. Select the **Transcode Shots DPX** preset, duplicate it, and give it a name.
4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.
5. Build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons.

   An example shot template is shown below:



6. Click the **Tracks and Handles** tab, select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
7. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.
8. Set the **Range** and **Handles**, as required:
   - **Clip Length** - exports the full clip length available, as if the clip was opened as a Viewer.
   - **Cut Length** - exports only the cuts included on the timeline.

NOTE: Selecting **Cut Length** allows you to add handles to each clip, up to the maximum available source clip length.

9. Check **Apply Retimes** to export any retimes present on the timeline.

NOTE: When **Apply Retimes** is disabled, which is the default state for **Create Comp**, any TimeWarp soft effects are not included in the resulting Nuke script. When the new track item is created through **Create Comp** or **Build Track from Export Tag**, TimeWarp soft effects are copied from the original track item to the new one.

10. Set how clip **Start Frames** are derived using the dropdown menu:
    - **Source** - use the source clip's start frame.
    - **Custom** - specify a start frame for all clips using the field to the right.
11. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: See Using Versions for more information on how versioning works in Hiero.

12. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:

- **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
- **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
- **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.

13. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

    Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the file structure in a browser window.

Using the SymLink Exporter

The SymLink Exporter allows you to create symbolic links to your project media in a named file structure using the shot template.

To create symbolic links a named location:

1. Select a sequence in the bin view and navigate to **File** > **Export...**

   The **Export** dialog displays.
2. Select **Process as Shots** from the Export list.
3. Select the **Transcode Shots DPX** preset, duplicate it, and give it a name.
4. Enter the **Export To** directory or click **Choose...** and browse to the location.

   The **Export To** directory is the starting point from which the shot template builds your shot hierarchy.
5. Build a custom shot template using **Path** tokens, the **Contents** field, and the folder and +/- buttons.
6. Click the **Tracks and Handles** tab, select the **Tracks For This Export** by enabling or disabling the tracks in the list. Hiero exports **all tracks** by default.
7. Enable or disable tags using the **Filter by Tag** panel. Click the checkbox to cycle through the available tag states.
8. Set the **Range** and **Handles**, as required:
   - **Clip Length** - exports the full clip length available, as if the clip was opened as a Viewer.
   - **Cut Length** - exports only the cuts included on the timeline.

NOTE: Selecting **Cut Length** allows you to add handles to each clip, up to the maximum available source clip length.

9. Check **Apply Retimes** to export any retimes present on the timeline.

NOTE: When **Apply Retimes** is disabled, which is the default state for **Create Comp**, any TimeWarp soft effects are not included in the resulting Nuke script. When the new track item is created through **Create Comp** or **Build Track from Export Tag**, TimeWarp soft effects are copied from the original track item to the new one.

10. Set how clip **Start Frames** are derived using the dropdown menu:
    - **Source** - use the source clip's start frame.
    - **Custom** - specify a start frame for all clips using the field to the right.
11. Set the **Version** number for the export, if applicable. Use the arrows to increment the version number and the +/- buttons to increase or decrease the padding. You can also type directly into the numeric field.

NOTE: SeeUsing Versions for more information on how versioning works in Hiero.

12. Set how Hiero should render your export using the **Render with** dropdown. Hiero provides the following options:
    - **Frame Server** - uses multiple Nuke processes to speed up render times, improving resource management.
    - **Single Render Process** - uses a single Nuke process to render your export. Rendering QuickTimes falls back to this setting, but it's also used when a problem is detected with the Frame Server.
    - **Custom Render Process** - uses a custom render process. Hiero requires a Python script to pass exports to your render farm of choice. Scripts must be located in specific directories, dependent on platform, as listed in the *Nuke User Guide*, *Loading Gizmos, NDK Plug-ins, and Python and Tcl Scripts* section. If no scripts exist, the dropdown only contains the default render processes.
13. Click **Export**.

    The **Export Queue** window displays an estimate of how long each component of the export is expected to take.

    Once the export is complete, the file structure specified in the shot template is created.

TIP: Click the magnifying glass icon to reveal the file structure in a browser window.

Customizing Hiero

This chapter provides a basic overview and some simple examples to get you started, but more information is available in the dedicated Python API document included in the Nuke package. See **Help** > **Python Dev Guide** for more information.

Environment Variables

Environment variables are used to store values that influence the behavior of Hiero and HieroPlayer, such as adding additional file paths to check at startup for plug-in scripts.

Setting Environment Variables

The process of setting environment variables differs depending on the operating system you're using:

On Mac OS X and Linux

1. The first step is to determine the type of the shell you're using. Launch a terminal and enter:
   `echo $SHELL`
   Your shell type is printed to the screen. For example, `/bin/bash` indicates that your shell is "bash".
2. Depending on the output of the $SHELL command, do one of the following:
   - **csh** or **tcsh** - add the following command to the **.cshrc** or **.tcshrc** file in your home directory:
     `setenv VARIABLE value`
     Replace VARIABLE with the name of the environment variable and value with the value you want to give it, for example:
     `setenv HIERO_PLUGIN_PATH /SharedDisk/Hiero`
   - **bash** or **ksh** - add the following command to the **.bashrc** or **.kshrc** file in your home directory:
     `export VARIABLE=value`
     Replace VARIABLE with the name of the environment variable and value with the value you want to give it, for example:
     `export HIERO_PLUGIN_PATH=/SharedDisk/Hiero`

NOTE: These steps set the environment variable until you manually remove it from the file in your home directory. If you want to set a variable for a single session, you can simply type the variable in the terminal then run Hiero from the same session.

On Windows

1. Right-click on **My Computer** and select **Properties**.
2. Click the **Advanced** tab.
3. Click the **Environment Variables** button.

   The **Environment Variables** dialog opens.
4. Click the **New** button under either **User variables** or **System variables**, depending on whether you want to set the variable for the current user or all users.

NOTE: You must have administrator privileges to set system-wide variables.

5. In the **Variable** name field, enter the name of the environment variable you want to set.
6. In the **Value** field, enter the value for the variable. The value can be a directory path, for example.
7. Click **OK** to save the variable.

Hiero Environment Variables

The following table lists the environment variables Hiero recognizes.

Environment Variable	Description
__GL_SYNC_DISPLAY_DEVICE	On Linux, set this variable to the name of screen device to synchronize in dual screen setups. See Synching to VBlank on Linux for more information.
FN_CRASH_DUMP_PATH	Allows you to specify where Issue Reporter dumps are saved by default.
FN_DISABLE_LICENSE_DIALOG or FN_NUKE_DISABLE_TMPLIC_NOTIFY_DIALOG	By default, if you have installed a temporary license, Hiero displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior, you can set either of these environment variables to 1 to suppress the warning message about imminent license expiration. NOTE: You still get a warning if no license is found, for example if you only have a HieroPlayer license but you try to run Hiero.

Environment Variable	Description
FN_LICENSE_DIALOG_DAYS_LEFT_BEFORE_PROMPT	By default, if you have installed a temporary license, Hiero displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior until a set number of days before expiry, you can set this environment variables to the required number of days.  NOTE: You still get a warning if no license is found, for example if you only have a HieroPlayer license but you try to run Hiero.
FN_SUBSCRIPTION_LICENSE_DIR	On Windows, user names containing non-ASCII characters can cause subscription licensing to fail. If a licensing error similar to the following displays: **Unable to create subscription license directory: C:\Users\Zoë Hernández\FoundryLicensing** Try changing the license directory to an alternate location using this environment variable.
foundry_LICENSE	The location of the Hiero RLM license file, if the following recommended location is not used: **On Mac OS X and Linux**: `/usr/local/foundry/RLM` **On Windows:** *`drive letter`*`:\Program Files\The Foundry\RLM`  NOTE: We're in the process of migrating licenses from FLEXlm to the RLM licensing model. If you're interested in making an early move to RLM licensing, please contact sales@thefoundry.co.uk to obtain a replacement license.
FOUNDRY_LICENSE_DEBUG	This variable prints additional licensing information to the command line or Terminal.

Environment Variable	Description
FOUNDRY_LICENSE_FILE	The location of the Hiero FLEXlm license file, if the following recommended location is not used: **On Mac OS X and Linux**: `/usr/local/foundry/FLEXlm` **On Windows:** *`drive letter`*`:\Program Files\The Foundry\FLEXlm` NOTE: We're in the process of migrating licenses from FLEXlm to the RLM licensing model. If you're interested in making an early move to RLM licensing, please contact sales@thefoundry.co.uk to obtain a replacement license.
FOUNDRY_LOG_FILE	This variable specifies the location of Hiero's logfile. If you don't specify a logfile, all output is to screen.
FOUNDRY_LOG_LEVEL	This variable sets the level of logging Hiero produces during operation. There are four levels of detail, on a sliding scale from minimal to verbose: • **error** • **warning** • **message** • **verbose** NOTE: Setting the logging level to verbose can produce large log files when FOUNDRY_LOG_FILE is specified.
HIERO_DISABLE_THUMBNAILS	Set this variable to stop Nuke Studio loading thumbnails.
HIERO_DISABLE_THUMBNAILS_CACHE	Set this variable to stop Nuke Studio caching thumbnails for improved access once loaded. NOTE: This variable does not clear the cache, you must remove cached files manually.

