



Nucoda

Colour and Finish

New Features Guide for 2019.1

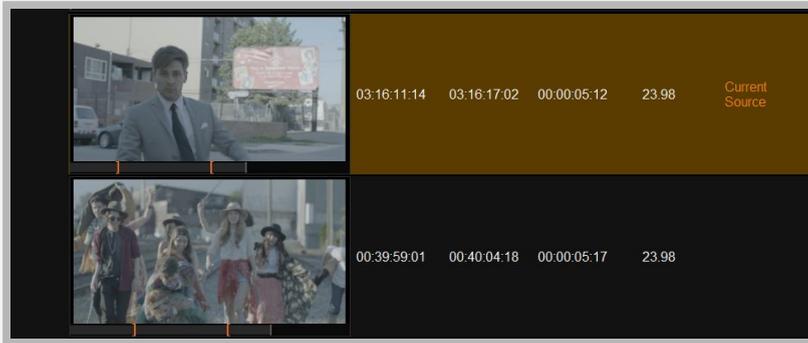


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Library

Interactive thumbnails in Library

Moving the mouse pointer over the small timeline below the thumbnail will scrub the contents, clicking will set the poster frame for the clip. Any source mark in or out point will also be shown.



Source replace while preserving effects

Used to replace source on the timeline but preserving effects

The new source replace command will allow replacing of material on the timeline with a different source, but will retain any cuts or effects that were applied to the original.

The effect is used on a per track basis and the replacement material should be the same length as the original material being replaced.

The replacement is done purely on the source length and position, so even sources with mismatched timecodes can be replaced. Typically it is used for mixdowns, eg: a reconform at a higher resolution or possibly a rescan of archive material.

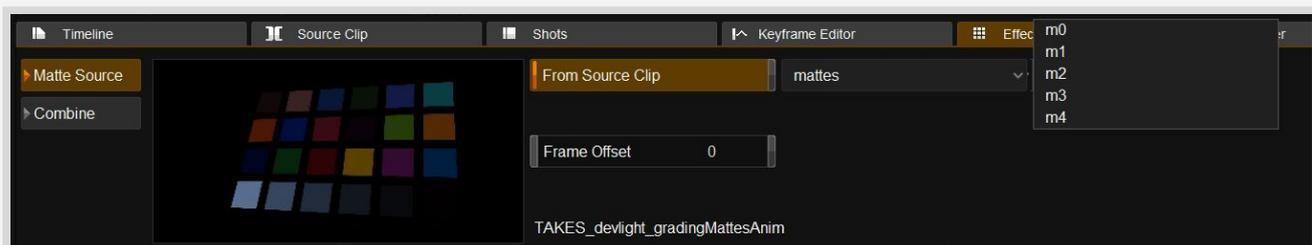
To use:

Right click on new source -> Overwrite -> Overwrite new source, keep effects
Hotkey Alt B, Alt E

Select the replacement clip in the library, place the playhead at the start of the mixdown clip on the timeline and use mouse or hotkey - without moving the playhead, repeat this for every video track in the composition, make sure to deactivate other tracks.

“From Source” option for Matte Effect

It is no longer necessary to select a clip in the library to set it as its own matte source, simply click the **From Source** option in the **Matte Source** tool and we will set the source clip as the matte source.



DVO Tools

Updates to current tools

DVO Dirt Map - Added option for spatial processing
DVO Steady II - Option for analysis at lower resolutions

New - DVO Dust GT

Dustbusting features very similar to DVO Dust, but optimised for performance.
Results may differ slightly from DVO Dust

Beta Access to features

DVO's

For the first time we are making some new tools available in a Beta state - they are marked as such in the effects list and you should not use them if you are not comfortable with using beta software in a project. Also please note that these may not be released in the next version.

DVO Scala - This is a preview of our new upscale technology - it is designed to automatically scale to the current output format - there are controls for Sharpness and Image noise level - it will only be available to users with a full DVO license or DVO Convert license.

Notes on the current parameters:

Source Grain Level

If you don't have grain/noise, choose "Minimal" to not lose detail, otherwise try and set it in relation to how grain/noise affects what should be a clean line. Very important to understand that this parameter always have a meaning regardless of "Output Grain Suppression".

