

Loki

User Guide



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1. Introduction

1.1 Getting Help

For help, please email support@digitalvision.se or contact one of the Digital Vision offices. Contact details can be found on our website at <http://www.digitalvision.tv>

1.2 System Requirements and Installation

Refer to the *Loki Setup and Installation Guide* for system requirements.

1.3 Quick Feature reference

Watch folders - [Chapter 7](#)
Configurable presets - [Chapter 4.8](#) and [Chapter 6](#)
Preview effects - [Chapter 4.2](#)
Audio pass-through and export -
Burn-in Capability - [Chapter 4.5](#)
Job Scheduling - [Chapter 4.6](#)
Pre-export file analysis -
Email alerting - [Chapter 4.6](#)
FTP Upload - coming soon.
Network node capability - [Appendix](#)
Usage Reporting - [Chapter 9.5](#)
File Format support - [Chapter 18](#)
Combine multiple files - coming soon

2. Loki Components

2.1 LokiClient

See Chapters 3 – 7

LokiClient is the front end editor and monitor of the system. The LokiClient can be installed on any PC that has access to the LokiServer Network

Functions of the LokiClient:

- Create and delete jobs.
- Create and edit presets.
- Create and edit watch folders.
- Monitor current and completed jobs.
- Monitor LokiNodes on the network.
- Adjust Loki settings.

Expanders
Use the expanders to view or hide job settings

Job Queue
All Queued, completed, and failed jobs can be monitored from here. Use the options tab to change queue settings

Main Tabs
Use the tabs to access the features of Loki

Summary Pane
Several tabs have a summary pane where you can view the settings of jobs, or select items

The screenshot shows the LokiClient interface with the following elements:

- Top Tabs:** Create Job, From Preset, Preset Editor, Watchfolder Editor, Tools, Settings, Monitoring.
- Main Content Area:**
 - Input:** Choose Video Input (with Browse... button), Choose Audio Input (with Browse... button).
 - Processing:** Expandable section.
 - Export:** Expandable section.
 - Timecode and Naming:** Expandable section.
 - Burn-in:** Expandable section.
 - Options:** Expandable section.
- Summary Pane (Right):**
 - Input File Information:** Unknown
 - Processing Options:** Resolution: x, 25p, Record Timecode, Bit depth: 10 bit
 - Export File:**
- Bottom Section:**
 - Buttons: Submit, Save As Preset..., Clear All...
 - Expand All Items button.
 - Job Queue Table:**

| Queued | Completed | Failed | Options | | | | | | | |
|-------------------|------------|--------|---------|-------|----------|--------|------|----------|-----------|-----------|
| Name | Input File | Pr | Format | Codec | Priority | Status | Node | Progress | More Info | Cancel Jo |
| Server: Connected | | | | | | | | | | |

2.2 LokiNode

See Chapter 12

The LokiNode is the processing engine. Usage of the node GUI (Graphical user interface) is for administrative and troubleshooting purposes only.

Multiple nodes can be installed to process the queue of jobs faster.

Important: ensure that the Loki Node has access to all the media files that are chosen to be processed using the LokiClient. When setting up the Loki network, all components should be able to access the same media locations or drives.

Functions of the LokiNode:

- Process jobs in the Queue in order of priority and time of creation.
- Manage the Processing settings via the user interface.

2.3 LokiServer

See [Chapter 13](#)

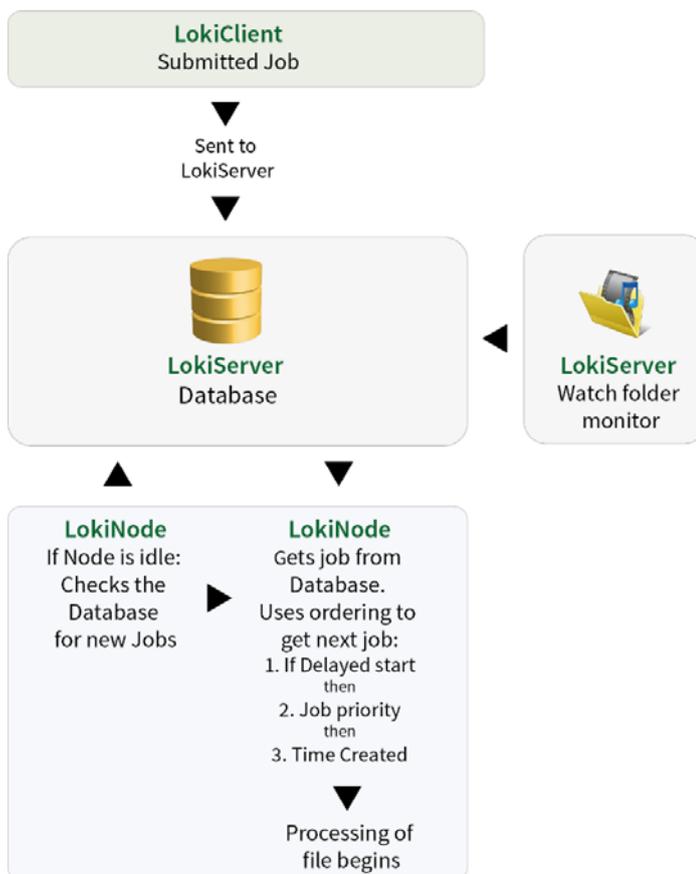
The LokiNode is the central data storage application of Loki. The LokiServer is also tasked with monitoring the watch folders.

Functions of the LokiServer:

- Store all Loki data.
- Monitor watch folders.

2.4 Job Flow

The three Loki software components work together to process the queue of jobs in the following way:



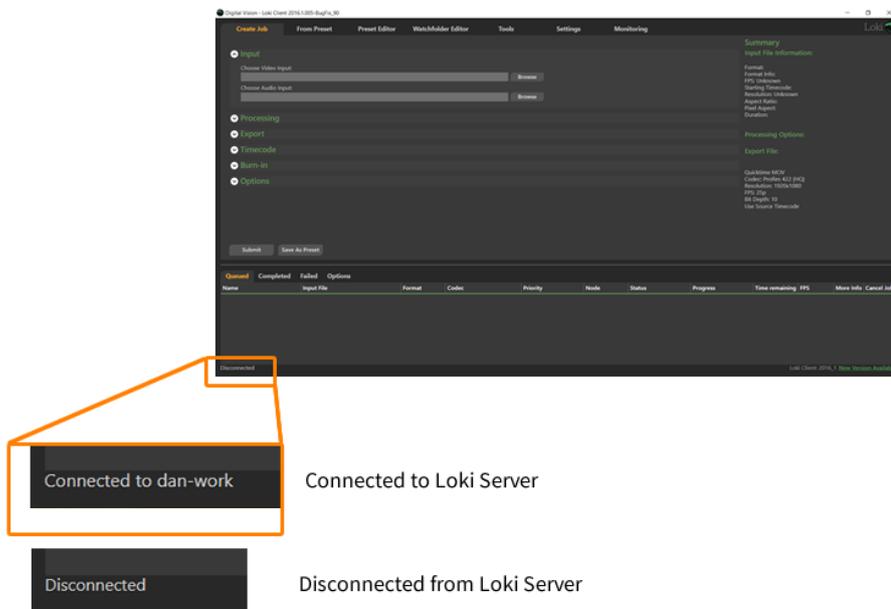
3. Getting started

3.1 First Run

Loki Client

Start the Loki Client by clicking the desktop icon or icon in the Start Menu.

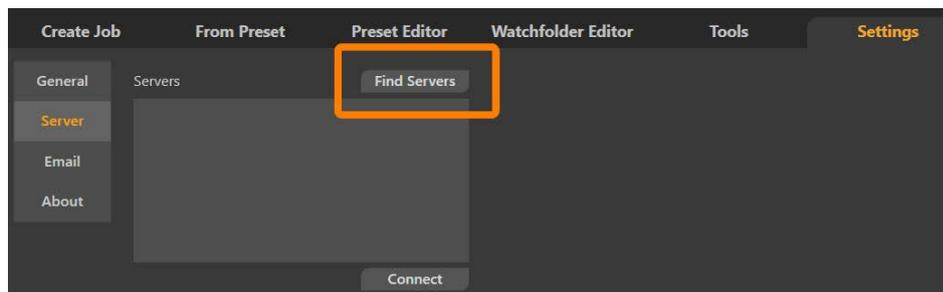
Firstly check the connection status of the Loki Client to ensure it is connected to the Loki Server.



The connection status is shown in the bottom left hand corner of the Loki Client. If the Loki server is running on the same computer or over the local network, the Client should find and connect automatically.

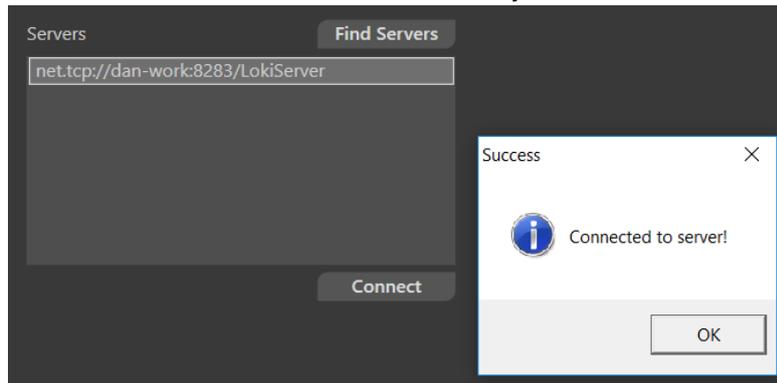
If the status shows **Disconnected**, the Client will have to be connected to the server as follows:

- Go to the Loki Client **Settings** tab
- Click the **Find Servers** button as indicated below



- The Client will then find any servers on the local computer or local network.

- When searching is complete, if only 1 server is found, the client will automatically connect to the Loki Server as below. The Client is now ready to use.



- If more than 1 server is found, select the chosen server from the list and click **Connect**.
- If no servers are found, please refer to the [troubleshooting](#) section of this guide.

Loki Node

As with the Loki Client, the Loki Node should automatically connect to the server if only 1 is found.

3.2 Using Loki

Ensure the Loki software components and any supporting software, for example; Apple QuickTime, is installed correctly. Please refer to the **Loki installation and setup guide** on how to do this.

The latest release notes detail what's new in the latest version, including bug fixes and features.

Loki Can be used in several different ways to create exports:

Create a Job:



Manually enter all parameters to create an export. This is useful for one off jobs or jobs with particular settings.

Job From Presets:



A simple method to create an export using previously saved settings.