Environment Variable	Description
HIERO_PLUGIN_PATH	Set this variable to the location of additional scripts to run at startup. You can use **.<folder>** to point to hidden folders, for example **.myPlugins**. For example, you could create a facility-wide location to share presets and use this variable to point multiple Hiero's to it. See Sharing Presets for more information. Use the following method to display set paths: `print hiero.core.pluginPath()`
HIERO_SINGLE_THREADED_PLAYBACK	This variable launches Hiero in single-thread mode, which can solve playback issues on various Linux Fedora distributions.
NUKE_AJA_CHANNEL NUKE_AJA_DUALOUTPUT	AJA cards take 3G level signal (mostly for 12-bit 444 RGB) and combine it into a single 3G-B (B denotes B level, hence the 3G-B) stream through SDI1 by default. Use these environment variables to customize this output behavior: • **NUKE_AJA_CHANNEL** - set this variable to 2, 3, or 4 to output a single stream through SDI2, SDI3, or SDI4. • **NUKE_AJA_DUALOUTPUT** - set this environment variable to 1 to force the card to separate the single 3G stream into two 1.5G streams through SDI1 and SDI2. Combining these two environment variables can force the stream to split and output through alternate SDI outputs. For example: • DUALOUTPUT + CHANNEL=1 OR CHANNEL=2 results in two 1.5G streams coming from SDI1 and SDI2. • DUALOUTPUT + CHANNEL=3 OR CHANNEL=4 results in two 1.5G streams coming from SDI3 and SDI4. NOTE: Certain modes, such as 12-bit 444, require a 3G stream. Otherwise, the card uses the single stream on the channel number specified.
NUKE_ALLOW_GIZMO_SAVING	Nuke does not allow you to **Overwrite** and **Save as** gizmos by default, without copying the gizmo to a Group. Setting this environment variable to 1 enables this behavior, so artists don't need to copy a gizmo before editing it.

Environment Variable	Description
NUKE_CRASH_HANDLING	Breakpad crash reporting allows you to submit crash dumps to The Foundry in the unlikely event of a crash. By default, crash reporting is enabled in GUI mode and disabled in terminal mode. When NUKE_CRASH_HANDLING is set to 1, crash reporting is enabled in both GUI and terminal mode. When NUKE_CRASH_HANDLING is set to 0, crash reporting is disabled in both GUI and terminal mode.
NUKE_DISK_CACHE	The location where Hiero saves all recent images displayed in the Viewer. Ideally, this should be a local disk with the fastest access time available.
NUKE_EXR_TEMP_DIR	On Linux, this is the location Nuke uses for temporary files while reading PIZ-compressed **.exr** files. This environment variable is only relevant on Linux. If this variable is not set, the location is determined by NUKE_TEMP_DIR.
NUKE_FONT_PATH	The location that Nuke checks for available font files when the Text node properties panel is opened.
NUKE_MOV64READER_ ENABLE	Set this variable to 0 to disable Nuke's 64-bit mov decoding and fall back to 32-bit decoding.
NUKE_NO_CRASH_PROMPT	When crash handling is enabled in GUI mode, this allows you to control whether reports are automatically submitted or not: When NUKE_NO_CRASH_PROMPT is set to 1, crash reports are submitted automatically without displaying a crash reporter dialog. When NUKE_NO_CRASH_PROMPT is set to 0, Hiero always displays a crash reporter dialog before submitting a crash report.
NUKE_TEMP_DIR	The location where Hiero saves any temporary files that do not have a particular place defined for them.
NUKE_WINDOWMANAGER_ DEBUG	When enabled, data from Hiero's window manager is printed to the command line or Terminal.

Environment Variable	Description
OCIO	Set this variable to the location of your OCIO configuration file for color conversion. NOTE: If you plan to use the OCIO config file specified in the Preferences, ensure that the **Preferences** > **Project Defaults** > **Color Management** > **Export** > **use OCIO nodes when exportingto a Comp** checkbox is enabled.

Sharing Presets

Hiero and HieroPlayer support facility-wide preset sharing by pointing multiple seats to a single network location using the HIERO_PLUGIN_PATH. As long as the folder hierarchy mirrors what the application expects, you can place this repository anywhere on your network.

To setup sharing:

1. Create the shared repository directory, for example:
   `/Volumes/myFacility/Shared/`
2. Follow the instructions under Setting Environment Variables to point individual machines to the shared location. For example, if you're using a **bash** shell, you could use:
   `export HIERO_PLUGIN_PATH=/Volumes/myFacility/Shared/`
   Any file that can be read locally can be placed in the shared path.

Startup Projects

Hiero and HieroPlayer search **<path>/StartupProjects/Hiero**, **<path>/StartupProjects/HieroPlayer** and **<path>/Templates** for preset projects saved as **.hrox** files. See Mac OS X, Linux, and Windows for a description of the **<path>** variable by platform.

Projects placed in these folders behave differently, depending on which folder they are read from:

- **StartupProjects/Hiero** or **HieroPlayer** - projects in these folders are displayed in the bin view at startup and are read only. An example project, **Tag Presets**, is included in the **Tags** tab.
- **Templates** - projects in this folder appear in a dropdown menu when you open a new project. Select the template to use for the new project.

NOTE: You may need to create the **StartupProjects/Hiero**, **StartupProjects/HieroPlayer**, and **Templates** folders manually in the chosen path.

To remove a startup project, either:

- Remove it from **<path>/StartupProjects/Hiero**, **<path>/StartupProjects/HieroPlayer** or **<path>/Templates**, or
- Rename the file extension so the application doesn't recognize it on startup. For example, **myStartup.hrox_hidden**.

To modify a startup project:

1. Load the project using **File** > **Open**.
2. Make any required edits and save over the original in the same location.

   The edited project loads at startup.

Using the Python API

Hiero and HieroPlayer ship with a comprehensive Python application programming interface (API) enabling you to perform most user interface actions using Python scripting.

This section provides a basic overview and some simple examples to get you started, but more information is available in the dedicated Python API document included in the Hiero package. See **Help** > **Python Dev Guide** for more information.

Running Python During Startup

On startup, Hiero and HieroPlayer scan various directories for Python scripts that customize the behavior of the application. These scripts can be downloaded from online resources and placed in specific locations on disk, depending on the platform you're using.

If you're familiar with Python scripting, you can place custom startup scripts in the same locations, though bear in mind that you should take care as mistakes can produce performance issues.

Some example scripts are included in the application package in the following directories:

On Mac:

- /Applications/Nuke10.0v5/Nuke10.0v5.app/Contents/Plugins/site-packages/hiero/examples/

On Linux:

- /usr/local/Nuke10.0v5/Plugins/site-packages/hiero/examples/

On Windows:

- drive letter:\Program Files\Hiero10.0v5\plugins\site-packages\hiero\examples

At startup, Hiero and HieroPlayer search **<path>/Python/Startup** and **<path>/Python/StartupUI** for any Python **.py** modules or packages containing **__init__.py**. Scanning is done in two passes - all the Startup folders are searched and then all the StartupUI folders.

You can also add your own Startup folders, which are scanned after the standard paths, by creating a Python file pointing to the custom location. For example:

```
import hiero.core
hiero.core.addPluginPath("/myCustomPlugins")
```

Searches **/myCustomPlugins/Python/Startup** after the standard paths.

Each package or module discovered is imported and added to the built-in package **hiero.plugins**.

NOTE: Python startup scripts are imported in alphabetical order so you can force ordering if necessary.

The **<path>** varies by platform as follows:

Mac OS X

- /Applications/Nuke10.0v5/Nuke10.0v5.app/Contents/Plugins
- /Library/Application Support/TheFoundry/Nuke
- ~/Library/Application Support/TheFoundry/Nuke
- ~/.nuke

Linux

- /usr/local/Nuke10.0v5/Plugins
- ~/.nuke

Windows

- drive letter:\Program Files\Nuke\plugins\hieroscripts
- drive letter:\Program Files (x86)\Nuke\plugins\hieroscripts
- ~\.nuke

NOTE: The **.nuke** folder can be found under the directory pointed to by the HOME environment variable. If this variable is not set (which is common), the **.nuke** directory is under the folder specified by the USERPROFILE environment variable - which is generally of the form *drive letter:\Documents and Settings\login name* or *drive letter:\Users\login name*

To find out if the HOME and USERPROFILE environment variables are set and where they are pointing at, enter %HOME% or %USERPROFILE% into the address bar in Windows Explorer. If the environment variable is set, the folder it's pointing at is opened. If it's not set, you get an error.

You can specify any number of user-defined paths using the environment variable HIERO_PLUGIN_PATH, separating them with **:** just like the standard unix PATH environment variable and Nuke's NUKE_PATH. See Setting Environment Variables for more information.

Using the Script Editor

Hiero and HieroPlayer include a Python **Script Editor**, accessible from the user interface, allowing you to enter Python statements directly.

To access the Script Editor:

1. Navigate to **Window** > **Script Editor**.

   The **Script Editor** displays.
2. Enter scripts in the lower half of the editor and press **Ctrl/Cmd** + **Enter** to execute the script.