Source Detail Level

This will try and preserve details, but not only about "clean lines" actually more about other things. You may need to balance this in regards to grain/noise. Somewhat related to keeping things sharp.

Output Grain Suppression

Refers to grain suppression of the whole image and impact depends on the "Source Grain Level".

Sharpness

Algorithm variations for keeping/making things softer or sharper. Also use Source Detail Level for keeping things sharp.

FINAL IMPORTANT NOTE

Memory usage is not yet optimized and mostly relates to the input format. Please note that you can crash the application if you don't have enough memory.

Technically a full frame 4K as an input frame, will have a memory load of 15.5Gb. A 1080p frame will have a load of 3GB ... this refers to the input format and will vary depending on your output format - but less so.

This tool requires AVX2 capable processors - processors older than 2014 will not work.
Check the Intel website for compatibility - it is not fully optimised, but we would like feedback on quality.

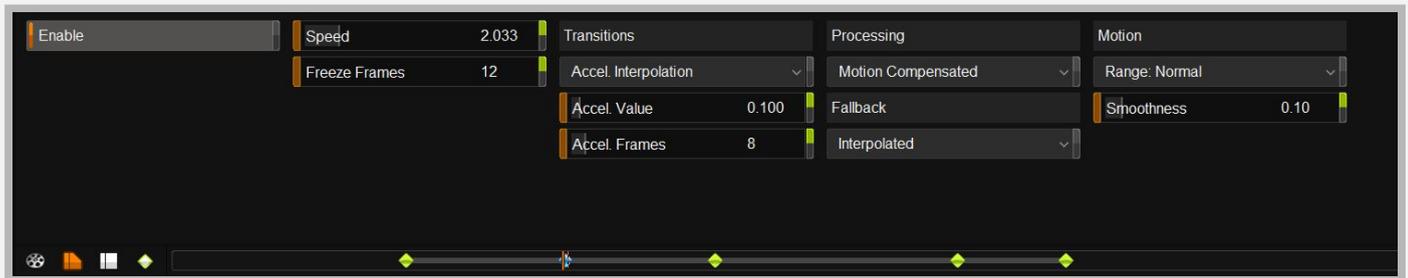
DVO Speed Source

The first version of new retime tool with DVO motion analysis - this tool makes vari-speed motion effects easy to achieve.

Apply to the clip and switch to Source view (Q) you are now able to set the speeds and keyframes based on the original source material, once you are done, switch back to Output view and the correct calculations will be made for the render.

This tool will be included as standard with Nucoda and Phoenix and will not require a license.

We would appreciate your comments and feedback.



The effect can be used in an effects layer (not only input FX) - opening up a some creative possibilities.

Parameters:

Speed: 0.50 - 10.000 - Default is 1.000 (normal speed) 0.500 is half speed.

Freeze Frames: Locate the frame you want to freeze - enter the amount of frames you want the freeze frame to be and set a keyframe.

Transitions - this affects how the changes between keyframe values will be calculated

Immediate -Change applied immediately upon reaching the keyframe

Accel Value -Distance from the keyframe at which point the transition to the new speed will be applied

Accel Frames - Number of frames from the next keyframe that the transition to the new speed will be applied.

Accel Interpolation - Automatic interpolation of the values

Current limitations:

- No reverse (use in conjunction with Retime)
- Frames cannot be animated backward in time

2019.1 - New Hotkey types - Dual and Hold hotkeys

There are only so many keys available on the keyboard, we have a lot of hotkeys, and we keep adding more. So we have implemented two new types of hotkey that will allow us to use the keys we have more effectively.

We are not jumping all in, but have remapped some common features using this function, and it is possible that we may remap more in the future.

Dual hotkey

- Two keys (and a modifier) can be assigned as a hotkey - this allows us to group keys in a sensible manner and make use of the same keys for multiple functions.
- By pressing and holding down the first key and then pressing the second key.
- By pressing and holding down a modifier, pressing the first, then the second key

Hold down

- This is as simple as holding down a key for slightly longer than a normal keypress, activating a second command.