Watch Folders:



Place files into defined folders which are then automatically processed using user-created presets. Use the ***Watchfolder Editor*** to define and setup these monitored folders.

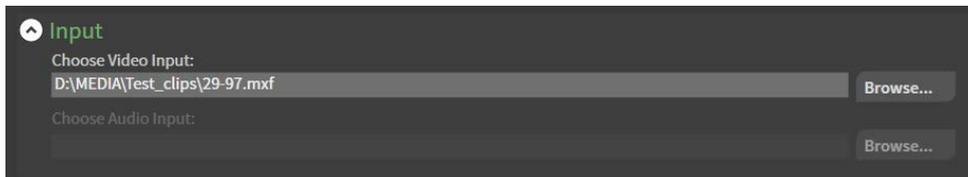
API (Coming soon):

Control and create exports using third party systems, such as a MAM (Media Asset Manager).

4. Create a Job

The Create Job tab is useful for creating one-off exports, or jobs which have unusual requirements.

4.1 Input

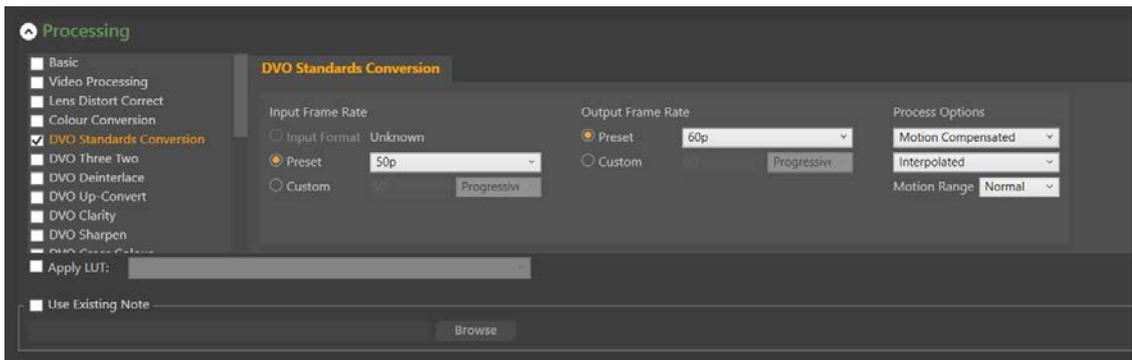


Select the video file that is to be processed. For a list of supported file formats, please see the [Appendix](#). After the input file has been selected, the metadata from the file will be displayed on the right in the *Summary* pane:

| | Summary |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Input File Path - | Input File Information: D:\MEDIA\Test_clips\29-97.mxf |
| Wrapper/Codec info - | Format Info: 4:2:2@Main |
| Frame rate/scan type - | FPS: 29.970 i |
| Start frame of timecode - | Timecode Start: 00:00:00;00 |
| Resolution - | Resolution 720 x 486 |
| Picture/Pixel aspect ratio - | Aspect Ratio: 1.333 Pixel Aspect: 1.000 |
| Duration of clip - | Duration: 00:00:09;00 |
| Input Audio details - | Audio: PCM Audio Bit Rate: 16 bits Audio Sample Rate: 48.0 KHz Audio Channels: 2 Audio Channel Positions: Front: L R |
| Chosen processing to be applied to the export - | Processing Options: DVO Up-Convert, DVO Standards Conversion, |
| Output file folder - | Export File: D:\MEDIA\Output |
| Output file name - | File1 |
| Wrapper - | Quicktime MOV |
| Codec - | Codec: ProRes 422 (HQ) |
| Resolution - | Resolution: 1920x1080 |
| Frame Rate - | 25p |
| Timecode type - | Record Timecode |
| Bit depth - | Bit depth: 10 bit |

Important: Ensure that all nodes, across the network, have access and appropriate read permissions for that file, otherwise the job will fail.

4.2 Processing



The processing expander provides all available processing options that can be applied to the file, for example: *DVO Standards conversion*, or Blanking settings.

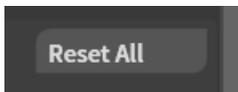
The features available will depend on the purchased options and licenses on the node.

Note: The DVO tools will be applied in the correct order according to the Digital Vision recommendations. For example *DVO Scratch* is applied before *DVO Up-Convert* in the processing chain.

Up to 4 DVO tools can be applied at the same time, per export.

Resetting parameters

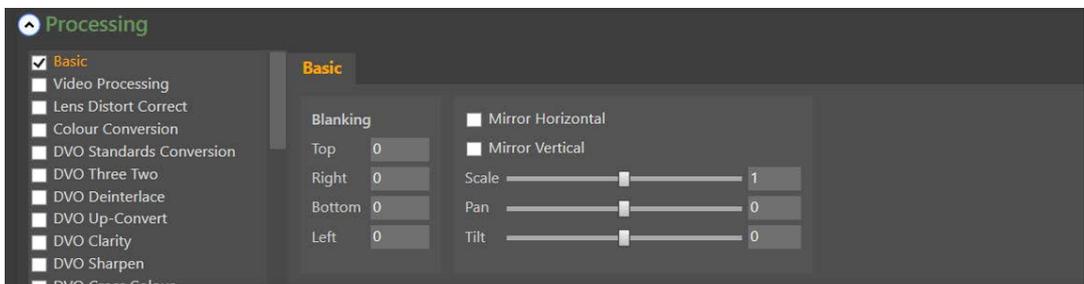
A Reset All button is provided to reset ALL tool parameters to default values inside the Processing Expander.



Processing Options:

4.2.1 Basic

Blanking and positioning options:



Blanking - Add blanking to each side of the picture, in pixel's.

Flip Horizontal – Flips the image horizontally.

Flip Vertical – Flips the image 'Upside down'.

Scale – increase or decrease the ‘zoom ‘ of the picture. A value of 2 would mean double the size. 0.5 would mean half the image size surrounded by black.

Pan – Move the image horizontally.

Tilt – Move the image vertically (up/down).

4.2.2 Video Processing

Legaliser

Legalises to Rec. 601 (SD) or Rec. 709 (HD)

Reinterlace

Add fields back into the image.

Field Dom Correct

Use for correcting issues with field dominance.

Field Swap

Used for swapping field order on interlaced material

4.2.3 Lens Correct

Automatically correct distorted images due to the inbuilt super wide angle lens on cameras such as the *GoPro*. Image shot using such cameras are highly distorted providing unnatural images.

To use, simply select the GoPro camera preset, and the export image will become ‘undistorted’.

4.2.4 Colour Conversion

Use the colour conversion tool to convert the input media to a different colour space using a Gamma Matrix.

Compared to a 3D Lookup Table, the Gamma Matrix tool allows for a more precise and efficient way to convert between various colour domains e.g. RGB to/from XYZ or RGB Rec709 to/from RGB DCI-P3 etc.



This tool is not designed to convert between *video* and *film* colour domains (e.g. film look or negative density).

4.2.5 DVO Up-Convert

Optimised upscaling of material. When converting from SD to HD or HD to UHD, the algorithm maintains the high quality of edges.

The Up-convert tool offers two algorithms to choose from:

DVO Zoom:

Ideal for HD to UHD/4K. Also *Half float* capable. (High Dynamic range and increased colour accuracy).

DVO-Upscale:

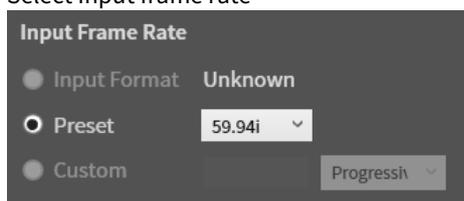
Ideal for material originating in an SD (Standard definition) format. For best results, choose the input and output scan type (Progressive/Interlaced).

4.2.6 DVO Twister Standards Conversion

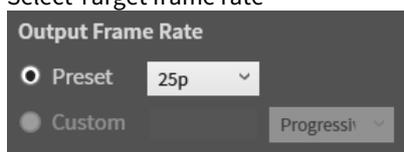
DVO Twister is a fully motion compensated standards converter with option for converting between the following frame rates: 16p, 18p, 20p, 23.98p, 24p, 25p, 29.97p, 50p, 59.94p, 60p, 50i and 59.94i.

Usage:

1. Select Input frame rate



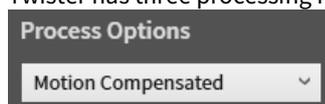
2. Select Target frame rate



3. Adjust any required parameters. The default parameters generally work best, but certain cases may benefit from experimentation of different settings.

Parameters:

Twister has three processing modes to choose from:



- **Motion Compensated**
This uses motion compensation and is the default. This allows the accurate recreation of fields and frames using the Digital Vision *Phame* motion vector algorithms.
- **Interpolated**
Method that recreates correct target fields and frames by careful mixing of the input source. This method will often produce a lower quality result than the motion compensated approach (blurs, jerky motion). Try if Motion Comp fails.
- **Nearest Frame**
Uses no processing other than skipping or repeating frames to output the same clip duration.

Different types of footage can produce different results. The default motion compensated option usually provides optimal results, but if the exported video contains undesirable artefacts, select the Interpolated option.



Always select the correct input and output frame rate and scan type (Interlaced or Progressive).

Fallback



This determines how the images that are found unsafe in motion mode are to be processed in the target format.

Motion Range



The Motion Range setups the motion analysis and its thresholds.



Motion Range only applies when the processing is set to **Motion Compensated**

4.2.7 DVO Three Two

The DVO Three Two pulldown is designed for automated removal of cadence/broken cadence from images. It is available as this standalone tool, or as part of Twister when converting from 29.97. This provides superior results over using a basic pulldown tool.

DVO Three Two Allows you to quickly do an inverse telecine process .It will work with material with broken cadence and will compensate such orphan fields.

Auto Mode will automatically process the 3:2 sequence and fix broken cadence.

4.2.8 DVO De-interlace

DVO Deinterlace accurately creates progressive frames from interlaced video originated material. The de-interlacer can maintain the fluid motion present in video (e.g. 50p delivery from a 50i source) or create a film look (e.g. 25p delivery from a 50i source).

DVO Deinterlace uses advanced motion adaptation techniques to preserve sharpness while also avoiding jaggedness typically associated with similar processes.

Parameters:

Mode Selection - Allows the choice of which field to use when processing.

4.2.9 DVO Clarity Noise Reduction

DVO Clarity is the fifth generation noise and grain reducer from Digital Vision. With completely new algorithms including grain characteristics analysis for automated grain reduction, new motion estimation engine and a new innovative spatio-temporal filter, the DVO Clarity provides stunning images, artefact free, but still retaining the original sharpness.

