

# Using the Fairlight Page

The completely redesigned Fairlight Audio Core engine allows for simultaneous playback of up to 2,000 tracks. It also utilizes intelligent load balancing for maximum plugin support.

Fairlight's increased track count meets the demanding needs of both clients and immersive formats, such as Dolby Atmos. Major studio films and series television require high track counts to accommodate complex mixes and the export of multiple deliverables. Immersive formats, such as Dolby Atmos, multiply the necessary track counts with their demands for deliverables from 7.1 up to 22.2.

This chapter covers the basic user interface controls found on the Fairlight page, where they are and what they do, in order to give you an overall orientation of how to work with this integrated audio environment.

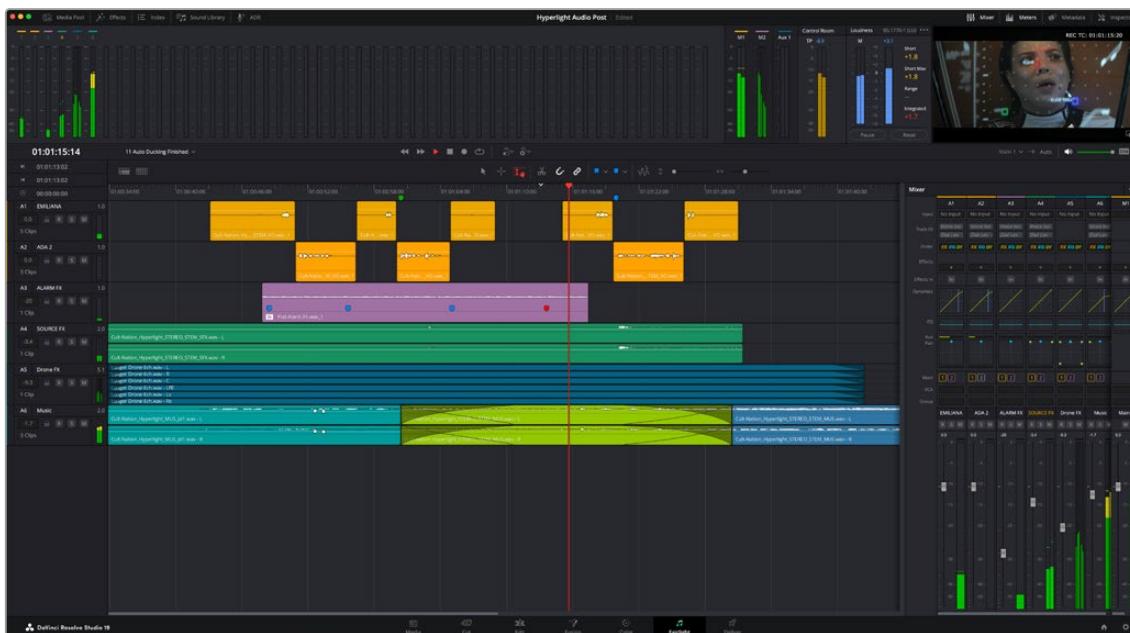
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# The Fairlight Page User Interface

In single monitor mode, the Fairlight page offers an optimized environment for handling your audio tracks, with an expanded mixer and custom monitoring controls that make it easy to edit and manipulate your audio media and evaluate and adjust the levels of your program to create a smooth and harmonious mix.



The Fairlight page

## The Interface Toolbar

At the top of the Fairlight page is a toolbar with buttons that let you show and hide different parts of the user interface. These buttons are as follows, from left to right:



The Interface toolbar



**Media Pool:** Shows and hides the Media Pool, from which you can edit audio clips into the Fairlight page Timeline.



**Effects:** Opens the Audio FX panel of the Effects Library, from which you can apply Fairlight FX, or AU or VST audio effects to clips or tracks in the Timeline.



**Index:** Shows and hides the Index and its Edit Index, Tracks, and Markers panels.

**Edit Index:** A list of all edit events in visible tracks of the Timeline.

**Tracks:** Lets you manage the tracks of the Timeline, showing and hiding which ones you want to work with.

**Markers:** Lets you see every marker in the Timeline, along with associated data. Browse through your markers all at once to quickly find the information you need.



**Sound Library:** Shows and hides the Sound Library panel. There are search and filter fields to locate desired sounds and a playback window to audition the sounds prior to editing into the Timeline.



**ADR:** Shows and hides the ADR panel, with tabbed controls for List, Record, and Setup, which control the functions of the ADR panel.



**Mixer:** Shows and hides the Mixer to the right of the Timeline, which lets you adjust the effects and levels for each audio track to create your mix.



**Meters:** Shows and hides the Monitoring audio meters and Fairlight viewer at the top of the page.



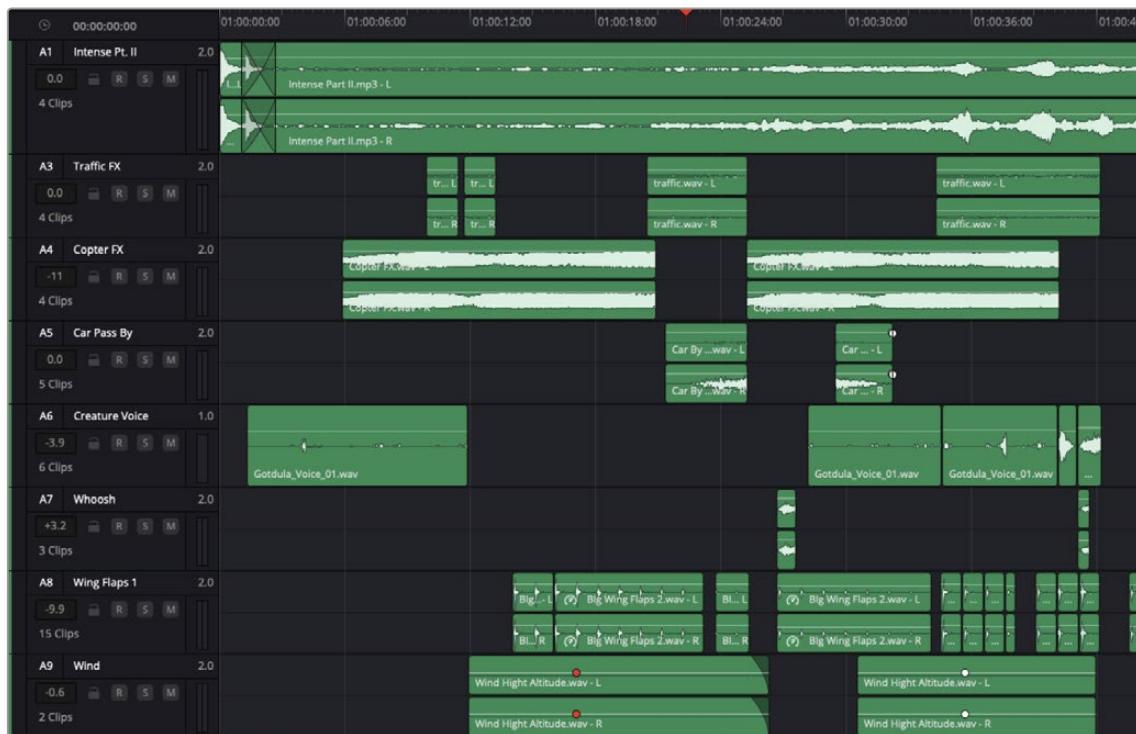
**Metadata:** Shows and hides the clip Metadata panel.



**Inspector:** Shows and hides the Inspector, where you can edit different clip attributes.

## The Audio Timeline

The heart of the Fairlight page, the Audio Timeline, presents the audio channels and tracks of the currently selected Timeline. Each audio track may contain multiple lanes depending on its Track Type, or format.



The Audio page Timeline

The clips edited into the Timeline appear within each track, with any multichannel elements within each clip occupying as many lanes as that track type has available (for example, 2 channel stereo, or 6 channels for 5.1). At the left of each track is a header containing a number of controls.

These multi-lane audio tracks appear differently from the Edit page, which is optimized for straightforward audio-for-video editing, and shows any multichannel files on single lane tracks with composite waveforms.

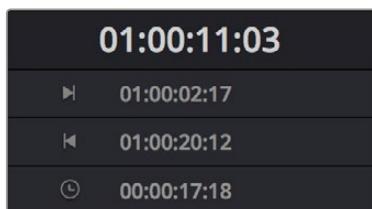
The Fairlight page Timeline cannot be closed.

## Controls in the Audio Timeline

The Audio Timeline has the following controls.

- **Timecode fields and Range buttons:** These fields display the current timecode value of the Playhead position along the Timeline Ruler, the Range In and Range Out points, and the Range duration.

Clicking the Range In and Range Out buttons (to the left of their timecode fields) sets their corresponding values and locations on the Timeline Ruler.



Timecode fields and Range buttons in the Fairlight page

- **Transport controls:** Located at the top of the Timeline, this bar contains audio-specific transport controls, which differ from those found on the Media, Edit, Color, and Deliver pages due to the included recording capabilities. These controls include Fast Reverse, Fast Forward, Play Forward, Stop, Record, Loop, and the Toggle Automation and Automation toolbar display icons.



Fairlight page transport controls

- **Toggle Automation button:** Clicking this button activates automation recording and playback, and adds an Automation Follows Edit button to the Toolbar, between the Flags and Markers buttons. For more details on the Toolbar, please refer to “Toolbar,” found later in this chapter.
- **Automation toolbar:** This button opens a secondary toolbar with all the controls you need for recording mixer automation.

For more details on Automation,  
*see Chapter 175, “Mix Automation.”*



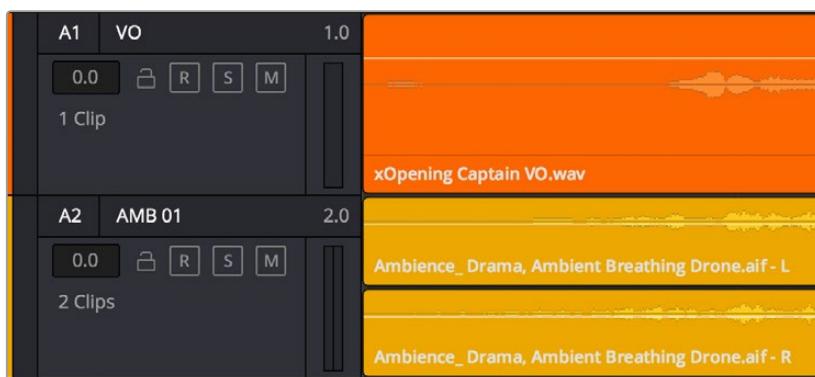
Fairlight page automation toolbar

- **Monitoring controls:** The three monitoring controls located at the far right of the transport controls let you quickly adjust the output volume of your mix. Clicking the Speaker icon mutes and unmutes the audio playback. The icon turns red when the audio is muted. The horizontal slider lets you gradually increase or decrease the output volume. The corresponding signal level is displayed in decibels as you move the slider. The DIM button lets you temporarily reduce the output volume, which is helpful if you want to have a quick chat with your client about sports or the state of the world while keeping half an ear on the mix. The slider turns yellow whenever you activate the DIM function.



The monitoring controls

- **Timeline Ruler:** The Timeline Ruler displays the program's timecode and, in conjunction with the playhead, indicates the current frame (or sample) where you're working in the Timeline. Within the Timeline Ruler, you'll find a handle at the top of the playhead. You can move the playhead by clicking and dragging the handle. Markers added to the Timeline also appear in their corresponding locations within the Timeline Ruler.
- **Playhead:** Shows the current frame and sample of playback and provides a visual representation of where you are while playing, shuttling, and jogging through the Timeline. At the same time, the large timecode display in the upper left-hand corner of the Timeline also shows the current playhead location. The playhead location is also a reference point for editing operations.
- **Audio tracks:** The Fairlight page supports multiple audio tracks. Each track may contain multiple lanes to accommodate the audio channels within multi-channel audio clips using track mappings such as stereo, 5.1, 7.1, Dolby Atmos, Ambisonics, or Adaptive (1–24 channels). Audio clips edited into the Timeline appear within the tracks, with the recorded channels occupying as many lanes as that clip has available. A corresponding header area containing various controls is located to the left of each track.

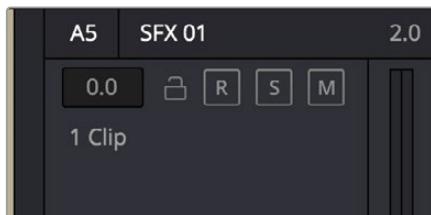


The Fairlight timeline is divided into tracks and lanes; track A1 is a mono track and has a single lane for mono audio. Track A2 is stereo and has two lanes for stereo audio.

