# DaVinci Resolve17

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#### **REMOTE COLLABORATION GUIDE**

## creative.space®

SIMPLIFY. INTEGRATE. INNOVATE.

## Introduction



I entered the industry as the first video-capable DSLR camera, the 5Dmkll, hit the market. This sparked a revolution across the world where almost anyone could get an affordable camera and call themselves a filmmaker. In my early career as a Colorist, I took any project that came my way, including many that were funded by passionate individuals out of their extremely small pockets. Colorists have to get the timeline from editorial into their application to be able to work on it, which forces you to hit all of the workflow mistakes made earlier in the process. The Colorist becomes a bearer of bad news to someone at the end of a long and arduous journey. Filmmakers think they are almost done, but then they have to learn some hard lessons. Just because the technology is more affordable, doesn't mean it is any less complex.

I moved from Orange County, California to Atlanta, Georgia and it felt like the industry moved with me. However, my new home didn't have the same established infrastructure to learn the ropes from industry veterans. After making my own films end-to-end, I fell in love with the post production process and color in particular. Starting in the dailies department at Company 3 working on features overnight while in college, I've been a working colorist in Atlanta for almost a decade now on features, episodic television, and commercials.

In addition to my post work, I am the Product Manager for creative.space at DigitalGlue. We are a systems integrator with 18+ years in the Media and Entertainment industry. Our roots are in broadcast and satellite infrastructure, and we transitioned with the industry into file-based workflows over the last two decades. Our team specializes in integrating multiple products into practical solutions with the help of our in-house software development team. We design and deployed solutions for everything from full production facilities to media asset management and storage. Three years ago, we started creative.space as a workflow platform centered around on-premise storage servers and intuitive software that creatives can easily use and manage without specialized technical knowledge or a dedicated I.T. department.

creative.space is more than just another hardware appliance. It is an enterprise-level storage platform complete with proactive support and an intuitive software interface designed based on feedback and suggestions from creatives just like you. creative.space is built to give content creators complete control over their projects by removing technology roadblocks so they can do what they do best: create. The first step towards turning your vision into reality is storage since it sits at the heart of every workflow. My career has been focused on developing workflows that help creatives stay creative and not break their flow to deal with technology. No project should crash and burn because of the complexity of creative tools. For now, I hope that this guide helps you master your collaborative workflow, whether you are using creative.space or not.

Sincerely, Nick T. Anderson

## Second Edition: What's New?



#### DaVinci Resolve 17<sup>™</sup> Released

You are reading the second edition of this guide, which has been updated to include the exciting new collaboration features included in version 17 of DaVinci Resolve, which is now finally out of beta.

The two notable features included in this release are:

- DaVinci Resolve Bin (.drb) and Timeline (.drt) exchange formats
- Proxy Support

These features dramatically simplify the collaborative workflow and, as such, this guide was was amended to include these updates. We understand that not all teams want to jump onto new software right away, so the previous sections with the pre-17 instructions are still included and will directly follow the new sections.



#### New Ways to Connect

Since we released the first edition of this guide, the world has been innovating around remote workflows. The section "Real-Time Feedback in Context" has been updated to bring awareness to three technologies that we find helpful:

- Camo Studio as a way to turn your iOS device into a webcam
- ATEM Mini Pro and Extreme Switchers from Blackmagic Design
- NDI as a Webcam Source from NLE Monitor Output

## creative.space°

## Enter the Fog: **A New Kind of Workflow**

Our customers were forced to adapt to the pandemic along with everyone else. The original blog posts that were adapted into the first edition of this guide were written in the first few days of the lockdown. This series of posts was a hastily written attempt to brain dump all of the best practices that were answers to the questions that were flooding into online channels as creatives started to rethink their workflows. One thing we didn't really cover in the original guide was creative.space and all the workflow features included that can make adapting easy. In this second edition, the final section outlines creative.space and our "Fog" workflow, which provides the benefits of the cloud with an affordable server at your location where you can access it locally with a high-bandwidth connection.

## What You'll Find Inside

This guide is the result of the questions that creative.space's Product Manager, Nick T. Anderson, repeatedly answered from customers and within online forums. If you've been searching far and wide for the "bullet-proof" workflow that ensures seamless collaboration wherever you are, then this is the guide for you. Even if you don't edit in DaVinci Resolve™, following the steps in this guide is the key to preventing conform issues down the line. Every project is different, so this guide focuses on providing context that can be used to assist with adapting the features available to a wide variety of workflows.

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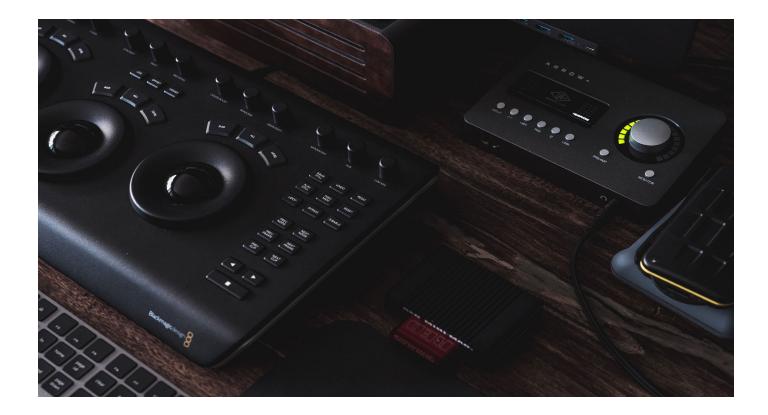
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## Streamline remote workflows by leveraging Blackmagic Design's DaVinci Resolve™

DaVinci Resolve<sup>™</sup> is an essential tool for working across multiple applications like Avid Media Composer<sup>™</sup>, Adobe Premiere Pro<sup>™</sup>, and Apple Final Cut Pro X<sup>™</sup>. Even if DaVinci Resolve<sup>™</sup> isn't being used for creative work, it is a media processing powerhouse with a robust feature set not found in any other tool.



#### DaVinci Resolve™ can be used to:

- Manage all media assets for a production as a central database.
- Generate audio-synced and logged proxies with embedded metadata for bulletproof round tripping.
- Generate proxy and cache media that can be accessed and rendered from, even when users don't have access to the actual media.
- Import and export of timeline and clip metadata formats for every major Non-Linear Editor (NLE), making it the ultimate translation tool for working between applications.



The key to remote collaboration is to foster a collaborative experience that enables the free exchange of work between team members.

What seamless collaboration looks like:



Access to the Same (or Analogous) Files:

You know you've achieved this when the media you need isn't offline.



#### Easy Exchange of Creative Work:

For NLEs, you know you've achieved this when you are able to exchange timelines without relinking or unexpected conform issues. Some specific translations will still occur between applications.



#### **Real-time Feedback in Context:**

You know you've achieved this when you can have back and forth discussions that result in less wasted time and more clarity on what needs to be done in the next iteration.





## DID YOU KNOW?

DaVinci Resolve™ is the key to allowing everyone to work in their application of choice. It can be used as a translation engine by importing timelines from other applications and then exporting them in a variety of formats. Format support varies between applications, so DaVinci Resolve™ takes adapting timelines to the next level with the ability to "re-conform" timeline items to any other clips in the Media Pool that are a valid match. By following the workflow in this guide, this means clips in timelines can be swapped between source, proxy, and other forms of the same content. This is even more relevant for remote workflows, where timelines can be "re-conformed" to the instances of clips that the local user has access to. A VPN makes it possible to stream proxies that are small enough for real-time playback over the internet and even render to other workstations that have faster access to the higher quality versions of content.

# BUILDING BLOCKS FOR A

Today, there are many possible combinations of cameras, formats, apps, and services to choose from. What is important is how you take these building blocks and bring them together into a single workflow. For remote collaboration, everyone needs a way to access the files, a way to exchange their creative work, and a way to communicate and provide feedback.

Access to the Same (or Analogous) Files It doesn't really matter how you get the files. You can sneakernet a physical drive or use one of the many file sharing P2P or cloud options on the market today. An end-user can also set up a hardware or software VPN with a FTP server, like we include with our creative.space NAS appliances. It all comes down to speed and cost.

#### Easy Exchange of Creative Work

Each Non-Linear Editing application (NLE) provides its own file-based timeline metadata containers, such as XML, FCPXML, AAF, EDL, and now DRT and DRB. Each application has its own nuances, which result in translation issues that end-users have to manually fix in the "Conform" process.



#### Real-time Feedback in Context

This is where most of the cloud services you are seeing promoted right now are focused. Screen sharing services provide varying levels of latency and visual quality based on pricing and allow multiple people to see what you are doing and provide feedback in real-time as if they were in the room with you. Cloud-based Review and Approval services let you upload renders of your timelines for people to add timecode comments and annotations to, so you can incorporate the notes back into your edit.

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Not everyone has the workload to justify creative.space, so our guide will focus on an approach that requires nothing more than individual collaborators storing their files locally, using any means to transfer those files back and forth. The workflow outlined in this guide lets you prep the big files and get them to everyone all at once and then reduces the amount of data that needs to be sent over the internet to the size of an email.

## OUR **guide**

DaVinci Resolve<sup>™</sup> has a "Collaboration Mode" that allows multiple users to work on the same project at the same time, but this only works if all of the workstations are in the same local network due to latency issues over the internet. As a result, this guide focuses on an entirely different collaboration workflow with DaVinci Resolve<sup>™</sup>. What does this look like?

#### S Individual Projects

Each user has their own project that they are working in, that acts as a "Sandbox". For DaVinci Resolve™, this may also mean different databases.

## 🛃 Media Assets

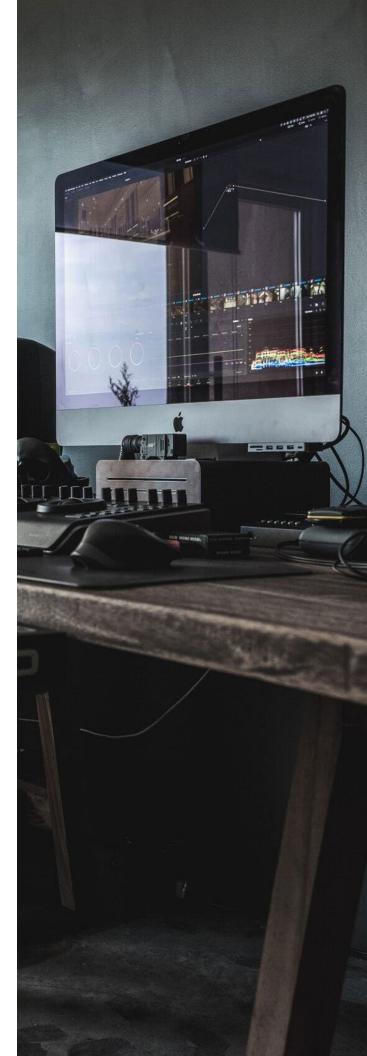
Users exchange Davinci Resolve Bin (DRB) and Timeline (DRT) files as well as other timeline metadata formats like XML, FCPXML, AAF, and EDL.

#### **=** Exchange Content

Users exchange DaVinci Resolve™ Project (DRP) files and/or Timeline Metadata (XML, FCPXML, AAF, or EDL) files, bringing new timelines into their DaVinci Resolve™ project.

Future editions of this guide may cover the collaboration features in Adobe Premiere Pro (Productions), Avid Media Composer (Bin Locking), and Final Cut Pro X (Library Syncing). This guide focuses on providing essential information on how to leverage DaVinci Resolve to make multi-app workflows smoother. For now, this guide assumes that readers have a basic understanding of their application of choice and how to edit with the files generated by DaVinci Resolve<sup>™</sup>.

> Not every project requires the level of complexity this guide covers. For short-form projects, there is a quick and easy workflow that uses Scene Cut Detection and a Flattened Video. The next section breaks down this workflow. If this isn't relevant to your project, you can jump ahead.