   The results are displayed at the top of the editor. A simple example might be:

   ```
   from hiero.core import *
   bin = projects()[-1].clipsBin()
   bin.addItem(Bin("Plates"))
   bin["Plates"].importFolder("/Footage/Hiero/finalshots")
   ```

   Which imports **hiero.core**, defines **bin** in the last project opened, creates a bin called **Plates** at root level, and imports the specified folder into **Plates**.

Script Editor buttons and commands are described below:

Icon	Hotkeys	Description
	Ctrl/Cmd+[	Go to the previous script.
	Ctrl/Cmd+]	Go to the next script.
	n/a	Clear the script history.
	n/a	Load and execute a script.
	n/a	Load an existing script.
	n/a	Save a script as a **.py** file.

Icon	Hotkeys	Description
	Ctrl/Cmd+ enter	Run the current script.
	n/a	Show the input pane only.
	n/a	Show the output pane only.
	n/a	Show both the input and output panes.
	Ctrl/Cmd+ Backspace	Clear the output pane.

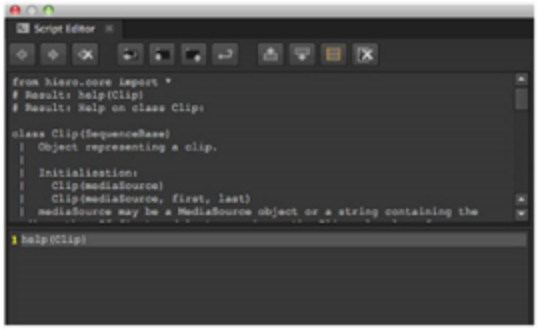
The Script Editor also features auto-completion and help for commands. Classes, attributes and so on are discoverable by:

• Entering the beginning of an object name and pressing the **Tab** key.

For example, typing **Bin** and pressing **Tab** displays a list of objects starting with Bin:

• Using the **help** command for a known object.

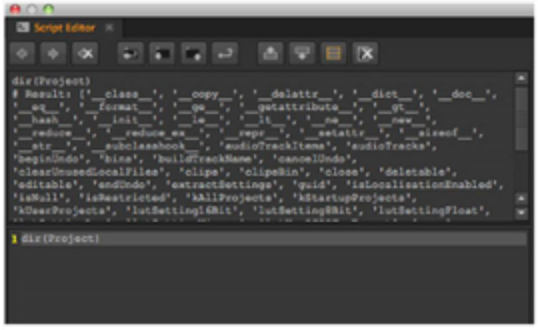
For example, **help(Clip)** returns a list of useful information on Clip:



Scroll down in the top pane to see more information relating to **Clip**.

• Using the **dir** command for a known object.

For example, **dir(Project)** returns a concise list of useful information on Project:



NOTE: The last entry in the Script Editor is restored at startup by default, but you can disable this behavior by navigating to **Preferences** > **Script Editor** and deselecting **Save and restore script editor history**.

For more information on Python scripting, see **Help** > **Python Dev Guide**.

Appendix A: Preferences

This appendix lists the preferences supported by Hiero.

The Available Preference Settings

The **Preferences** dialog is divided into the following sections:

General	Settings for auto-saving and path substitutions.
Project Defaults	General project settings, and settings for color management.
Performance	Settings for caching, hardware, localization, and threads/processes.
Behaviors	Settings for start up, file handling, export options, scripting, node behaviors, and more.
Panels	Settings for the interface appearance, file browser, control panels, nodes, Viewers, script editors, and scopes.

General Section

The **General** section includes the following controls:

Autosave	
force project autosave after <300> seconds	Set the number of seconds after which to automatically save your project. Disable this by setting it to zero.
Path Substitutions	

path substitutions	Allows you to remap file paths in order to easily share projects across different operating systems. When the application encounters a file path, any text in the **OSX/Linux** column is replaced with the text in the **Windows** column, or vice versa. For example, if you enter **/Volumes/networkmount** in the **OSX/Linux** column and **Z:** in the **Windows** column: • On Mac OS X and Linux, any file paths that start with **Z:** are converted to start with **/Volumes/networkmount**. • On Windows, any file paths that start with **/Volumes/networkmount** are converted to start with **Z:**. To be able to enter text in either column, you need to click on the **+** button below to add a row to the table.
+	Adds a row under **path substitutions**.
-	Deletes the selected row(s) under **path substitutions**.
Nuke	
Open In > **New Nuke Session launches NukeX**	When enabled, new Nuke sessions are launched as NukeX.

Project Defaults Section

The **Project Defaults** section includes the following controls:

Color Management

NOTE: You must restart the application for changes to these preferences to be applied.

OpenColorIO config

OpenColorIO config file	Sets the OpenColorIO configuration to use, if you don't intend to use the default settings. If you select **custom** from the dropdown, enter the file path of the configuration file or click **Choose** to use the browser.  NOTE: Hiero also includes an environment variable method for setting a config file. See Environment Variables for more information.
Default Color Transform	
working space	Sets the colorspace files should be converted to, on import, and from, during render - it's the colorspace used by Hiero under the hood.
viewer	Sets the default LUT applied to Viewers.
thumbnails	Sets the default LUT applied to thumbnails when ever they are generated.
8 bit files **16 bit files** **log files** **floating point files**	Sets the default LUT applied to the specified ingested file type.
Nuke Script Project Settings	
color management	Sets whether Hiero uses the LUTs read from the configuration specified or the **Nuke** native LUTs during export. Selecting **OCIO** makes the relevant OCIO LUTs available to the Read and Write nodes in scripts on a per project basis. All configurations except **nuke-default** automatically switch this control to **OCIO**.

General

Format	

output resolution	Use this to select the image output resolution in the Timeline environment. For a sequence, the video tracks are cropped to this format. By default, clips in the sequence are reformatted to fit this format. You can adjust the reformatting, by selecting clips in the timeline and adjusting the settings in the **Sequence** tab. Changing the output format for a clip is not currently supported.
frame rate	Select the frame rate for the current project in the Timeline environment.
Sequence	
start timecode	Use this to define the start timecode for the current project. For track items, this overrides the timecode defined in the media.
time display	You can use this to select the display format for times. You can select either **Timecode** or **Frames**.
drop frame	Use this to choose whether timecodes from this sequence are displayed in drop frame times or not. Drop Frame is a timecode display option that leaves out two frames from the 30 fps timecode sequence every minute (except every 10th minute) so that long running NTSC sequences are accurate to a real-time clock (NTSC frame rate is 3000/1001, or approximately 0.01% slower than 30fps).  NOTE: Enabling Drop Frame is a Timecode display feature only - the source media remains a continuous stream of frames.

Performance Section

The **Performance** section includes the following controls:

Caching

Disk Caching	
temp directory	This saves all recent images displayed in the Viewer for fast playback. Using this control, you can specify where you want Nuke to save these images. Select a local disk (for example, C:/temp), preferably with the fastest access time available. It's also important to leave enough space for the maximum disk cache size (defined below).

Memory Caching	
playback cache size (% of system RAM)	Specifies the percentage of system RAM used for the timeline Viewer playback cache. The entire amount is allocated, even if you've only got a few frames in the Viewer. Recently used frames are retained in the memory to avoid relying on the disk buffering system. The cache is freed when you switch to the compositing Viewer and reallocated when you switch back to the timeline Viewer.  TIP: On low-end machines, minimizing this may improve application responsiveness at the expense of smooth playback.
Audio Waveforms	
waveform memory (MB)	Sets the amount of memory available for storing timeline audio waveforms.
Application in Background	
pause timeline Viewer when the application goes to the background	When enabled, pause timeline Viewer caching when the application is in the background.
clear timeline Viewer cache when the application goes to the background	When enabled, the timeline Viewer cache is cleared when the application goes into the background.  NOTE: This preference is only available when **pause timeline Viewer when the application goes to the background** is enabled.
Undo Caching	
undo history size	Allows you to set the amount of RAM to use for the undo history. If this limit is exceeded, older items are discarded.
minimum undo events	Use this to set the amount of undo events. This setting always applies, even if it breaches the memory limit.

Hardware

Audio	

audio device	The **audio device** control allows you to select an existing audio device for playout from a list of automatically detected devices. You can disable playout on a device by selecting **Disabled**.
RED Rocket	
use red rocket	You can select the **use red rocket** checkbox to speed up decoding RED media. If you're using R3D Rocket graphics card, note that using it is likely to only be considerably faster when you're reading in at full resolution. If you're reading in at half resolution, for instance, using without the R3D Rocket card enabled may be faster. This is because the R3D Rocket graphics card is designed to be fast when reading in multiple frames at the same time. This is not how it works internally, and therefore reads with the R3D Rocket card disabled may sometimes be faster when working in lower resolutions (< 4K widths). Also, note that the R3D Rocket card always produces better results than when downsampling. Also, the R3D Rocket card can only be used by one application at a time, so if you are viewing multiple scripts at once, you may only be able to use the R3D Rocket card in one.
GPU	
expand 3 to 4 channels	You can use this to expand images cached for playback from 3 to 4 color channels per pixel. Some graphics hardware performs better at loading images to video memory with 4 channels per pixel, than it does with 3. Enabling this option improves playback performance on such hardware, at the expense of reducing the number of frames that it's possible to cache. If you are seeing poor playback performance, enabling this option may help. However, if you are seeing acceptable playback performance with this option disabled, then leaving it disabled increases the number of frames that may be cached for smooth playback.  NOTE: You must restart Nuke for this option to take effect.
Enable PBO texture uploads	Enabling Pixel Buffer Objects (PBOs) can improve playback performance for certain combinations of hardware, software, and file formats.  NOTE: You must restart Nuke for this option to take effect.