DVO Clarity includes:

- Automated grain characteristic analysis
- An enhanced motion estimation engine
- Detail enhancement
- A new spatio-temporal filter

Parameters:

Amount – The *Amount* parameter sets the overall level of noise/grain reduction.

Aggressiveness – Specifies how much grain/noise should be removed from the image. This sets how far and how strongly we attempt to reduce noise/grain taking motion into account. The higher the value the less motion safety.

Preservation – Specifies the amount of detail that is preserved in the image.

4.2.10 DVO Chroma

Use DVO Chroma to take care of Chroma artefacts, for example:

- Chroma bleeding from Video.
- Chromatic aberration and other issues due to camera lenses.
- Colour fringing due to bayer pattern defects

Parameters:

Strength - Higher value will process harder and can take care of larger colour mismatches.



For debayering artifacts try a very low strength setting such as 0.00 or 0.01 for a good result.

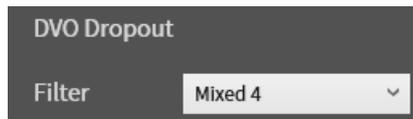
Coarseness - If very large bleeding occurs this may be increased to a higher value, but use with caution.



The coarseness should be used with caution, it's for very large chroma defects.

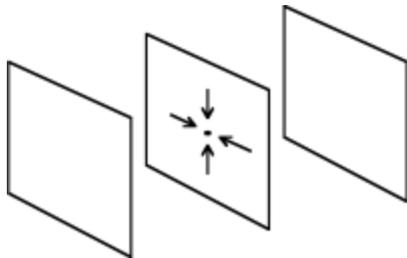
4.2.11 DVO Dropout

A fully automatic and highly accurate video drop-out removal system. It can remove around 90% of visible imperfections without introducing unwelcome artifacts utilizing a pioneering set of processing algorithms and filters.

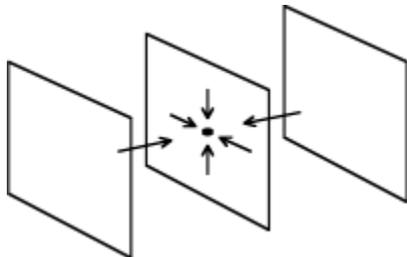
Parameters:**Filter**

The filters used by the process are very important in determining the final processed quality. *DVO Dropout* includes a variety of filter algorithms that can effectively process a wide range of input footage.

The following generic filter groups are defined:

Spatial

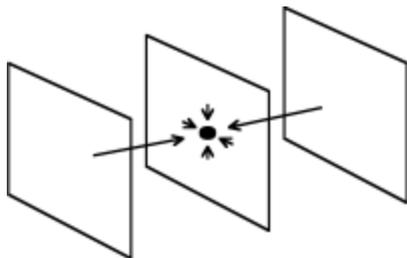
All filters named *Spatial* are filters that work only within the current field, i.e. it has taps only in the current field. These filters are intended for very small spots.

Mixed

All filters named *Mixed* have taps in both the current field and the frame previous to and following the current frame. That is, it has both spatial and temporal taps. All these filters however have more taps in the current fields than in the previous and following frames together (more spatial taps than temporal). These filters are intended for normal dropouts

The different *Mixed* types (*Mixed 1,2,3* etc.) change the ratio between spatial and temporal. The larger the number, the more *temporal* filtering.

Temporal



Filters named *Temporal* have both spatial and temporal taps but with more temporal than spatial. This will enable the *DVO Dropout* to remove any size of drops. These filters may need more careful use, to not give unwanted artefacts.

Filter Size



This sets the size of the filter on the current field, so it is only required for spatial and temporal filters.

Use the numeric slider to define the filter size. The optimal size of dropout filter size is 3

Signal Selection



This selects the signal (channel) within which dropout will be detected.

The detection works on one channel only, normally 'Y'. By setting the signal to 'U', for example, when only U dropouts are visible, the DVO Dropout will more precisely detect the chroma dropouts, minimizing the risk of affecting actual picture content.

Motion



This numeric slider configures the degree of motion sensitivity.

Initially you can set it to 0 (most safety), for maximum motion sensitivity, and then increase it in steps if there isn't enough filtering in moving parts of the picture.

A value of 256 corresponds to no motion adaptation at all, which means that temporal filtering can be applied fully to moving parts of the image.

MDC

The MDC (Motion Detection Current) tickbox determines whether to look at just the previous and next field, or to look at all of the previous, current, and next field

Default: Off

Having this option on ensures higher sensitivity and reduces artefacts down to a minimum. For maximum filtering, the control is set to off.



This is the first option to enable if you start seeing visible artifacts from processing.

Edge

This controls material edge protection.

Edge protection acts as a safety measure and reduces the possibility of false scratch detection. Some material may require this protection e.g. houses at a distance, a forest or material with a slight weave. By turning edge protection on, the built in edge detector will affect where DVO Dropout filters and it will reduce filtering where it finds edges.

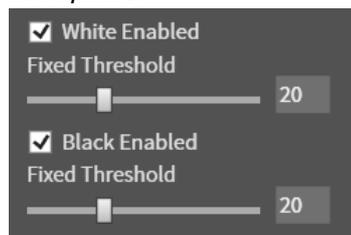
Adaptation

Adaptation acts to exclude falsely detected drops from being processed. It does this by comparing dropouts detected on the current field with dirt detected on the previous field (within a sizable window).



For Static dropouts like VTR head clogs, Adaptation should be unselected.

Black/White



There are two separate and independent parameter groups controlling the processing for Black (dark) and White (light) areas.

Or in chroma mode high or low U or V levels

White/black dropout removal can be enabled via the corresponding tickbox.



Note that if neither button is enabled then *DVO Dropout* will not filter at all!

Fixed Threshold Sliders

You should lower the thresholds if you have very low contrast white dropouts on light background, or black dropout on dark background, and increase the thresholds if the luminance difference between the dropouts and the background is less.

4.2.12 DVO Line Sync

Line sync or line *jitter* is a very common problem with archived analog video tape.

It is typically caused by the lack of (or disturbances with) *line synchronization pulses* which prevents the video tape recorder from locating the actual start and end of each line. This causes **random line displacement** (jitter).

The most visible effect is that vertical edges appear to be *jagged*. The jitter can range from +/-1 pixel to more than +/-5 pixels in severe cases. *DVO Line Sync* automatically detects and corrects these line displacements as well as any stretching it causes.

Parameters:

Detection Strength - controls the degree of jitter detection with a higher number meaning a higher degree of detection.



If the *Strength* parameter is pushed too high, we may correct lines unnecessarily and introduce jitter. Analyse the resulting output before committing to a long render.



Note that the processing time is dependent on detected (and processed) lines. The more line sync issues we find, the longer it will take to process.

Processing Shift - Enables correction of pixel shifting (left/right)

Processing Stretch - Enables correction of stretched/shrunken lines.

Noise Reduction - This is *Adaptive Noise Reduction* with *non-recursive spatio-temporal filtering* so ghosting will not occur.



Note that processing time will be considerably higher when noise reduction is active since all lines have to be processed.

Strength - Sets the amount of *Noise Reduction* to perform.

4.2.13 DVO Brickwall

Useful for reducing compression artefacts, DVO Brickwall provides an extremely sharp cut-off at a user-defined frequency. This enables you to create an accurately defined spectral content of material for various types of compression pre-processing.

Coupled with other DVO tools, the quality of the image subjected to compression can usually be greatly improved.

DVO Brickwall helps reduce signal entropy making compression easier.

This means that compression artefacts can be reduced and the quality of the compressed image can usually be greatly improved.

Parameters:

Cutoff

This numeric slider allows you to precisely control the horizontal and vertical filtering of the luminance, as a percentage of the maximum bandwidth. A setting of 100% equals a full bypass.

Filter

There are 3 different types of filter cores with different characteristics depending on the picture content.



Diagonal filter is very efficient when mastering for DCT compression algorithms like MPEG.

Interlaced

If the media content is interlaced this will need to be enabled for best results.

4.2.14 DVO Cross Colour

Cross Colour (also known as *Chroma Crawling*) is a defect that results from *crosstalk* between the *chrominance* and *luminance* components of a composite video signal (PAL or NTSC). Once a video signal has been in the composite domain, this defect is not easily removed.

Parameters

Aggressiveness

Spatial - When the *Temporal* setting is *decreased*, The *Spatial* control may be **increased** instead to remove cross-colour at the expense of slight spatial Chroma bleeding.

Temporal - Increase for maximum cross-colour removal. Reduce if temporal Chroma bleeding becomes too intrusive.

If the parameters are increased too much it increases the possibility of introducing artifacts.

4.2.15 DVO Aperture

The DVO Aperture tool is a high quality frame-based spatial filter that increases the apparent sharpness of the picture.

This is a critical function when dealing with film scans and compensates for the loss of high frequency information generated in the film scanner. Problems requiring aperture correction arise in a scanning system when the frequency response falls off as the effective wavelength of the detail to be resolved in the image approaches the dimension of the scanning aperture.

The aperture processor normally increases response to high frequency content in the signal, thus adding subjective sharpness to the picture.

Aperture correction should therefore be employed as the last process in the chain.

Parameters

Horizontal Strength - Controls the amount of horizontal aperture correction. Allowed values are from 0 to 100% in increments of 10%.

Vertical Strength - Controls the amount of vertical aperture correction. Allowed values are from 0 to 100% in increments of 10%.

4.2.16 DVO Alias

DVO Alias takes care of the negative side effects of out-of-band vertical frequencies that show up on-screen as line flicker or “twitter”.

This is commonly seen in footage containing venetian blinds or car grills.

Parameters:

Cutoff Frequency

This controls the amount of filtering and selects for the maximum vertical bandwidth to **keep**

You should start at a high value and lower until the flickering has been removed.



A setting of 100% equals a full bypass.

Interlaced

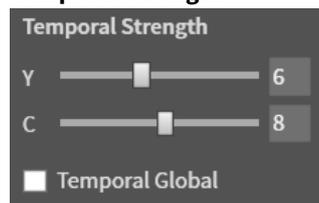
If the media content is interlaced this will need to be enabled for best results.

4.2.17 DVO Noise

Digital Vision’s DVO Noise algorithm is specifically designed to reduce unwanted electronic noise especially on video originated material. Uses include restoration, compression pre-processing, and image processing of new feature film, television and commercial material.

Parameters:

Temporal Strength



Use the numeric sliders to set the amount/level of temporal recursive filtering in each component.