## Track header

The controls in the track header let you lock/unlock, solo/mute, and record-arm the track.

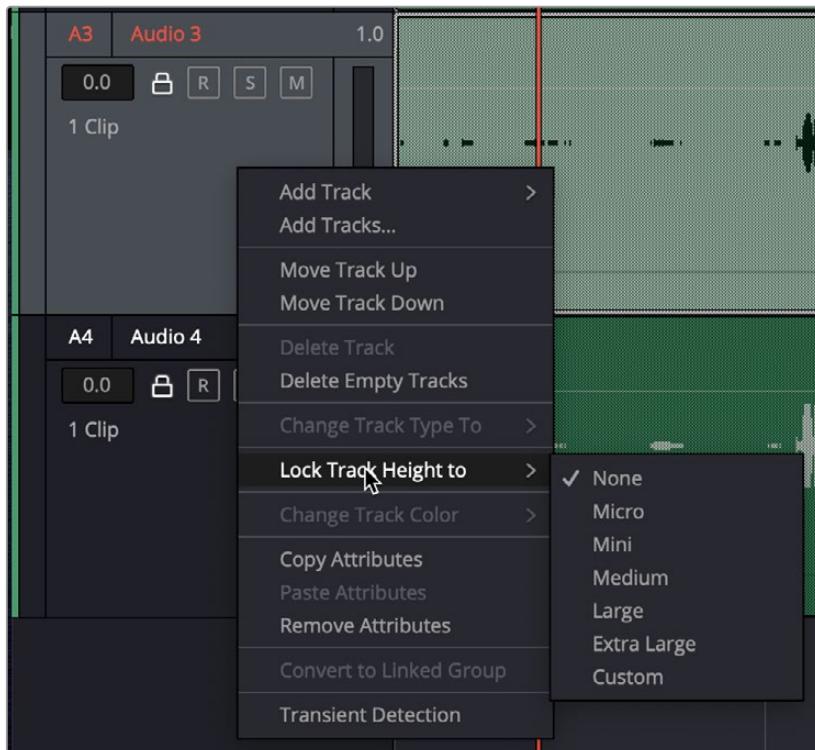
In addition to a level meter, the track header includes informational fields showing the track type, track number and name, track volume, and the number of clips on the track.



The track header controls of the Fairlight page timeline

- **Track color:** Each track can be color-coded with one of 16 colors, which will carry over to the Fairlight and Edit page Mixers, Tracks Index, and Audio Meters.  
To apply a color to a track, right-click the track header and choose a color from the Change Track Color submenu.  
You can apply the same color to multiple tracks by dragging over contiguous track headers or Command-clicking multiple discontiguous track headers, then selecting a color from the Change Track Color submenu.
- **Track number:** Indicates the number of each track.
- **Track name:** Each track has a name that defaults to the track number, such as Track 1, Track 2. However, you can click any track's name and edit it to be whatever you like. For example, you can rename each track with the type of audio you're editing onto it, such as Production, Ambience, SFX, or Music. These track names are also used to identify each track's channel in the Mixer, in the middle of each channel strip (each channel strip's track number is simultaneously displayed at the top).
- **Audio channel type indicator:** Audio tracks also show which channel configuration that track uses, listing the number of channels for mono, stereo, 5.1, 7.1, Atmos, adaptive, and others.
- **Fader value:** A field displays the current fader setting at the position of the playhead, in dB. This value corresponds to the track's fader level on the Mixer panel. You can drag this value up or down and the fader will follow.
- **Lock Track button:** When a track is locked, clips can't be replaced, moved, or otherwise edited, although clips on locked tracks can be graded when in the Color page. The lock shows closed when track contents are locked and open when unlocked.
- **Arm button:** This button arms recording onto that track.
- **Solo button:** Disables all other tracks but the current one, enabling you to quickly hear a single track in isolation. This affects rendering, so if one or more tracks are soloed, the muted tracks won't be output or rendered.
- **Mute button:** Temporarily disables audio on that track so it's not monitored or output. This affects rendering, so if one or more tracks are muted, they won't appear in the rendered output.
- **Audio meters:** Each track has audio meters in the track header that let you see levels during playback.

- **Toolbar editing tools:** The toolbar contains both modal and command buttons to let you work on your projects. More detail on these appears in the following section.
- **Vertical and horizontal scroll bars:** If your project is longer than the current width of the Timeline, or the number of audio tracks is taller than the current height of the Timeline, these scroll bars let you drag to navigate around your program. When the view is scrolled horizontally, the playhead moves along with the track waveforms, so it may temporarily move out of view. If you start playback, the playhead jumps back into view. You can also scroll vertically using the scroll wheel (or other scroll control) of your mouse or other pointing device and can scroll horizontally by holding the Command key down while using your scroll control.
- **Individual Timeline track resizing:** Any track in the Timeline can be individually resized by right-clicking anywhere within that track's header control area and choosing a track height from the Lock Track Height To submenu of the contextual menu. You can choose a fixed size including Micro, Mini, Medium, Large, Extra Large, and Custom. When you choose a fixed track height, vertical zooming no longer affects that track until you change that track's "Lock Track Height to" option back to None. You can also highlight several or all tracks and set the track height to one size. All highlighted tracks will change to that particular size unless changed again, either globally or individually.



Resizing an individual audio timeline track using contextual menu options

## Zooming Audio Waveform Height

You can zoom into or out of the audio waveforms shown in each clip of one or more tracks, to make them taller or shorter, or you can reset them to their default sizes. This doesn't change the audio levels of clips in affected tracks, it just lets you make the audio waveforms easier to see.

### To zoom audio waveform height using your scroll wheel:

Hold down Command-Option, and roll the scroll wheel or control up or down to resize all waveforms in all tracks.

You can also use commands that are accessed in the top menu View > Zoom Audio Waveform for any track on the Timeline. You can select one or multiple tracks to resize their waveforms all at once. There are three sets of commands in the menu:

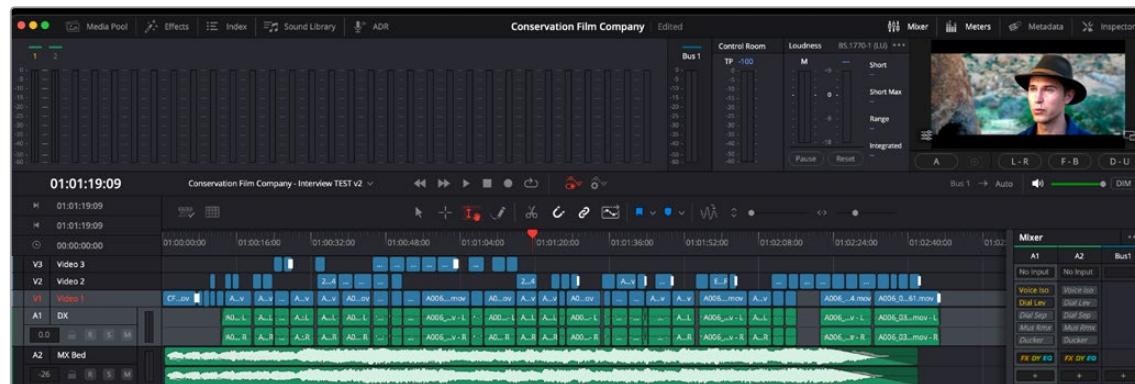
- Reset
- Zoom Increase Height
- Zoom Decrease Height

Right-clicking any clip in the Timeline allows you to access the Track Waveform Zoom submenu with even more zoom options.

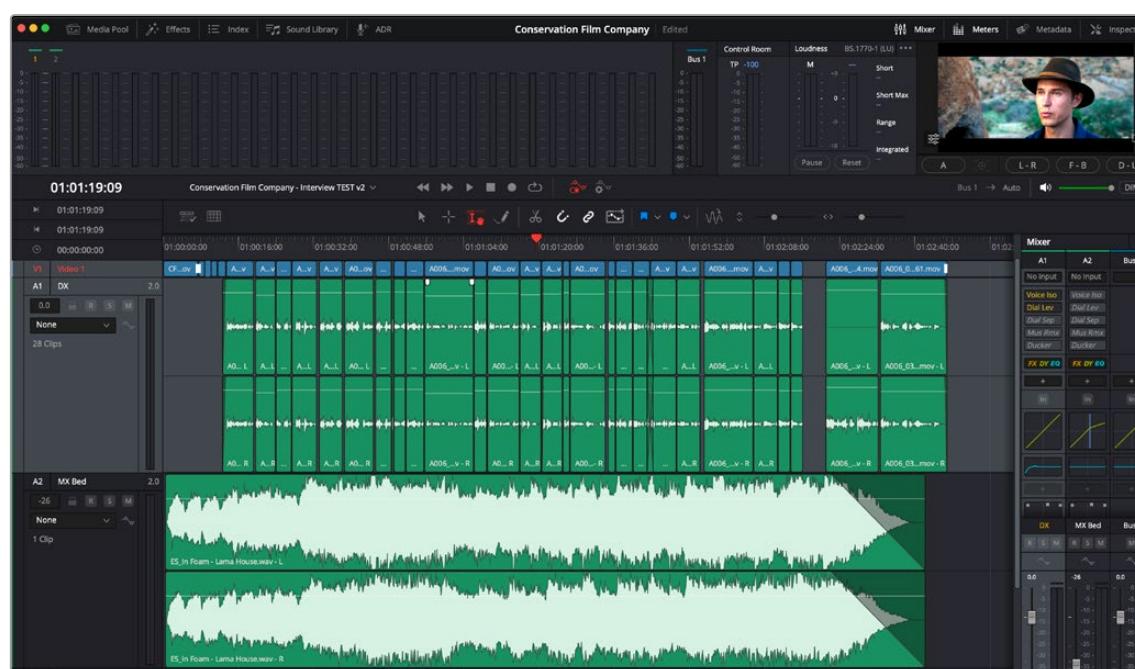
## Smart Zoom Track Height

When you select a track in the Timeline or Mixer and press Command-Option-E, Smart Zoom increases the track height and centers your selection to occupy the whole viewable area of the Timeline. Once you've finished your edits, press Command-Option-E again to close Smart Zoom.

As with other Da Vinci Resolve key commands, you can re-map Smart Zoom in the Keyboard Customization dialog. For more information on Keyboard Customization, see *Chapter 4, "System and User Preferences."*



Standard Timeline view





Smart Zoom Timeline view

## Audio Editing Modes

The Fairlight page has two audio editing modes: Overwrite Mode and Layered Audio Editing Mode.

### Overwrite Mode

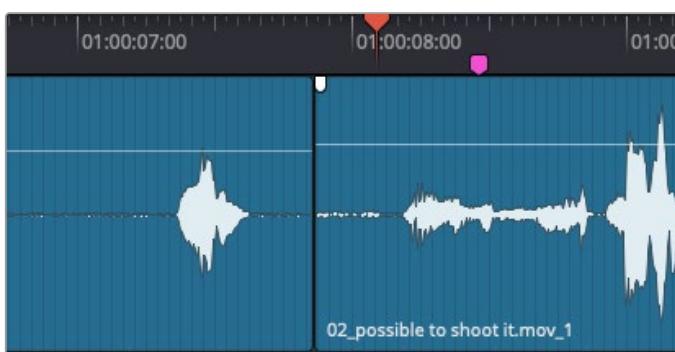
As the name suggests, if one portion of a clip overlaps another clip during an edit, the area that is affected on the underlying clip is non-destructively deleted to accommodate the incoming clip. If the overlapping clip is moved or deleted, the underlying clip remains truncated.

Any area that is removed by this process is still present in the original clip and can be exposed by trimming the start or end (depending on what you've affected).

Overwrite is the default mode and is best for most generalized editing.