Localization

Paths	
auto-localize from	Enter the location of the files you need automatically localized, unless otherwise specified in the Read node's **cache locally** control or in the bin right-click, **Localization Policy** menu. Commonly this would be your remote working folder. If you leave this field blank, automatic local file caching doesn't take place.
localize to	Enter the file path where all the localized files are automatically stored. Localizing files allows for faster reloading for files that are stored in a location that is slow to access (such as a network drive). You should construct the file path as follows • Replace any leading forward or back slashes with underscores. For example, replace **\\windowspath\to\my\network\file.dpx** with **__windowspath\to\my\network\file.dpx** • Replace any Windows drive signifiers (colons) with underscores. For example, replace **t:\my\network\path\file.dpx** with **t_\my\network\path\file.dpx** This defaults to **[getenv NUKE_TEMP_DIR]/localize**.
Storage	
limit to (GB)	This allows you to set the maximum amount of space (in GB) to use for localized files. Set to zero for unlimited size. Values lower than zero, leave that amount of space free.
Inputs	
localization policy	Sets the default localization policy for new bin clips.
pause localization on script/project open	When enabled, localization does not start automatically when you open a script or project. Enabling this option can help to open scripts and projects more quickly.
Network	
check for updated files every	When files are localized, specifies the time interval (in minutes) before the **auto-localize from** directory is checked for updated versions of the files.
never check for updated files	When enabled, localized files are never checked for updated versions of the source.

Threads/Processes

Playback	
default number of threads per reader	Sets the number of threads to use per reader. If your source files are located on high performance local drives, increasing the number threads can significantly improve read times. CPU intensive operations, such as **.jpg** decoding, can also be improved by increasing the number of threads per reader.
override number of threads per reader	Allows you to override the default number of decode threads used, dependent on file format. Use the plus button to add an entry to the table and then select the file format using the dropdown menu. Double click the Number of threads column to set the required number of decode threads for that format.
OpenEXR helper threads to use	Sets the number of helper threads to use for OpenEXR only. The default, zero, automatically sets the number of helper threads used.
ARRI helper threads to use	Sets the number of helper threads to use for ARRI only. The default, zero, automatically sets the number of helper threads used.
NOTE: The OpenEXR and ARRI helper thread preferences are independent of the threads per reader and override table per format settings.	
frame server Nuke processes to run	Set the number of slave Nuke processes to run for the frame server. You must restart Nuke for this setting to take effect.
QuickTime decoders to use	Sets the number of background processes available to handle QuickTime file I/O. You must restart the application for this preference change to take effect. NOTE: Using too many decoders can affect performance, depending on the available hardware.
Rendering	

export renders	You can select from several render options: • **limit renderer (more responsive ui)** – Select this option to make the user interface more responsive during transcodes. It tells Nuke to use 2 threads to transcode and to use 25% of RAM to cache. Using this option is likely to result in slower transcodes. • **no renderer limits** – Select this option to ensure that transcodes happen as quickly as possible. This option may result in a less responsive user interface during transcodes. • **customize render limits** – Select this option to manually configure Nuke's cache memory setting and the number of threads used to do transcodes.
number of threads	Sets the number of threads that Nuke uses when transcoding. Lower numbers allow the Timeline environment's interface to be more responsive. Higher numbers allow faster transcodes. This setting is passed to Nuke using the **-m** option.
cache memory (GB)	Use this to set the number of gigabytes of RAM that Nuke uses for its Cache settings. Lower numbers may improve the Timeline environment's interface responsiveness, while higher numbers may improve the speed of the transcodes. This setting is passed to Nuke with the **-c** option.
Downsize Filtering	
8-bit images **10-, 12- and 16-bit integer images** **16-bit float images** **32-bit images**	Customizes the downsize filtering behavior by bit-depth. The default (1x) retains the original image size. You can select 2x to halve the image size, or 4x to quarter the image size. The Viewer image quality dropdown affects the decode rate and resolution of clips displayed in the Viewer. Lower resolutions decode faster and vice versa.

Behaviors Section

The **Behaviors** section includes the following controls:

Documentation

documentation source	Sets the source of the **Properties** ? button help: • **local** – use Nuke's built-in HTML help server. Nuke's local help server searches the NUKE_PATH for HTML files with the same name as the requested node, such as Blur.html. It also searches .nuke and .nuke/Documentation. • **foundry** – This uses The Foundry's Online Help, the most up-to-date version of the documentation. • **custom** – Select this to point to your own help server.
auto port	When enabled, assign a free port automatically.
local port	Specify a local documentation server port manually. This is usually >= 1024. You can also set this to 0 to automatically assign the port.
range	Specify a range of ports to attempt with the **local** documentation server.

File Handling

scan for file sequence range on drop into Bin view	When enabled, identify and import the file range of media that is dropped into the bin. When disabled, no range is detected and only a single frame is ingested. (This does not affect container formats, such **.mov** and **.r3d**.)
automatically rescan versions when moving off end of the version list	When enabled, incrementing a clip or track item's version past the end of the previously discovered versions list, forces a rescan to update the versions list. See Using Versions for more information.
frame number style	Sets the sequence display mode to be used in the file browser.

assume fixed width frame numbers in file sequences	When enabled, assume frames have a fixed width number. With this selected, frame numbers need to be padded with zeros to a fixed length, otherwise frame numbers without preceding zeros are assumed to belong to sequences with no padding. This is important as the sequence identifier specifies a unique file name for each and every frame. For example: **Files**: sequence 1.18.exr, sequence 1.19.exr, and sequence 1.20.exr **With fixed frame width assumed**: sequence 1.##.exr / sequence 1.%02d.exr **With fixed frame width NOT assumed**: sequence 1.#.exr / sequence 1.%d.exr
default red clip video decode mode	Sets the default red clip decode mode for new projects. You can choose from **FullPremium**, **HalfPremium**, **HalfGood**, **QuarterGood**, **EighthGood**, or **SixteenthGood**. NOTE: Changing this preference does not change the default decode setting for existing projects.

Positions

show menus with previous item under the cursor	When enabled, opening contextual menus positions them with the most recently used item under the pointer.

Startup

startup workspace	Sets which workspace to display on startup. You can choose from **Compositing**, **Conforming**, **Editing**, **Finishing**, **Reviewing**, and **Timeline**. You can also choose to save a customized workspace, which would also be available from this list.
show splash screen at startup	When enabled, display the splash screen on startup.
show startup dialog	When enabled, display the dialog on startup.

restore workspace when opening projects	When enabled, restore the selected saved workspace when opening projects.
analytics	
automatically submit usage statistics	When enabled, certain usage statistics are collected from the machine on which you license Nuke, NukeX, Nuke Studio, Hiero, and HieroPlayer. When disabled, we don't collect any usage data from your machine.  NOTE: The port number used to communicate with The Foundry is 443, the same one used for uploading crash reports. For more information on what data we collect, see Installation and Licensing for your particular operating system.

Timecode

R3D file timecode	Sets the source timecode for RED files. You can choose from **Default From File**, **Absolute Timecode**, or **Edge Timecode**.
other media timecode	Sets the timecode source for file-per-frame media (such as **.dpx**). You can choose from **File Header** or **Frame Number**. If **File Header** is selected and a timecode exists, then the timecode is used. Otherwise it defaults back to using the frame number from the file name.
max valid timebase (fps)	Sets the maximum image header timebase above which the value is clamped. Image files are often created with application specific timebase values in the header description. This can lead to reading in spuriously high frame rates and the clamp aims to prevent this from happening. If your clips do have extremely high frame rates, increase this value as necessary to avoid clamping.
EDL style spreadsheet timecodes	When disabled, the srcOut and dstOut values in the spreadsheet use the film convention, representing the last frame of the cut. When enabled, the srcOut and dstOut values in the spreadsheet use the video convention, representing the frame directly after the cut.