Here are some of the first changes we have made:

Dual hotkeys

Splice : v
 Splice Adjustment segment : Shift v
 Splice Black to timeline : Alt v, Alt b
 Splice Aux to the timeline : Alt v, Alt a

Overwrite : b
 Overwrite to Source TC : Alt b, Alt s
 Overwrite Preserve Effects : Alt b, Alt e
 Overwrite Adjust segment : Shift b
 Overwrite Black to timeline : Alt b, Alt b
 Overwrite Aux to the timeline : Alt b, Alt a

Hold down (the hold time can be affected by the Keyboard settings in Windows)

Add scene cut: c
 Add edit cut: c (hold)

Enhanced JKL Functionality

J - Play Backward x1 x2 x3 x5 x8
 K- Stop
 L - Play Forward x1 x2 x3 x5 x8

K held followed by J - Step back one frame
 K followed by J and Held - Play Backward x1/4

(new) K held followed by L - Step forward one frame
 (new) K followed by L and Held - Play Forward x1/4

Scene cuts and edit cuts

Important : New behaviour for DVO when adding a scene cut

From 2019.1 adding a scene cut to a rendered clip with a DVO will invalidate the cache and re-render the DVO effect, this is an intended result because adding a scene cut changes the analysis range of the clip.

If a cut needs to be added to trim or remove media, an edit cut can be used - this will not force a re-render and can be added using the GUI, mouse or Precision panel (see below)



Scene cut - cut with a blue line one either side of the cut

Scene cuts are the default when adding a cut to material, they serve a dual purpose:

- Indicate that the timecode one either side of the cut is continuous.
- Used as analysis boundaries for DVO Tools, this means that DVO tools will not use the material before or after a scene cut for analysis or repair.
- Scene cuts cannot be trimmed and will be ignored when exporting source media



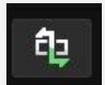
Edit cut - black line

This is a normal edit and will allow trimming

- Exporting material with edit cuts will result in separate clips being created in source export mode
- Edit cuts are ignored by DVO Tools and extra frames will be used in analysis, even if they are not visible on the timeline. This can cause problems when using DVO's like DVO Flicker.



Toggle scene cut to edit cut



Toggle edit cut to single sided scene cut

Precision panel changes:

Add Scene cut : Cut

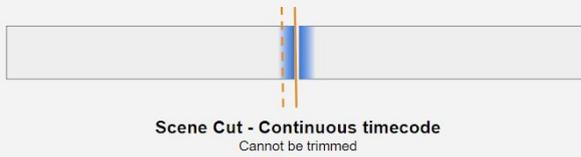
Add Edit cut : Cut (hold)

Toggle Scene cut: Ctrl + Cut

Toggle Edit cut to single sided scene cut : Alt + Cut

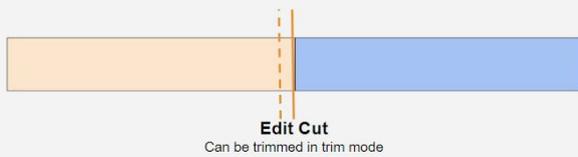
Single sided scene cut - what is it and why do we need it

DVO Tools automatically use scene cuts as a boundary for image analysis, this means that data from a previous/next scene won't affect the processing of the current scene.

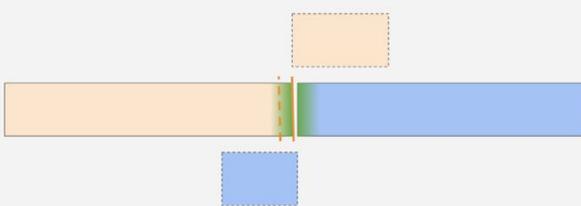


If the material being processed has extra material that must be removed, this would pose a problem for analysis, because there is no scene cut, the analysis would automatically process the trimmed frames (even if there were no visible) sometimes producing unexpected results.

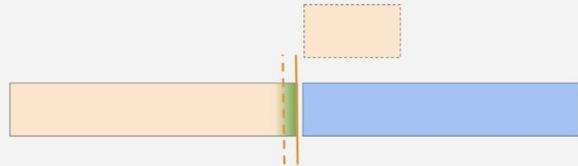
To trim the frames, add an edit cut - switch to trim mode - apply the required trims. Use the right click menu or shortcut keys to change either side of the edit cut into a single sided scene cut.