(Left) Overwrite edit showing original clips, (Right) Right hand clip dragged left



Resulting overlap

### Layered Audio Editing

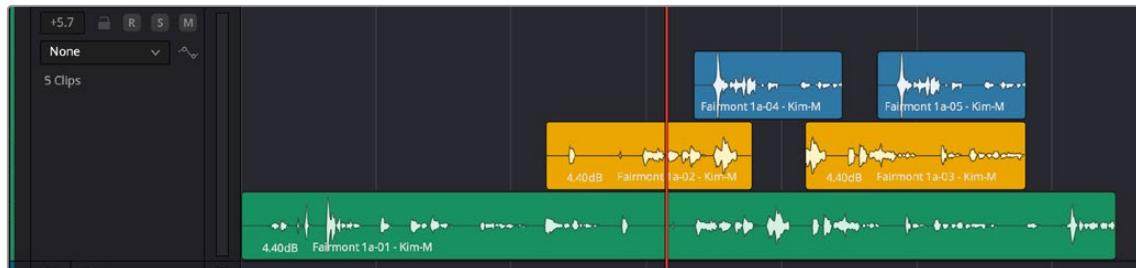
Layered Audio Editing is a special audio editing mode that lets you superimpose multiple audio clips in the same track, with audio clips edited into the top layers muting overlapping sections of audio clips appearing on lower layers. With layered audio editing enabled (Timeline > Layered Audio Editing), superimposed audio clips are treated similarly to superimposed video clips that have opacity set to

100%, with clips on top obscuring (or muting) clips underneath. You can separately toggle this on and off in the View menu > Show Audio Track Layers.

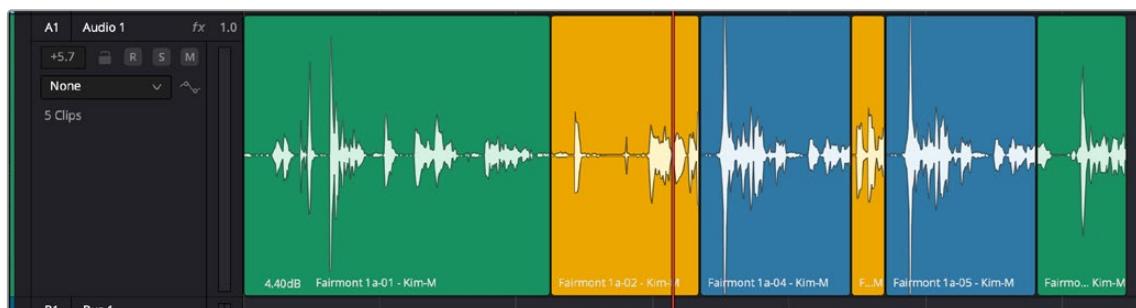
This mode is very useful for any situation where you're combining segments of multiple takes together ("comping") to create a single voiceover, audio vocal track, ADR, or dramatic performance, as you can choose which segments to use via their superimposed position in the stack of clips appearing in that track, while preserving the other takes underneath in case you might want them later.

However, it's important to understand that if you delete any clip on a layer that is "above" another, the lower layer will then "poke through." This can involve extra housekeeping when editing and is one of the reasons that Overwrite Editing mode is the default mode.

**TIP:** Layered Audio Editing mode can be used on audio tracks on the Edit page as well.



Layered Audio Editing and Show Audio Track Layers enabled



Layered Audio Editing with Show Audio Track Layers disabled. All layers are folded into a single view.

## Flatten Audio Layers

After working with Layered Audio Editing, it can be useful to create a "comp" (composite) of a performance in order to have a single element that reflects the final desired result. Timeline > Flatten Audio Layers allows you to create a single edit without layers where the clip boundaries are preserved. Choosing this command will cut across each layered clip at the in/out points and flatten them into a single layer.



After choosing Flatten Audio Layers, audio layers showing (so blank space above)

If you are exporting to an AAF, you'll want to turn off layered audio editing, as only the first, lowest layer is exported. If you had already been using layered audio editing, you can first use Flatten Audio Layers, then perform your AAF export. Keep in mind that if you have created any layered crossfades, only fades on the incoming clip are retained.

## Switching Among Multiple Timelines

Timelines can be organized like any other clip in the Media Pool. To open or switch among timelines, use the following procedures. Each Timeline retains the view settings last made within it, including track heights, zoom settings, etc.

### To switch timelines, do one of the following:

- In the Edit, Cut, or Fairlight page Media Pool, double-click a timeline.
- In the Edit page Timeline Viewer, choose a timeline from the Timelines drop-down menu at the top of the viewer.
- In the Color page, choose a timeline from the Timelines drop-down menu at the top of the viewer.
- In the Fairlight page, choose a timeline from the Timelines drop-down menu to the left of the transport controls.

## Toolbar

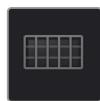
The Toolbar has buttons that let you choose modes of functionality and other buttons that let you execute commands such as placing markers and flags.



Icons in the Fairlight Page toolbar when the Automation button is highlighted in the transport bar



**Timeline View Options drop-down menu:** Contains a variety of controls that allow you to customize the display of clips and set navigation and scrolling options in the Timeline.



**Grid View Options drop-down menu:** Contains controls to customize the timeline grid, allowing you to view reference lines or align clips to timecode or musical beat locations.



**Pointer Mode:** The default mode in which you can move and resize clips in the Timeline, roll edits, and do other basic editing tasks. While this mode can be used with the pointer, it's designed for letting you make automatic selections of clips at the position of the playhead in selected tracks, using keyboard shortcuts or the Fairlight Editing console.



**Range Mode:** An editing mode in which you can select partial regions of one or more clips for partial editing. It's designed for letting you make automatic selections using In and Out points to define regions of selected tracks, using keyboard shortcuts or the Fairlight Editing console.



**Focus Mode:** In Focus mode you can access Multi Tool behavior depending on cursor position:

**The Selection tool (I-beam):** Appears when you move the cursor over the upper area of the waveform track “lane,” and lets you make time range selections of clips or automation keyframe data (depending on the track view).

**The Hand tool:** Appears when you move the cursor over the lower area of the waveform lane, and lets you select a clip or clips by clicking, move them by dragging, or apply Cut, Copy, and Paste operations. This tool is available in the other modes as well.

**The Trim tool (Up/Down arrows):** Appears when you move the cursor close to the clip gain line, and lets you trim the automaton curve for clip gain or keyframe levels. When trimming an automation parameter, a tooltip shows the level along with the delta to the original value. Trim tool cursors for trimming clip boundaries to trim clip start or end, or perform rolling trims are also available. This tool is available in the other modes as well.



**Pencil:** A tool that lets you write automation data using the pointer as a pencil. The Pencil tool appears when automation is enabled.



**Razor (Scissors):** Click to add a cut to every clip on an unlocked track that intersects the position of the playhead.



**Snapping:** Enables or disables clip snapping. When turned on, clip In and Out points, markers, and the playhead all snap to one another for reference while you’re editing.



**Linked Selection:** When you select an edit point with both video and audio components, and Linked Selection is enabled, both the video and audio edit points are selected, so when you apply a video transition to an edit, a crossfade is added to the audio.

Also lets you link together any otherwise unrelated audio clips to perform edit operations (for example, trimming) to any linked clips at one time.



**Automation Follows Edit:** Enables or disables mix automation that is unique to a timeline to be embedded into the clips so that when cutting and pasting new instances of them in the Timeline they retain their levels, panning, filter settings, etc. This is extremely useful when using multiple instances of the same audio clips throughout an edit.

The Automation Follow Edit button appears when automation is enabled, and is enabled by default.



**Flag Clip/Flag Colors drop-down menu:** Flags identify clips, and indicate all clips that correspond to the same item of media in the Media Pool. Clips can have multiple flags. Clicking the Flag button automatically adds a flag to whichever clip is currently selected in the Timeline. A drop-down menu lets you choose flag color, and has a choice to clear all flags from the currently selected clip (if one is selected) or clear flags from the entire timeline (if no clip is selected).



**Add Marker/Marker Colors drop-down menu:** Markers identify specific frames of individual clips or timelines. If a clip is selected in the timeline, clicking the Add Marker button adds a marker to the clip at the position of the playhead in the Timeline. If no clips are selected, clicking the Add Marker button adds a marker to the timeline ruler at the position of the playhead. A drop-down menu lets you choose marker color, and has a choice to clear all markers from the currently selected clip (if one is selected) or clear markers from the entire timeline (if no clip is selected).



**Transient Detection:** Enables transient detection for all clips on a given track. Once enabled, a transient button appears on tracks to enable the transients on a track's clips to be easily identified and navigated. When the Jump to Transient button is enabled, the Up and Down arrow keys navigate to transients within a clip.

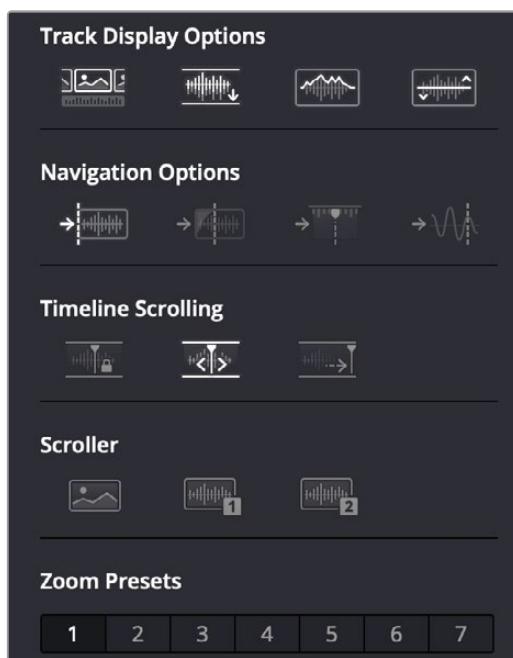


**Vertical Slider:** Lets you adjust the vertical zoom level of tracks.



**Horizontal Slider:** Lets you adjust the horizontal zoom level of the Timeline.

## Timeline View Options



Selecting the Audio Timeline View options

### Track Display Options



**Video Tracks:** This button lets you display or hide the video tracks in the current Timeline, for use as a reference while you work.



**Full Waveforms:** This button lets you toggle full waveforms on and off, optionally hiding the divider bar that keeps the waveform separate from the file name area of each audio clip, so the waveform occupies the full space of each audio bar in the Timeline.



**Waveform Borders:** This button lets you toggle waveform outlines on and off, drawing a dark border around the edges of each waveform to make them easier to see.



**Gain Line:** This button lets you toggle the clip gain indicator line on and off. Also available in the Fairlight Menu > Show Clip Gain Line.

## Navigation Options



**Jump to Clip:** When toggled this lets you jump from clip to clip using the Up or Down Arrow keys.



**Jump to Fade:** When toggled this lets you jump from fade to fade using the Up or Down Arrow keys.



**Jump to Marker:** When toggled this lets you jump from marker to marker using the Up or Down Arrow keys.



**Jump to Transient:** When toggled this lets you jump from transient to transient using the Up or Down Arrow keys. Transient Detection must be turned on in the Timeline and the track for this navigation.

## Timeline Scrolling



**Fixed Playhead:** This button lets you set the playhead to be fixed so that during playback the tracks scroll past the playhead as it remains in place, which is useful when working with the Fairlight control surface.



**Page Scrolling:** This button lets you set the playhead to scroll to the end of the current Timeline view and then start a new page at the end of the Timeline play. The rate of the page turn is dictated by zoom level of the Timeline.



**No Scrolling:** This button sets fixes the Timeline in place so that it will not update with the playhead. Depending on the zoom level, it is possible that the playhead will play offscreen with no timeline updating

**NOTE:** These options are also available in the View menu > Timeline Scrolling.

## Scroller



**Video:** This button lets you see video tracks scrolling in the bottom of the Fairlight timeline with the option of low, medium, or high viewing of the video media immediately surrounding the playhead.



**Audio 1:** An audio scroll bar and zoomed-in visual reference for the audio media immediately surrounding the playhead. A drop-down menu allows for the choice of what audio track will scroll.



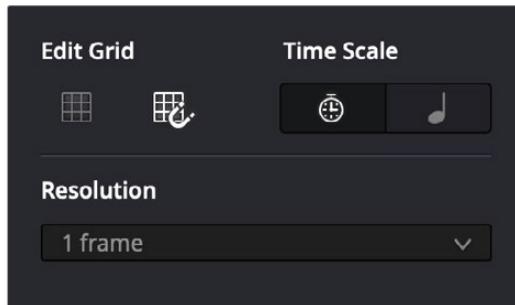
**Audio 2:** An additional audio scroll bar and zoomed-in visual reference for the audio media immediately surrounding the playhead. A drop-down menu allows for the choice of what audio track will scroll.