## SHORT-FORM WORKFLOW

## SCENE CUT DETECTION

Not every project demands the highest quality or can justify the time required to properly conform a timeline for Color from Editorial. In these cases, it may make more sense to use DaVinci Resolve's "Scene Cut Detection" workflow. For this to work properly, Editorial needs to export the timeline as a flattened video without titles or effects. Ideally, all of the clips on the timeline are also in their original colorspace, providing more data for the Colorist to work with. In Resolve, the Scene Cut Detection feature automatically finds the cuts and allows the user to import the flattened video as individual clips. When round-tripping the colored timeline back to Editorial, they just need to bring in the flattened video and add back the effects and titles on top. For projects with short turnarounds, this workflow is simple and quick.

> Add Clips Based on EDLs into Media Pool... Add into Media Pool With Offset...

Add as Offline Reference Clip Scene Cut Detection...

Extract Audio...

#### 2 REVIEW AND REVISE CUT POINTS

Then, click Auto Scene Detect and wait for it to analyze the video, adding lines where it detects changes. These lines may or may not go over the threshold to be automatically considered a cut. Be sure to go through and check the smaller grey lines to see if they are cuts. Also, make sure that any fades are only counted as a single cut. You can add a transition to transition your color to match the fade. When you are done, click Add Cuts to Media Pool.

#### Create New Timeline Using Selected Clips... Create New Multicam Clip Using Selected Clips...

**Create Bin With Selected Clips Remove Selected Clips** 

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#### IMPORT USING SCENE CUT DETECTION

First, you need to find the flattened video in the Media Browser on the Media Page of DaVinci Resolve. Right click on the video and select Scene Cut Detection...



#### **13** CREATE A TIMELINE WITH CLIPS

All of the clips will be added to the Media Pool in order, based on Timecode. Select them all in Timecode order, right click, and select Create New Timeline Using Selected Clips....



This workflow doesn't really allow collaboration, but it does let you quickly complete remote work. A ProRes file for a spot under 5 minutes is usually small enough to download in less

Keep in mind that this workflow doesn't scale well. If there are ever revisions, grades will have to be manually copied clip by clip to the new timeline. In addition, there aren't any frame handles in the flattened video to adjust the edit with.

## SECTION 1 ACCESS TO THE SAME CONTENT

## Section 1: **ACCESS TO THE** SAME CONTENT

There are some media prep steps that need to be taken before people start using clips in timelines, such as audio syncing, audio channel mapping, and initial color management. Failing to complete these processes at the beginning will lead to workflow and conform issues down the line. Once a clip is added to a timeline, there is no easy way to link audio to it. Audio channel mappings must be consistent when relinking/reconforming media. Color can be updated by replacing files, but any effects added to the clips may need to be adjusted.

The first step to building a collaborative workflow is to break down all of your team members and the assets they need. Multiple assets may represent the same actual "content". The key is to use the workflow outlined in this guide to ensure that all these assets share a common unique identifier that can be used to relink and reconform as needed. For this workflow, DaVinci Resolve™ acts as the central hub to ingest the Source files from cameras and sound recorders and then generate the rest of the assets needed for the project. Different types of files are needed for different scenarios, and this workflow creates a "bullet-proof" link back to the original content. This link is even more essential if you plan on coloring in DaVinci Resolve™.



#### Source

Also known as the Original Capture Format (OCF). These are the files straight from capture devices like cameras and sound recorders and are used for Online operations, such as Color and VFX.

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#### Master

Transcodes of Source files that are of high enough quality to be used for Color, VFX, and final delivery.

#### Cache

Frames generated by DaVinci Resolve™ that are linked to specific database records and can be used for playback and rendering in place of the actual clips they represent.

#### Proxy

Renders of Source and/or Master files that are used for Offline operations, such as editorial and sound.

#### Web

Highly compressed files that are web-friendly and can be used for Offline operations in a pinch, but may cause performance issues.

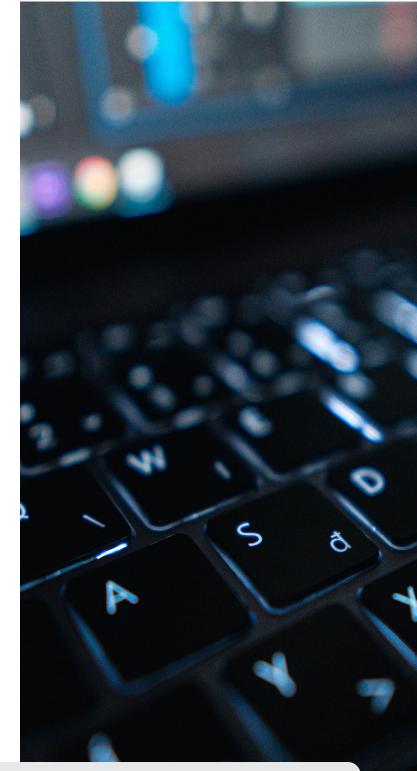
When files are generated properly with Reel Names and Timecode, re-conforming your timelines between different forms of the same content becomes really easy. Editors can start working with smaller files that are easier to access and download over the internet, so the urgency for transferring larger files is reduced. The higher quality files can be synced overnight or even physically delivered on a hard drive (sneakernet). The list above reflects the order in which you generate the various forms of content. The reverse of that roughly shows the order in which to send files from smallest to largest.

## A CLOSER **LOOK**

## Leverage Reel Names to dramatically improve your workflow

Anyone who has ever had to relink files in an NLE understands how frustrating this process can be. File names are the default way most people relink files, which can lead to issues when files have different extensions and when multiple files in the project have the same name. What most people don't know is that there is already a tool understood across applications to ensure a bulletproof relink and conform: Reel Names.

Reel Names, known by some applications as Tape Names, is a metadata field that can be embedded into files as an alternative for file names to relink and conform. By leveraging DaVinci Resolve<sup>™</sup> and its database as the central hub for your production assets, you can render clips with a Reel Name embedded. This ensures that the clips will link back to the source assets in Resolve when it comes time to color. Reel Names fit nicely into the dailies process along with audio channel mapping, color correction, and metadata logging.



## DID YOU KNOW?

Online and Offline aren't just terms for the internet, they are a short-hand used to define which parts of the Post Production workflow are done with high-quality or high-performance assets. Capture and master formats are built for the highest quality possible, which often means these files can't be played back in real-time on some computers. Color, VFX, and Finishing are typically "Online" processes, meaning they are performed with these higher quality formats. The "Offline" parts of the workflow, like Editorial, Sound, and Review, use optimized files rendered from the Online that provide real-time performance at the expense of quality. Today, computers are much faster than they used to be, making it possible to have an end-to-end Online workflow. Even so, having video and audio synced into a single file before Editorial reduces possible workflow bottlenecks when trying to roundtrip to audio applications like ProTools.

## QUICK STEP GUIDE

Leverage DaVinci Resolve<sup>™</sup> Reel Names to dramatically improve your workflow



Go to your Project Settings



Go to General Options and turn on Reel Names



Manually set Reel Names for individual clips as needed



Prepare Sound





Render the Proxies with **Reel Names** 



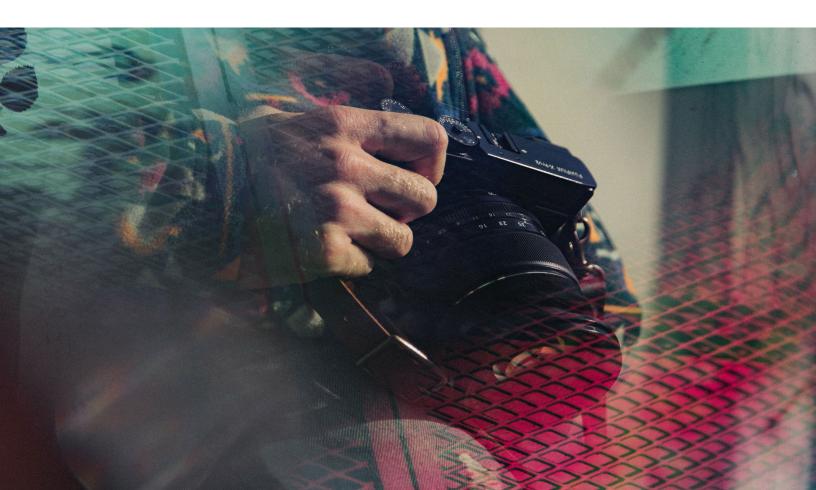
Import Proxies into your **Offline NLE** 



Updating Proxies

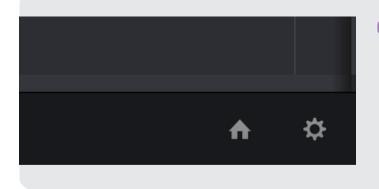


Importing the Offline Edit into Resolve



## STEP BY **STEP**

## How to add Reel Names to clips in DaVinci Resolve™



01 Select cache resolution & format Open **Project Settings** and click the **gear icon** in the bottom right of the window to open the

# Project Setting:: Confor Options Masse sating Ender Advance Or Advance Ender Advance Career and Ray Source of ple aphrane Satistics Source of ple aphrane Target Advance Source of ple aphrane Satistics Source of ple aphrane Target Advance Source of ple aphrane Satistics Source of ple aphrane Target Advance Source of ple aphrane Satistics Source of ple aphrane Target Advance Source of ple aphrane Satistics Source of ple aphrane <

You can also use only part of the Reel Name for conforming, with options to "Limit" and "Ignore" the characters that are read.

#### 02 Go to General Options and turn on Reel Names

**Project Settings**.

On the **General Options** tab of the **Project Settings**, there is an **Assist using reel names from the:** section. The setting chosen here will be the default for the Project, but individual clips can manually be set to different rules.

The biggest decision you need to make is whether you will use Reel Names to represent individual clips or batches of clips.

Using a Reel Name as a unique identifier for an individual clip is like picking a unique code word that can be used to identify it regardless of how that file's name might change. It connects multiple files as coming from the same source content.

Using a Reel Name as a unique identifier for batches is like a label that says these clips belong to and are unique within this container. The file name continues to be an essential identifier, and the Reel Name is used to resolve conflicts. Check the box next to **Assist using reel names from the:** and select one of the following options:

<b>OPTION 1</b> Source Clip File Path Name	Obtain the Reel Name by extracting it from each media file's path. This makes it possible to extract a Reel Name from all or part of the file name, or from all or part of the name of any folder in the path that encloses that file. This extraction is defined using the Pattern field, which is explained in greater detail on the next page.
OPTION 2 Mediapool Folder Name	The reel name is obtained from the name of the bin in the Media Pool that encloses that clip. This option is helpful for certain workflows where the bin naming is used to differentiate files that have the same name. For example, footage shot on DSLR cameras with naming that starts over every time the camera card is reformatted. If every camera card has a clip with 00001.mxf, setting a Reel Name will allow you to identify which instance of that filename you are actually referring to. Additionally, VFX clips delivered in batches can use this setting to discern between versions while keeping individual clip names consistent. When you use this option, there will never be any question as to which assets in your Media Pool are being referenced. It will always be the asset with the file name being referenced within the bin that is indicated by the Reel Name. When you import timelines from other NLEs, you will be able to point to these bins and the proxy references will relink to the source assets that you generated them from, even if file names repeat.
<b>OPTION 3</b> Embedding in Source Clip File	Useful for file formats where the reel number is embedded within the media file itself. QuickTime files created by Final Cut Pro, REDCODE RAW files, DPX frame files, and CinemaDNG files are all formats that are capable of containing reel number header data. If your source files already have this metadata and there is no chance for file name overlaps, this is the ideal option.
<b>OPTION 4</b> Source Clip File Name	If there is no defined Reel Name, often it's easy to just use the source clip filename. This is a safe option to use in situations where you want to manually choose different reel name extraction methods for individual clips using the Clip Attributes window. It will ignore the file extension.