The single sided scene command allows any edit cut to be changed to a single sided scene cut (green line) - this will prevent analysis past the edit cut.



Trimmed material on both clips
Both sides converted to single sided scene cuts



Trimmed material on one clip
Only one side converted to single sided scene cut

Hotkey changes:

- Add Scene cut : C
- Add Edit cut : C (hold)
- Toggle Scene cut: Alt C, Alt S
- Toggle Edit cut to single sided scene cut : Alt C, Alt S

Dolby Vision update

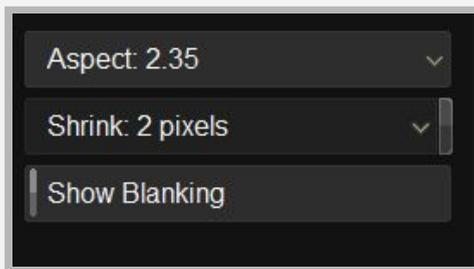
Dolby Vision 2.9 and 4.0 - Working with letterboxed content

Taken from Dolby Vision best practices guide

- Avoid using positive values on the LIFT trim control for letterboxed content. (negative Lift can be used).
- The current implementation on Ultra HD Blu-ray and some OTT HDMI devices apply the Trims to the letterbox blanking area to allow sub titles to appear over them.
- If the scene contains positive Lift values to raise the target black levels, this may cause the letterboxed area to also lift.
- An alternate way to achieve the desired result is to use GAIN and GAMMA trims more aggressively as these controls are manipulating the tone curve to achieve a more lifted black effect without using Lift.
- If the content matches the canvas ratio, i.e. no letterbox, positive Lift can be used.

Show Blanking

In 2019.1 we have added a function in the Dolby Vision tool to allow you to see the effect of the trims on the letterboxed area. This way you can be sure there is no lift applied.



Turning on this function will hide the letterboxing and allow you to see the effect the trim is having on the letterboxed areas. The function will not affect analysis and is purely for viewing, it affects all clips globally.

Analysis - Shrink area (use with care)

Due to the way that specifically pillarboxed areas are sometimes calculated it is sometimes possible to have material that has a single black line that may fall into the analysis area.

Example:

Material is pillarboxed with 1.66 mask in a 1920 x 1080 project - the exact calculation means that the blanking on the left and right is 63.4 pixels.

Most users will calculate their images to have a blanking of 64 pixels left and right, rounding up the values. It is possible that the left edge of the image will be one pixel smaller than the 1.66 mask used for analysis of images for Dolby Vision mastering

We have added a Shrink option in the analysis menu that will make the analysis area 2 or 4 pixels smaller on the edges, meaning that the black edge will not be used to calculate the analysis. Please note, it is only valid for the analysis phase.

Customisable Measurement and Viewer Tools

User configurable Scopes and other viewer tools

In this version we have added the option for users to display multiple scopes and measurement tool at the same time. It is easily configurable and it is easy to create user presets.

Please remember - having a lot of scopes on the monitor will affect real-time performance, especially in UHD or 4K and high frame rates. There is an option to not display the tools while playing back.

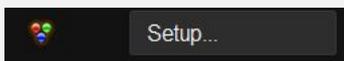
Currently the scopes can only be placed on the GUI image or on the SDI monitor output.

The ...setup button previously used for CMS setup will now open a Viewer Configuration menu containing option to configure Scopes, CMS setup (if active and Apply CMS is not selected), Grids, Masks, Viewer tools

The region of interest that can be set by clicking and dragging the mouse on the image canvas can now be reset by clicking on the image, or using the reset icon as before