## Zoom Presets



**Presets 1-7:** These buttons let you choose from one of seven zoom levels.

## Grid View Options



Selecting the Grid View options:  
Timecode Time Scale options shown

## Edit Grid Options



**Show Grid:** When toggled, this shows or hides the grid line on tracks under the Timeline.



**Snap to Grid:** When selected, inserting, moving, or trimming clips on tracks snap to the nearest grid line.

## Time Scale Options



**Timecode:** When selected, the grid follows Timecode according to the selected resolution.

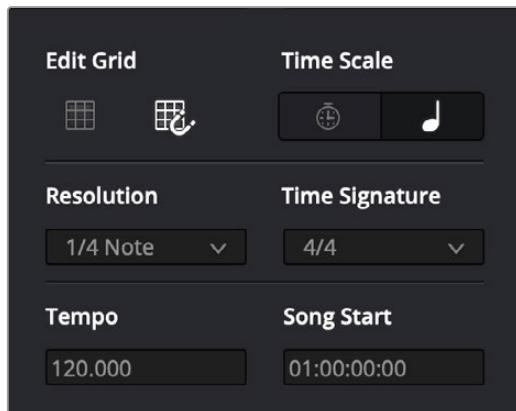


**Tempo:** When selected, the grid follows bars and beats.

## Timecode Grid Resolution

When the Timecode Time Scale option is enabled, the Grid follows the selected Timecode Grid Resolution. The Timecode Grid resolution options include: 1 second, 1 Frame, 1/2 Frame, and 1/4 Frame.

## Tempo Grid Options



Selecting the Grid View options;  
Tempo Time Scale options shown

The following Tempo Grid options determine grid behavior when the Tempo option is selected:

- **Resolution:** Lets you select the desired Grid resolution according to bars and beats:  
Bar, 1/2 Note, 1/4 Note, 1/8 Note, 1/16 Note.
- **Tempo:** Lets you enter the tempo in BPM.
- **Time Signature:** Lets you select one of the following as the time signature: 4/4, 3/4, 6/8.
- **Song Start:** Lets you enter the Song Start Timecode location.

## Setting the Tempo Grid Start

### To set the Tempo Grid start location:

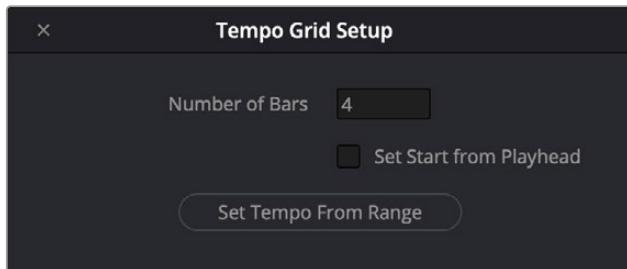
- Right-click at the desired location on the Timeline ruler.
- Choose Set Tempo Grid start.

The first bar and beat of the tempo grid moves to that location.



Setting the Tempo Grid start location

## Setting the Tempo Grid from a Range Selection



Tempo Grid Setup window

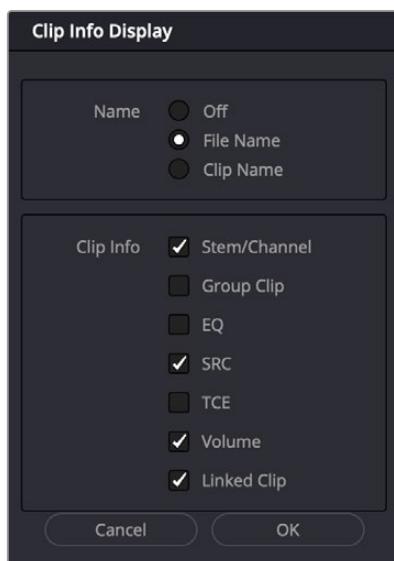
### To set the Tempo value for the Tempo Grid from a range selection:

- Make a range selection in the Timeline.
- Right-click anywhere in the Timeline ruler, and choose Set Tempo Grid BPM from the contextual menu.
- In the resulting Tempo Grid Setup window, enter the number of bars in the selection.
- If desired, select Set Start from Playhead.
- Click Set Tempo From Range.
- Close the Tempo Grid Setup window.

The tempo in the Tempo Grid Options settings updates accordingly.

**TIP:** When setting the tempo based on a range selection, choose a section of the music where it is easy to count out the bars/beats to set the range.

## Customizing Clip Display in the Timeline



Selecting the audio clip view options

Choose Fairlight > View Clip Info Display to open a dialog where you can customize what information is shown at the bottom of each clip in the Fairlight timeline. This dialog has options for viewing no clip name, the file name, or the clip name, and for choosing from among a variety of metadata that you might want available to view as you work with clips in the Timeline.

# Customizing the Timeline's Display

There are a variety of ways you can customize the Timeline to better see what you're working on.

## Playhead Modes

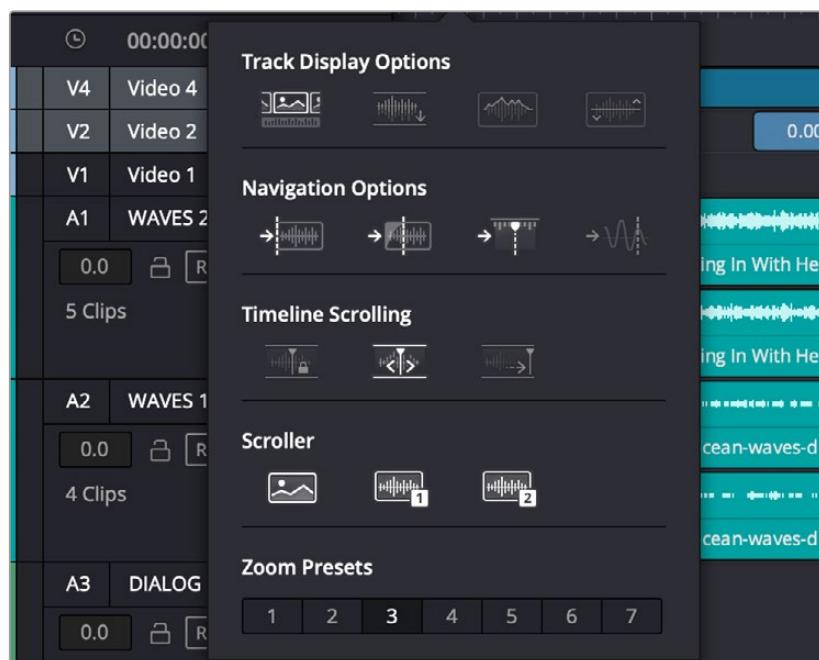
There are options for Page Scrolling ("Page") and No Scrolling ("Disabled") as outlined in the Timeline View Options section above. There is also the option for turning on the Fixed Playhead mode when you are not using Focus mode. This is available in the Timeline View Options drop-down menu, or choosing View > Timeline Scrolling > Fixed. When enabled, the playhead remains fixed in place, and the Timeline scrolls underneath it as you use the transport controls or JKL to play, shuttle, or scrub forward or back.

**NOTE:** Fixed playhead scrolling is not currently available when using Focus mode.

Also, please keep in mind that when you have changed DaVinci Resolve > Keyboard Customization from the default DaVinci Resolve mapping to a different mapping, many default key commands are altered. For instance, the Pro Tools Keyboard Customization does not offer JKL transport.

## Visible Video Tracks

A checkbox in the Timeline View Options drop-down menu of the toolbar lets you display small height video tracks in the Fairlight timeline for reference. This can be very useful as you can see which audio clips correspond to which video clips. The video clips can also be used as snapping targets for positioning audio.



Showing video tracks on the Fairlight page

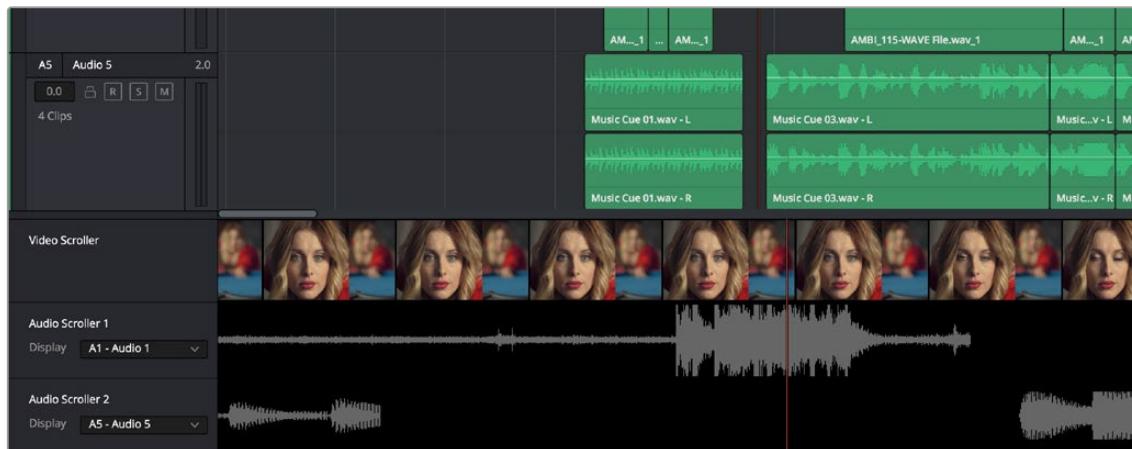
When the Video Tracks option is on:

- The Track Index can be used to choose which video tracks are visible.
- The video track(s) can be edited, both placement and clip trimming.
- Editing an embedded clip that contains both video and audio will add a clip with both audio and video in the appropriate corresponding tracks.

If the Video Tracks option is disabled, adding a clip with both video and audio to the timeline will add only audio to the corresponding tracks.

## Video and Audio Scrollers

Checkboxes in the Timeline View Options let you optionally show one Video Scroller and up to two Audio Scrollers at the bottom of the Fairlight timeline.



Video and Audio Scrollers at the bottom of the Fairlight timeline

At the default Low zoom level, the Video Scroller provides a scrollable frame-by-frame filmstrip view of the video of your program, where one frame of the scroller equals one frame of your video.

Each of the two Audio Scrollers, on the other hand, let you focus on a continuous waveform view of a particular audio track. Choose which track is visible in an Audio Scroller via the drop-down menu in the Timeline header.



Audio Scrollers showing the drop-down menu that selects which track they display

## What Are They Used For?

The Audio Scrollers always provide a zoomed-in view of specific audio tracks that you're focused on, regardless of the zoom level of the Timeline tracks above. This means you can focus on subtle details of the audio of one or two tracks that you're working on, while the rest of the Timeline shows you the overall stack of tracks with clips that are playing together at that moment.

Meanwhile, the Video Scroller always shows the exact frame of video that corresponds to the current moment in time, so it's an aid to precision editing involving frame-specific adjustments.

Additionally, both the filmstrip and waveform viewers scroll continuously during playback, giving you a preview of what visual actions and audio cues are coming a few moments forward in time that you can refer to while performing automation or recording foley.

## Repositioning the Scroller Playhead

While the scrollers are visible, the Scroller playhead can be dragged to the left or right in the Timeline to give you more or less preview room to the right.

## Zooming the Video Scroller

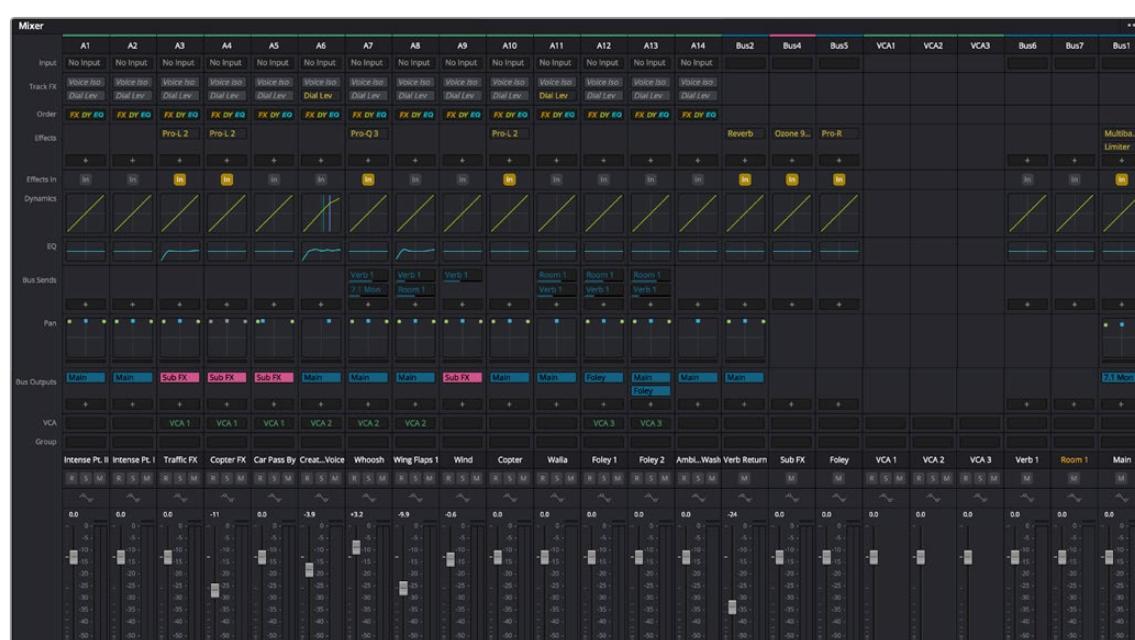
Right clicking on the Video scroller lets you choose a Low, Medium, or High zoom level. At Low, you get a frame-by-frame view of the program that feels like scrolling a strip of film on a Steenbeck flatbed editor. At Medium and High, you get a progressively abbreviated film strip that scrolls more quickly.