Do not use higher settings above 11-12, except in extreme situations.

Temporal Global

The DVO Noise is an adaptive noise reducer. This means it disables the temporal/recursive processing of all moving edges within the image to assist in the reduction of motion artifacts.

Temporal Global enables filtering of the whole picture regardless of motion for maximum temporal filtering.



Temporal global should normally be set to *Off* and only to be used in extreme situations, or to create a motion smearing effect.

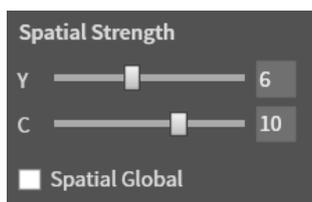


Enabling **Temporal Global** might cause excessive smearing in the picture.

In addition to the above controls, the motion sensitivity control on the *Setup* section adapts the temporal filtering in respect to Noise size and intensity.

Spatial Strength

Edge-preserving spatial filtering complements the adaptive temporal filters by processing noise in portions of the image that are detected as being in motion, while leaving non-moving areas unaffected. The spatial filtering is done before application of the temporal filters and works in unison with DVO Noise's motion processing.



Spatial Global

When ticked, this enables filtering of the whole picture by switching off the motion adaptation.

A moderate level of global spatial filtering can be used as a basic level of grain and noise reduction before using the temporal filtering (also see Global Balance).



This may cause excessive softening of the picture if the spatial filter is not set up correctly.



- Temporal filtering works in areas with no or little motion.
- Spatial filtering works in areas of motion.
- Global enable the filters to work on the entire picture.



Optimising the Spatial Filter

1. Set Spatial Strength, Size and Threshold to their maximum
2. Turn Spatial Global on

Adapt the spatial filter to the grain/noise size by decreasing the spatial size settings to as low as possible whilst still resulting noise being removed

Decrease spatial threshold until edges are not affected (a typical setting

4. is between 8-25%)
5. Decrease spatial strength until the desired level of spatial filtering is achieved

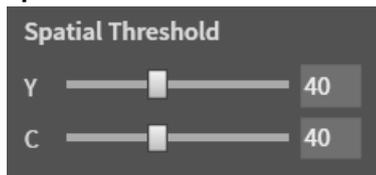
6. Decide whether *Spatial Global* should be left on (filtering of the whole picture), or turned off (filtering only in areas with motion).

Spatial Size



The Spatial sliders adjust the spatial size of the noise, in pixels, for each component.

Spatial Threshold



The spatial threshold sliders determine when to filter, depending on the intensity of the surrounding pixels.

If there is a high enough intensity/contrast (e.g. an edge) between the noise and surrounding pixels, filtering will not occur.

Use the spatial threshold sliders to adjust the setting for each component.



A low setting will only affect low intensity pixels (flat areas). A high setting will start to affect high intensity pixels (edges).

Global Balance



Global Balance allows a combination of the basic level of spatial filtering and motion adaptive spatial filtering. Maximum filtering according to spatial strength is achieved in areas with motion.

The Global Balance slider allows you to set a minimum level of spatial filtering, rather than having the level set entirely based on motion detection. If the slider is set to 0, then parts of the image with no motion will receive no spatial filtering. Increasing the slider increases the spatial filtering of areas with little or no motion.

Motion Estimation



DVO Noise is a fully motion compensated noise reducer. This means that much more aggressive settings can be used without introducing smearing.



The *Best* setting is good for fast motion but is slower than *Normal*. In almost all cases, *Normal* or *Best* should be used.

Noise Spike



This setting enhances the spatial filter performance by incorporating a spike adaptation. The setting relates to the grain/noise characteristics.

- A low setting (e.g. Narrow) is suitable for smaller noise sizes and/or less pronounced variations in amplitudes.
- A high setting (e.g. Wide) is suitable for larger noise and/or more pronounced variations in amplitudes.

4.2.18 DVO Sharpen

DVO Sharpen gives stunning and realistic pictures using adaptive picture analysis and processing – with no side effects. Easy adjustment of highly user friendly, simple controls alone produces stunning results or using DVO Sharpen’s advanced adaptive controls you can match the processing to the picture detail such as lowlights, highlight, foreground, etc.

Parameters

Strength – Overall amount of sharpness applied.

4.2.19 DVO Dust

DVO Dust is a fully automatic and highly accurate film dirt, dust and random scratch concealment and video drop-out removal system. It can remove around 90% of visible imperfections without introducing unwelcome artefacts.

DVO Dust utilises a pioneering set of processing algorithms and new filters with the Digital Vision Emmy award-winning PHAME motion compensation technology. With manual "dust busting" being very time consuming and expensive, the automation in DVO Dust can typically reduce the amount of operator time required by an order of magnitude. This saves enormous amounts of time and money without any compromise in terms of picture quality.

Parameters:

Mode – Overall Strength of the dust removal.

Strength – Fine tuning the strength of the tool.

Enable White – enables the detection and removal of white coloured dust and artefacts.

Enable Black – enables the detection and removal of black coloured dust and artefacts.

4.2.20 DVO Dry Clean

The new revolutionary automated dust removal algorithm. Choose this over DVO Dust, unless speed is important.

Parameters:

Strength

The strength can be considered the master control when adjust how much dust needs to be removed. Use the slider to adjust to the desired value.

4.2.21 DVO Scratch

DVO Scratch is used for removing vertical/continuous scratches.

These are typically those not being detected by dust/dirt removers, which are looking for random defects in the picture. The process is fully automatic and has an advanced detection algorithm with a fill-in result far superior to the normal process of hiding the defect using information from both sides of the scratch.

Parameters:

Colour Mode

This determines the image channels detection is undertaken in. Default is Y.

Y - *Luminance* detection only (fastest).

R+G+B - Separate detection in R, G and B channels. Processing of each channel is based on the combined result from the detection.

R,G,B - Separate detection in R, G and B channels.

Column Aggressiveness

First stage detector *aggressiveness*, which determines what columns (and pixels) are selected as scratch candidates to be processed. The *higher* the setting, the more aggressive.

Pixel Aggressiveness

Second stage detector *aggressiveness*, which is a modifier for pixel selection within the selected columns (from the first stage). The *higher* the setting, the more aggressive.

Scratch Type

Used to describe scratch *characteristics*. For moderate scratches, typically choose the specific scratch type evident in the material. In case of very *heavy* scratches, with emphasised edges, it can be advantageous to select *W+B*.

Values :

- White - for white (brighter) scratches.
- Black - for black (darker) scratches
- W+ B - for a mixture of black and white scratches



Do not use *W+B* as a default setting as it will sometimes process too much in the picture.

Scratch Width

Sets the width-profile for scratches.

Values : Thin, Normal, Wide



If detection/processing is insufficient in areas which have *many* scratches close by, a *Wide* setting is recommended.

Image Noise Level

Characterises the level of noise in the image. Image noise will affect the accuracy of detection.

4.2.22 DVO Pixel

DVO Pixel is used to find and conceal any stuck, dead or semi dead pixels coming from a malfunction camera sensor.

Parameters:

Global Sensitivity



This parameter is the main threshold to find the possible dead pixels. It will search the RGB channels for misconducting pixels.

4.2.23 DVO Warp

DVO Warp is an intelligent automatic tool for removing warping artifacts often associated with line scanners.

The current version of the tool deals with vertical warping. The tool should be considered very precise, with results hard to match for any manual/semi-manual process.



A high priority is given to safety, so the tool can be run largely unsupervised without creating issues.

Parameters:

Profile

This control is used to set internal configuration parameters to match specific behaviours which have been identified (such as a specific scanner type).

The different profiles available are :

| | |
|------------|------------------------------------------------------------------------------------------------------------------|
| General | The general mode for sources which are unknown or don't have a profile. This is the DEFAULT. |
| GE-III (a) | Golden Eye III model A – the most common model. |
| GE-III (b) | Golden Eye III model B – uncommon model with a different mechanical construction which affects warping behavior. |



The Profile setting does not visually change any of the other user parameters, but may in some cases affect how they are interpreted. In particular, the Sensitivity parameter may be interpreted for conditions matching a specific profile. The General profile mode has no specific tuning and expect this mode to have the greatest effective range for a parameter such as Sensitivity.

Sensitivity

This parameter sets the general sensitivity for the detection and selection of warped frames to process.

A low sensitivity corresponds to warps with high “amplitude” (more visible) and high sensitivity then corresponds to warps with low amplitude (less visible).



Sensitivity should mainly be tuned for a common source, splice and scanner. It should normally not have to be tuned for specific clips.



Do not use *W+B* as a default setting as it will sometimes process too much in the picture.

Safety

The Safety parameter lets the user choose a desired "safe" processing level, therefore placing limits on how much de-warping to do. Processing will be cancelled if it is considered unsafe (hitting this user set limit).

The larger the value, the safer we will be, and the less risk of over-processing.



This parameter is of a statistical nature and targeted for setting a comfortable level for unsupervised processing (of a lot of material). The effect of the parameter range may not always be noticeable for an individual clip.



Whatever the setting for *Safety*, processing may be cancelled for a specific shot because *any* amount of de-warping may end up being considered unsafe.

4.2.24 DVO Print Align

DVO Print Align uses a fully automatic process to align RGB separation prints, even if the offset varies over time.



Parameters:

Reference Colour

Select the component (Red, Green or Blue) that should be used as the reference.

Fixed Colour

Select the component (Red, Green or Blue) to which all other should be locked.

Max Offset

Set the maximum adjustment that can be done in pixels.

4.2.25 DVO Flicker

DVO Flicker analyses the image sequence to remove brightness and chrominance fluctuations. These may be caused by varying exposure time, unsynchronised light sources, telecine transfer, aging film stock and/or film chemical related issues.

Parameters:

Enable Local

This parameter describes the general nature of the flickering. Turn on local if the flicker is isolated to portions within a frame rather than globally

4.2.26 THOR

Accelerated Real-time 4K processing for a selection of tools.

Thor Ultra contains three tools:

- *Thor Clean* - Noise and grain reduction with clip based analysis.
- *Thor Zoom* - high quality upscale algorithm for HD to UHD and 4K conversions.
- *Thor Sharpen* - high quality image sharpening.

The three tools are available via a selection of common presets.

4.2.27 Use Existing Note

Loki has the ability to use Existing .note files from Digital Vision Nucoda and Phoenix products.

When using a .note file, all other processing options will be ignored.

Simply select the note using the *browse* button, and when exporting, the note file will be used for the processing.



4.3 Export

The Export expander provides the options on how the file is exported.