# Here are a series of search characters that may be used, according to the DaVinci Resolve™ manual:

?	Looks for matches of any single character. Add as many question marks as there are characters you want to match. ?? matches two characters such as 02; ??? matches four characters such as 0002.
****	A wildcard that creates matches for any sequence of zero or more characters.
%R	Specifies the Reel Name's actual location. Reel Names may contain any character, but should not contain a directory separator (forward slash).
%_R	Extracts the Reel Name and strips out the R3D file name underscores found in EDLs from Final Cut Pro 7 or earlier.
%D	Matches any directory name or file name. When this is the last operator in a pattern, do not add a forward slash.
/	Used to separate any two operators

## WHAT DOES THIS MEAN?

The default example provided is: \*/%R/%D. The \* at the beginning says that all parent folders from this point back are irrelevant. The %R signifies that the name of the direct parent of the file should be used as the Reel Name.

The %D signifies where the actual file is in the structure, which is at the end of the path. In effect, this pattern will result in the direct parent folder name being used as the Reel Name.

Some file types, like XAVC, use a folder structure that is several levels deep. To revise the example above to use a parent folder three levels up, we need to use the pattern \*/%R/%D/%D/%D. So, if the file path is \*/SOURCE/Video/A001/XDR00T/Clip/A001C001\_160522CN.MXF, then A001 would be successfully extracted as the Reel Name.

#### 03 Audio Syncing

✓ Batch 1		SCENE_1A_TAKE_3_poly	_07.wav
Video	Create New Timeline Using	g Selected Bins	_07.wav
	Create New Multicam Clip	Using Selected Bins	_07.wav
Audio	New Fusion Composition		_07.wav
	Remove Bins		y_07.wav
Power Bins	Open Bins As New Window		_07.wav
> Master	Stereo 3D Sync		_07.wav
· musici	Stereo 3D Mode		_07.wav
	Import Media from XML		_07.wav
Smart Bins	Import Subtitle		_07.wav
Smart Bins	Remove All Clips in Bins		_07.wav
🕲 Timelines	Relink Clips for Selected B		_08.wav
> Keywords	Auto Sync Audio		Deved on Timese de
> People			Based on Timecode Based on Timecode and Append Tracks
	Color Tag		Based on Vinecode and Append Tracks
> Shot		SCENE_1H_TAKE_1_poly	

It is at this point that you should sync any separately recorded audio. If you add clips to timelines before syncing audio and mapping channels properly, you won't be able to update those clips later. The beauty of DaVinci Resolve™'s audio syncing workflow is that it adds the audio channels directly into the video clips, instead of making new grouped or merged clips, and in this process copies the metadata from the audio files. So, if you logged Scene/Shot/Take and Channel Description metadata in your audio files, those will magically be added to the video.

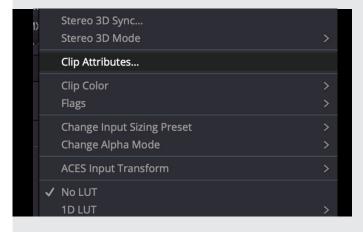
To sync audio to video, the first step is to place the Video and Audio clips into the same bin or in separate bins underneath the same parent bin. Then, right click on the parent bin and select Auto Sync Audio. Another menu will pop up with four options.

- · Based on Timecode
- · Based on Timecode and Append Tracks
- Based on Waveform
- · Based on Waveform and Append Tracks

The choice to use **Timecode** or **Waveform** will depend on whether or not you jam synced timecode between the camera and sound recording device. If you don't have matching timecode and you recorded scratch audio in camera, then you can sync the audio based on matching the waveform pattern. Syncing based on waveform is not always perfect, so it is important to check for accuracy.

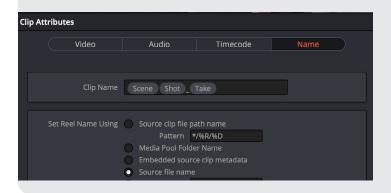
The choice to **Append Tracks** or not is based on whether you want to keep the existing audio channels embedded in the video clip. Appending adds the new audio channels after the existing ones. If you don't append, then the original audio channels will be replaced.

#### 04 Select Clips and Open Clip Attributes



Select one of more clips and right click on them. Select **Clip Attributes**...

## 05 Manually set Reel Names for individualclips as needed



On the Name tab, you can set a custom Clip Name using metadata fields starting with a % sign. In addition, you can set a custom Reel Name setting for the selected clips using <u>the same logic outlined previously</u>, allowing different types of assets to be handled differently.

The same options as the Project Settings will be available, with the addition of a User Defined field. Choose the options that make the most sense for the clips you have selected.

#### 06 Map Audio Channels

Clip Attributes			
Cilp Attributes			
Video	Audio	Timecode	Name
Format Adaptive	5 🗸 Tracks 1		Ð
Format Adaptives		Add	
Format	Source Channel	Track C	hannel in Track
Adaptive 5 🗸 🗸	1 - SLATE MIC (Linked)	✓ Audio 1	Channel 1
	2 - BOOM (Linked)		Channel 2
	3 - WALTER (Linked)		Channel 3
	o mileren (einkeu)		chumer 5

It's important to ensure you map all the audio channels properly for your workflow. The mapping will determine how the audio channels in the clip will map to audio tracks in the timeline. Having all the channels on a single track per clip makes editing easier. For this reason, we typically recommend mapping the channels into a single track of Mono, Stereo, or Adaptive. Adaptive is great for editing in DaVinci Resolve™. You won't be able to go back and change this later, so be sure to test sending timelines back and forth between your applications of choice before committing to any single approach.

The process to take source video and audio and map the channels will be different based on your source format and how the sound mixer recorded their files onset. For example, if you don't do anything to an XAVC clip, it will have 6 mono channels of audio. You can remap these into a single track with 6 channels OR fewer if some of those channels aren't used. In the example to the left, we have completely replaced the camera audio with a poly mix file from the sound mixer. In this case, the mixer labeled each of the channels, so we are able to identify exactly which mic each channel represents. As you can see, we chose Adaptive 5 as the format and 1 track. This puts all 5 of these channels onto a single track in the edit timeline.

## DID YOU KNOW?

When you import NLE-specific timeline metadata, like a Final Cut Pro 7 XML from Premiere Pro, even though the effects won't be applied in DaVinci Resolve™ they are preserved and added into the round trip metadata exported from the timeline. So, it is important to remove color and effects before sending to DaVinci Resolve™, otherwise the timeline sent back might not import as expected. The footage might end up looking weird, since the color and effects were applied to clips that had different color. In addition, effects like image stabilization, which require nesting, should be un-nested before sending to DaVinci Resolve™. Since DaVinci Resolve™ has high quality stabilization tools, these processes can be rendered into the files for editors to simplify their timelines.

#### 07 Prepare Color

	Color Space & Transforms		
		ACEScct	
		ACES 1.1	
Color Management			
Capture and Playback			
Fairlight			
		Sony SLog3 SGamut3	
		Rec.709	
		ACEScc AP1 Timeline Space	
		HDR mastering is for 1000 nits	

There is no "correct" color pipeline, but there is a chain of operations that you need to be mindful of. For example, if I am going to color with ACES, I would want to do a first light dailies pass so that the editors see something closer to how it will look when I am working with the files later. You always want to be mindful of what the editors and producers are going to be looking at, since over time they will develop a bias towards it, which might become a problem when it comes time to do final color. If the editor is going to apply their own color or effects on their side, this can cause problems down the line and a different approach might need to be taken, potentially rendering log proxies with an output LUT. It is beyond the scope of this guide to dive into color pipelines.

## 08 Render the Proxies with Reel Names

	► YouTube ¥	vimeo`	ProRes	H.264
Custom	1080p	1080p	ProRes Master	H.264 Master
Filename	SourceName			
Location	/Volumes/Wond	er Show/02_EDIT.	/Dailies/A001	Browse
	Render 🔵 S	ingle clip 🔘 In	dividual clips	
	Video	Audio	File	
File	ename uses 🔵	Custom name Source name		

## Once you have the settings right, go ahead and render the files to your preferred location.

You have to have a timeline to render anything in Resolve, which you probably already have from applying color. The most important thing is to make sure you set the job to render Individual Clips. This is required to embed the Reel Name into the rendered files. You can choose to **Use unique filenames** and add a **prefix** or **suffix.** This is totally up to you. The nice thing is that adding the Reel Name makes this choice less

Render Settings - Cus	tom_				
E E YouTi	ube 🌱	vimeo~	ProRes	H.2	264
Custom 1080p		1080p	ProRes Master	H.264	Master
<ul> <li>Export Video</li> </ul>					
Format	MXE	OP1A			
Codec		y XAVC			
Туре		a VBR 480 3840			
					—1
					- 1
$\sim$ Advanced Settings					-
Pixel aspect ratio					_
	O c	inemascope			_
Data Levels		uto			_
					1
			and super-white	data	1
Data burn-in	Sam	ne as project 🗸			
	U	se optimized m	edia		
	<b>U</b>	se render cache	d images		
Enable Flat Pass	Off				
	Zn	isable edit and i	nnut sizing		-1
		orce sizing to hi			
		orce debayer to			
Tone Mapping					
Add	0	≎ frame	handles		

#### 08 Render the Proxies with Reel Names (Continued)

problematic, since the Reel Name makes it possible to relink and reconform between multiple clips and files regardless of their file names.

It is important to mention here that there are some options that can dramatically improve your rendering times through making use of Smart Rendering, which is activated through the **Bypass re-encoding when possible** checkbox in the Render Settings. Smart Rendering only works when rendering from and to the exact same profile (format, codec, resolution, etc.) So, if you are using XAVC, for example, be sure you know exactly the bit rate used in camera. What is Smart Rendering? Instead of rendering frames through the CPU and GPU to write new files, the frame data is copy and pasted from the source files. This means you can't alter them in any way. If your footage is log, you have to keep it log.

Where this workflow is really powerful in Resolve is when you use the <u>Render Cache</u>. The profile you select for these caches will be the profile you need to match to Smart Render. In particular, leveraging the Render Cache will allow you to quickly render your dailies as long as you have played back the timeline at least once.

#### 09 Import Proxies into your Offline NLE

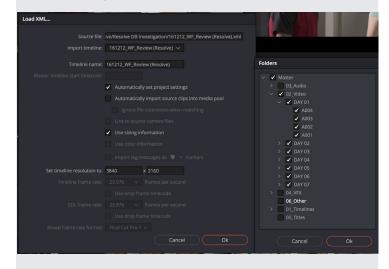
Whether you are using Resolve or another NLE for offline, the proxies generated in the previous step can help reduce cost by allowing you to use workstations with lower specs. Likewise, these files can be sent over the internet easier than source files, which often have a complex metaclip folder structure. At this point all you need to worry about is importing the proxies into your application and getting to work.

See the next section on how to use proxies in DaVinci Resolve.

#### **10** Updating Proxies

In Adobe Premiere Pro, the Reel Name is referred to as a Tape Name and is provided as one of the relinking options. Avid Media Composer provides similar options for relinking. Why is this important? If you continue to work on the proxies within Resolve, updating VFX and color, you can export new proxies and push those out to the offline editor(s) to work with. This process can be very dynamic, allowing specific shots to be worked on in context with the edit. By working in parallel, pacing can inform color and VFX with the resulting looks/ effects feeding back into the edit to inspire further creativity. This kind of collaboration can have a dramatic effect on your final product that wouldn't be possible with a traditional linear workflow.