Panels Section

The **Panels** section includes the following controls:

Appearance

Font	Change the type, weight, angle, and size of the font used on Nuke's user interface.
UI Colors - right-click on any color button and select **Set color to default** to revert changes.	
Background	Change the background color of most user interface elements (menus, toolbars, panes, properties panels, Viewers, and pop-up dialogs).
Base	Change the color of input fields, the input pane of the Script Editor, and the left side of the Curve Editor.
Highlight	Change the color of the highlighting that appears when you hover the cursor over a control, select a file or folder in the File Browser, or scrub to a new frame on the timeline.
Highlighted Text	Change the color of any highlighted text (for example, text you select in node properties).
Label	Change the color of labels and text on the application interface. Note that this does not set the color of the labels on nodes in the Node Graph.
Button	Change the color of buttons and dropdown menus.
Animated	Change the color that indicates a control has been animated.
Keyframe	Change the color that indicates a keyframe has been set.
Cached frames	Change the color of the cached frames on the Viewer timeline.
Playhead	Change the color of the frame marker on the Viewer timeline.
In/Out Markers	Change the color of the in and out frame markers on the Viewer timeline.
Curve Editor / Dope Sheet - right-click on any color button and select **Set color to default** to revert changes.	
no. of curves visible	Sets the maximum number of curves visible in the Curve Editor.
background	Change the background color of the Dope Sheet tab.
unselected key	Change the color used for an unselected key on the Dope Sheet.
part-selected key	Change the color used for a part-selected key on the Dope Sheet.
selected key	Change the color used for a selected key on the Dope Sheet.

timeline	Change the color used for the timeline on the Dope Sheet.
control text	Change the color used for the control text on the Dope Sheet. These indicate the frame number of a key when you select one.
control text shadow	Change the color used for the shadow of the control text on the Dope Sheet.
time label	Change the color used for the time labels on the Dope Sheet. These indicate frame numbers.
current frame	Change the color used for the current frame on the Dope Sheet. This is a vertical line that indicates the current frame on the timeline.
project frame range	Change the color used for the project frame range on the Dope Sheet. These are two vertical lines indicate your frame range.

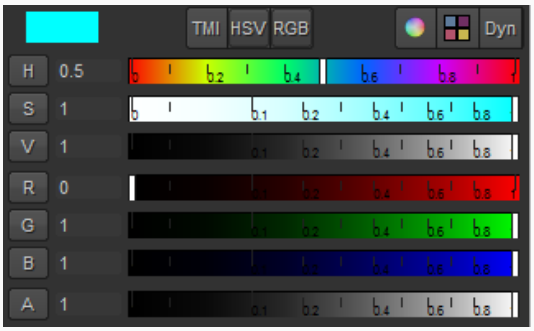
Control Panels

max nodes in properties bin	Use this to set the maximum number of panels that can be open in the **Properties** pane.
reopen acts like new panel	When this is enabled, double-clicking a node that has been open before, places the panel in the same place as a new panel. If this is disabled, the panel appears in its previous position.
Color Panel	
color picker button opens	Sets the type of color picker displayed when you click a color picker button in the properties panel: • **in-panel color picker** - opens a color wheel and sliders in the properties panel. • **floating color picker** - opens a color wheel and sliders in a floating panel.  TIP: Holding **Ctrl**/**Cmd** and clicking the color picker button opens the alternate color picker to the one specified in the **Preferences**.

File Browser

start file browser from most recently used directory	When enabled, new file browsers open at the last location used. When disabled, new file browsers open at the current working directory.

Node Colors

autocolor	Deselect this checkbox to ignore individual soft effect color settings and, instead always use the **All Others** color.
<node name or type>	The soft effects listed here have been given a default color. You can change this by clicking the assigned color to open the color menu, and selecting a new one. 
All Others	Use this to select the color to use as default for all soft effects not otherwise specified above, or all soft effects if **autocolor** is disabled.

Scopes

black point	Use the slider or the entry box to select the black point value.
white point	Use the slider or the entry box to select the white point value.
luma/chroma encoding	Use this to select the video standard to use when converting from RGB to luma and chroma for scope display.
include viewer color transforms	Select this checkbox to include applied Viewer color transforms (gain, gamma, and LUT) in scope data. If this checkbox is disabled, all Viewer transforms are ignored.  NOTE: If disabled, rendering may become slow as image calculation may be needed.
Force full frame	Select this checkbox so that the Viewer always requests full frame data when a scope is displaying data for that Viewer. If this checkbox is disabled, the scopes only display data for the current area requested by the Viewer, rather than the whole image.

Script Editor

font	Use this to select the font to use in the Script Editor.  NOTE: This control also changes the font in the BlinkScript Kernel Source field.
indent	You can use this control to set the indent value to use when scripting.
save and restore script editor history	Disable this checkbox if you prefer that the contents of the Script Editor is not saved and restored between sessions of Nuke.
clear input window on successful script execution	Disable this checkbox if you want the most recent script to remain in the input window after execution.

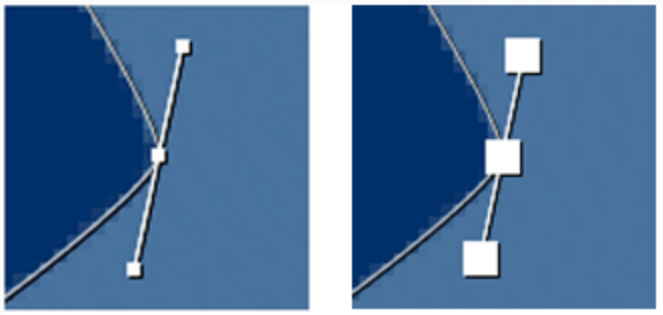
Timeline

show frame end marker	When enabled, an extra line is drawn on the timeline to the right of the playhead, indicating the end of the current frame.
visible range follows playhead	When enabled, the timeline scrolls with the playhead, constantly updating the view. When disabled, the playhead is allowed to move off screen.
Audio Tracks	
half waveforms	When enabled, audio tracks on the timeline display only the rectified waveform. When disabled, the full waveform is displayed.

Viewer

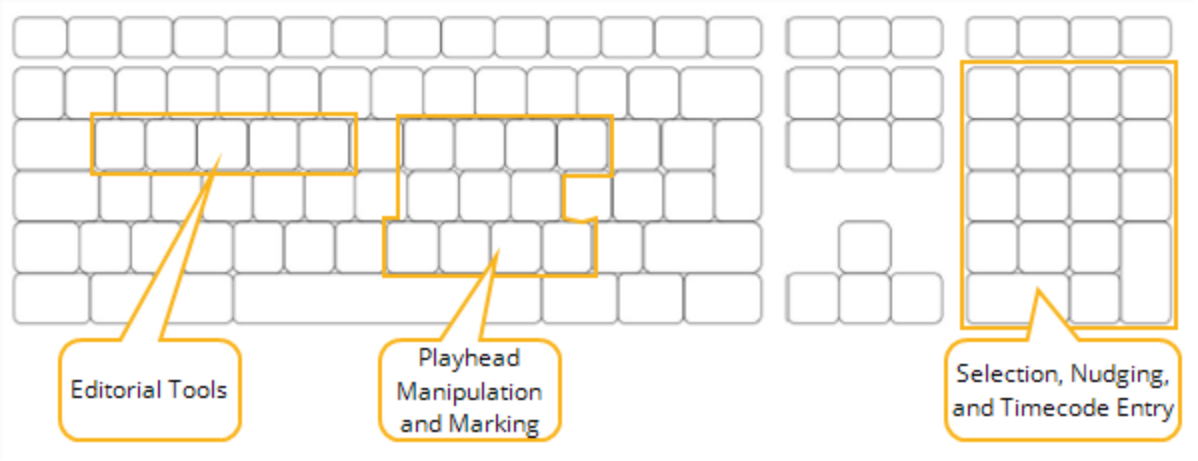
playback mode	Use this to set the Viewer playback mode: • **Play All Frames** - the default setting, plays all frames in real-time (dependent on hardware). • **Skip Frames** - plays frames in real-time skipping where necessary to maintain the frame rate. • **Play All Frames, Buffering** - plays all frames by buffering and playing frames back as they become available.
guides	You can use this to choose to show overlays in the image area. You can choose from: • **Title Safe** – Indicates where text should be entered to be visible. • **Action Safe** – Indicates the area in which to place actions so that they are visible. • **Format** – Displays the size of the format over the Viewer.
fullscreen display	Use this to select which display to use for fullscreen mode. This setting takes effect the next time fullscreen mode is entered.
see through missing media	Select this checkbox to see through missing media in the timeline, displaying the first displayable media in the underlying tracks.
background	Use this to select the Viewer background. You can select black, or gray (using the slider to determine the grayscale), or checkerboard (using the slider to determine the size of the squares).
frame increment	Use this to set the default number of frames skipped by the Viewer skip controls, and the timeline **Nudge More** commands.
filtering mode	Use this to determine the filtering used during rendering in the Timeline environment. You can select **Auto**, **Nearest neighbour**, or **Linear**. **Auto** uses ths same automatic selection as in the Compositing environment. This does not affect exports or rendering in the Compositing environment.
Audio	
default latency adjustment (ms)	Use this to adjust the default timing offset (in milliseconds) between audio and video to apply to new Viewers. Positive values make audio play earlier relative to video; negative values make audio play later. To convert from video frames to ms, divide 1000ms by the video frame rate. For example: • at 25fps, a video frame is 1000/25 = 40ms, or • a 1.5 video frame delay = 1.5 * 40ms = 60ms.
default volume	Use the slider or numeric field to set the default volume.

Viewer Handles

Controls	
2D handle size	Adjust the size of the square control handles that appear on the Viewer for some operations, such as transformations, warps, and Bezier and B-spline shapes.  By default, this value is set to 5. You can also set the pickable area size of the square control handles in the numeric field or slider to the right of the **2D handle size** control.