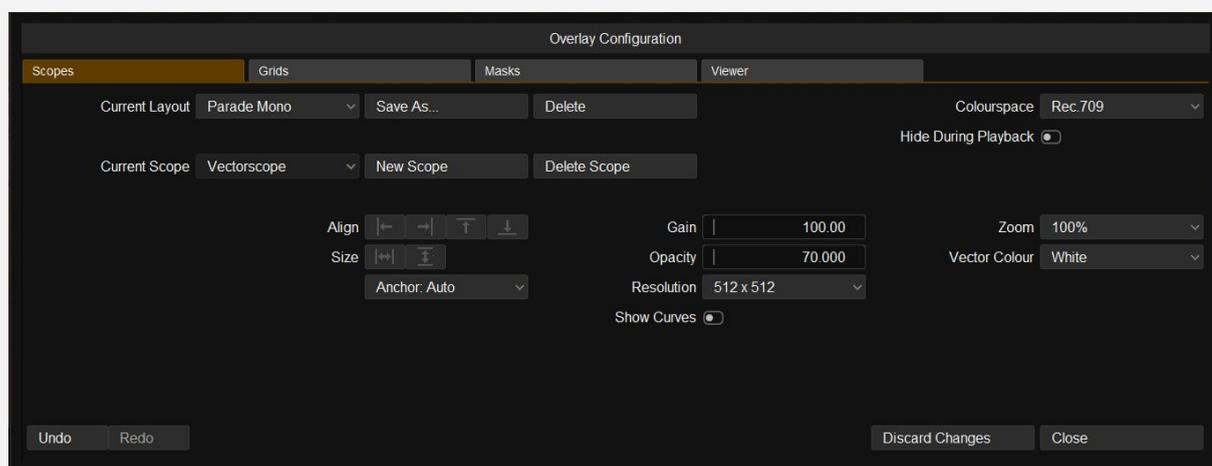


The icon still functions to turn CMS on and Off if "apply CMS" is not activated



New features:

- CIE Graph with two configurable gamut outlines per graph to display limits
- Choice of working colour space for CIE and Vectorscope rendering - 601, 709, P3, 2020
- Working space will also adjust P3 or 2020 luma coefficients for PQ scope
- Compare Diff threshold can be set interactively (lower value is more sensitive)
- Overlay brightness can be set interactively (HDR function)
- Mask transparency can be set interactively (view only)
- Easy to add Masks and Grids as needed
- Per user presets for scopes, masks and grids - inside the the user folder.



Scopes Tab

- Make sure the curves (top icon) scopes and scopes button is turned on



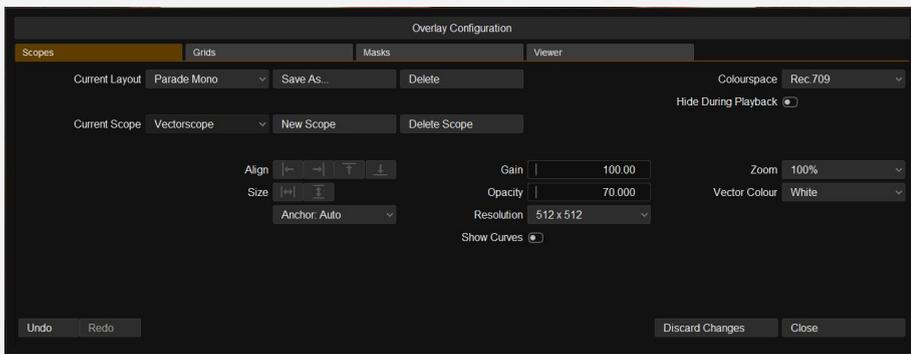
- Click the ...setup button to open the menu - the first tab is scopes.

Create a new or modified layout

The Current Layout list is the same as what you have in the GUI, choose a layout here to customise, click Save As... and enter a name for a new layout. Press discard to return to the last saved position.

Adding another scope to a layout

- Make sure no scope is selected (green outline)
- Choose the scope you want to add from current scope menu
- Press new scope, this will add a scope.
- With a scope selected, changing the current scope will change the selected scope
- The curves are always shown overlaid on the first scope added to a layout, they can be activated for other scopes or added to a layout using the Curves scope preset.
- Curves will only be displayed if it is relevant to the selected tool.