#### 11 Importing the Offline Edit into Resolve



Okay, so the offline editorial team has a cut ready for you to color. How exactly do you get it into Resolve with the clips linked to your source assets, instead of the proxies? The key is to uncheck the Automatically import source clips into the media pool checkbox in the Load XML... dialogue. This will launch the Folders dialogue where you can check the exact bins to link to. Make sure that you don't check two folders that have clips with the same Reel Name in them. If you don't do this step properly, there is <u>a workaround using the</u> <u>Reconform from Bin(s) tool.</u>

#### 12 Update Timeline Color

~	Remote Versions Version 1	> >	
	Delete All Versions Reset Fusion Composition		
	Delete Unused Versions		
	Add into Current Group Add into a New Group Remove from Group Groups		
	Flags		
	Markers		
	Clip Color		
	Copy Remote Grades to Local		
	Copy Local Grades to Remote		
	Use Local Grades		
	Use Remote Grades		
	Display Node Graph		
	Change Input Sizing Preset		
	Render Cache Fusion Output Render Cache Color Output		
	ACES Input Transform		
~	No LUT 1D LUT 3D LUT DaVinci CTL CLF		
	Generate 3D LUT (33 Point Cube) Generate 3D LUT (65 Point Cube) Generate 3D LUT (Panasonic VLUT)		

The timeline should import and automatically relink to the clips in the bins you selected. If you color graded using Remote Versions for your grades instead of Local Versions, then the color should be automatically applied to this new timeline. All you will need to do is change the version for any clips with more than one version. If you used Local Versions, which is set by default, no worries, just right click on the clips in the color page for your dailies timeline and select Copy Local Grades to Remote. This will do exactly what it says, so those grades will be accessible from all instances of those clips across timelines. You can then do the opposite from your new timeline to copy the grades to the Local Versions.

#### **13** Conform Any Missing Clips

	New Compound Clip New Fusion Clip New VFX Connect Clip			
	Copy Remove Attributes Cut	жс жх		
	Ripple Cut	<sub>መለ</sub> ሰ		
	Delete Selected Ripple Delete Reset Fusion Composition	(X) (X)		
>	Enable Clip Change Clip Duration Change Clip Speed Retime Controls Retime Curve	D ₩D ₩R		
	Clip Color		>	
	Generate Optimized Media			
	Render Cache Fusion Output Render Cache Color Output		>	
~	Conform Lock Enabled Conform Lock with Media Pool Clij	2		
	Find In Media Pool Clip Attributes			

The last thing to make sure of is that the offline editors didn't use any additional assets that you don't have. You will quickly figure this out, as Resolve will tell you some clips weren't found and ask you to point to another location. If you can't find them, it will set them as offline. All you need to do is communicate with your team to have them send you the files. They should automatically link up once added to the Media Pool. If not, you may need to manually conform them. This is easy, just select an asset in the media pool, right click the offline clip in the timeline, and select Conform Lock with Media Pool Clip.

## A CLOSER LOOK | PROXIES

A fantastic new feature in DaVinci Resolve 17<sup>™</sup> is the addition of Proxies. The previous edition of this guide highlighted the caching features available in Resolve which can be found in the section following this one. Proxy files are easier to manage than Optimized Media since they are easy to find and share, but don't replace the value of a Render Cache. The new proxy feature allows the user to generate and/or attach a second file to any clip in the Media Pool that can be played in place of the original file path reference. The idea is to transcode formats that don't play back in real-time into one that does. Traditionally this meant a less compressed format that is less demanding on CPUs. Now, this also means a format that can play back in real-time over the internet via a VPN.

Resolve supports the generation of proxies in the following codecs:

- H.264
- H.265
- ProRes
- DNxHR

Proxies can be generated within Resolve or externally and then linked. Resolve supports more formats as proxies for linking than it does for generating. With a toggle switch, the proxies are used interchangeably with the source clip for playback, enabling real-time playback in situations that wouldn't normally be possible, such as streaming over the internet. Be careful to match the colorspace when making proxies so that applied color and effects match when toggling.

The supported resolutions for proxy generation are:

- Full
- Half
- Quarter
- One-Eighth
- One-Sixteenth

Rather than provide fixed resolutions, **Proxy media resolution** options are fractions of the source resolutions. For real-time playback over the internet, a bitrate of under 20 mbps is essential. I typically work with UHD (3840x2160) source material, so I create **Quarter** resolution proxies in ProRes Proxy or DNxHR LB that work great over my 1 GbE home internet connection.



# GENERATING PROXIES IN **DAVINCI RESOLVE:**

#### 01 Set up your Project Settings

Project Settings: 170102_WF		
Presets		HD 1080PsF 23.976 V
Master Settings		
Image Scaling		
Color Management		
General Options		Single link Dual link
Camera RAW		Quad link
Capture and Playback		Video
Subtitles		
Fairlight		
		10 bit 🗸
		Bilinear V
		Use Rec.601 v matrix for 4:2:2 SDI output
		Enable HDR metadata over HDMI
	Optimized Media and Render Cache	
		Quarter v
		DNxHR LB
		Original
		DNxHR 444 - HDR 🗸
		DNxHR 444 - HDR 🗸
		Enable background caching after     5 seconds
		Automatically cache transitions in user mode
		Automatically cache composites in user mode
		<ul> <li>Automatically cache Fusion effects in user mode</li> </ul>
	Working Folders	
		/Volumes/Nick-Cache/Resolve/ProxyMedia Browse
		Nolumes/Nick-Cache/Resolve/CacheClip Browse
		Nolumes/Nick-Cache/Resolve/.gallery Browse
	Frame Interpolation	
		Nearest
		Standard Faster V
		Medium v

#### 02 Generate Proxies for Clips

Clip Name	Reel Name Start TC File Name	
□ 1A_1	13:40:47:09 A001C001 160522CN	I.M>
□ 1_2	Create New Timeline Using Selected Clips	×
□ 1A_1	Create New Multicam Clip Using Selected Clips	×
□ 1A_2	Duplicate Clips	D
□ 1A_7	Create Bin With Selected Clips	×
□ 1A_4	Remove Selected Clips 🖾	(F
🗔 1A_5	Convert to Stereo	D
🗔 1A_6	Stereo 3D Sync Stereo 3D Mode	ุป
□ 1A_7		>X
□ 1B_1	Clip Attributes	10
□ 1B_2		> (F
🗔 1B_3	Flags	>D
□ 1B_4		> <
🗔 1B_5	Change Alpha Mode	>(F
□ 1B_6	ACES Input Transform	> D
□ 1B_7	LUT	> X
□ 1B_8	Update Timecode from Audio Track	>
🖽 Proxy Test A001	Generate Optimized Media	
	Generate Proxy Media	
	Link Proxy Media	
	Set Poster Frame #P	
	Clear Poster Frame \CP	
	Analyze Clips for People	
	Unlink Selected Clips	

- Go to Project Settings
- Go to Master Settings
- Set Codec and Resolution
- Set Proxy file path
- Save Project Settings

- Select Clips in Media Pool
- Right Click
- Select Generate Proxy Media
- Wait for Proxies to be generated

## LINK EXTERNALLY GENERATED PROXIES TO CLIPS IN **DAVINCI RESOLVE<sup>TM</sup>:**

#### 01 Generate Proxies for Clips

Clip Name	Reel Name	Start TC	File Name				
□ 1A_1		13:40:47:09	A001C001 1	50522CN.M>			
□ 1_2 □ 1A_1	Create New Time Create New Mult			x s x			
□ 1A_2 □ 1A_7	Duplicate Clips Create Bin With S	Selected Clips		D			
□ 1A_4	Remove Selected Clips 🗵 🖾						
□ IA_5	Convert to Stere			D			
1A_6	Stereo 3D Sync Stereo 3D Mode			, D			
				×			
🗔 1B_1	Clip Attributes			1			
□ 1B_2	Clip Color			> (F			
🗔 1B_3	Flags			> <sub>D</sub>			
🗔 1B_4	Change Input Siz			> <			
🗔 1B_5	Change Alpha Mo	ode		> <sub>(F</sub>			
🗔 1B_6	ACES Input Trans	sform		> p			
🗔 1B_7				> ×			
□ 1B_8 	Update Timecod	e from Audio T	rack	>			
🛄 Proxy Test A001	Generate Optimi	zed Media					
	Generate Proxy I Link Proxy Media						
	Set Poster Frame			жр			
	Clear Poster Frame			⊼Р			
	Analyze Clips for	People					
	Unlink Selected C Relink Selected C Change Source F	lips					

## See previous instructions above or here

#### 02 Link Proxies

lip 1	Name		Reel Name	Start TC	File N	lam
	1A_1			13:40:47:09	A001	C00
	1_2	Create New Tir	neline Using Selec	ted Clips		
	1A_1		ulticam Clip Using			
	1A_2	Duplicate Clips				
	1A_7		, h Selected Clips			
	1A_4	Remove Select	ed Clips			
	1A_5	Convert to Ste	reo			
	1A_6	Stereo 3D Syno				
	1A_7	Stereo 3D Moo	le			>
	1B_1	Clip Attributes.				
	1B_2	Clip Color				>
	1B_3	Flags				>
	1B_4	Change Input S	Sizing Preset			>
	1B_5	Change Alpha				>
	1B_6	ACES Input Tra	insform			>
	1B_7	LUT				
	1B_8					>
#	Proxy Test /	Update Timeco	ode from Audio Tra	ack		
		Generate Opti	mized Media			
		Generate Prox	y Media			
		Link Proxy Me	dia			
		Set Poster Fran	ne		ЖP	
		Clear Poster Fr	ame		ЪЪ	
		Analyze Clips f	or People			
		Unlink Selected Relink Selected Change Source	l Clips			

- Select Clips in Media Pool
- Right Click
- Select Link Proxy Media
- Navigate to Proxy files or directory
- Select Open

## A CLOSER **LOOK**

#### Caching In DaVinci Resolve™

DaVinci Resolve<sup>™</sup> features an advanced caching system that saves frames of video as files in folders that link to records in the database. The cache can be used to work in a project, even if the user doesn't have access to the referenced files, they just need access to the cache folder. The first thing to emphasize is that Resolve Caching IS NOT the same as a proxy workflow. While Optimized Media serves a similar purpose, you can't just go in and grab the files it creates to use them elsewhere. Optimized Media and Render Cache files are tied directly to the unique identifier in the Resolve database for the item they represent. So, these files will only ever work for a single user on a single project in a single database, with some exceptions if you use the specific workflow outlined below that backs up and restores the database.

#### Resolve has two forms of caching:

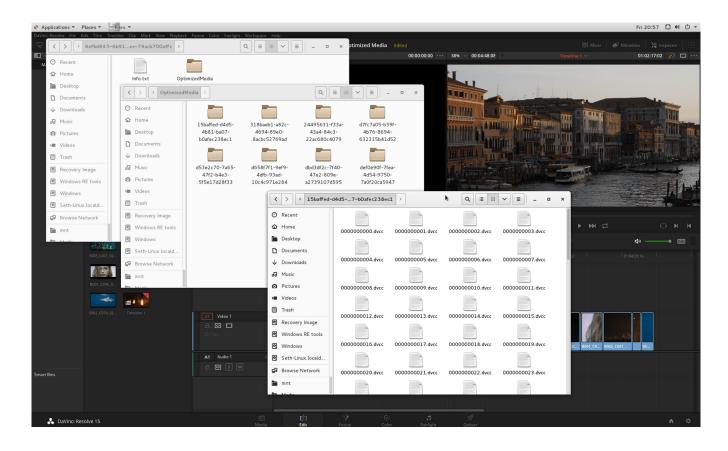
**Optimized** Media

**N1** 

Frames that represent Media Pool items as an INPUT, generated by a manual user action.

## 02 Render Cache

Frames that represent the OUTPUT of Fusion and Color processes, which can be broken down to the node level, generated based on user settings automatically during playback.