## Scrolling the Fairlight Timeline Using the Scroller Tracks

Dragging the scroller tracks to the left or right smoothly scrubs through the Timeline in greater detail, regardless of the zoom level of the Timeline tracks above.

# Mixer

The Audio Mixer provides a set of graphical controls you can use to assign track channels to output channels, adjust EQ and Dynamics, add filters and Fairlight FX, set levels and record automation, pan stereo, surround and immersive audio, and mute and solo tracks.



The Audio Mixer, with channel strips corresponding to the tracks in the Timeline

The Audio Mixer exposes two sets of channel strips with controls that correspond to the tracks in the Timeline. By default, the leftmost set of channel strips expose one set of controls for each track in the Timeline, while the rightmost set of channel strips expose another set of controls for each bus you've created to manage signal flow from the audio tracks to submixes and desired outputs.

**TIP:** You can right-click on a the number at the top of mixer channel strip to copy/paste settings, and also copy/past settings within the mini views of the channel dynamics and EQ as well. Also, effects plugins (Fairlight FX, AUs and VSTs) have local 3 dot Options menus at their top right that allow you to copy/paste settings.

- **Track color:** Each track can be differently color-coded using the right-click contextual menu on a track in the Timeline or Tracks Index, to help you keep organized.
- **Track number:** The number of the Timeline track corresponding to each channel strip appears here.
- **Input:** A drop-down menu that lets you patch inputs, busses, utility signals, and configure the input settings of audio signals routed through Blackmagic Design or other hardware interfaces.
- **Track FX:** This channel strip section offers specialized built-in Fairlight FX plugins, routed directly from disk and then onwards to other effects processing. The available Track FX are the Voice Isolation, Dialogue Leveler, and the new Dialogue Separator, Music Remixer, and Ducker plugins. Voice Isolation is a DaVinci Neural Engine AI effect that is only available in DaVinci Resolve Studio. For details on Track FX, see *Chapter 178, “Fairlight FX.”*
- **Order:** A drop-down menu that lets you choose the order of processing per track of the EQ, Dynamics, and Effects.
- **Effects:** Fairlight FX, VST, and Audio Unit effects that you apply to tracks from the Effects Library appear here, with controls for enabling/disabling each effect, opening an effect's floating user interface or Inspector controls, and deleting that effect.
- **Effects In:** A button to globally mute or enable all insert effects on a track (Fairlight FX, AU or VST). Track FX and the built-in channel dynamics and EQ are not affected by this control.
- **Dynamics:** Double-clicking exposes a set of dynamics controls with three sets of controls corresponding to an Expander or Gate, a Compressor, and a Limiter that can be used separately or in concert to manage the dynamics of the audio on that track.



The channel strip Dynamics control window

— **EQ:** Double-clicking exposes a four-band parametric equalizer, with additional High and Low Pass filters, that has both graphical and numeric controls for boosting or attenuating different ranges of frequencies of audio on each track. You can select from among four types of EQ filtering from the Equalizer Type drop-down menu, with options for Earth (the default), Air, Ice, and Fire. These four equalizer types affect the Curves aspect and Q-factor of the transfer function. Each band has controls for the filter type (Bell, Lo-Shelf, Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ change depending on the filter type.



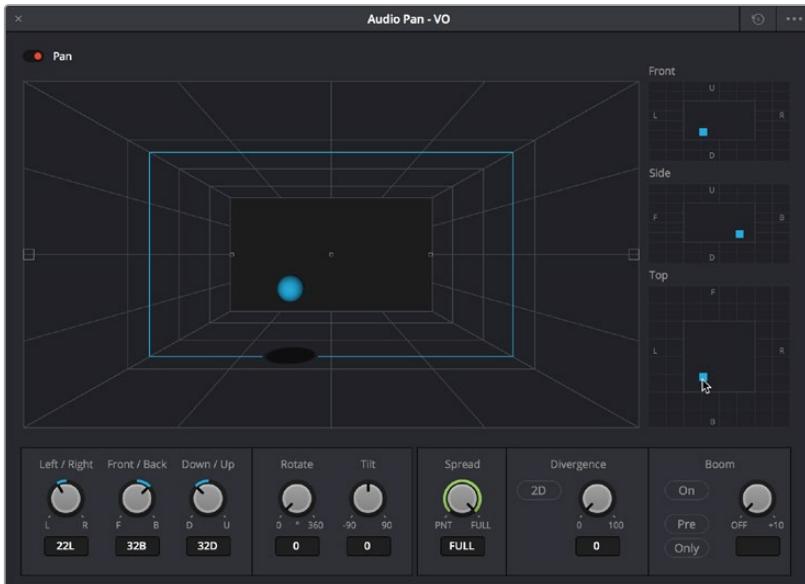
The channel strip EQ window

- **Bus Sends:** Click the + sign to add bus sends. Bus sends are only available if there are two or more available busses. Creating a bus send requires at least one additional bus other than the main output bus.
- **Pan:** A pan control compatible with stereo and surround panning. You can drag within this control to adjust pan, or you can double-click to expose a pan window. What controls are available in the pan window depend on the mapping of the audio track, but both stereo and surround panning controls are available, with corresponding numeric controls.



The Pan control window

Option-double-clicking on the Pan control of the Mixer opens an alternate 3D Audio Pan window. Whereas the regular Pan window lets you do stereo and conventional 5.1 and 7.1 surround panning, the 3D Audio Pan window lets you do the kind of spatial audio positioning enabled by advanced surround formats, such as Dolby Atmos, Auro 3D, and NHK 22.2.



The 3D Pan window

- **Bus Outputs:** These buttons let you assign a track or bus to one or more of the output busses.
- **VCA:** These buttons let you assign that track's channels to VCAs 1-10, or assign from the larger pool of 128 total available VCAs via a secondary dialog box.
- **Track name:** This mirrors the track name found in the header controls of the Timeline. You can customize a track's name in the Mixer by double-clicking and typing in the name field.
- **Arm, Solo, and Mute buttons:** Identical to the controls found in the track header controls of each timeline audio track. Arm enables recording for a track. Solo lets you mute all other tracks in order to play that track in isolation (along with any other Soloed tracks). Mute disables audio playback from that track. These controls are also available the Tracks Index.
- **dB display:** Shows you the volume level, in decibels, that track is currently set to.
- **Automation Arm:** Arm automation control per track. When enabled, will record automation in Latch mode when the transport runs. The control also shows red when a fader is moved. Automation can also be set to "Safe" or "Off" by right-clicking on this control.
- **Level Meter:** This is a real time indicator showing a track's signal level from -60db to 0db. The display and decay characteristics for audio metering can be set in Project Preferences > Fairlight > Audio Metering.
- **Fader:** Each track's main vertical faders let you adjust the level of that track and perform automation recording. Double-clicking the fader handle will reset it to the default level of 0. Holding the Shift key when adjusting a fader allows fine control of level with .1 dB resolution.

**TIP:** You can quickly assign bus routing, VCAs, plugins, or enable/disable automation safe on or off for a selected group of channel strips, or to all channel strips by holding down the Option key (Mac) or the Alt key (Windows) for all selected tracks or Command-Option (Mac) or Control-Alt (Windows) for all mixer channel strips prior to performing the operation. These shortcuts can save a lot of time in your workflow.

# The Monitoring Panel

The Monitoring panel that runs along the top of the Fairlight page shows all of the audio meters corresponding to the tracks in the Timeline, as well as the Master Output meter, Control Room meters, and a video viewer.



The Monitoring panel

At left, a row of audio meters corresponds to the channel strips of the Mixer, one meter for every audio track in the Timeline. Each track meter displays the number of channels that corresponds to that track's audio format, with mono tracks having a single audio meter, stereo tracks having two, 5.1 tracks having six, and so on. All of these track and bus meters (with the exception of the Loudness meters) display both peak and RMS (root mean square) levels against a dB scale.

To the right of the Track meters are the Bus meters, where all busses appear separated by type, each displaying a meter with the number channels that corresponds to the bus's audio format. This way you can see the sum of all tracks that have been routed to a particular bus.

The last set of meters, to the right of all others, are the Loudness meters, which consist of two sets of meters and a numerical readout section. The Control Room meter reflects that main output level from the program and the Loudness meter measures the mix's loudness according to the user's chosen scale. This lets you keep track of the "integrated loudness" of the overall mix, which is the standard that all contemporary mixing specifications refer to when specifying client deliverables.

The height of the monitoring panel can be adjusted by dragging the bottom of the panel.

## Absolute and Relative Measurement Scales

While some users prefer to measure their levels to correspond to a relative scale of "0," similar to a VU meter where the needle rides above the "0," others want to see the absolute measure of the amplitude in LUFS and true peak. By default, the Loudness meter is set to relative scale, but you now have the option to choose between relative scale and absolute scale in the Loudness meter.

Relative scale in the Loudness menu is relative to the selected scale, so a loudness unit of 0 corresponds to the target of the chosen measure type. For instance, if EBU R128 is selected, whose target measure is -23dB LUFS, the "0" LU (Loudness Unit) is equal to -23dB. If ATSC A/85 is chosen, whose target is -24dB, then that becomes the corresponding equivalent of the relative LU of 0.

When using the absolute scale, the Loudness meter displays the increments to reflect the chosen measure type. In absolute scale the EBU R128 meter will display -23 instead of the relative scale's 0.



The option in the Loudness panel reveals the various measure types as well as the option for absolute scale.

When working with large track counts, you can right-click on the panel and see a contextual menu that offers options for single or dual rows, as well as narrow or wide meters. You can also double click on the bus master meters on the right side to access a double row view for them.



The double height Monitoring panel

## Viewer

A small viewer at the far right of the Monitoring panel allows you to view video playback; it always shows the matching video frame at the position of the playhead.

- The viewer can be resized within the monitoring panel by dragging the left or lower edge of its window.
- A button in the lower right-hand corner lets you expand the Viewer into its own floating window.
- The Fairlight page has Cinema Mode viewing (Command-F) or through the Workspace menu, Workspace > Viewer Mode > Cinema Viewer.
- You can also use the Clean Feed mode view on a separate monitor by choosing Workspace > Video Clean Feed and choosing the target monitor for dedicated video playback.
- You can choose to turn the Viewer off entirely in the Workspace > Fairlight Viewer submenu.

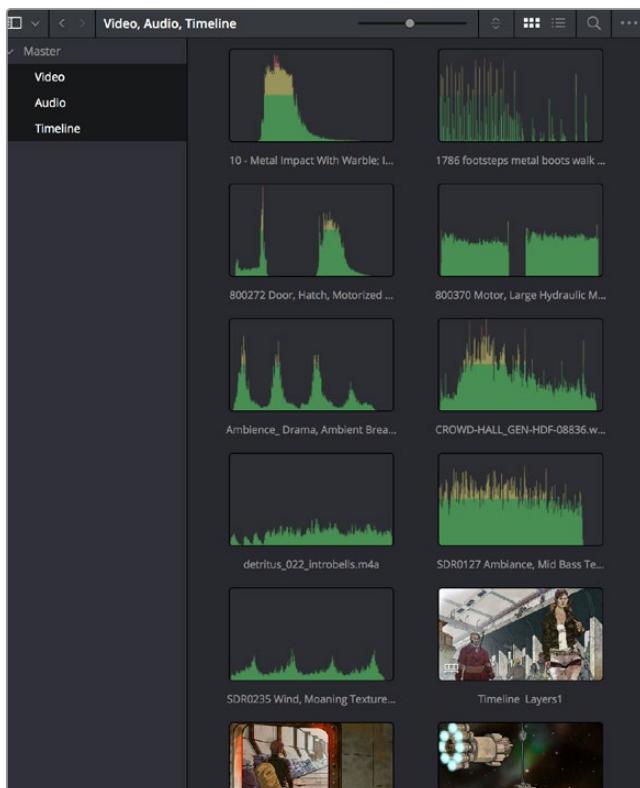


The Monitoring panel

# The Media Pool

In the Fairlight page, the Media Pool serves as the repository of all audio clips in your project, both clips that appear within the Timeline, and clips that you've added to your project but have not yet used. When you record audio into the Timeline, the resulting clips appear in the Media Pool as well, for future use. The Media Pool appears on all DaVinci Resolve pages, and contains all of the video clips and timelines within your project.