Appendix B: Keyboard Shortcuts

This appendix lists the keyboard shortcuts used by both applications, along with their function. In general, contiguous areas of the keyboard are assigned to related functionality. The left-hand keys on a QWERTY keyboard are used for tool selection and actions, the right-hand side for playhead manipulation including source/record and insert/overlay, the arrow keys for selection and nudging, and the numeric pad for timecode entry.



Hotkeys	Button	Menubar	Function
Timeline and Editing Controls			
Q		n/a	Cycles between the available move tools: • **Multi Tool** • **Move/Trim** • **Select**

Hotkeys	Button	Menubar	Function
W		n/a	Cycles between the available selection tools: • **Select Track to Right/Left** • **Select All in Track** • **Select All Tracks Right/Left**  NOTE: Holding **Alt** toggles between track and all tracks behavior.
E		n/a	Cycles between the **Slip Clip** and **Slide Clip** tools.
R		n/a	Cycles between the available edit tools: • **Roll Edit** • **Ripple Edit** • **Retime Clip**
T		n/a	Cycles between the available razor tools: • **Razor** • **Razor All** • **Join**
left-click	n/a	n/a	Select a clip including any linked tracks.
Alt + left-click	n/a	n/a	Select a clip, ignoring linked tracks (for example, audio only).
Shift + drag clip	n/a	n/a	Disable snap to transition when dragging clips.
left-click then Shift + left-click	n/a	n/a	Select all clips between the left-clicks (use **Shift** + **Alt** + **left-click** to ignore linked tracks).
drag then Alt	n/a	n/a	Activate Ripple mode while dragging track item.
Alt then drag	n/a	n/a	Duplicate the dragged track item.
Alt and drag	n/a	n/a	Ripple and duplicate the dragged track item.
Alt and left-click	n/a	n/a	Select a clip, ignoring linked tracks.
Ctrl/Cmd + A	n/a	n/a	Select all track items.

Hotkeys	Button	Menubar	Function
Ctrl/Cmd + Shift + A	n/a	n/a	Deselect all track items.
File Menu			
Ctrl/Cmd + Shift + N	n/a	File > New Project	Open a new project.
Ctrl/Cmd + O	n/a	File > Open	Open an existing project.
Alt + Shift + <num>	n/a	File > Open Recent > Project Name	Open a previously saved project from the list.
Ctrl/Cmd + W	n/a	File > Close	Close the current project.
Ctrl/Cmd + S	n/a	File > Save	Save the current project.
Ctrl/Cmd + Shift + S	n/a	File > Save As...	Save the current project with a different name.
Ctrl/Cmd + I	n/a	File > Import Clips	Import a clip or clips.
Ctrl/Cmd + Shift + I	n/a	File > Import Folder	Import a folder or folders.
Ctrl/Cmd + Alt + Shift + I	n/a	File > Import EDL/XML	Import an EDL or XML sequence.
Ctrl/Cmd + Shift + E	n/a	File > Export	Export the selected sequence.
Ctrl/Cmd + Q	n/a	File > Quit	Close Hiero and display a prompt to save any unsaved work.
Edit Menu			
Ctrl/Cmd + Z	n/a	Edit > Undo	Undo the last action.
Ctrl/Cmd + Shift + Z	n/a	Edit > Redo	Redo the last undo action.
Ctrl/Cmd + X	n/a	Edit > Cut	Cut the selected item(s) and place in the buffer.
Ctrl/Cmd + C	n/a	Edit > Copy	Copy the selected item(s) to the buffer.

Hotkeys	Button	Menubar	Function
Ctrl/Cmd + V	n/a	Edit > Paste	Paste item(s) from the buffer.
Backspace / Delete	n/a	Edit > Delete	Delete selected item(s).
Ctrl/Cmd + A	n/a	Edit > Select All	Select all files in the current bin.
Ctrl/Cmd + Shift + A	n/a	Edit > Clear Selection	Deselect all files in the current bin.
Ctrl/Cmd + D	n/a	Edit > Duplicate	Duplicate the selected object(s).
Shift + S	n/a	Edit > Preferences	Open the Preferences dialog.
View Menu			
Ctrl/Cmd + Shift + 1	n/a	View > Zoom to Actual Size	Zoom the contents of the Viewer to actual size.
Ctrl/Cmd + Shift + 2	n/a	View > Zoom to Half Size	Zoom the contents of the Viewer to half size.
H	n/a	View > Zoom to Fill	Fit the current clip to the height or width of the Viewer, depending on the clip's format.
F	n/a	View > Zoom to Fit	Zoom to fit the clip to the Viewer.
+	n/a	View > Zoom In	Zoom in to the Viewer.
- (minus)	n/a	View > Zoom Out	Zoom out of the Viewer.
Ctrl/Cmd + F	n/a	View > Full Screen	Toggle Full Screen mode.
Ctrl/Cmd + Shift + F	n/a	View > Full Quality 1:1	Toggle Full Screen mode at Full Quality 1:1 zoom.
Esc	n/a	n/a	Exit full screen mode.
E	n/a	View > Clipping Warning	Toggle the Level Warning tool on and off.
I		View > Mark In	Set the In Point at the current frame.

Hotkeys	Button	Menubar	Function
O		View > Mark Out	Set the Out Point as the current frame.
Alt + I	n/a	View > Clear In Point	Clear the In point for the current clip or timeline.
Alt + O	n/a	View > Clear Out Point	Clear the Out point for the current clip or timeline.
Alt + U	n/a	View > Clear In and Out Points	Clear the In and Out points for the current clip or timeline.
Home		View > Go to Start	Go to the start of all clips.
End		View > Go to End	Go to the end of all clips.
Shift + I	n/a	View > Go to In Point	Go to the In Point in the current clip.
Shift + O	n/a	View > Go to Out Point	Go to the Out Point in the current clip.
, (comma) (K + J)		View > Frame Backwards	Skip one frame backwards.
. (period) (K + L)		View > Frame Forwards	Skip one frame forwards.
Shift + , (comma)		View > Skip Backwards	Skip backwards by the frame increment value specified in the Viewer tools.
Shift + . (period)		View > Skip Forwards	Skip forwards by the frame increment value specified in the Viewer tools.
Alt + , (comma)		View > Previous Edit	Go to the previous clip in the Viewer.
Alt + . (period)		View > Next Edit	Go to the next clip in the Viewer.
Alt + Shift + , (comma)	n/a	View > Previous Tag	Go to previous frame tag.

Hotkeys	Button	Menubar	Function
Alt + Shift + . (period)	n/a	View > Next Tag	Go to next frame tag.
Space		View > Play	Play the clip or sequence currently in the Viewer.
P		n/a	Pause RAM caching in the Viewer.
J		View > Play Backward	Play clip or sequence currently in the Viewer backward (click multiple times to increase playback speed).
K		View > Pause	Pause playback.
L		View > Play Forward	Play clip or sequence currently in the Viewer forward (click multiple times to increase playback speed).
Enter (numeric pad)	n/a	View > Edit Playhead Time	Shift focus to the timecode field under the Viewer, allowing you to manually edit the playhead position.
Ctrl/Cmd + Shift + P	n/a	View > Ignore Pixel Aspect	Display the clip in the Viewer with a 1:1 aspect ratio.
Ctrl/Cmd + /	n/a	Show Timeline Editor	Display the timeline pane, if it is not already visible.
Return (main keyboard)	n/a	View > Swap Inputs	Controls the AB inputs: • **Stack** - swaps which input is visible. • **Horizontal** - swaps the inputs horizontally. • **Vertical** - swaps the inputs vertically.
R, G, B, A, Y		View > Channels	Set the Viewer output channel.
PgUp	n/a	n/a	Scroll up and down through available layers in the Viewer.
PgDn	n/a	PgDn	n/a
\ (back slash)	n/a	View > Show Overlays	Toggle the HUD overlays.
W		View > Toggle SplitWipe	Toggle the SplitWipe compare mode on and off.

Hotkeys	Button	Menubar	Function
Project Menu			
Ctrl/Cmd + B	n/a	Project > New Bin	Create a new bin in the current bin.
Ctrl/Cmd + Y	n/a	Project > New Tag	Create a new tag in the current bin (tags can only be created in the **Tags** tab).
Ctrl/Cmd + N	n/a	Project > New Sequence	Create a new sequence in the current bin.
Clip Menu			
Ctrl/Cmd + Return (main keyboard)	n/a	Clip > Open In > Viewer	Open the selected clip in the Viewer.
Ctrl/Cmd + Alt + Return (main keyboard)	n/a	Clip > Open In > New Viewer	Open the selected clip a new Viewer.
1	n/a	Clip > Open In > Viewer Input A	Open the selected clip in Viewer input A.
2	n/a	Clip > Open In > Viewer Input B	Open the selected clip in Viewer input B.
Alt + D	n/a	Clip > Open In > Metadata View	Open the metadata view for the selected clip.
D	n/a	Clip > Hide Version	Hide the currently selected version(s) of a clip in the Versions Bin view.
Alt + ↑	n/a	Clip > Version Up	Cycle up through the available clip versions.
Alt + ↓	n/a	Clip > Version Down	Cycle down through the available clip versions.
Ctrl/Cmd + Alt + ↑	n/a	Clip > Max Version	Jump to the maximum known version or scan for new versions if the max version is already reached.
Ctrl/Cmd + Alt + ↓	n/a	Clip > Min Version	Jump to the minimum known version or scan for new versions if the min version is already reached.