Export Location

Define the folder where to export the file. Folder and Filename \$ Variables are also accepted.

Filename

Enter a file name for the exported file. Enter filename only, without the file extension.

For example: *file1*, not *file1.mov*.

Resolution

Choose from:

Same as input – takes the resolution from the chosen input file (if known).

Choose Preset – select from a range of common resolutions.

Custom – enter any resolution size.

Aspect Ratio Preserve

If the source images are a different resolution to your defined output, you can choose if and how they are scaled and/or cropped for output. Loki provides three options: (default option is *centre*)

Auto Fit

Scales the source image to the size of the output format.

Auto Crop

Crops the source image and scales it to the size of the output format.

Centre

The centre of the source image is mapped to the centre of the output format maintaining the source image aspect ratio. This may result in a cropped or blanked image, depending on the difference between the source and output resolution and aspect ratio.

Frame Rate

Select a Progressive or Interlaced frame rate, or choose same as input, to use the same as the input file (if known).

Bit Depth

Choose the bit depth for the export (the final bit depth will depend on the file format/codecs chosen).

File Format

Select the file wrapper: CIN, DPX, EXR, JP2, JPEG, QuickTime MOV, MXF OP-atom, MXF OP-1a, TGA, TIF.

Frame Padding

When exporting a sequential file format such as DPX, EXR, or TIF, the amount of total digits in the exported frame number can be adjusted. The numbers will be zero padded.

For example:

| Example export file name | Frame padding option | Result |
|--------------------------|----------------------|-----------------------------|
| Export00001.dpx | 0 | Export00001.dpx (No change) |
| Export00001.dpx | 6 | Export000001.dpx |

| | | |
|-----------------|----|----------------------|
| Export00001.dpx | 10 | Export0000000001.dpx |
|-----------------|----|----------------------|

Codec/Type

A list of codecs or format options will be shown depending on the selection above.

Audio Export Options

Loki has various options for exporting audio along with video files. The options available depend on the chosen video file format:

MXF – Uncompressed 8 channel audio will be exported.

QuickTime MOV – Audio can be exported as embedded QuickTime audio. 2 channel Stereo.

MP4 – (Coming soon).

DPX/EXR/TIF - Audio can be exported as a separate WAV file. 2 or 8 channel selectable.

All formats – A 2 channel WAV audio file can be exported if using any export format.

Export Length

Export Length provides the ability to export a defined range, rather than the whole source file. For example, if the source input file is 1 hour long, export length can export just the first 1 minute 40 seconds.

This feature does not utilise the embedded timecode of the file, so regardless of the timecode in the file, the file always starts at 00:00:00:00 timecode.

Standard timecode format is used: HH:MM:SS:FF (Hours:Minutes:Seconds:Frames)

Example 1:

A 1 hour long source file is used, with the timecode starting at 10:00:00:00. It is required to export the last 5 minutes of the file:

The **From** time would be entered as: **00:55:00:00** (55 minutes)

The **Length** time would be entered as **00:05:00:00** (5 minutes)

Example 2:

To export the first 1 minute of a file, enter:

From: 00:00:00:00

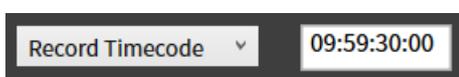
Length 00:01:00:00



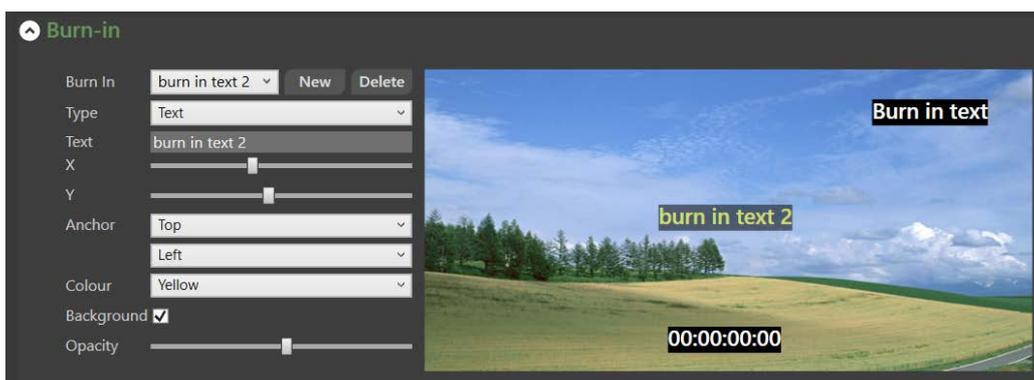
If the **Length** entered is longer than the actual file, black frames will be added to the end of the file.

4.4 Timecode and Naming

Select either Source timecode, to use the original file's timecode, or set record timecode to start the export at a chosen timecode:



4.5 Burn-in



Use the Burn-in editor to create Watermarks, burnt in text, or images. Click **New** to create a new burn in position on the image.

There are three types of burn-in you can apply to the image:

Variable -This includes metadata that is related to the file, for example, source timecode, tapename, or Frame number.

Text - Any text of your choice can be burnt into the image (max 50 characters).

Image - Select an image from your computer to be burnt in. Supported file formats include PNG and JPG.

When using the Variable or Text burn-in types, appearance options are available:

Text Colour – Change the colour of the text

Text Background – When this is unticked, there is not black text background

Opacity – Changes the opacity of the burn in

4.6 Options

Email Alerts

Loki provides the ability to send out an email after each job is completed. Select an email pre-set from the drop down list to apply an alert to that job.

To turn off the email alerts, select the **No Email Alerts** option from the drop down list

Adding or editing of the email pre-sets can be performed in the Email section of the Settings tab.

Set Priority

Job can be prioritised to set their position in the job queue. If several jobs are set to the same priority, it will start processing those jobs in the order they were created.

Available options:

- Highest
- High
- Normal (Default)
- Low

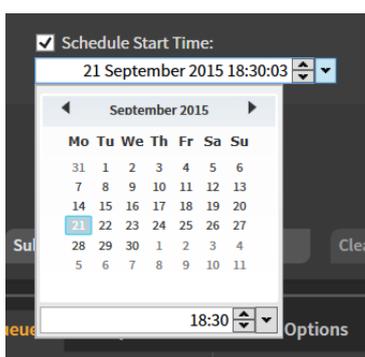
Set Job Name

By default, all submitted jobs are given the current date and time as the job name. The Job Name option gives the user the ability to set a custom name. For example; you may want to apply internal reference numbers or names relating to client work.

Schedule start time

When submitting a job for export, the first available node will pick up the job as soon as it is free. The schedule Start time option gives provides the ability to delay the start of particular jobs. This may be useful when you wish to utilise the downtime of processing power in the evenings, when machines are busy with other tasks in the day.

To set a job start time, simply enable this option and set a start date and time in the future for when you would like a node to start processing this job. By default, the current time and date is selected when the LokiClient is opened.



4.7 Submit

To submit the job for export, press the **Submit** button. The job will be sent to the server where the next

available node will pick it up for processing. (Unless **Scheduled Start time** has been applied, in which case the job will be delayed until the specified time).

If no LokiNode's are available to process the job, the job will wait in the queue.

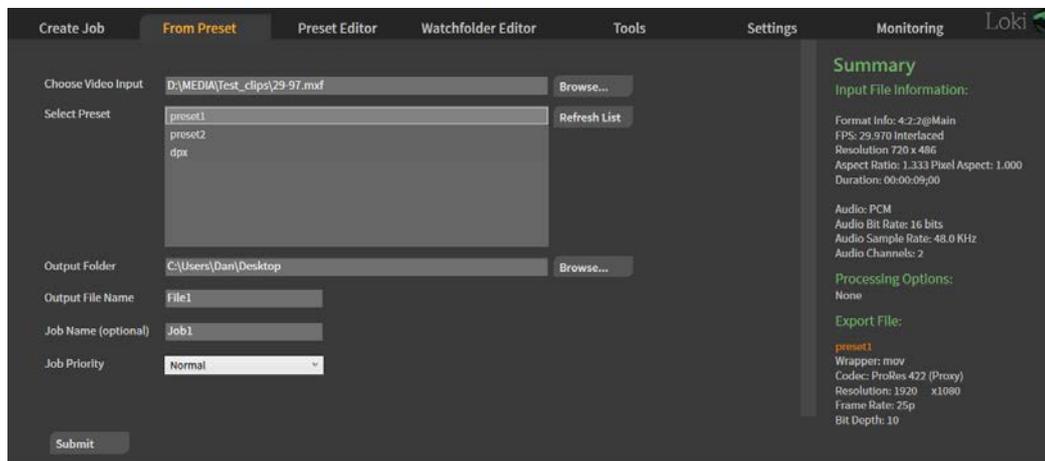
4.8 Save As Preset

To save the entered settings as a preset to use again, press **Save as Preset...**

The preset can then be used in the **Job from Preset** tab, or when using Watch folders.

5. Job from Preset

Job From Preset tab provides a quick and convenient way to create exports using existing presets. These presets can be created using the **Create Job** tab or **Preset Editor** tab.



5.1 Create an export

Choose Video Input

Select the file to be processed. For a list of supported file types, please see the [Appendix](#) of this document.

After the input file has been selected, the metadata from the file will be displayed on the right in the *Summary* pane.

Select Preset

Select a pre-made preset. This defines the processing and output file format of the exported file.

Output Folder

Select the destination folder for the exported file.

Output File Name

Enter the file name for the exported file. You do **not** need to type in the file extension – for example enter: *file1* rather than *file1.mov*

Job Name (Optional)

Enter a name for the job. If left blank, the current time and date will be used for the job name.

Job Priority

Set a priority for the job when it enters the job queue.

Submit

Submit the export to the job queue. The next available node will then start processing the export.

6. Preset Editor

The Preset editor is used to edit and create the saved settings used for **Watch folders** and the **Job from Preset** tab.

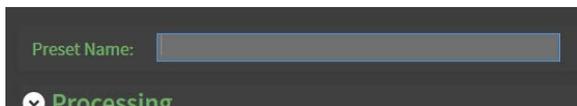
The presets contain the most of the same options as **Create a job** tab, apart from:

- Input File
- Output file
- Job scheduling

The Preset editor has three main functions:

6.1 Create a new Preset

To create a new preset, enter the name of the presets into the *Preset Name* text field.



Continue to fill in all the chosen options that are required for the Preset, and press **Save** to save the Preset.

6.2 Edit or view existing Preset

To view or edit an existing preset, press the *Edit* icon, next to the name of the existing preset in the Presets list.