#### Here's a quick look at how these files look on the file system.

There is **ONLY ONE** way to migrate a cache between systems and that is to back up the database and restore it. This will keep all of the unique IDs intact, so they will link to the cache folders. If these IDs change in any way, the connection is broken.

## If you want to avoid recreating caches local to each user, you need to do the following:

- **O1** Have ONE user prepare all media and generate the entire cache from their project and database.
- **02** Make a backup of this database.

- **03** Distribute this database and the cache to the other users.
- 04 Have other users restore this database and point to their access point for the cache.
- 05 Have each user select all Media Pool items, right click, and select Rediscover Optimized Media.

From here, everyone will be able to use the same assets and won't have to recreate them individually. If multiple applications are being used for the project, then making multiple caches in this process makes sense. A ProRes cache works for Final Cut Pro X, Premiere Pro, and to some extent Media Composer. A DNxHR cache works for Premiere Pro and Media Composer, but not Final Cut Pro X. Each user's cache path is set locally, so switching between caches is as simple as changing the path set under the project settings and then running **Rediscover Optimized Media** again.





An Uncompressed workflow will allow you to cache in full ACES linear color space. Without Uncompressed, all caches should be made in the camera's original color space with ACES turned off. You can define multiple working folders for your cache to store multiple formats.

The biggest benefit to this approach is that you can send or provide remote access to the Optimized Media, which is smaller and incremental, over the internet, instead of your source footage or even a proxy.

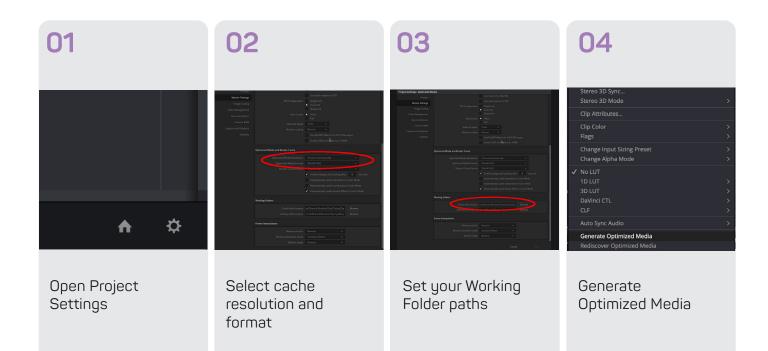
Users can start working with the cache and then switch over to the actual files once they are synced. Users can start with a single database with low-bandwidth proxies and generate and distribute higher quality caches over the course of the production.

## DID YOU KNOW?

These caches can be used for Smart Rendering. With a Render Cache, this effectively means that once you play back your timeline once, you can simply copy the frame files into a single container without having to re-render anything.

## QUICK-STEP GUIDE

#### Caching In DaVinci Resolve™

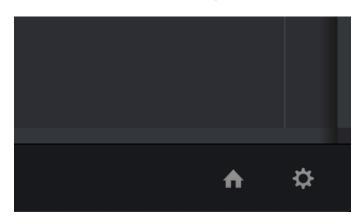


05 06 07 layback Fusion Color Fairlight Reset Node Grade Worksp Use Optimized Media If Available
 Delete Optimized Media... Display Node Graph Proxy Mode Change Input Sizing Preset Render Cache ✓ None Delete Render Cache Smar User Fusion Memory Cache Render Cache Color Output HDR Mode Node Cache Define clips for Define nodes for Configure the Render Cache Render Cache Render Cache

## STEP BY STEP

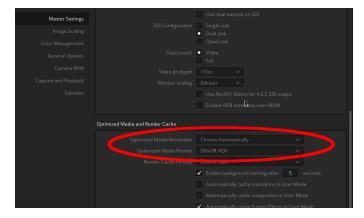
How To Set Up Caching In DaVinci Resolve™

#### 01 Open Project Settings



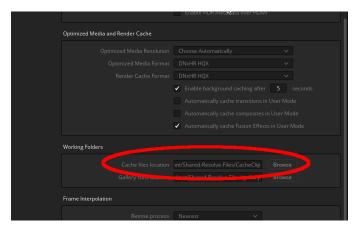
First, click the gear icon in the bottom right of the Resolve window to open the Project Settings dialog.

#### 02 Select cache resolution & format



Then, go the **Master Settings** tab and scroll down. In the Optimized Media and Render Cache section, you can choose the resolution and formats for Optimized Media and the Render Cache, as well as some checkboxes that determine automatic caching behavior.

#### 03 Set your Working Folder paths



Next, under the **Working Folders** section, put in the path on your locally accessible storage that you want to set as the Cache files location and click **Save**.

#### 04 Generate Optimized Media

	Change Alpha Mode	>
~	No LUT	
	1D LUT	>
	3D LUT	>
	DaVinci CTL	>
	CLF	>
	Auto Sync Audio	>
	Generate Optimized Media	
	Rediscover Optimized Media	

Once you've set up your formats and location, there are a few menus that you will use when working with the Resolve Cache.

In the Media Pool, right click on an item to **Generate Optimized Media.** 

## HOW TO SET UP CACHING IN DAVINCI RESOLVE™

(Continued)

05 On the color page, right click...

Playback	Fusion	Color	Fairlig	ht	Workspace
✓ Use Opti Delete O	mized Me ptimized		ailable		
Proxy Mo	ode				
Render C	Cache				✓ None
Delete R	ender Cac	che			Smart
Fusion M	lemory Ca	ache		►	User

Under the **Playback** menu in the top bar, you can turn on the **Render Cache** in two modes: **Smart** and **User. User** requires the user to manually turn on the cache for specific clips and nodes. **Smart** automatically caches all clips during playback. Results with this may vary based on your computer's specs and available storage space. 06 Define clips for Render Cache

	Display Node Graph	
	Wipe Timeline Clip	
	Change Input Sizing Preset	>
	Render Cache Fusion Output	>
	Render Cache Color Output	
>	No LUT	
	1D LUT	>

On the Color page, right click a Clip to **Render Cache Color Output** or **Render Cache Fusion.** 

#### 07 Define nodes for Render Cache

Save as Shared Node Delete Node			
HDR Mode			
Node Cache	>	🗸 Auto	
LUTs	>	On	
Color Space	>	Off	
Gamma	>		
Channels	>		

On the Color page, you can right click on an individual node to create a **Node Cache** of its output.

# A CLOSER<br/>LOOKAutomatically Translate File Paths<br/>by Mapping Mounts in DaVinci Resolve™

When you map your paths properly, your entire team can collaborate without worrying about re-linking. Users can connect to the database through a local or remote network connection and use whatever mount makes sense for them. Even without connecting to the same database, users can exchange project files. Either way, managing media between projects is as easy as copying and pasting once Dynamic Project Switching is turned on in the Project Browser.

The Mapped Mounts feature was originally designed to help users work between operating systems (OS). Operating systems like Macintosh and Windows, handle file paths differently, especially when it comes to mounting network shares. By mapping these differences in DaVinci Resolve's preferences, teams can collaborate in the same project without needing to re-link every time someone opens the project on a different OS. These settings are system-wide, which means they'll remain consistent across projects.

Mapped Mounts can also be used to map the same root directory between different storage devices or IP addresses. For remote workflows, this mapping can be used to seamlessly translate VPN-based paths to local paths with high-bandwidth access to storage. If files have the same file extension (such as .mxf or .mov) and the same audio channel mapping, then different files can even be translated automatically. When implemented properly, render jobs can be sent from remote workstations, working with proxies, to render nodes that will use the source media.



## DID YOU KNOW?

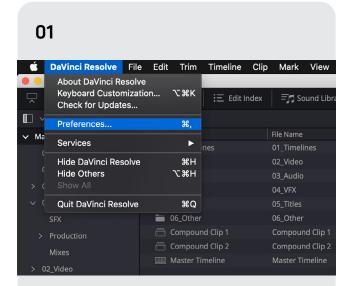
Source media formats are designed to capture the highest quality possible, but can be difficult to play back in real-time without the proper hardware and connection. To work around this issue, the source media is typically synced with audio and then rendered into a format that is easier to work with. This process is typically referred to as "Dailies", since media is handled in batches from each day of production.

For real-time playback over the internet, proxies need to be under 20 MB/s.

Common proxy formats are ProRes, DNxHR, and Cineform.

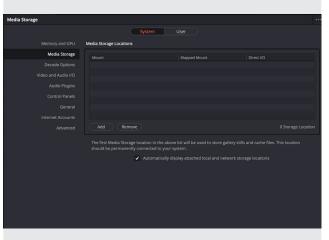
## QUICK-STEP GUIDE

Automatically translate file paths by Mapping Mounts in DaVinci Resolve™



Navigate to the Preferences tab while using DaVinci Resolve™





Go to the Media Storage tab

orage						
		Syste	em User			
< > = =		WalterF	Frisk	0	Q Search	
Cloud Cloud Drive Locations digitalglue's Speeder im 192.182.11  G Retwork Tags Red Grange Vellow Green Blue	Cloud Mazing Backups Mazlook Pro Backup Moment System VoluInformat WaterFrisk	ion i	WFLG_Archive			

Add the paths you will be accessing from your workstation

#### 04

	System	User	
Memory and GPU	Media Storage Locations		
Media Storage	Mount	Mapped Mount	Direct I/O
Decode Options	Nolumes/Adobe-Productions-Testing		
Video and Audio I/O	/Volumes/WalterFrisk	/Volumes/Speeder/WalterFrisk	
Audio Plugins			
Control Panels			
General			
Internet Accounts			
Advanced	Add Remove		

#### Add the path to map the mount

## STEP BY STEP

#### Automatically Translate File Paths, by Mapping Mounts in DaVinci Resolve™

#### 01

Navigate to the Preferences tab while using DaVinci Resolve™

é	DaVinci Resolve	File E	dit Trim	Timeline	Clip	Mark	View
	About DaVinci Res Keyboard Custom Check for Update	ization	. Тжк	Edit li	ndex	<b>≕</b> r <b>s</b> So	ound Libra
	Preferences		ж,				
✓ Ma	Services		•	nes		File Name 01_Timeli	nes
¢-	Hide DaVinci Reso	olve	жн	iies		02_Video	nes
	Hide Others Show All		∼жн			03_Audio	
						04_VFX	
	Quit DaVinci Reso	lve	жQ			05_Titles	
	SFX	i	06_Other			06_Other	8
	Production		📑 Compou	nd Clip 1		Compour	nd Clip 1
	Mixes		📑 Compou	nd Clip 2		Compour	nd Clip 2
> 0	2 Video		🛄 Master T	imeline		Master Ti	meline

#### 03

Add the paths you will be accessing from your workstation

#### 02

Navigate to the Media Storage tab

Media Storage			
	System		
	Media Storage Locations		
Media Storage	Mount	Mapped Mount	Direct I/O
	Add Remove		
		in the above list will be used to store gall d to your system. natically display attached local and netw	

The first location in this list will be used as the default cache location. The list is top down, so the items higher up will take priority when there are conflicts.

#### 04

#### Add the path to map the mount

Under the Mapped Mount column for the mount you just added, type in the path that others are using. When Resolve sees the path you typed into the Mapped Mount column it will automatically translate it, so that you don't have to worry about re-linking.

- On Mac, this path will start with /Volumes/.
- On Windows, the path will start with an IP address or a drive letter, such as C:/.
- On Linux, it will be a UNIX path.

#### 05

Make sure you have the files you need in the right place!