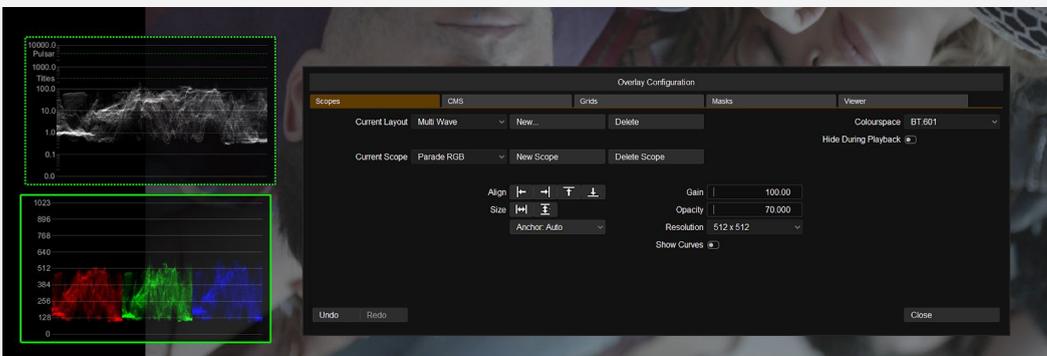


All changes are saved when the close button is pressed.

Select a scope by clicking on the scope, moving over scopes will show a red box, this is to show the scope that will be selected if clicked

After selecting a scope, select a second using ctrl and clicking, the second selection will have a dotted outline and the first a solid outline. The first selected scope is used as the guide to align or resize other selected scopes.

Holding down Ctrl with scopes selected will allow you to move all selected scopes at once.



Available settings include:

- Align Left, Right, Top and Bottom - Based on multiple selections
- Match Width and Height
- Gain - Gain of the measurement data in the scope
- Opacity - Opacity of the scope lines and layout
- Resolution - this sets the sampling resolution for the selected scope - 512x512 is the default - higher sampling rates will affect performance.
- Show curves - this will select which waveform will show a curve overlay when curves is selected
- Magnification settings for Vectorscope 200% and 500%
- Green or white display for Vectorscope

The following settings are not saved per layout but are project settings

- Colourspace - choose between BT601, Rec.709, P3, 2020 for Vectorscope and CIE display
- Hide during playback
-

Anchor - this defaults to Auto - it will automatically adjust the origin corner of the scope depending on the size of the screen.

For example: if your GUI is 1920x1080 and you are trying to position a scope bottom right on a 4K SDI screen, the Auto option will automatically jump to that corner once you have moves the scope past half way

CMS Tab

The CMS tab has the same function as it did before - if set - you are able to change the LUT being used, either by using the preset LUT menu or the path. It will not be available if the CMS for the output format is set to "Apply CMS"

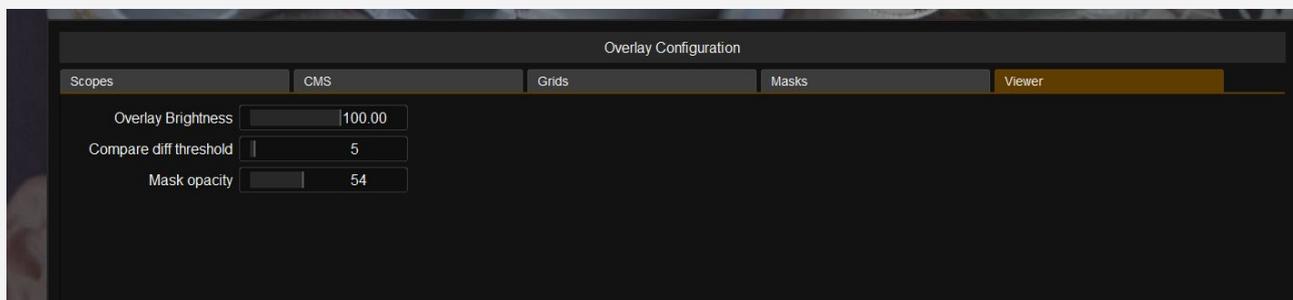
Masks and Grids

Please note - the masks and grid tools cannot create boxes or shapes

- In these tabs you are able to add and remove user define masks or grids, select the New button
- Type the aspect of the mask you need - in this case 2.888
- The mask or grid ratio will be derived from the name
- Click delete to remove the selected Mask or Grid
- Masks and Grids are available immediately as a user preset.