The Preset details will be loaded into all the fields.

To edit the Preset parameters, change one or more of the items and click **Save**, it will then ask if you want to overwrite the existing preset.

6.3 Delete a Preset

To delete an existing preset, click the *Bin* icon on the list of presets:



The Preset will be permanently deleted and removed from the list.

7. Watch Folders

7.1 Watch folder Introduction

Watch folders, also known as *hot folders*, or *drop folders* provide a way to automatically process multiple files using user created presets

Video files (mov, mxf, etc) and sequential files (dpx, exr, etc) are both supported, but need to be defined in the watch folder settings.

Currently, when creating a new watch folder, existing files in the folder will be ignored.

Watch folder use rules to determine when to start processing the file/files. Some rules are fixed and some use user-defined.

For example, if transferring a large Video file into a video file watch folder, the file will not be processed until it is fully copied into that folder.

Important: The watch folders are monitored from the LokiServer application. Ensure that the computer where the LokiServer is installed, has access to the chosen folders used for the watch folders.

7.2 Create a Watch folder

-Name

Enter the Name of the Watch folder you want to create creating.

-Watch folder Path

Enter the folder path where the watch folder will monitor for files.

-Choose Preset

Select the Preset that will be applied to the files in the watch folder. Presets can be created in the **Create Job** tab and **Preset Editor**.

-Priority

Sets the priority of the watch folder jobs versus other jobs in the queue

-Output Folder Path

Enter the folder where the processed watch folder files will be exported to.

-Move Original file



Move original file when complete
Original completed

Move original if failed
Original failed

Once a watch folder file has been processed, Loki place the original file into a selected folder depending if the process has been successful or failed.

-Append File Name

Use this function to append text to the end of the processed file name. For example if the input file is *file1.mov*, and the word “*processed*” is appended, the exported file will be named *file1processed.mov*.

-Watch folder Type

Choose the type of watch folder depending on what type of files we be used. The two options are:

Video files – Use this for MXF, MOV, R3D, and MP4.

Sequential files – Use this for DPX, EXR, TIF, TGA, DNG, ARI, and JPG.

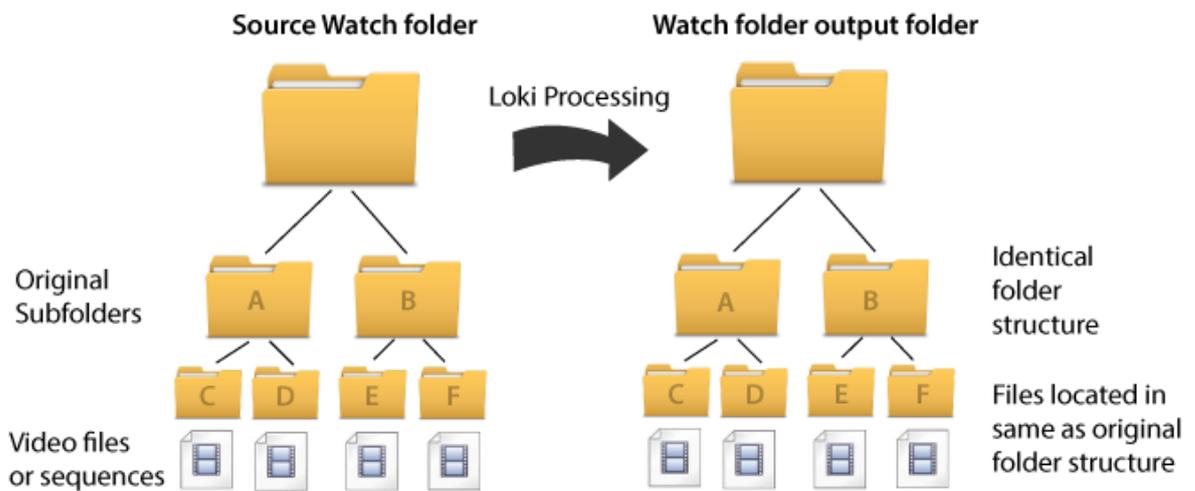
-Sequential File Watchfolder Rules

When using watch folders with sequential files, for example DPX frames, rules can be applied to change when Loki starts processing the files in the folder.

-Process Subfolders

When this option is enabled, Loki will look inside any subfolders of the main watch folder. The sub folders will be processed with the folder structure replicated on the output.

Example:

**-Enable**

Enables or Disables this watch folder.

When enabled, all files in this watch folder will be processed.

When disabled, all files in this watch folder will be ignored.

7.2 Edit Watch folder

To edit a watch folder, click the edit icon on the watch folder list. The Watch folder parameters will now be shown in the watch folder editor fields. Click **Save** to apply any modifications.

**7.3 Delete Watch folder**

To delete a watch folder, click the delete icon on the watch folder list:



The selected watch folder will be removed from the list of watch folders.

8. Tools

8.1 Test Pattern Generator

The test pattern generator can be used to create a various range of patterns. Files can be exported to Apple ProRes. No audio is exported.

Options available:

| | |
|---------------|---------------------------------------------------------------------|
| Test Pattern | Select the type of test pattern used. |
| Duration | Choose the number of frames the test pattern generator will export. |
| Frame Rate | The frame rate used in the file header |
| Resolution | The pixel size of the exported file |
| Export Format | Apple ProRes only. |
| Codec | The Apple ProRes type. |
| Export To | The location of the export Test pattern file. |

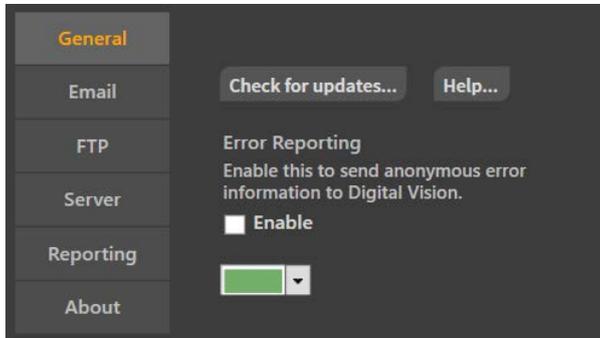
8.2 Test Pattern Types

Loki provides a range of test patterns:

| | | | | |
|----------------|-------------|--------------|--------------|-----------|
| Colour bar 75% | Colour bar | Multiburst | Zoneplate | Pluge |
| Black | White | Luma Step 10 | Luma Step 16 | Luma Rump |
| RGBY Rump | Chroma Ramp | | | |

9. Settings

9.1 General



-Check For Updates

Check for new versions of Loki, and read the latest release notes.

-Help

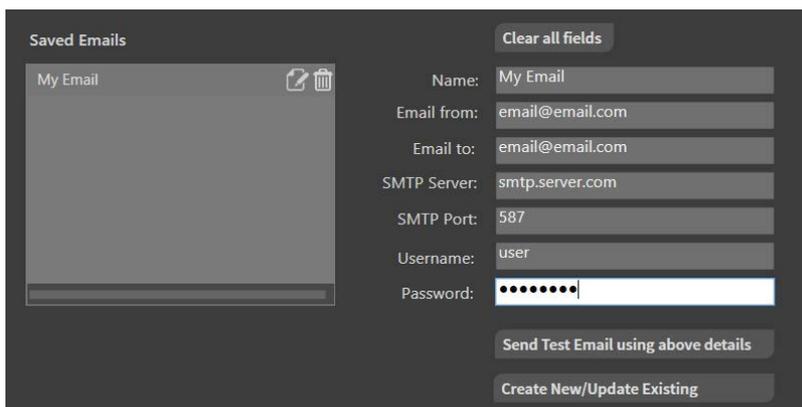
View the Loki Help documents

-Error reporting

When enabled, anonymous error information will be sent to Digital Vision to help improve the quality of the software.

9.2 Email

The Email settings are used to create and edit the email addresses used for Email Alerting.



To save a new Email address:

- Enter all the relevant fields from your email provider. Some fields may be left empty if not required.
- Click **Send Test Email using the above settings** to check the details have been entered correctly. A test email will be sent to the chosen address if successful.
- Click **Create New/Update Existing** to save the email address. The new entry will be added to the list on the left.

To edit an existing address:

Click the *Edit* icon in the *Saved Emails* list next to the Email entry to be edited.



The text fields will be populated with the email settings. Click **Create New/Update Existing** to save any changes.

To delete an existing address:

Click the *bin* icon next to the Email entry to be deleted.

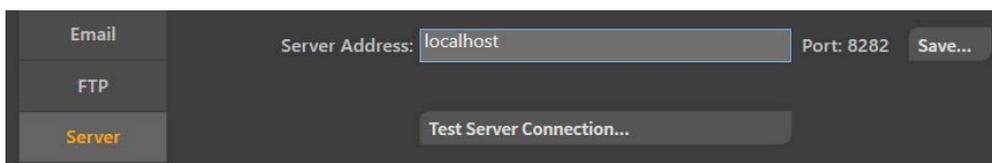


The chosen Email entry will be deleted and removed from the list.

9.3 FTP

Feature coming soon.

9.4 Server



Each client needs to access the LokiServer. The LokiServer can be located on the same machine, or a remote computer, on the same network.

The default location of the server is *localhost*, and is the correct entry if the LokiServer is located on the same machine as the LokiClient.

This can be changed to the IP address of the LokiServer computer. After editing the IP address, click **Save** to apply.

To test the connection to the LokiServer, click **Test Server Connection**.

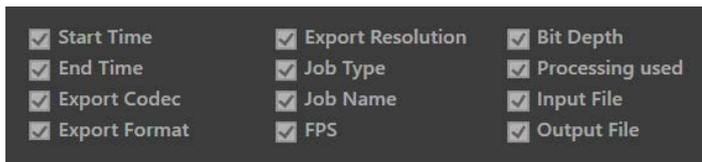
9.5 Reporting

The reporting feature provides the ability to list all job information into a CSV file.

The **Enable Job Reporting to CSV file** checkbox enable/disables reporting to CSV file. When this is enabled, each job will write a new entry into the CSV file.

The Default location for the CSV file is *C:\Loki\Reports*. To change the location, browse to a new location which is accessible to all LokiNodes. The new location will be saved automatically.

It is possible to select which data is written into the CSV file by selecting the relevant checkboxes:



9.6 About

The about tab provides the current client version and support information.

10. Monitoring Tab

The monitoring tab is used to view the status of Nodes on the system, and also which watch folders are currently active.