The Bin list at the left shows a hierarchical list of folders called bins used for organizing your media, which can also be used to organize your timelines. By default, the Media Pool consists of a single bin, named "Master," but you can add more bins as necessary to organize timelines and clips by right-clicking anywhere in the empty area of the Media Pool and choosing Add Bin. You can rename any bin by double-clicking on its name and typing a new one, or by right-clicking a bin's name and choosing Rename Bin. The Bin list can be hidden or shown via the button at the upper left-hand corner of the Fairlight page toolbar.



The Media Pool in Thumbnail mode showing audio clips

The browser area to the right shows the contents of the currently selected bin in the bin list. Every clip you import, every timeline you create, and every AAF, XML, EDL and other file types you can import appear here. You can create or import as many timelines as you need within a single project.

As elsewhere, the Media Pool can be displayed in either Metadata view, Thumbnail view, or List view. In List view, you can sort the contents by any one of a subset of the total metadata that's available in the Metadata Editor of the Media page. Of particular interest to audio editors are columns for Clip Name, Reel Name, different timecode streams, Audio Channels, Format, Audio Codec, Date Added, Flags, and Duration.

For more information on using all of the features of the Media Pool, see *Chapter 18, “Adding and Organizing Media with the Media Pool.”* In the sections that follow, some key features of the Media Pool are summarized for your convenience.

## Importing Media Into the Media Pool on the Fairlight Page

While adding clips to the Media Pool in the Media page provides the most organizational flexibility and features, if you find yourself in the Fairlight (or other) pages and you need to quickly import a few clips for immediate use, you can do so in a few different ways.

### Add media by dragging one or more clips from the Finder to the Fairlight page Media Pool (macOS only):

- 1 Select one or more clips in the Finder.
  - 2 Drag those clips into the Media Pool of DaVinci Resolve, or to a bin in the Bin list.
- Those clips are added to the Media Pool of your project.

### Use the File > Import > Media command:

- 1 With the Fairlight page open, choose File > Import > Media.
- 2 Use the Import dialog to select one or more clips to import, and click Open.

### Use the Import Media command in the Fairlight page Media Pool:

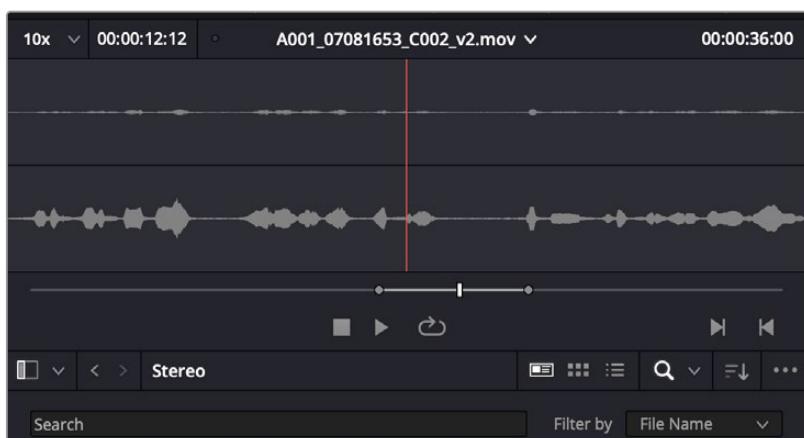
- 1 With the Fairlight page open, right-click anywhere in the Media Pool, and choose Import Media.
- 2 Use the Import dialog to select one or more clips to import, and click Open.

Those clips are added to the Media Pool of your project.

For more information on importing media using the myriad features of the Media page, see *Chapter 18, “Adding and Organizing Media with the Media Pool.”*

## Media Pool Preview Player

The Media Pool has a preview player at the top that provides a place to open selected source clips in the Media Pool, play them, add marks to log them, and set In and Out points in preparation for editing them into the Timeline via drag and drop. The Media Pool Preview Player effectively acts as a Source monitor for editing in the Fairlight page.



The preview player in the Media Pool

- Various viewing controls populate the title bar at the top. A drop-down menu at the upper left lets you choose a zoom level for the audio waveform that's displayed. To the right of that, a Timecode window shows you the duration of the clip or the duration that's marked with In and Out points. Next to the right, a real-time performance indicator shows you playback performance. In the center, the title of the currently selected clip is shown, with a drop-down menu to the right that shows you the most recent 10 clips you've browsed. To the far right, a Timecode field shows you the current position of the playhead (right-clicking this opens a contextual menu with options to change the timecode that's displayed, and to copy and paste timecode).
- The center of the Media Pool Preview Player shows you the waveforms in all channels of the currently selected clip, at whatever zoom level is currently selected.
- Transport controls at the bottom consist of a jog bar for scrubbing, Stop, Play, and Loop buttons, and set In and Out buttons.

## Bins, Power Bins, and Smart Bins

There are actually three kinds of bins in the Media Pool, and each appears in its own section of the Bin list. The Power Bin and Smart Bin areas of the Bin list can be shown or hidden using commands in the Media Pool Options menu (...): Show Smart Bins and Show Power Bins. Here are the differences between the different kinds of bins:

- **Bins:** Simple, manually populated bins. Drag and drop anything you like into a bin, and that's where it lives, until you decide to move it to another bin. Bins may be hierarchically organized, so you can create nested bins, one inside of the other, if you like. Creating new bins is as easy as right-clicking within the bin list and choosing Add Bin from the contextual menu.
- **Power Bins:** Hidden by default. Power bins are shared among all of the projects in your current project library, making them ideal for shared title generators, graphics movies and stills, sound effects library files, music files, and other media that you want to be able to quickly and easily access from any project. You put whatever materials you want into Power Bins; it's a manual process. To create a new Power Bin, show the Power Bins area of the Bin list, then right-click within it and choose Add Bin.
- **Smart Bins:** These bins build "custom collections" of media that use metadata or analysis to automatically populate the bins dynamically, meaning that the contents will change depending on what the Smart Bin is set to focus on. For example, a sound effects Smart Bin will show only sound effects, and the bin's contents will grow or shrink depending on the number of effects files that have been identified in the project, which may change over time. Smart Bins can allow very fast and efficient organizing of project contents.

There are several automatically created Smart Bin types available (see Preferences > User > Editing > Automatic Smart Bins).

You can choose to have Resolve's Audio Classification analysis categorize your files (automatically creating "Collections" smart bins). Or, you can manually add metadata to your clips using the Metadata Editor, adding Scene, Shot, and Take information, keywords, comments and description text, and more to make it faster to find what you're looking for when you need it.

You can create your own criteria for a Smart Bin. To create a new custom Smart Bin, make sure the Smart Bin area of the Bin list is showing, then right-click within it and choose Add Smart Bin. A dialog appears in which you can edit the name of that bin and the rules it uses to filter clips, then click Create Smart Bin.

**NOTE:** To view Smart Bins other than Keywords and Collections, you must first enable any additional Smart Bin choices in Smart Bin Preferences > User > Editing > Automatic Smart Bins.

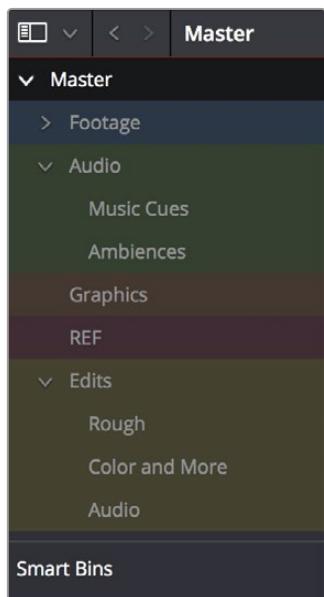
## Showing Bins in Separate Windows

If you right-click a bin in the Bin list, you can choose “Open As New Window” to open that bin into its own window. Each window is its own Media Pool, complete with its own Bin list, Power Bins and Smart Bins lists, and display controls.

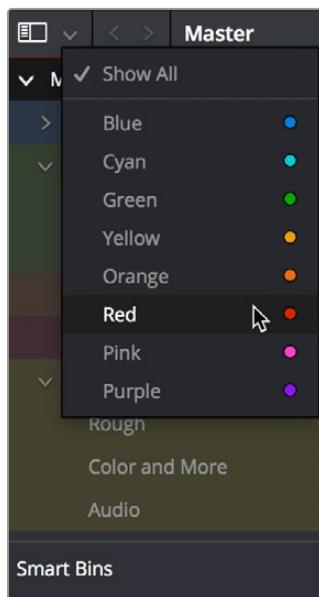
This is most useful when you have two displays connected to your workstation, as you can drag these separate bins to the second display while DaVinci Resolve is in single screen mode. If you hide the Bin list, not only do you get more room for clips, but you also prevent accidentally switching bins if you really want to only view a particular bin’s contents in that window. You can have as many additional Bin windows open as you care to, in addition to the main Media Pool that’s docked in the primary window interface.

## Filtering Bins Using Color Tags

If you’re working on a project that has a lot of bins, you can apply color tags to identify particular bins with one of eight colors by right-clicking any bin and choosing the color you want from the Color Tag submenu.



Using color tags to identify bins



Using Color Tag filtering to isolate the red bins

For example, you can identify the bins that have clips you’re using most frequently with a red tag. A bin’s color tag then appears as a colored background behind that bin’s name.

Once you’ve tagged one or more Media Pool bins, you can use the Color Tag Filter drop-down menu (the drop-down control to the right of the Bin List button) to filter out all but a single color of bin.

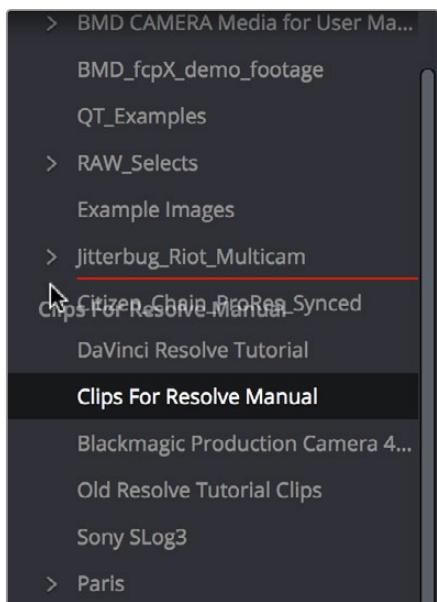
To go back to seeing all available bins, choose Show All from the Color Tag Filter drop-down.

## Sorting the Bin List

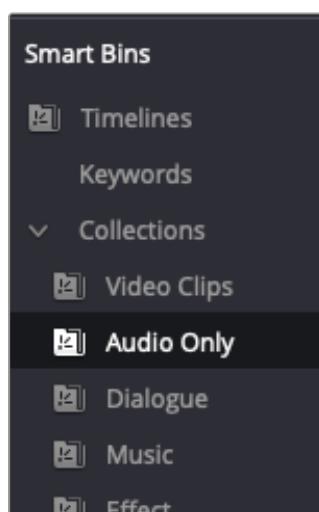
The Bin list (and Smart Bin list) of the Media Pool can be sorted by Bin Name, Date Created, Date Modified, in either ascending or descending order. Simply right-click anywhere within the Bin list and choose the options you want from the Sort by submenu of the contextual menu.

You can also choose User Sort from the same contextual menu, which lets you manually drag all bins in the Bin list to be in whatever order you like. As you drag bins in this mode, a red line indicates the new position that bin will occupy when dropped.

If you use User Sort in the Bin list to rearrange your bins manually, you can switch back and forth between any of the other sorting methods (Name, Date Created, Date Modified) and User Sort. Your manual User Sort order will be remembered, making it easy to use whatever method of bin sorting is most useful at the time, without losing your customized bin organization.