/ledia Storage				
	Syst	em User		
Memory and GPU	Media Storage Locations			
Media Storage	Mount	Mapped Mount	Direct I/O	
Decode Options				
Video and Audio I/O				
Audio Plugins				
Control Panels				
General				
Internet Accounts				
Advanced	Add Remove		0 St	orage Location
	✓ Au	tomatically display attached local and netv	vork storage locations	Save
			Cancer	Save
location relative to internet. However y	the Mount. There ar	need to have the files in e lots of ways to transfe long as they can be rea od to go.	er files over the	

For creative.space customers, our built-in FTP server can be used to provide remote collaborators access to pull the content they need based on their LDAP permissions. SECTION 2 EASY EXCHANGE OF CREATIVE WORK

## Section 2: EASY EXCHANGE OF CREATIVE WORK

Since DaVinci Resolve's Collaboration Mode doesn't work over VPN, this collaboration workflow is built around each user having their own "Sandbox", a local environment that other users can't interfere with. In this case, we are talking about each user having their own project and possibly their own database.

If you followed the workflow outlined in the previous section, each project should have its own Media Pool with all of the production assets organized into bins. Everyone should have access to the files referenced, or at least Optimized Media representing them. Whether these are on networked storage or copied to a local direct attached drive, proper mount mapping should be configured for every user to eliminate the need for relinking. From this foundation, it is really easy to exchange timelines between projects and applications.

This section will cover how to leverage the powerful conform tools included in DaVinci Resolve™ to exchange creative work between collaborators. While these tools have been available for a long time, they are not well advertised, leaving them buried in the massive DaVinci Resolve™ manual for only the most diligent users to find. Once you've mastered these tools, you will be able to tackle any conform issues you might run into without fail.



# DAVINCI RESOLVE™ BIN AND TIMELINE FILES

In DaVinci Resolve 17, Blackmagic Design introduced two new exchange formats that are a game changer for remote collaboration: DaVinci Resolve Bin Replace every instance of DRB, DRT, and DRP with .drb, .drt. and .drp and Timeline (.drt) files. These are what the names imply, exchange formats for Bins and Timelines. This new workflow eliminates the steps involved in collaborating with DaVinci Resolve Project (.drp) files, which were covered in the first edition of this guide. This workflow can still be found in the next section, which you can jump to here.

### **Order of Operations**

There are some very important order of operations to understand about working with these files:

- One user needs to do the initial processing of the files into synced and logged clips (outlined here) and then distribute the media files and Bins to the rest of the team
- Only "Local Versions" of color will transfer with a Timeline, so all looks should be copied "From Remote Versions to Local Versions" before exporting
- 03 Make sure you have access to an instance of the files referenced by a Bin or Timeline before you import it
- Media Bins should ALWAYS be imported prior to importing a Timeline that references the clips in them, otherwise those clips will be imported into the same Bin as the Timeline
- 05 If an imported Timeline is set to "Remote Versions", it will inherit the versions from the Media Pool clip, which may not match the clip referenced in the sender's Media Pool
- 66 "Remote Versions" of color will transfer with the clips in a Bin, but the versions for imported Timelines will need to be manually set back to the proper version, since they will always default to Version 1 regardless of previous setting

#### **Best Practices for Collaboration in Resolve**

The key to a successful collaborative workflow with these new exchange formats is to do the following:

- Organize Media and Timelines in separate Bins under the root Master bin in the Media Pool
- Under the Timeline Bin, create a bin for each team member
- Exchange DaVinci Resolve Timeline (.drt) files for timelines and import the timeline into the creator's bin before duplicating into yours to make revisions
- Under the Media Bin, I recommend that you organize bins based on the batches materials arrive/are created in, since you can use Smart Bins that auto-populate with clips based on metadata
- Batches should contain Bins for each camera with an audio Bin with all the sync audio clips and these Batch Bins should be what are exported and exchanged as .drb files, otherwise the synced audio clips will automatically be added to the Bin on export
- It can be helpful to create a Timeline in each Media Bin that includes all of the clips synchronized by timecode, called a Sync Map
- A great way to organize media is to create Selects Timelines with all of the clips in a Batch to sort through the content to find and rate the best moments and cut out the ones that you know you won't ever use

# A CLOSER **LOOK**

Dynamic Project Switching

New Project... New Folder...

Import Project... Restore Project Archive...

Dynamic Project Switching
 Close Projects in Memory

Other Project Backups...

Refresh Remote Rendering Dynamic Project Switching makes it possible to copy and paste between projects. From the Project Browser (House Icon), right click in an empty area and select Dynamic Project Switching.

From here, when another user wants to send you a timeline from Resolve, all they have to do is give you a DRP file. You can then import it, open it, and copy the timeline into your project. Be sure to create a new bin to paste the timeline into. If there aren't valid matches to clips in your project, then it will automatically add those clips to the bin. If no clips are added, then the timeline should be linked automatically to your Media Pool items.

If your collaborators are working with other forms of the same content in Resolve, you may need to re-conform the timeline to the proper items in your Media Pool.

# DID YOU KNOW?

Dynamic Project Switching allows DaVinci Resolve™ to open more than one project into your computer's local memory. This means that switching between projects is faster AND you can copy and paste between them.

= = =

# A CLOSER **LOOK**

Import a Timeline from Another Project

If your collaborators are working in other NLEs then they will need to send you an XML, FCPXML, AAF or EDL. Import this file by going to **File > Import Timeline > Import AAF, EDL, XML...** in the top bar.

🗯 DaVinci Resolve	File Edit Trim	Timeline	Clip N	vlark Viev	v Playback	Fusion	Co
● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	New Project New Bin New Timeline Close Current T	imeline	∂ ೫N ೫N	🎵 Sound Li	brary		
✓ Master Bin 7	Save Project Save Project As		ሄS 企業S		_160602TZ.MXF 1605221A.MXF		Reel
	Revert to Last S Import File Import Project		l ►		_1605220N.MX _160522BG.MX		
	Import Timeline Import Metadat Import Batch Lis	a to	•	Pre-co	AAF, EDL, XM nformed EDL. _160522HO.MX		<b>₩</b> 1

There are some considerations you need to make when working with different NLEs:



#### Adobe Premiere Pro

**Effects:** Adobe has added extended metadata to this format for effects, which won't be imported properly, but will be passed back to Premiere when round-tripping. Make sure that you and the editors are aware of this, so they can account for it before they send you the XML or after they receive one from you by removing the effects and reapplying them after.

Presets	Image Scaling	
Master Settings	Resize Filter	Sharper 🗸
Image Scaling		Override input scaling
Color Management		
General Options		Override output scaling
Camera RAW		
Capture and Playback	Anti-alias edges	Auto     On
Subtitles		
Fairlight	Deinterlace quality	<ul><li>Normal</li><li>High</li></ul>

**Scale:** Final Cut Pro 7 XMLs are typically the best format to send to Resolve. By default, Premiere doesn't scale clips to the timeline's resolution, while Resolve does. In Premiere, you can change clips so they Scale to Frame Size. Alternatively, you can change Resolve's scaling to Center crop with no resizing to match Premiere. Doing one of these will ensure that the sizing information in the XML is interpreted properly.



#### Final Cut Pro X

Resolve is able to work really well with FCPXML files generated from Final Cut Pro X, even importing color corrections. Like the other formats, effects are not carried over. Luckily, auditions and compound clips do carry over in most cases. You will have to decompose them OR go inside them to color the actual clips directly. Color WILL NOT send back to FCPX when exporting FCPXMLs from Resolve.

#### Avid Media Composer

Resolve and import can export AAFs and export ALEs. If you prep your proxies properly in Resolve, they should link back without issue. You can find instructions for this process <u>here</u>. Understand that only a few very specific effects will carry over.



### Now let's move onto how you can use DaVinci Resolve™ as a Swiss Army Knife for passing Timelines between different applications.

Instead of thinking about Resolve as one of the applications that are part of your production, think of it as your Production Asset Management system. For the purpose of this chapter, assume that EVERY asset that will be used by any other NLE will be present within the DaVinci Resolve™ database as part of the project. When the project is done and it is time to archive your assets, you will have a single point of reference for your entire production that will retain all of the color metadata so you can remaster in the future. For more information, be sure to check out Chapter 47 of the DaVinci Resolve™ manual, Conforming and Relinking Clips.

Imagine that you have a root bin in Resolve for each of the projects your collaborators are working in. You can keep a matching bin for each of the bins in their NLE, containing the proxies you made for them. When they give you an XML, you can link the media to these bins. Then, duplicate the timeline and reconform to the proxies being used by other users in other NLEs to generate XMLs, FCPXMLs, EDLs, or AAFs for them. Additionally, you can use Resolve as a middle man between VFX renders and offline editorial, generating versioned proxies that link back to the master quality files in Resolve.

### When we are talking about conforming, there are four levels within Resolve that a conform can relate to:

Media Storage: The path a Media Pool item references

Media Pool: The items that can be used in Timelines

**Timeline:** The container for Timeline Clips

#### **Timeline Clips:**

The items that reference the Media Pool, but exist as unique entities with their own properties

Basically, the Media Pool is the link between Timeline Clips and Media Storage. So, let's explore the different reconforms that are available:

Media Storage > Media Pool: Relink a Media Pool item to a different file path

Media Pool > Timeline Clips: Replace the Timeline Clip with a different item in the Media Pool

# STEP BY **STEP**

Reconforming Timelines using DaVinci Resolve™

This section will teach you how to manually reconform a timeline between multiple bins with Media Pool items that have the same File and/or Reel Names.

# 01

# Import your Assets and Organize your Media Pool

∽ Master
> 01_Timelines
$\vee$ 02_Video
✓ PROXY
✓ DAY 01
A001
✓ SOURCE
✓ DAY 01
A001
A002
A003

You probably already have all of your source media in Resolve. Now, make sure that all of the proxy files you generated are also imported into your Media Pool and separated based on their type. For example, proxies generated for Premiere, Media Composer, and FCPX will all likely be slightly different. Make sure these each have different root bins.

Best practice is to intentionally organize your bins in the Media Pool so that you can easily discern between bins that contain the same content, but in different forms. For example, you can split your root for video clips into SOURCE, PROXY, and WEB bins. Underneath these, the rest of the bin structure can be identical. This methodology lets you just check a single bin to reconform a timeline to.

#### Prep the Timeline you want to Reconform

By default, all Timeline Clips should have Conform Lock Enabled turned on. Technically, each Timeline Clip can have multiple valid clips in the Media Pool to link to. If you have ever imported an XML into Resolve and seen the red <!> icon, this means that the import process didn't have enough information to be confident in the conform, so it made a choice, but didn't lock it. When a Timeline Clip isn't conform locked, you can double click the <!> icon to choose an option from the Conflict Resolution dialog.

Any Timeline Clips you want to reconform MUST have **Conform Lock Enabled** unchecked first. You can choose to only reconform certain clips, such as VFX shots, but for this chapter, let's assume you want to reconform your entire timeline from the Source to Proxy items in your Media Pool. Select all of the clips on your timeline, right click on them, and select **Conform Lock Enabled**.

This will unlock the Conform for all the clips on the timeline so that we can reconform them.

	New Compound Clip New Fusion Clip New VFX Connect Clip		
	Copy Remove Attributes	ЖC	
	Cut	жх	
	Ripple Cut	ሙ^ ት <b>Ж</b> Х	
	Delete Selected	∞	
	Ripple Delete	企図	
~	Enable Clip	D	
	Change Clip Duration	ЖD	
	Change Clip Speed		
	Retime Controls	ЖR	
	Retime Curve		
	Normalize Audio Levels		
	Clip Color		>
	Generate Optimized Media		
	Render Cache Fusion Output		
	Render Cache Color Output		
~	Conform Lock Enabled		
	Find In Media Pool		
	Clip Attributes		

### 03

Prepare your Color

#### First, let's review these two types of grades:

- Local Grades and Versions: The node structure that is applied to each Timeline Clip on the Color page is stored in the database in relation to the Timeline Clip, so multiple instances of a Media Pool item on a Timeline will have UNIQUE grades and versions.
- Remote Grades and Versions: The node structure that is applied to each Timeline Clip on the Color page is stored in the database in relation to the Media Pool item, so every instance of a Media Pool item on a Timeline will have access to the SAME grades and versions, with the first version selected by default.