Hotkeys	Button	Menubar	Function
V	n/a	Clip > Select Version	Display the available versions of a clip or sequence.
F5	n/a	Clip > Refresh Clips	Reload the clip or track item when the source file location has not changed, such as when work has been done on the clip offline. Selecting refresh only refreshes the clip's current frame range.
Alt + F5	n/a	Clip > Rescan Clip Range	Similar to **Refresh Clips**, above, but rescan also checks for additional frames that may have been added to the source file and adds them to the track item's frame range.
N	n/a	Clip > Insert	Insert the contents of a source Viewer into the timeline at the current playhead position and ripple existing track items downstream to accommodate the change.
M	n/a	Clip > Overwrite	Insert the contents of a source Viewer into the timeline at the current playhead position overwriting existing track items.
Timeline Menu			
Shift + U	n/a	Timeline > Mark Selection	Place the In and Out markers around the selected track item or track items on the timeline.
U	n/a	Timeline > Mark Clip	Place the In and Out markers around the upper-most timeline clip under the current playhead position.
C	n/a	Timeline > Razor Selected	Apply the Razor tool to the currently selected track(s) within the selected clip(s).
Shift + C	n/a	Timeline > Razor All	Apply the Razor tool to all tracks within the selected clip(s).
Shift + Backspace	n/a	Timeline > Ripple Delete	Remove the selected clip(s) and ripple clips down stream to close gaps in the timeline.
Ctrl/Cmd + T	n/a	Timeline > Transition > Dissolve	Add a dissolve between two selected track items.
D	n/a	n/a	Enable or disable the selected clip(s) or track(s).

Hotkeys	Button	Menubar	Function
Ctrl/Cmd + Alt + A	n/a	Timeline > Select All in Track	Select all the track items on the current track.
Ctrl/Cmd + ←	n/a	Timeline > Nudge > Nudge Left	Trim, roll, or nudge a selected transition or track item to the left (within the available handles for trim and roll).
Ctrl/Cmd + →	n/a	Timeline > Nudge > Nudge Right	Trim, roll, or nudge a selected transition or track item to the right (within the available handles for trim and roll).
Ctrl/Cmd + Shift + ←	n/a	Timeline > Nudge > Nudge Left More	Trim, roll, or nudge a selected transition or track item to the left by the frame increment value specified in the Viewer tools (within the available handles for trim and roll).
Ctrl/Cmd + Shift + →	n/a	Timeline > Nudge > Nudge Right More	Trim, roll, or nudge a selected transition or track item to the right by the frame increment value specified in the Viewer tools (within the available handles for trim and roll).
Ctrl/Cmd + ↑	n/a	Timeline > Nudge > Nudge Up	Nudge the selected track item(s) up one track.
Ctrl/Cmd + ↓	n/a	Timeline > Nudge > Nudge Down	Nudge the selected track item(s) down one track, where possible.
Alt + Shfit + /	n/a	Timeline > Rename Shots	Display the **Rename Shots** dialog for the selected track items.
Cache Menu			
F12	n/a	Cache > Clear Playback Cache	Click to clear the frames stored in the playback cash, represented by the green bar under the Viewer playhead.
Window Menu			
Alt + S	n/a	Window > Toggle Fullscreen	Expand the interface to fill the available screen space.

Hotkeys	Button	Menubar	Function
Ctrl/Cmd + Alt + Shift + ‘ (backtick)	n/a	n/a	Cycle backwards through all current panes.
Ctrl/Cmd + Alt + ‘ (backtick)	n/a	n/a	Cycle forwards through all current panes.
Ctrl/Cmd + Shift + [	n/a	n/a	Jump between tabs in the current pane.
Ctrl/Cmd + Shift +]	n/a	n/a	
Shift + F1	n/a	Window > Workspace > Conforming/Editing	Switch to Hiero’s Conforming workspace or HieroPlayer’s Editing workspace.
Shift + F2	n/a	Window > Workspace > Editing/Flipbook	Switch to Hiero’s Editing workspace or HieroPlayer’s Flipbook workspace.
Shift + F3	n/a	Window > Workspace > Reviewing	Switch to the Reviewing workspace.
Shift + F4	n/a	Window > Workspace > Timeline	Switch to the Timeline workspace.
Shift + F<num>	n/a	Window > Workspace > Custom Workspace Name	Switch to the custom workspace associated with the number selected.
Viewer Controls			
Alt + left-click + drag (middle-click and drag on Linux)	n/a	n/a	Pan the contents of the Viewer.
Scroll wheel (over Viewer or Viewer timeline)	n/a	n/a	Zoom the Viewer or Viewer timeline.

Hotkeys	Button	Menubar	Function
Scroll wheel middle-click + drag (over Viewer timeline or timeline)	n/a	n/a	Zoom the Viewer timeline to the indicated frame range.
Scroll wheel Alt + middle-click + drag (over Viewer or timeline)	n/a	n/a	Zoom the contents of the Viewer or timeline.
middle-click (over Viewer timeline or timeline)	n/a	n/a	Zoom to fit the Viewer timeline to Viewer contents. NOTE: If your mouse preferences are not set to **Button 3** for the middle mouse button, you may have to use **Ctrl/Cmd** + **middle-click**.
Alt + close Viewer		n/a	Close only the selected tab. Clicking close without holding **Alt** closes any linked tabs as well.
Spreadsheet Controls			
Alt + left-click	n/a	n/a	Move the playhead to the selected clip's **In** point on the timeline.
Alt + double left-click	n/a	n/a	Move the playhead to the selected clip's **In** point on the timeline and zoom to fit the clip in the timeline view.
Alt + close Spreadsheet		n/a	Close only the selected tab. Clicking close without holding **Alt** closes any linked tabs as well.
Bin View Searchbox Controls			
left-click	n/a	n/a	Select a tag search criteria.

Hotkeys	Button	Menubar	Function
Ctrl/Cmd + left-click	n/a	n/a	Toggle select individual tag search criteria.
Shift + left-click	n/a	n/a	Select a range of tag search criteria.
Script Editor Controls			
Ctrl/Cmd + [		n/a	Go to the previous script.
Ctrl/Cmd +]		n/a	Go to the next script.
Ctrl/Cmd + Enter		n/a	Execute current script.
Ctrl/Cmd + Backspace		n/a	Clear the output pane.

Appendix C: File Formats

This appendix lists the file formats recognized by Hiero.

Supported File Formats

The following table lists the supported file formats. The extensions listed under **Extension** let you specify the image format; use these as the actual file name extensions or the prefix to indicate output format for the image sequences.

Format	Bit Depths	Read/Write	Extension	Notes
Apple ProRes	8, 10	read and write	mov	Adds support for Apple ProRes 4444 and Apple ProRes 422 on Mac OS X, Linux, and Windows using the mov64 reader. Apple ProRes 4444 includes the SD, HD, 2K, UHD, and XQ formats. Apple ProRes 422 includes the HQ, LT, and Proxy formats.
ARRIRAW	12	read only	ari	

Format	Bit Depths	Read/Write	Extension	Notes
AVI	n/a	read and write	avi	AVI files can be supported by default or via Hiero's reader/writer that is based on the FFmpeg open source library. If you get an error when using AVI files in Read nodes, you may need to use the prefix **mov64:** before the file path and file name, for example, mov64:\z:\job\FILM\IMG\final_comp_v01.####.avi. When working with Write nodes, you can also select **mov64** from the **file type** dropdown menu and use avi as the file extension. On Windows, in order to support more codecs, the AVI reader uses the DirectShow multimedia architecture. When decoding **.avi** files, DirectShow tries to find the appropriate codec on the system. If the codec is not available, DirectShow and Hiero are unable to open the **.avi** file. Note that the 64-bit version of Hiero can only use 64-bit DirectShow codecs. If you only have a 32-bit codec installed, the 64-bit version of Hiero cannot use it to open **.avi** files.
CIN	10 (log)	read and write	cin	
DNG	8, 12	read	dng	Includes RAW 2.5K CinemaDNG
DPX	8, 10, 12, and 16	read and write	dpx	
FPI	obsolete			
GIF	8	read only	gif	
Radiance	16	read and write	hdr, hdri	This format stores an 8-bit mantissa for each of r, g, and b and an additional 8-bit exponent that is shared by all three, which packs the floating point RGB triplet into 32 bits per pixel.
JPEG	8	read and write	jpg, jpeg	Adjust compression levels using the quality slider in the Write node's properties panel.