There are three main sections in the Monitoring tab:

The screenshot shows the Monitoring tab in the Loki application. It features a dark theme and a navigation bar at the top with options: Create Job, From Preset, Preset Editor, Watchfolder Editor, Tools, Settings, and Monitoring (highlighted). The Loki logo is in the top right corner. The main content area is divided into three sections:

- Server:** A table with columns Server, Status, and Version. It shows localhost is Connected and Version is Not Yet Implemented.
- Nodes connected:** A table with columns IP Address, Hostname, Status, CPU %, Node Version, Engine Version, and Licenses. It shows one node at IP 172.16.25.11 with Hostname Dan-work, Status [Not yet implemented], CPU % 14.5%, Node Version 2015-2.022, Engine Version Loki 2015.2.036, and Licenses DVOFULL.
- Watchfolders:** A table with columns Active, Name, and Output Format. It shows one active watchfolder named dpx1 with Output Format preset1.

10.1 Server

Shows which server the LokiClient is connected to.

10.2 Nodes Connected

Displays a list of LokiNodes currently connected to the system with the following information:

| | |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address | The IP Address of the LokiNode |
| Hostname | The Hostname. |
| Status | The current processing status. |
| CPU % | The CPU load. |
| Node Version | The LokiNode version running on the Node. |
| Engine Version | The version of the processing engine the LokiNode is using. |
| THOR | Indicates if a THOR card is present on the node machine. |
| Licenses | Displays the list of type of licenses that the LokiNode is running. Also indicates if the Node has a THOR card installed. See Chapter 16 |

10.3 Watch folders

Provides a list of all Watch folders:

| | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| Active | Indicates if the watch folder is currently enabled or disabled – if disabled, no files in that watch folder will be processed. |
| Name | The Name given to the watch folder. |
| Preset Used | The Preset has been applied to this watch folder. |

11. Job Queue

The Job queue has four main functions:

- View the current jobs in the processing queue.
- View completed jobs.
- View failed jobs.
- Access job queue options.

Columns in the job Queue tabs:

Queued tab

| | |
|----------------|-------------------------------------------------------------------------------------------------------------------|
| Name | The Job Name |
| Input File | The input file used for the current export |
| Processing | The processing options which are being applied to the export – For example: DVO Standards conversion, DVO Noise |
| Format | The wrapper used ie; MXF, MOV |
| Codec | The compression or type of file, ie; DNxHD for MXF or RGB10 for DPX. |
| Priority | The chosen priority for the export |
| Status | The current status of the export: Waiting for Node, Delayed Start, Processing. |
| Node | The node which is currently processing the job. This will remain blank until a node has started work on this job. |
| Progress | The current percentage of the export. |
| Time remaining | Displays the approximate time until the job will complete |
| FPS | Displays the approximate processing speed in Frames Per Second. |
| More Info | This will open a new window displaying a complete list of the job details. |
| Cancel Job | This will cancel the queued or currently processing export. |

Completed tab

| | |
|---------------|-----------------------------------------------------------------------------------------------------------------|
| Name | The Job Name |
| Output Folder | The location where the file has been exported. |
| Output File | The name of the exported file. |
| Format | The wrapper used ie; MXF, MOV |
| Codec | The compression or type of file, ie; DNxHD for MXF or RGB10 for DPX. |
| Processing | The processing options which are being applied to the export – For example: DVO Standards conversion, DVO Noise |
| Priority | The chosen priority for the export |
| Status | The current status of the export: Processing complete, Uploading to FTP, etc. |
| Node | The node which is currently processing the job. |
| Duration | How long the export took to process. |
| More Info | This will open a new window displaying a complete list of the job details. |
| Re-run Job | This will queue up the job to be processed again. |

Failed tab

| | |
|------------------|--------------------------------------------|
| Name | The Job Name |
| Input Video File | The input file used for the current export |

| | |
|--------------------|-----------------------------------------------------------------------------------------------------------------|
| Processing | The processing options which are being applied to the export – For example: DVO Standards conversion, DVO Noise |
| Format | The wrapper used ie; MXF, MOV |
| Codec | The compression or type of file, ie; DNxHD for MXF or RGB10 for DPX. |
| Reason For Failure | Describes the reason why the job failed, or provides more information. |
| Node | The node which is currently processing the job. |
| More Info | This will open a new window displaying a complete list of the job details. |
| Re-run Job | This will queue up the job to be processed again. |

Options tab

Provides options to clear the job lists:

Clear Completed List

Clear Completed List

Removes all completed jobs permanently from the list AND the database.

Clear Failed List

Clear Failed List

Removes all Failed jobs permanently from the list AND the database.

12. LokiNode

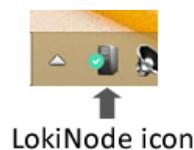
The LokiNode is the processing engine. Usage of the node GUI (Graphical user interface) is for administrative and troubleshooting purposes only.

Multiple nodes can be installed to process the queue of jobs faster.

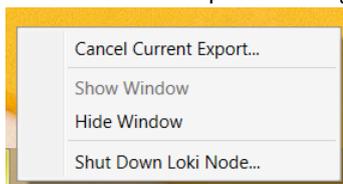
Important: If the LokiNode is located on a different computer than the LokiClient, ensure that the LokiNode has the correct access and permissions to the input files.

12.1 Node Settings and Options

To access the LokiNode interface and options, right click on the LokiNode icon in the Windows system tray:



The LokiNode icon provides a right-click menu with various options:



Cancel Current Export

Cancels the current export that is being processed on this node.

Show Window/Hide Window

Displays or hides the LokiNode user interface.

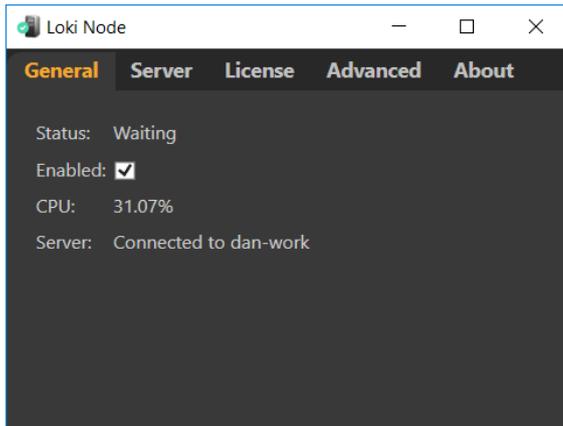
Shut Down Loki Node...

Closes the LokiNode application completely. When closed, no jobs will be processed on this node

12.2 Node User Interface

The LokiNode User interface is separated into several tabs with the following functions:

General Tab



Status

Displays the current status of the Node. For example: Waiting, Processing.

Enabled

When ticked, the node will pick up jobs. To disable the node from picking up new jobs, untick this option.

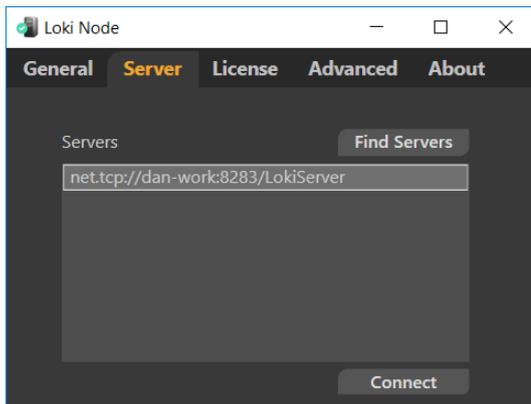
CPU

Displays the current CPU load of this LokiNode.

Server

The currently connected server.

Server Tab

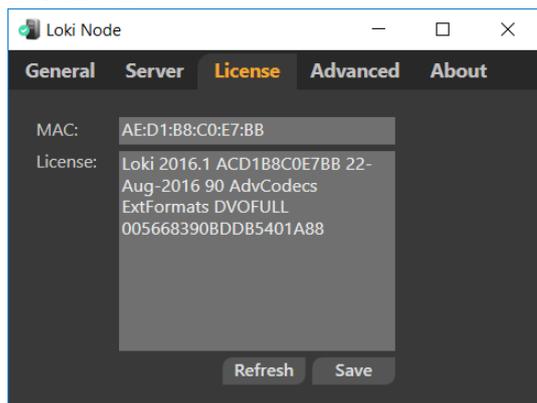


This tab is used to connect to a Loki Server. The server connection status is displayed in the General tab. If the server shows **Disconnected**, click **Find Servers** to find a Loki Server on your network.

If only 1 server is found, the Node will automatically connect. If two or more Servers are found, choose the correct server from the list and click **Connect**.

The Node will be now be connected to the Loki Server and available to process jobs.

License Tab



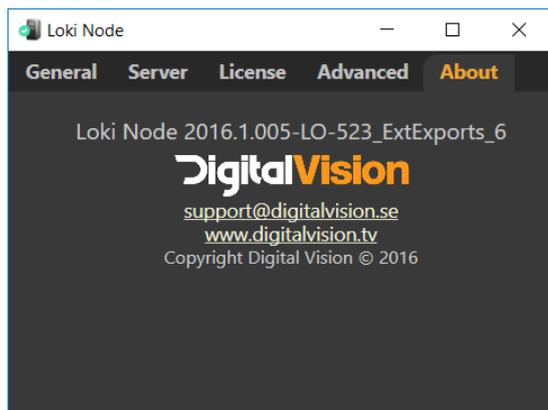
The license tab is used to update and enter new licenses on the Loki Node.

To enter a new license, copy and paste the license provided and click **Save** to apply.

Advanced Tab

This section is only to be used under the guidance of Digital Vision Support. Adjusting these settings incorrectly could adversely affect the stability and performance of Loki.

About Tab



Displays the full version number of the Loki Node. Please provide this to Digital Vision support if requested

12.3 Node Licensing

Each Node contains a license to enable the processing.
Use the LokiNode user interface to update or edit the license key.

13. LokiServer

The LokiNode is the central data storage application of Loki. The LokiServer is also tasked with monitoring the watch folders.

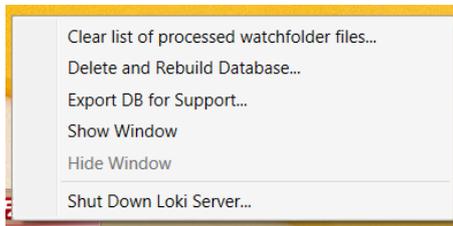
Functions of the LokiServer:

- Store all Loki data.
- Monitor watch folders.

To access the LokiServer options, right click on the LokiServer system tray icon:



↑
LokiServer icon



Clear list of processed watchfolder files...

This will reset the list of previously processed watchfolder files.

Delete and Rebuild Database...