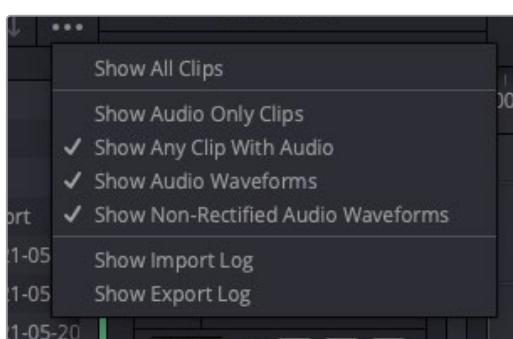
Dragging a bin to a new position in the Bin list in User Sort mode



The Audio Only Smart Bin

## Filtering Clips With Audio in the Fairlight Page

The Media Pool on the Cut, Edit, Color, Fusion and Fairlight pages can show Audio Only clips using the Collections smart bin labeled “Audio Only” found in the Collections area of Smart Bins. This makes it easy for you to find audio clips that you’re looking for, which may be hidden along with lots of video clips in the same bin.



The Media Pool filter options in the option menu

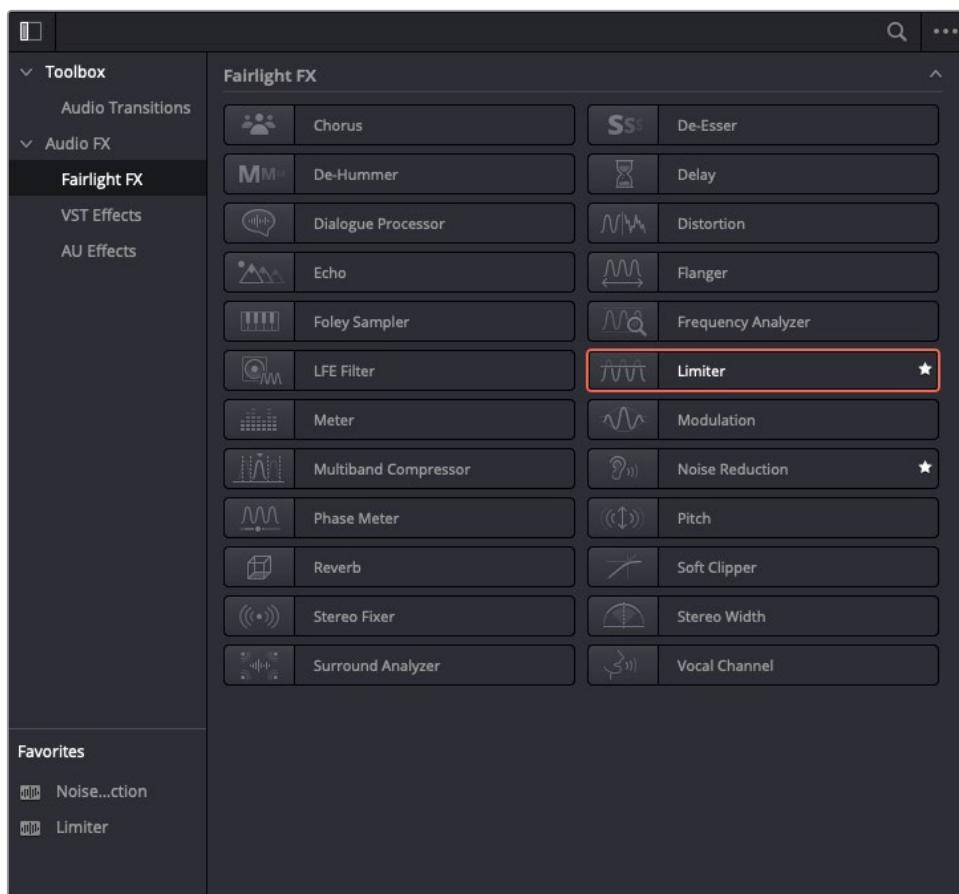
If you'd like to work with some additional options, the Media Pool in the Fairlight page also has the ability to filter out audio-only clips, or video clips with audio, in the currently selected bin. To use this feature, click the Option menu of the Media Pool and choose Show All Clips, Show Audio Only Clips, or Show Clips With Audio, Show Audio Waveforms, and Show Non-Rectified Audio Waveforms.

# Effects Library

The Effects Library on the Fairlight page displays both the built-in Fairlight FX audio plugins that accompany DaVinci Resolve on macOS, Windows, and Linux, as well as whatever Audio FX are available on your workstation.

- Fairlight FX are built-in audio processing effects that are fully cross-platform on all platforms DaVinci Resolve supports.
- On macOS and Windows, DaVinci Resolve supports the use of third-party VST audio plugins.
- On macOS, DaVinci Resolve supports Audio Unit (AU) audio plugins.

Once you install third-party effects on your workstation, they appear in this panel of the Effects Library alongside the Fairlight FX that are always available. Audio plugins let you apply effects to audio clips or as a real time process on an entire audio track (affecting all clips on that track), to add basic dynamics or tonal processing compression, limiting or EQ, noise reduction, or creative spatial effects like delay or reverb.



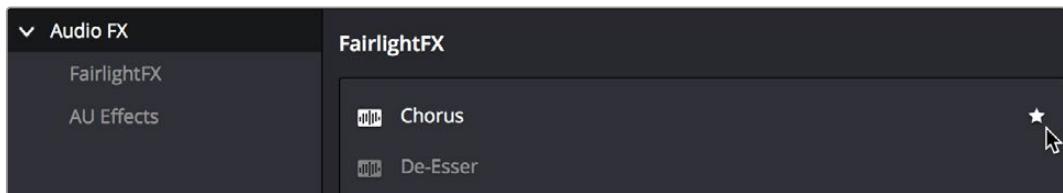
The Effects Library

Similar to the Media Pool, the Effects Library's Bin list can be opened or closed using a button at the top left.

## Effects Library Favorites

To save an effect as a Favorite:

- Hover over the far right of any effect to see a star
- Click on the star to add the effect to the Favorites effects list.
- Favorites appear in a separate area on the lower left next to the Effects Library Bin list.



Stars indicate a flagged favorite effect, all favorites are currently filtered

**NOTE:** Items that are set as Favorites in the Effects Library list will also appear at the top of the Mixer's Effects drop-down menu effects list.

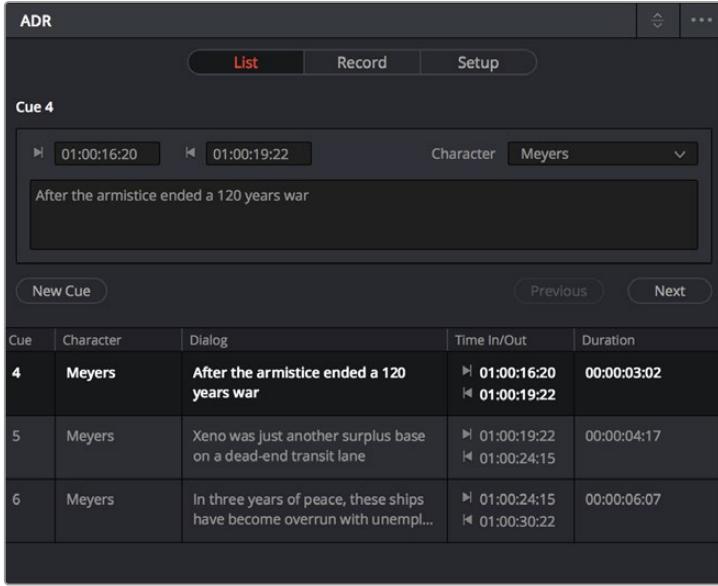
# ADR

The Fairlight page of DaVinci Resolve has a sophisticated, yet intuitive, interface for doing "ADR" (Automated Dialog Replacement). Comprehensive cue list management, industry-standard audio beeps and visual cues, sophisticated take management with star ratings and layered take organization help you manage your work while getting the best parts of each performance.

When open, the ADR interface consists of three panels to the left of the Timeline: a List panel, a Record panel, and a Setup panel.

## The List Panel

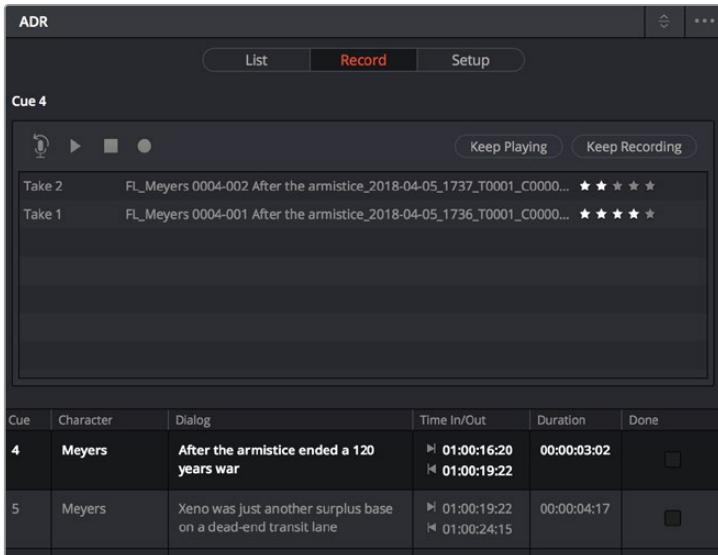
This is where you create a list of cues you need to re-record, either from within the Fairlight page, or imported from a .csv file that someone provides you. It presents controls for adding, editing, importing, and exporting cues that you want to record.



The Setup panel of the ADR interface

## The Record Panel

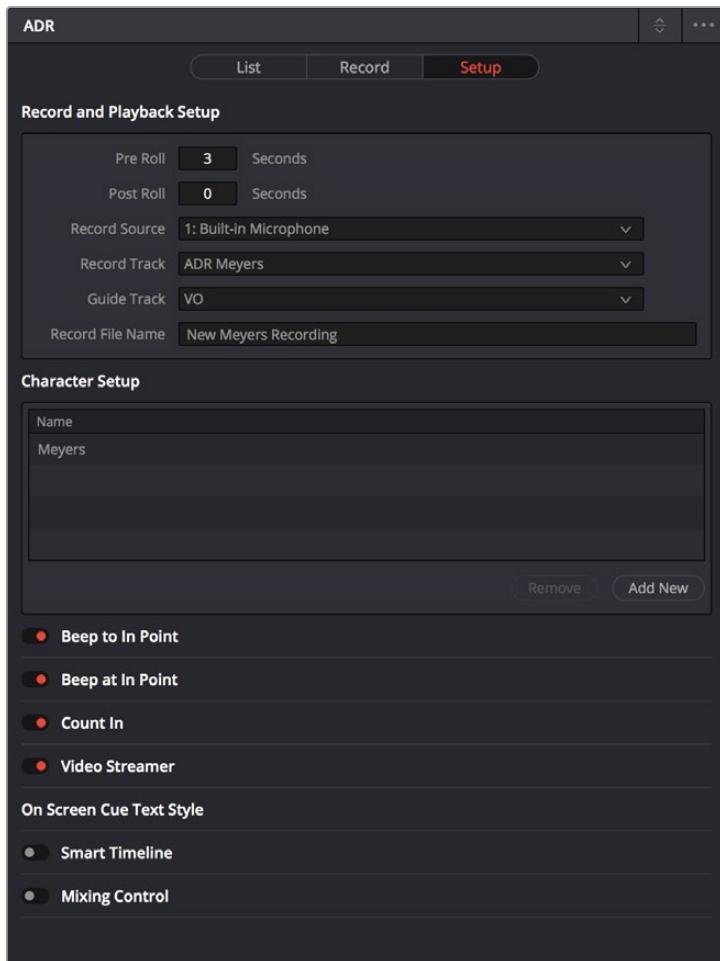
This is where you actually run the ADR recording session you've set up, using the dialog cues you've put into the Cue list. It presents controls for displaying and selecting which cues to record, previewing and initiating recording, and adding metadata to rate the different takes you've recorded and to keep track of which cues have been completed.



The Record panel of the ADR Interface

## The Setup Panel

The Setup panel is where you configure your ADR session. Choose your audio input, your record track and what tracks to monitor. Then access beeps, video streamers and onscreen text that the actors will see on the video output display to help them keep their performance in sync.