When you reconform a Timeline, you are changing the Media Pool items that the Timeline Clips reference. This may or may not change the grades and versions applied to the Timeline Clips, based on the type of grade used.

# How the different grade types react to a reconform:

- Local Grades and Versions: The grades and versions are attached to the Timeline Clips, so they remain, even when the Media Pool items change.
- Remote Grades and Versions: The grades and versions are attached to the Media Pool items, so they are replaced with the grades and versions on the new Media Pool items that have been linked to the Timeline Clips.

Prepare your Color (Continued)

# Which grade type is desirable depends on your workflow scenario:

Color Fairlight	Workspace	Help			
Nodes				>	
Reset				Selected Node Grade	☆₹
Grade Version			►	Grades and Keep Nodes All Grades and Nodes	ີ

#### **Scenario 1 - Graded Proxies**

If you generated the proxies with color correction applied, then carrying over the Local Grade will result in the same corrections being applied again, which is not desirable. In this case, you may want to select all of the Timeline Clips in the Color page and **Reset All Grades and Nodes** from the Color dropdown.

#### Scenario 2 - Passthrough Proxies

If you retained the original capture colorspace when generating the proxies, then the Local Grades from the Source clips will carry over and be applied to the proxies. Whether this is a good or bad thing is up to you. If your proxies are a lower resolution, then some Color adjustments may not translate perfectly. This might be a good workflow for teams doing offline editorial in Resolve, since editors can use the grade like a "viewing LUT" and even make adjustment on the Color page themselves in context to their edit. There really isn't a "right" workflow here.



# 04

#### Prepare Your Color (Continued)

Since Remote Grades and Versions will disappear after a reconform, you will be left with an ungraded Timeline. If you want to keep these grades, then you need to copy them to Local before you reconform. To do this, select all of the clips on your Timeline in the Color page, right click, and select **Copy Remote Grades** to Local.

Just like it sounds, this will take all of the Remote Grades that are linked to the Media Pool items and copy them to the Timeline Clips as Local Grades. After you reconform the timeline, you can do the reverse and **Copy Local Grades** to Remote so they are also linked to the proxy Media Pool items.

Once you are sure that reconforming won't affect your Color in unexpected ways, you are ready to actually reconform your Timeline.

You can reconform your timeline back and forth between different Media Pool bins as much as you like, but I prefer to duplicate my timeline and rename it so that it is clear which assets are being referenced.

	Add into Current Group Add into a New Group Remove from Group Groups	>
	Flags Clip Color	> >
	Copy Remote Grades to Local Copy Local Grades to Remote Use Local Grades Use Remote Grades	
	Apply Grade Append Grade	
	Shot Match to this Clip	
	Change Input Sizing Preset	>
	Render Cache Fusion Output Render Cache Color Output	>
	ACES Input Transform	>
~	No LUT 1D LUT 3D LUT	> >

# 05

#### Reconform your Timeline

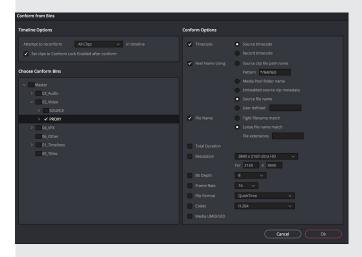
Best practice is to duplicate a Timeline before reconforming. The latest release of Resolve adds a Duplicate option to the contextual menu, the only option in previous versions to duplicate was to select the Timeline and copy and paste it. It will create a new timeline with "copy" appended to the end. Rename it as you see fit.

Now, it's time to actually do the reconform. Right click the Timeline and select **Timelines > Reconform from Bins....** 

II Pro	XV AUUT LOCAL PROXV		01:00:0	U:U
	Timelines		Timeline Settings Starting Timecode	
	Create New Timeline Using Selected Clips Create New Multicam Clip Using Selected Clips		Import >	
	Open in Timeline		Export >	
	Create Bin With Selected Clips		Link Offline Reference Clip >	
	Remove Timeline	企図	Reconform From Bins	
			Reconform From Media Storage	
	Stereo 3D Sync		ColorTrace <sup>™</sup> >	
	Stereo 3D Mode		Set Timeline as Stereo	
	Clip Color			
	Flags			
	Set Poster Frame	ЖP		
	Clear Poster Frame	№Р		

# 05

#### Reconform your Timeline (continued)



This will launch the **Conform from Bins** dialog. As you can see from the image below, the Media Pool bins are shown on the left with checkboxes and the **Conform Options** are on the right. Check only the bins on the left that contain the Media Pool items you want to reconform the timeline clips to. In this case, I have selected to root bin PROXY.

For the **Conform Options**, select as few options as you can. If you embedded Reel Names into your Proxies,I recommend using those. If file names are identical, you can use those to conform as well. Conforming with Timecode will allow you to conform to clips with different names, but may cause conflicts.

Provided that you actually have proxies with frames that match the source, clicking **Ok** in the **Conform from Bins** dialog will result in your Timeline remapping to the Media Pool items in the bins you selected.

!

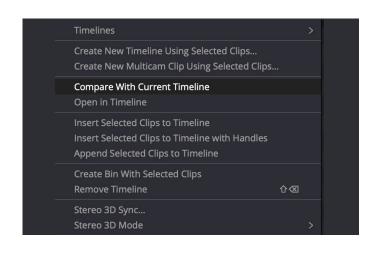
By default, DaVinci Resolve<sup>™</sup> will use the in and out points set on each clip in the Media Pool when adding them to a timeline. This is also true when selecting more than one clip and creating a timeline from them. If you aren't careful, you may end up adding only part of some clips and then rendering them as partial proxies. When it comes time to reconform, if you discover that some clips are time shifted, this is likely the cause.

Conflict Resolution	New Timeline
Image Path: Nolumer/WaterFriskWrK G, Aychive, 170523/WALTER RISK/SOURCE/VdeoJA02J9/2 File Name: A0230202, 165621/W MAGE Sam Timescode: 17:5308/6 16 0200 formes) Reil Name: A0230202, 1655221W Creation Date: Sam May 23 04 5304 2016	Start Timecode 01:00:00:00
Image Parts: Volumes/Waiterfrisk/WFLG.Archive_1705/29/WAI/TER FRISK/PRCIX/MideoA003/008 Fie Name: A0300202,1695221W.mdf Sant Timeset: 17512731 89 for name) Beel Name: A030002,169521W Creation Date: Wed Mar 18 165320 2020	Timeline Name       Timeline 68         No. of Video Tracks       1         No. of Audio Tracks       1
Carcel Obange	Audio Track Type       Based on selected media       ✓         ✓       Use Selected Mark In/Out
12 A001002 (665221W.mvf	Use Custom Settings Cancel Create

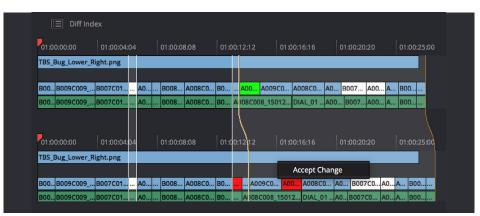
# A CLOSER **LOOK**

### DaVinci Resolve's Timeline Comparison Tool

So far in this section, we've covered how to bring timelines from collaborators into your project. From here, you can pull from these timelines as needed, use them as a starting point, OR use the instructions outlined here to compare to your timeline and accept changes one by one. The Timeline Comparison tool is a game changer for splitting up work between collaborators and then merging everyone's changes. Best practice is to always duplicate your timeline before comparing, so you don't lose anything.



- **01** To use the Timeline Comparison tool, open the timeline you want to make changes to.
- 02 Next, right click the Timeline you want to compare the open timeline to and select Compare With Current Timeline.
- **O3** This will open the **Timeline Diff** dialog from which you can see each difference one by one and accept changes.



This approach is better than having multiple editors working on a timeline in real-time, since you can trust that nothing you have in your project has been changed without you knowing. There is a chain of custody, where each timeline has been manually edited by a user. My recommendation is that you keep a Timeline bin for each collaborator, so you can easily keep track of the timelines you receive from other users.

With the above workflow, you should be able to pass timelines back and forth between collaborators without running into unexpected issues that require manual conforming. Having everyone work in Resolve results in the most seamless exchange of timelines, but the same process can be used to round-trip with other applications.

# SECTION 3 REAL-TIME FEEDBACK IN CONTEXT

# Section 3: REAL-TIME FEEDBACK IN CONTEXT



With what we have covered so far, feedback can happen in real-time over the phone or video conferencing solutions. Timecode markers and annotations can be used in Resolve to include feedback and context along with clips and timelines. You don't NEED a separate service to be able to communicate. If your budget allows, you can utilize commercial solutions for an enhanced experience.

Using a screen share like Teamviewer, Zoom, or Splashtop, provides a more dynamic experience, but latency and quality are an issue. With the workflow outlined in this chapter, everyone will still be able to reference their local Sandbox to see an accurate representation in full quality. A cloud service like Frame.io, Sony Ci, or Wipster can allow you to add timecode comments and annotations that integrate into your timelines.

DaVinci Resolve<sup>™</sup> even has a Remote Grading feature that should work in conjunction with the instructions in this section, since everyone will have access to the same media. We have not worked with this feature before, but we did find this <u>blog</u> which describes it.

The most important thing is that communication is able to flow in a way that feedback is dynamic. When you get a list of notes, you might interpret things wrong or there might be a better path to explore if you could talk to the person who gave the notes. A quick back and forth can save a lot of time and money, resulting in a better end product. You can leverage different approaches and technology depending on your unique needs, but it really is all about what communication channels you need to set up to be successful as a team. In my experience, that communication is more effective when everyone involved has a shared visual reference point.



With COVID-19, the days of having a client in the room looking over your shoulder to help guide the creative process have been put on hold. However, video conferencing services came in to fill that gap. If an artist is unsure whether their cut works or the color has the right vibe, the client is only a call away. The cost and availability of internet bandwidth varies by locations and the quality of cloud solutions scale with your budget, particularly when it comes to resolution and color accuracy.

There are professional-grade solutions that use proprietary technology like Streambox that are targeted at the top tier of the market who demand quality. DaVinci Resolve remote grading is a high quality option that only sends instructions over the internet, but requires all users to have real-time access to the files. Other than color, those in the industry who have to deal with security audits have generally settled on KVM solutions to remotely access workstations that are local to the data so that artists never have direct access to it. This guide will focus on solutions that are more accessible.

#### This section will focus on three remote technologies that are in the consumer or prosumer:

- Camo Studio for iOS
- Network Device Interface (NDI)
- ATEM Mini Pro and Extreme Switchers

All three of these technologies are designed to work with any of the video conferencing services available today. At this point, these services are ubiquitous and there is no clear winner for higher quality in the general pricing tier. At DigitalGlue, we've tried almost all of them and have run into one problem or another with everyone. Even with a 1 GbE connection, service providers throttle performance to manage their network. Don't be surprised if you experience inconsistent results with any platform.

#### **Camo Studio**

Camo Studio is an app for iOS and MacOS that lets you tether your phone and use it as a webcam input. The killer feature of this app is that it integrates with the portrait mode of your phone to provide depth-aware blurring. Before I found this app, I was using an ATEM Mini Pro and a Blackmagic Micro Studio Camera 4K as my webcam. The issue with this setup was that, even with a Voigtlander 17mm wide angle lens, the image was too zoomed in. The small distance of a desk up against a wall doesn't play that well with a micro 4/3" sensor. Luckily, the wide angle lenses of my iPhone 12 Pro provides the perfect field of view. I just plug in my phone and mount it to the same mount I was using for the Micro Studio Camera 4K.