Deletes and creates a new Loki database. All current Job, Preset, Email, FTP, and settings information will be lost. Only use under the guidance of Digital Vision support, or if you need to reset all settings, jobs and presets.

Export DB for Support...

Exports the Loki Database into a file for support purposes. A .dat file will be saved in `C:\Loki` the named with the current date and time. This function is useful when you are having problems with Loki. Send this file to support@digitalvision.se with a description of the problems you are having.

Show Window/Hide Window

Displays or hides the LokiNode user interface.

Shut Down Loki Server...

Closes the LokiServer application completely. When closed, no jobs will be processed and the LokiClient will not be able to create jobs or edit any settings.

14. API

Feature Coming soon

15. Performance Optimisation

15.1 Recommended hardware

Loki is very CPU dependant, so the faster the CPU and the more cores the better. We recommend at least a Dual Intel Xeon CPU based system with 6 or more cores per CPU. Loki will run on slower PC's just fine, but the processing time will be significantly increased.

A GPU is not required to run Loki. The only time that Loki will benefit from a powerful GPU is if de-bayering Raw camera footage such as from ARRI or Sony cameras.

15.2 BIOS Settings

For best performance we recommend several BIOS settings are adjusted as below:

- Hyper threading (HT) should be turned off
- NUMA (Non Uniform Memory Access) should be turned off

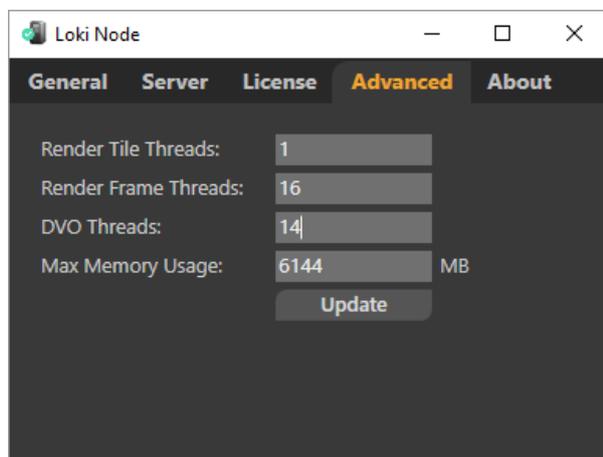
15.3 Loki Settings

The Loki Node performance settings are set up automatically during first run according to your system specification.

Performance settings can be adjusted using the Loki Node, but should be only adjusted under certain scenarios, as applying incorrect settings can significantly reduce the performance. If in any doubt, please contact Digital Vision support for guidance.

To check the settings for best performance:

1. Open up the Loki node User interface.
2. Navigate to the **Advanced** tab.



- **Render Tile Threads**
This should always be set to 1.
- **Render Frame Threads**
This should be set the same as the number of physical CPU cores inside the PC. For example, a dual 8 core CPU should be set to 16.
On a single CPU 10 core machine this should be set to 10.
This number applies to the physical rather than virtual cores. Virtual cores will show if Hyper threading is turned on, which is detrimental to Loki performance.
- **DVO Threads**
If less than 14 cores, this value should be set to 1 number below the Render Frame

threads setting.

If your system has 15 or more cores, this should be set to 2 less than the Render Frame Threads setting.

- **Max Memory usage**

This is the amount of memory that Loki uses to process. All of the memory amount specified will be used up by Loki during the processing or export.

It is advised to set this to around 75% of the total system RAM.

16. Troubleshooting

16.1 No servers are found

If no Loki Server is found when trying to connect a Loki Client or Loki Node, check the following:

- Ensure the Loki Server is running on the local computer or a network computer.
- If the Loki Server is located on a remote network computer, ensure the Client/Node can see the computer in which the Loki Server is installed. Try using the ping command
- When the server first starts, Windows will ask the user permission to add a firewall exception to Port 8283. If this has not happened, you can manually add a Windows Firewall exception to the Loki Server application.
- Ensure no other firewalls are blocking Port 8283 over the network.

16.2 Client / Node / Server application fails to start

If one of the Loki applications fail to start, or crash on start up, please contact Digital Vision support, and send the three start up log files in C:\Loki\Logs\:

LokiNodeStarLog.txt
LokiServerStartLog.txt
LokiClientStarLog.txt

16.3 Job completes almost instantly

If a job starts processing and then completes within a few seconds, it usually means an error has occurred with the processing engine.

Send the logs files from C:\Loki\Logs\ to Digital Vision Support.

16.4 Failed Jobs

If the export fails to complete due to an error, the job will go into the failed jobs list. The *Reason for Failure* column will provide a link to the Error Log file.

Each job creates its own log file. Please send the log files to support if you are continuing the see failed jobs. The Log files are stored in C:\Loki\Logs\

16.5 Jobs in queue stuck as *Waiting for Node...*

When submitting jobs, the jobs should be picked up by the node free LokiNode. Before a node picks up the jobs, the status will read ***Waiting for Node...***

If you know that there are free LokiNode's but the jobs remain with this status:

1. Check that the LokiNode application is running on the local machine or the dedicated Node.
2. Check that machine with the LokiNode has network access to the machine with the LokiServer on it.

3. Ensure the Node has a valid licence. A node will not process any jobs without a valid licence.

16.6 Error messages

Send any details of error messages or crashes to Digital Vision support. This helps improve the quality of software.

17. Licensing

17.1 Checking Licenses

Each Loki Node is licensed by a Licence key provided by Digital Vision.

The license information for each node can be found using the LokiClient. Inside the monitoring tab, each node is listed with the relevant details.

| Nodes connected | | | | | | |
|-----------------|----------|---------|-------|--------------|-----------------|------------------------------------------|
| IP Address | Hostname | Status | CPU % | Node Version | Engine Version | Licenses |
| 172.16.25.13 | Dan-work | Unknown | 18.5% | 2015.3.027 | Loki 2015.3.018 | DVOFULL License time remaining: 242 days |

Node identity (points to IP Address and Hostname)

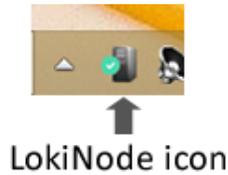
License options (points to DVOFULL)

License duration (points to License time remaining: 242 days)

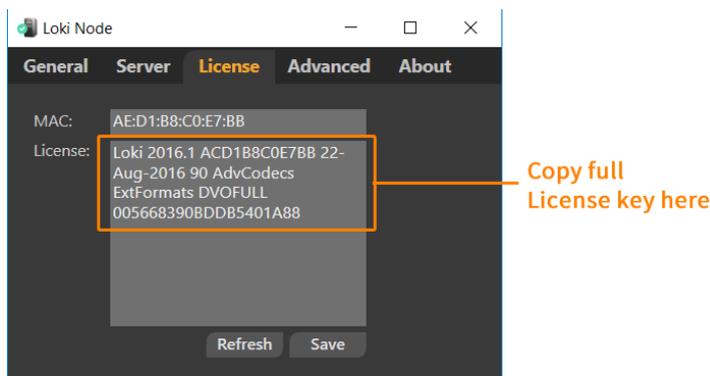
17.2 Editing Licenses

Entering a new licence or editing an existing one can be performed using the LokiNode application.

The LokiNode can be opened by double clicking on the icon in the system tray:



Inside the LokiNode application, enter the new licence key provided, in the text box as shown below. If there is an existing license, please clear this first. Click the **Update** button to save the new licence.



Any licensing queries, please email licensing@digitalvision.se

18. Appendix

File Formats supported:

18.1 Input Formats

| | |
|-----|---------------------------------------------------------------------------------------------------------------------------------------|
| MXF | OP1a/OP-Atom. XAVC XDCAM50 AVC Intra IMX Avid DNxHD/DNxHR DV DVCPRO P2 Uncompressed RAW Camera formats. |
| MOV | ProRes and legacy codecs. |
| MP4 | GoPro and others |
| DPX | All formats. |
| EXR | None / RLE / ZIPS / ZIP / PIZ / PXR24 / B44 / B44A |
| DNG | Various camera formats. |
| TIF | TIF8 TIF16 |
| JPG | - |
| CIN | Cineon |
| MPG | MPEG1 |
| RAW | Red, Alexa, Amira, SI-2K, Phantom |
| JP2 | JPEG 2000 |

18.2 Export Formats

| | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MXF | OP1a: XDCAM HD50 (HD)- XDCAM or HDF01a AVC Intra 100 (HD) DVCPRO HD 100 (HD) YCbCr8bit (HD) IMX30/40/50 (SD) DV25/50 (SD) XAVC (UHD) (<i>Coming soon</i>) OP-Atom: DNxHD (HD) DNxHR (UHD) DV25/50/100 (SD/HD) IMX30/40/50 (SD) RGB Uncompressed YUV Uncompressed |
| MOV | Apple ProRes 4444 422(HQ) 422 Proxy 4444 XQ |
| JP2 | JPEG2000 8bit |

| | |
|------|------------------------------------------|
| MP4 | H.264 (<i>Coming soon</i> <i>mx</i> f) |
| DPX | RGB8 RGB10 RGB12 RGB16 YUV10 |
| EXR | SMPTE 2065 ACES |
| TIFF | 8 / 16 bit |
| CIN | Cineon |
| JPG | JPEG |
| TGA | Targa |

18.3 Infrastructure and configuration

Loki support several different installation types to enable scalability.

Three examples:

1. Standalone installation

All Loki components are installed on a single machine only.

2. Small Network installation

The LokiServer and LokiNode are installed on a single machine, perhaps in a server room and multiple clients access these over the network.

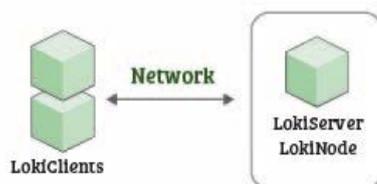
3. Full network installation

All Loki Components are installed on separate machines, with multiple nodes and clients connected. This type of installation is useful where extra processing is needed with multiple nodes.

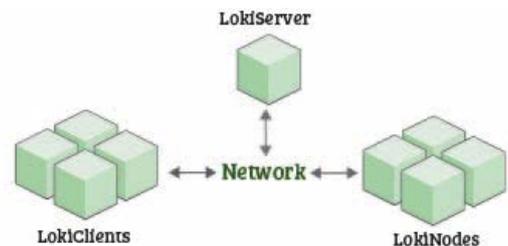
1. Standalone



2. Small Network



3. Full Network Installation



18.3.1 Networking requirements

If running the Loki components across a network, certain requirements need to be satisfied. All components need to be able to access the same media, although the connection speed to this media is not always important.