Viewer

- Use Overlay brightness for HDR - reduce that levels of keys, shapes drawn on the SDI output
- Use compare Diff threshold to change comparison values for Red and Diff compares
- Use Mask opacity to change the opacity of masks, useful when repositioning material

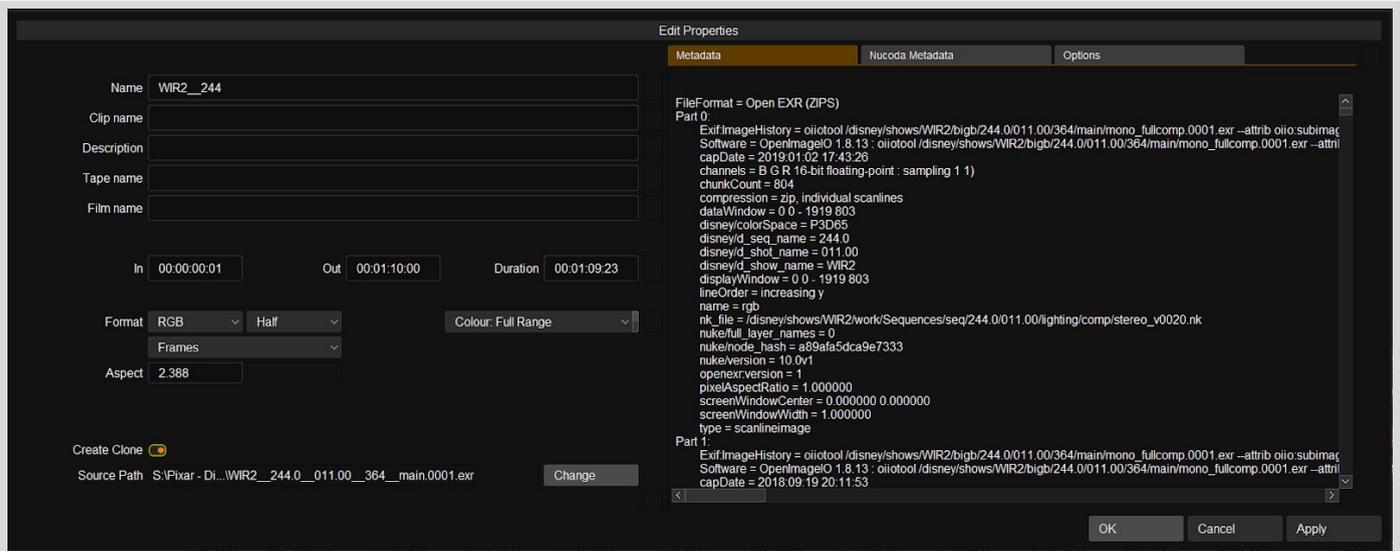


Support for EXR files with multiple embedded mattes

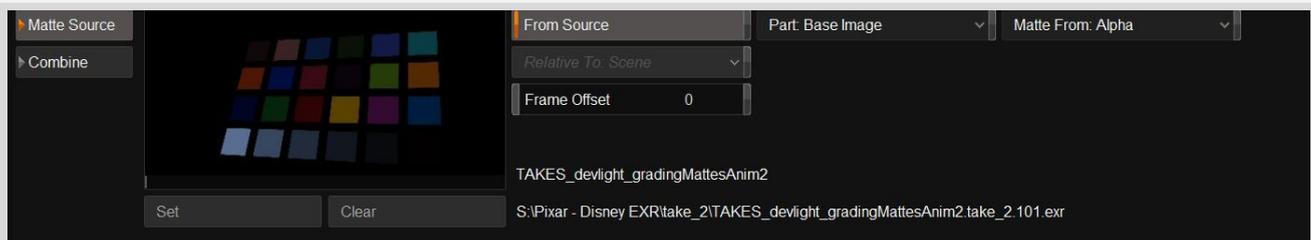
This version supports multiple embedded mattes within Open EXR Files. These special files will generally have a Base image (Main RGB image) and then multiple separate parts that contain images in matte or R G B channels - usually mattes for grading or compositing.

Compressed EXR are supported, but performance will depend on the compression and size of the files, since a very large amount of information can be placed in the files.