The Camo Studio app for MacOS gives you deep control over the image so you can make it look however you want. As a Colorist, I found that the image parameters did not react how I was expecting, but it was simple enough to play around with each to create a look that was ideal for my lighting environment. Luckily, you can save these as presets to bring back up on demand. Be careful though to never adjust parameters when a preset is selected, because this will overwrite the existing settings. Instead, create a new preset and it will duplicate the current settings as a starting point.

#### **ATEM Mini Pro and Extreme**

Blackmagic Design has a habit of acquiring companies that make expensive technology and then creating low-cost versions that are more user-friendly. The quality may be lower in some cases, but they are so affordable that you just buy two. The new ATEM Mini line of switchers is the culmination of these acquisitions. It packs an entire broadcast facility worth of equipment into a single panel. This product is nothing short of revolutionary. I personally have used it as a webcam, a video village and visualization system for a commercial shoot, a streaming encoder for my monitor output in Resolve, and an instant dailies generator. Basically, I've used it for things that are not the typical use case for a video switcher.

#### The ATEM Mini Pro and Extreme ISO switchers combine the following technologies into a single device:

- 4-8 input 1 M/E Video Switcher
- Ultimatte Upstream and Downstream Keyers
- Fairlight Audio Mixer
- Camera Control for Blackmagic Cameras
- H.264 Encoder
- Record Inputs to Disk with multicam DRP
- Internet Streaming via RTMP
- Multiviewer
- Webcam Output via USB
- Ethernet Control
- Cellular Tethering



One of these is essentially a video village in a box. The ISO models even record each input as an H.264 files along with a DaVinci Resolve Project file containing a multi-cam timeline based on the switcher settings. The non-ISO models only record the program output. The Extreme model includes more keyers and DVEs designed to live composite camera inputs with real-time rendering engine outputs for virtual production. You can be really creative with these tools. As a DIT, I used my ATEM Mini Pro on a commercial that needed to match an existing



shot, so I loaded up a frame as a still and did a half transition to make a split screen that the Producers and Director could see via Zoom as we were shooting. As a switcher, the ATEM supports picture in picture, so you can input both a camera and the output of an I/O device like an Ultrastudio to create a single webcam that shows both the program output of your NLE and yourself. There are two mic inputs, so you can input two audio sources as well. Having your inputs managed by a switcher gives you a lot more control over what people see on a video conference call. You could technically even have multiple camera inputs, such an additional angle that shows your hands on a color panel. There are also a lot of features packed into the panel that aren't accessible through the physical controls, so it's important to play with the ATEM Control Software.

For a limited time while supplies last, we are including an ATEM Mini Pro ISO with a 3-year contract for any creative. space system. Our workflow integration with the ATEM Mini Pro ISO enables teams to go live to post the moment you hit record.

#### **Network Device Interface (NDI)**

NDI is a technology from NewTek that has found widespread adoption despite not being a standard or open source. It is designed to be an IP alternative to SDI video streaming. Instead of video cables, NDI feeds are distributed over ethernet cables. It automatically navigates your network to find available ports and then streams video over them. It was designed for us within local networks in a facility, but some solutions have emerged that make it work over the internet. The important use case that this guide is concerned with is that you can use NDI as a webcam input.

At this point, almost every NLE has some kind of support for NDI. Since the NDI tools are free for every application except DaVinci Resolve, editors have a no-cost option for sharing their monitor output to video conferencing platforms. Avid Media Composer was the first and provides native support for NDI. Adobe Premiere Pro support requires you to download a free plugin from NDITools.tv. DaVinci Resolve NDI support isn't official and uses an OFX plugin from Nobe.

NDI uses H.264 compression that is higher-bandwidth for local area networks. When you use it as a webcam input, the platform you are using will likely re-encode it, so expect a quality hit.

Adobe Premiere Pro supports importing NDI recordings. The free NDI Tools include an NDI recorder. So, users can record any stream they can see on the network and then cut with it right away. Unfortunately, there isn't growing file support. With the Watchtower plugin from the Knights of the Editing Table, you can watch the record folder for NDI and automatically import NDI streams as they become available. https://knightsoftheeditingtable.com/watchtower

# FOG STORAGE FROM CREATIVE.SPACE

-00:30:24:2

What is creative.space

?

### Managed Storage as a Service (MSTaaS)



Hardware at Your Location Intuitive Web and

**Desktop Software** 



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We've re-imagined the business model for enterprise storage to adapt to the ever-changing needs of creative teams. At its core, creative.space is a service that gives creatives back the time they lose dealing with complicated technology, so they can do what they do best: create compelling content.

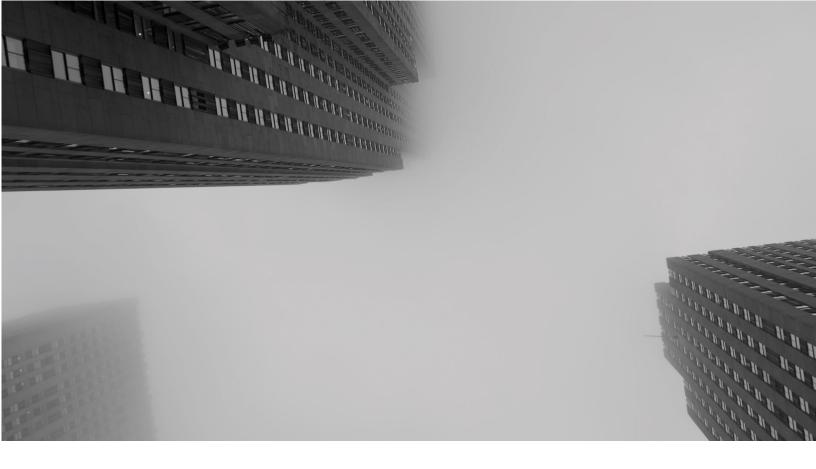
### The creative.space Difference

- No IT Experience Required
- Proactive Support with Ongoing Workflow Discussions

- Flexible Contracts that Scale Based on Your Needs
- In-house Software Development Team

Teams can leverage our high-performance shared storage as the foundation for efficient workflows between local and remote users using our "Fog" networking solution. Unlike Cloud, Fog blurs the lines between the on-premise and cloud experience. By following the workflow in this guide, creatives can edit in real-time, remotely, without uploading and downloading files. The creative.space Desktop App lets creatives securely connect to content where it is, instead of hassling with cloud services. All access is easily controllable through the intuitive Web App, so nobody sees anything they aren't supposed to.



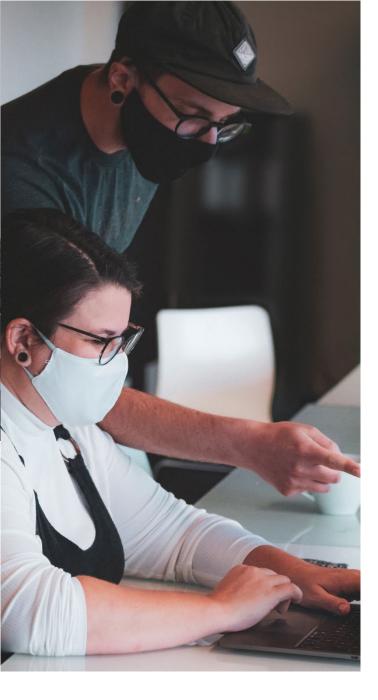


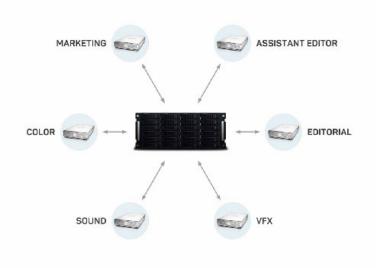
# ENTER THE FOG: THE NEXT-GENERATION OF REMOTE WORKFLOWS

### Get Your Head Out Of The Cloud

The creative.space platform is designed to make the day-to-day lives of creatives easier. DigitalGlue, the company behind creative.space, has a long history in custom software development; creating simple user interfaces that streamline complex tasks. As a systems integrator, we've watched our customers buy into and then sober up to the myth of the cloud. Typical cloud workflows force teams to manage their production assets in two places - local and cloud storage. With creative.space, these two places become one through our enterprise storage at your facility that can be accessed remotely at any time. We call it "Fog".

Unlike current solutions in the marketplace, creative.space is the world's first managed storage service designed specifically for creatives, eliminating the need for IT involvement. Our intuitive Web Application simplifies collaborative storage by providing a streamlined user experience that promotes productivity and creativity, therefore increasing revenue and decreasing expenses for their company. A simple Desktop Application allows users to connect to their system and mount collaborative Spaces (also known as Volumes). Once a Space is mounted, it can be worked with as if it were any other storage volume, but with the unique ability to have multiple users access it at the same time.





#### **Access Anywhere**

The initial transition from collaborating in an office or studio to working from home full time added a new level of complexity when it comes to data accessibility and security. Due to these recurring remote workflow challenges, creatives have reverting back to managing files and versioning across multiple devices; the exact problem creative.space was designed to solve.

In response to growing accessibility roadblocks, the DigitalGlue team of engineers went to work searching for a Virtual Private Network (VPN) partner that would integrate seamlessly into the creative.space platform and provide customers with a secure path to their data no matter where they are working from.

Enter ZeroTier. By combining the creative.space desktop app, built-in LDAP, mDNS, FTP, and the ZeroTier VPN, creative.space customers can instantly access their system remotely and start working right away, then securely transfer files when it's convenient. Users can mount remote Spaces to their desktop and edit in real-time using optimized proxies, then send render jobs to a workstation with local access to the source content. Unlike the cloud, with creative.space's Fog network all the content can stay in one place for everyone to access from wherever they are. The Fog solution leverages the deep feature set of the creative.space software and integrated ZeroTier VPN to securely extend access to remote users with the same intuitive interface they are familiar with.

### Peer-to-Peer Transfers and Syncing

Our FTP server is unique in that we provide complete access to the files where they are, instead of forcing users into a single directory. This dramatically reduces the time involved in distributing files by eliminating the copy or move step previously required for FTP workflows. Additionally, the time to deliver is cut in half compared to cloud services by cutting out the middleman and going directly peer-to-peer. Users can utilize any software that supports FTP and log in with their creative.space credentials for the system. They will only be able to open the folders that they have permissions for. Transferring files with creative.space is included, so there is no additional charge, but users have to take the time to specify source and destination location, and what to transfer, manually.



We recommend using an FTP client that supports syncing and ideally automation with scheduling. The client will need to be run on the system that has the direct attached storage mounted. The key is to use a matching folder structure (which can be created using our Folder Structure Presets feature) to sync directories between storage devices based on a shared root. Any differences will be synced. We are currently developing our own streamlined workflow software, but any existing client that supports syncing will work for the time being.

### **Resolve Database**

A DaVinci Resolve<sup>™</sup> Database can be installed on any creative.space system upon request as part of our managed service offering. We will work with you to configure the database to ensure maximum security. Unless you have experience with PostgreSQL, you are likely leaving your database wide open. We limit access based on specific approved IP addresses and ranges to ensure there isn't any unauthorized access. For remote users, we can link approved IP addresses with a VPN network so that you can separate access for specific projects and teams. By storing your database on creative.space, you also unlock all of the enterprise features that the file system provides, namely Snapshots, which allow you to restore and recover data from states that would otherwise be lost.

The database is not installed by default because mixing storage and database transactions on the same network isn't usually a good idea. If you already have a DaVinci Resolve ™ server in place, you may want to continue using that. However, the core issue is using the same connection to the storage for both transactions. If you separate the connections, you eliminate this conflict. You can use a VPN or a secondary ethernet connection (such as 1 GbE) to separate the data streams. This will separate the networks and IP addresses being used to access. If you force all access to the database through the VPN, then you can easily control all database access by granting users access to a VPN network that has a small range of IP addresses that are already in the database.

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