Format	Bit Depths	Read/Write	Extension	Notes
MXF	n/a	read only	mxf	NOTE: Currently, only 'complete' MXF files are supported. Supported codecs include: • 4:2:2 YCbCr 8-/10-bit • 4:4:4:4 RGBA 8-/10-bit • Avid 4:2:2 YCbCr 8-/10-bit • Avid 4:4:4:4 RGBA 8-/10-bit • JPEG2000 • Avid DNxHD (1080p and 720p 1920x1080 and 1280x720, 4:4:4:4 and 4:2:2) 36, 115, 120, 145, 175, 185, 220, 220x • Uncompressed (4:2:2 YCbCr and RGB)
OpenEXR and OpenEXR 2.2	16, 32	read and write	exr	OpenEXR handles 16- and 32-bit float. This 16 is also called "half float" and is different from the 16-bit integer that all the other formats that support 16-bit use. Hiero supports multi-part OpenEXR files. For more information, see the *Nuke User Guide*.
EXR Compression				

Format	Bit Depths	Read/Write	Extension	Notes
EXR file metadata contains a **compression** key/value pair detailing the compression type used to write the **.exr** file. The value is expressed as the name of the compression type or an integer referencing the compression used: 0 - no compression 1 - RLE compression, run length encoding 2 - Zip compression, one scan line at a time 3 - Zip compression, in blocks of 16 scan lines 4 - PIZ-based wavelet compression, in blocks of 32 scan lines 5 - PXR24 compression, lossy 24-bit float 6 - B44 compression, lossy 4-by-4 pixel block, fixed rate 7 - B44A compression, lossy 4-by-4 pixel block, flat fields are compressed more 8 - DWAA compression, lossy DCT based compression, in blocks of 32 scan lines 9 - DWAB compression, lossy DCT based compression, in blocks of 256 scan lines				
PNG	8, 16	read and write	png (8-bit) png16 (16-bit)	
PSD	8, 16	read only	psd	While Hiero reads standard Photoshop® blend modes, it doesn't read Photoshop layer comps or recognize group blend modes. Photoshop layers are read into separate Hiero layers and anything that doesn't map into that is ignored.

Format	Bit Depths	Read/Write	Extension	Notes
QuickTime	n/a	read and write	mov	QuickTime is only supported by default on Windows and Mac OS X. To use QuickTime files on Linux, you need to use the prefix **mov64:** before the file path and file name, for example, mov64:/z:/job/FILM/IMG/final_comp_v01.####.mov The **mov64** writer supports the following codecs: • Apple ProRes 4444 • Apple ProRes 422 HQ • Apple ProRes 422 • Apple ProRes 422 LT • Apple ProRes 422 Proxy • Avid DNxHD (1080p and 720p 1920x1080 and 1280x720, 4:4:4:4 and 4:2:2) 36, 115, 120, 145, 175, 185, 220, 220x NOTE: Interlaced writing is not supported. See Avid DNxHD Notes below. • Photo - JPEG • MPEG-1 Video • MPEG-4 Video • PNG • Animation • Uncompressed 10-bit 4:2:2
Avid DNxHD Notes				

Format	Bit Depths	Read/Write	Extension	Notes
The bit rates listed in the **codec profile** dropdown are the bit rates for 1080p at 29.97 fps EXCEPT for 36 (which is actually 45 Mbps @ 29.97fps). You should look at the codec format (422/444, 8/10-bit). This leads to a set of 1080p bit rates: • 1080p/29.97 440x, 220x, 220, 145, 45 • 1080p/60 N/A, N/A, 440, 290, 90 (same at 59.94) • 1080p/50 N/A, N/A, 367, 242, 75 • 1080p/25 365x, 185x, 185, 120, 36 • 1080p/24 350x, 175x, 175, 115, 36 (same at 23.976) At 720p, the **codec profile** dropdown has a different interpretation. The bit rate is taken as the bit rate at 720p at 59.94fps. This leads to another set of bit rates: • 720p/59.94 N/A, 220x, 220, 145, N/A • 720p/50 N/A, 175x, 175, 115, N/A • 720p/29.97 N/A, 110x, 110, 75, N/A • 720p/25 N/A, 90x, 90, 60, N/A • 720p/23.976 N/A, 90x, 90, 60, N/A NOTE: Since the bit rates are for 1080p at 29.97 fps AND 720p at 59.94 fps (except for 36 Mbit which should read 45 Mbit). It is possible to calculate the bandwidth for all the other frame rates by: • BandWidth@1080p = fps/29.97 * NominalBandWidth, or • BandWidth@720p = fps/59094 * NominalBandWidth where NominalBandWidth is the bandwidth listed in the codec profile knob OR 45 if the bandwidth listed is 36 Mbit. (Avid labels the codec profile names by the approximate bandwidth.)				
RAW	n/a	read only	n/a	DSLR raw data files, such as Canon .CR2 files. These are only supported via the dcraw command line program, which you can download from the dcraw website. Bit depth and other specifications depend on the device. Some devices may not be supported.

Format	Bit Depths	Read/Write	Extension	Notes
REDCODE	16	read only	r3d	Note that .r3d files may look different in Hiero compared to various versions of RED applications, like RED ALERT or REDCINE. Unlike most other file formats Hiero reads, the .r3d REDCODE files must be processed to convert from a raw format to an RGB color image. From time to time, a new version of the RED SDK that Hiero uses improves this processing and due to the timing of release cycles, Hiero may sometimes be using a different version than the RED applications.
SGI	8, 16	read and write	sgi, rgb, rgba (8-bit sequences) sgi16 (for 16-bit sequences)	
SoftImage® PIC	8	read and write	pic	
TIFF	8, 16, and 32	read and write	tif, tiff (8-bit sequences) tif16, tiff16 (16-bit sequences) ftif, ftiff (32-bit sequences)	If utilized, the compression schema on imported TIFF sequences must be LZW®.
Truevision® TARGA	8	read and write	tga, targa	

Format	Bit Depths	Read/Write	Extension	Notes
Wavefront® RLA	8	read only	rla	
XPM	8	read and write	xpm	This is the text-based format in which Hiero's interface elements are stored.
YUV	8	read and write	yuv	This format does not specify resolution, so Hiero assumes a width of 720 pixels.

Reader Fallback Paths

If the application can't find a suitable reader when reading source clips from disk, the following paths are searched for fallback **.dylib**, **.so**, and **.dll** readers compiled against the comparable Nuke version:

Mac OS X:

• /$HOME/.nuke

• /Library/Application Support/Nuke/x.x/plugins/

Linux:

• /$HOME/.nuke

• /usr/local/Nuke/x.x/plugins/

Windows:

• \$HOME\.nuke

• C:\Program Files\Common Files\Nuke\x.x\plugins\

• C:\Program Files (x86)\Common Files\Nuke\x.x\plugins\

NOTE: You can also add your own search paths using the NUKE_PATH environment variable. See Setting Environment Variables or the *Configuring Nuke* chapter in the Nuke *User Guide* for more information.

Supported Audio Formats

The following table lists supported audio formats.

NOTE: Although Nuke supports the import and editing of multi-channel audio, during playback audio is currently mixed to 48 KHz stereo output.

Format Name	Extension
Audio only formats	
All platforms	
Wave	wav
Audio interchange format	aiff
Mac OS X and Windows	
MPEG 4 Audio	m4a
Integrated audio formats	
RED Audio	r3d
QuickTime Audio	mov

Appendix D: External Software

This section lists third-party libraries used in Hiero, along with their versions, as well as other third-party contributions in Hiero.

Third-Party Contributions

The following table lists third-party contributions included in Hiero, along with their licenses.

Contributor	Description	License
Pixar	DTEX file reader	Copyright © Pixar. All rights reserved. This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software. 1. Definitions The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law. A "contribution" is the original software, or any additions or changes to the software. A "contributor" is any person or entity that distributes its contribution under this license. "Licensed patents" are a contributor's patent claims that read directly on its contribution.

Contributor	Description	License
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Third-Party Libraries and Fonts

NOTE: If, for any reason, you think The Foundry is not entitled to use these libraries and fonts, please visit supportportal.thefoundry.co.uk.

Third-Party Library Versions

The following table lists third-party libraries included in Hiero and their current version.

Library	Version	Library	Version
AAF	201210	AJA	11.3
Alembic	1.5.0	ARRIRAW SDK	5.1
BlackMagic	9.1	Boost	1.46.0
Breakpad	r1338	bzip2	1.0.6
Curl	7.21.1	DirectX	Jun10 (Windows only)
EuCon	2.5.5	Expat	2.0.1
FBX	2012.2	FFmpeg	2.1.4
FreeType	2.5.0.1	FTGL	2.1.3
GLEW	1.5.8	Google BSD	1.5.0
HDF	5.1.8.7	Intel MKL	Linux: 10.3.7.256 Mac OS X: 10.2.5.088 Windows: 10.3.7.258
JPEG	6b	Libexif	0.6.20
Libpng	1.4.8	libresample	0.1.3
libsndfile	1.0.25	Libtiff	3.9.4
Msinttypes	r20	OpenALSoft	1.13

Library	Version	Library	Version
OpenColorIO	1.0.9	OpenEXR	2.2
OpenImageIO	r1719	OpenSSL	1.0.0a
PortAudio	v19	Primatte	5
PySide	1.2.2	PyString	1.1.0
Python	2.7.3	QuaZip	0.3
Qt	4.8.5	QuickTime	7.3
R3D SDK	5.3	Skein	1.1
TBB	30_20101215	Truelight	3.0.4965
VXL	1.10.0	xmlrpcpp	0.7
zeromq	3.2.3	zlib	1.2.5

For a full list of all third-party licenses and fonts used in Hiero, please see the Nuke Online Help, *Appendix D*, *Third-Party Libraries and Fonts*, or click here.

Appendix E: EULA

End User License Agreement (EULA)

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