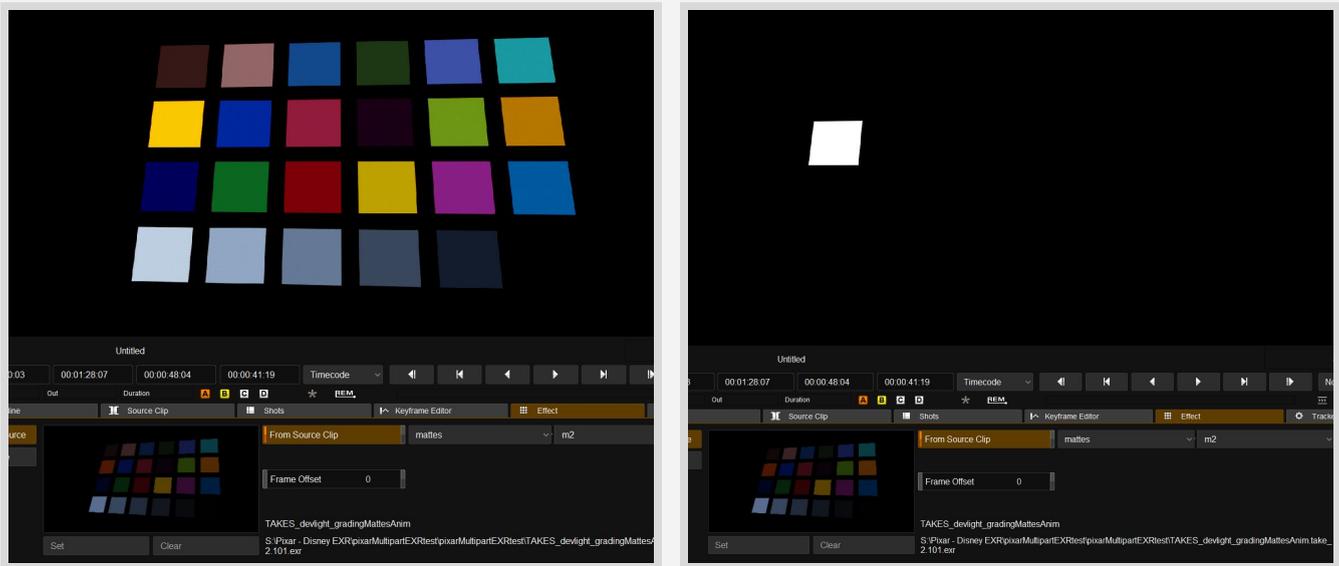
- In Nucoda we only support the datawindow in the image - use of the display window is not supported



In the Matte Tool in the layer stack, there is a new option to use the Source as Matte, this makes setup much quicker. Once selected, the image is read and we will show the Base image.



If there are any additional parts they are shown in the list, and any available channels in the part is listed in the order they are in the file. Selecting a part and a channel will select the matte.



Use the show function in the Router (Show on Precision panel) to see the selected matte

Precision Panel Control



In the Matte tab on the third screen from the left (default) you will find some new controls

- From Source button - This allows you to set a file as its own source, without messing around in the library.
- Matte Part - Name of the part in the file
- Matte from - which layer contains the matte - normally R, G, B or Matte depending on the file type.

Using the knob or rocker switches will allow you to select a Matte Part, and Matte from will let you choose the matte you wish to use - layout is very individual and will depend on the way the EXR are build.

The joystick (hold down until it beeps) will let you either turn or nudge the joystick to select Matte Part and Matte from selections. It will cycle through all the matte and from options, making is really easy to find and choose a matte.

Syntax for EXR Layer additions to the EDL

***NUCODA_LAYER** [layer name] [-effect <effect-id>] [-matte.part.channel]

[layer name] - optional layer name - no spaces allowed

[-effect <effect-id>] - optionally add effect to layer on creation

[-matte part.channel] - Set matte part and channel (this will depend on the EXR file)

TITLE: WIR Mattes

001 WIR V C 00:00:00:01 00:01:07:05 01:00:00:00 01:01:07:04

*FROM FILE: \media\EXR-Mattes\wdasMultipartEXRtest\WIR__244.0__011.00__364__main.0001.exr

*NUCODA_LAYER Shirts -matte.part charMatte10.R

*NUCODA_LAYER Noses -matte.part charMatte3.B

This example EDL will:

- Import and place the the main shot on the timeline
- Add layers called Shirts and Noses and set the Matte input to use the correct parts
- There is no need to specify the filename for the mattes - if there is no filename we will use the file that was imported to the timeline as the source.

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