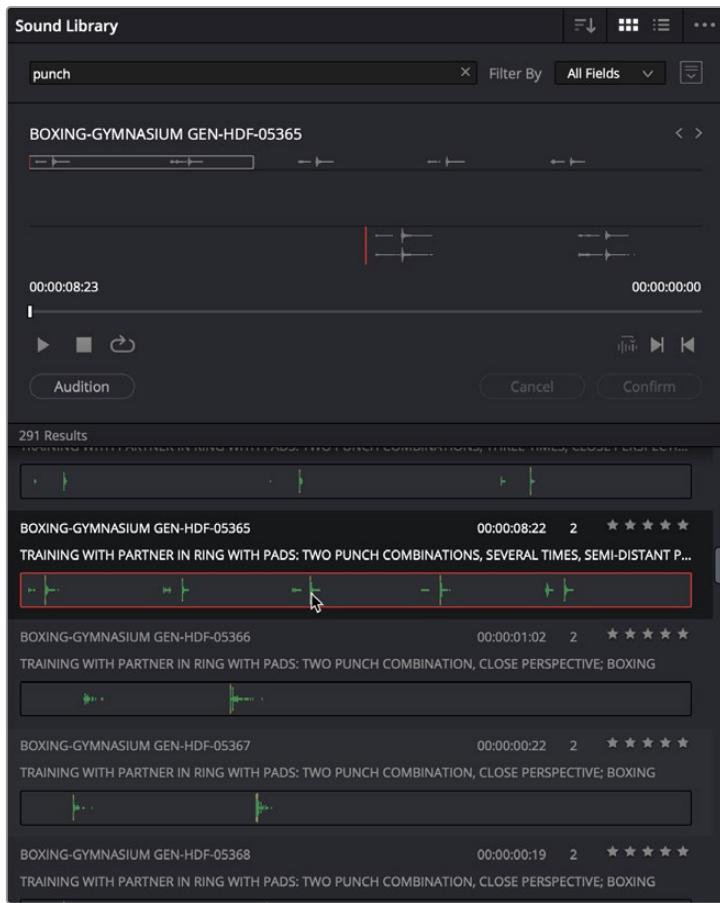
The Setup panel of the ADR interface

For more information on using the ADR panel, see *Chapter 171, "ADR (Automated Dialog Replacement)."*

## Sound Library Browser

A Sound Library panel is available from the Interface toolbar for browsing sound effects libraries that you have available to you, on your system or on network storage you may be connected to (for example, a SAN). It includes the capability of scanning specified file paths to catalog available sound files and their metadata, storing this data within the currently selected project library (or another project library that you select) to use when searching for the perfect sound effect within your library. Once you've cataloged your sound effects collection, it's easy to search for sounds, preview what's been found in the list, and edit the one you like best into the Timeline.

**TIP:** You can download the Fairlight sound library, a royalty-free collection of over 500 professionally recorded foley sounds that you can use in your own projects, which are directly downloadable from the Sound Library panel. The Fairlight sound library features everything from atmospheric ambient sounds to foley sounds such as foot steps, hits, effects, and more. This free sound library is designed to work with the Fairlight FX Foley Sampler plugin, which lets you use a MIDI keyboard to trigger sounds so they can be recorded at precisely the right time in your program.



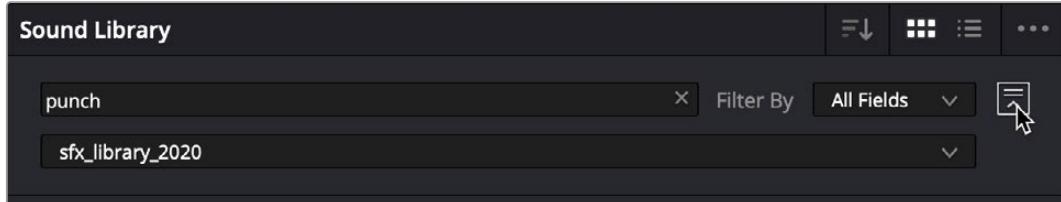
The Sound Library panel

## Library Controls

Clicking the Library button (to the right of the Search field) reveals a menu that lets you choose which project library to use for searching (and cataloging) sound effects collections. Each network project library can have a different catalog.

**NOTE:** The Sound Library results pane will be empty until a search is made.

The Sound Library is capable of using the Mapped Mount option in the Media Storage panel of the Preferences, in order to access sound effects located on remote volumes using other operating systems.



Choosing a library to search

## To catalog all audio files within a given file path for searching using the Sound Library:

- 1 Using the Project Manager, create an empty network project library to store the sound effects catalog.
- 2 Open a project, open the Edit or Fairlight pages, then open the Sound Library.
- 3 (Optional) Click the Library button (to the right of the Search field), and select the project library you created using the drop-down menu that appears. The current project library is selected by default. If you're working within a local project library instead, the top compatible project library in the list will be the default.
- 4 Do one of the following:
  - a) If you've not yet connected a library of sound effects, an Add Library button appears in the center of the Sound Library. Click this button, and from the file dialog that appears, select the top-most directory of a file path that contains sound effects; if you've selected a directory with subdirectories inside, each subdirectory will be examined for content.
  - b) If you're adding more sound effects to an existing library, then click the Option menu and choose Add Library. From the file dialog that appears, select the top-most directory of a file path that contains sound effects; if you've selected a directory with subdirectories inside, each subdirectory will be examined for content.
- 5 Click Open.

A progress bar will show you how long the operation will take. When you're finished, a dialog will appear letting you know how many clips were added to the current library.

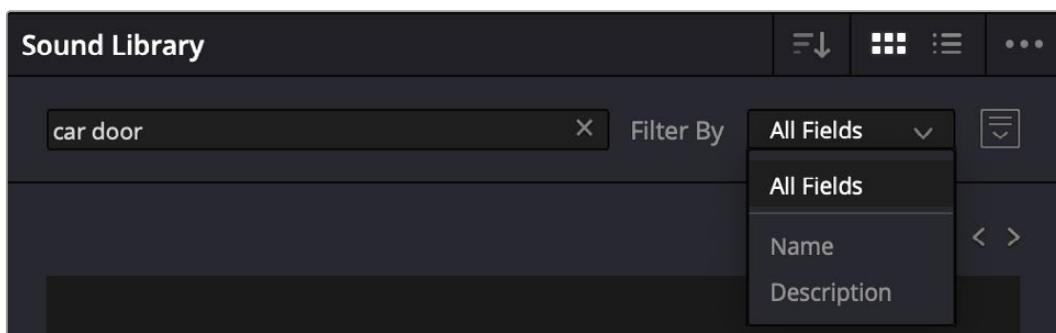
## Display Controls and the Search Field

The Sound Library title bar has controls for sorting the sound effects list, showing it in List or Icon view, and an Option menu with various other settings and commands.



Display controls let you choose how the contents of the Sound Effects list are viewed

Underneath, a text field lets you enter search terms, while a drop-down menu to the right lets you choose whether to search the current project library for sound effects by name, description metadata, or all.



The Search field and Filter By menu

## To search for a specific sound effect and edit it into the Timeline:

- Type a search term into the Search field. The case of search terms is ignored, except for boolean operators.

To help you to eliminate false positives, the search field supports different kinds of searches, such as literal searches, and/or/not boolean searches, wildcard searches, and ranges of characters.

**NOTE:** If you want to perform Boolean searches, the Boolean operators must be typed in all upper caps, such as "AND," "OR" and "NOT." If lower case is used, "and," "or" and "not" will be treated as search terms but as regular words.

## Or/And/Not Searches

Simply typing words separated by a space is treated as a series of OR searches for each word independently of one another, either literally or as part of another word. For example, if you type either of the following:

```
car door  
car OR door
```

both yield the same results. Every sound effect in your library containing either the letters "car" or "door" (or both) will appear, whether these letters appear independently, or within other words. Results will include files such as "CarExDoorClose," "Doormouse\_Squeak," "Carburetor dropped on cement," and "Carpet Shake."

Using AND (it must be upper caps) lets you specify multiple criteria for a search, when each file that's returned should contain every word you type somewhere within, in any order. For example, if you type:

```
car AND door
```

every sound effect in your library containing both the strings "car" and "door" will appear, even if these words appear either singly, in combination, or within other words, such as "NewCarDoorSlam" and "Carpet\_Footsteps\_Indoors," and "GarageDoorHitsCar."

Using NOT lets you omit sound effects that have a particular word. For example, if you type:

```
car NOT door
```

only sound effects with "car" will appear, and all sound effects with "door" will be omitted.

## Literal Searches

Using quotations specifies a literal search for only the specified term, separated from other text by a space. For example, if you type:

```
"cat"
```

every sound effect in your library with the standalone word "cat" appears. Sound effects with "cats" and "caterpillar" will be omitted. Results will include "Space cat drone" or "Cat meowing."

## Wildcard and Range Searches

The \* (asterisk) specifies a wildcard search of any number of characters. Adding an \* between two search terms identifies any sound effect with the two search terms connected by any number or combination of characters with no spaces (even no characters). For example, if you type:

`close*door`

results include "Door-Wood Cheap-Wooden-Closet-Door-Kick-In-Flimsy-Rattle," "ElevatorCabinCloseDoor," and "LatchSwingCloseSqueakDoorSecur." If you instead type:

`door*close`

results include "DoorHvyMetalCloseSlam," "DoorLidWoodenChestCloseAntique," and "ElevatorDoorCloseSlam." If instead you type:

`c*r`

results include "lectrohummin," "KiaShumaEXTBootCloseTrunkaka," and "Ambience with Piana, Louder."

The ? (question mark) specifies wildcard search specifying only a single character. The number of question marks you type specifies how many characters of wildcard searching you want to perform. For example, if you type:

`door?close`

you may get no results at all, unless you have a sound effect named "door-close." However, if you type:

`door????close`

results include "DoorWoodClose" since the word wood is four letters, matching the number of wildcard letters you've specified.

**TIP:** Typing "\*\*\*\*" will show all of the files in your Sound Library

## Preview and Audition Controls

Selecting an item in the Sound Effect list loads it into the preview player where you can play it or audition it in your timeline using the controls underneath the search field.

- **Clip name:** The name of the current clip you've selected.
- **Next/Previous buttons:** Two buttons let you select the next or previous sound effect clip in the Sound Effect list.
- **Duration display:** Shows the duration of the current clip, or of the section of the clip marked with In and Out points.
- **Playhead timecode display:** The playhead's current position.
- **Waveform overview display:** The waveform of the entire sound effect appears here, providing a zoomed out view of the selected clip. All channels are summed together in this display.

- **Zoomed in waveform display:** A zoomed-in section of the selected clip that lets you see more waveform detail for setting In, Out, and Sync points.
- **Jog bar:** Lets you navigate through or scrub around the clip.
- **Transport controls:** Play, stop and loop buttons let you control playback, although you can also use the space bar and JKL controls. Right-click the Stop button to switch it into “Stop and Go to Last Position” mode.
- **Marking controls:** The Sync Point button lets you mark a specific frame on the sound effect that you want to sync to the Timeline’s current playhead position when you use the Audition controls. The In and Out buttons let you mark which portions of the sound effect clip you want to edit into the Timeline.
- **Audition controls:** The Audition button puts you into Audition mode, where the currently selected sound effect clip is automatically placed at the position of the playhead in the currently selected Timeline track. You can then move over to the timeline and listen to the clip in your mix. Cancel and Confirm buttons let you choose whether you want to remove the clip from the Timeline and try again with another clip, or leave the sound effect clip in.

### To audition clips you’ve selected in the Sound Library in the Timeline:

- 1 Select a sound effect clip you’ve found from the list that you want to audition in the Timeline.
- 2 (Optional) In the Sound Library, use the scrubber bar to move the playhead to the part of the sound effect that you want to sync to, and click the Sync Point button to place a sync mark on that clip. For example, if you’re syncing the sound effect of a car door closing, you might sync the first frame of the door fully closed to the peak of the “slam” sound effect, rather than any door squeaking earlier in the sound effect.
- 3 (Optional) Set In and Out points to define the range of the sound effect you want to potentially use.
- 4 Select a track you want to preview the sound effect in by clicking its track header or Mixer channel strip.
- 5 Position the playhead at the place in the Timeline you want to place your clip.
- 6 Click the Audition button in the Sound Library. That clip now appears, temporarily, in the Timeline, and you can play through that section of the Timeline to see how you like the sound effect in context with the rest of the mix.
- 7 If you like the sound effect, click Confirm to keep it in the Timeline. If you don’t, click Cancel, and it will disappear from the Timeline.

**NOTE:** In order Use the Audition function, a track has to be selected first.

Additionally, if you select another sound effect after auditioning, without first confirming the prior sound, the Audition process is cancelled, and the prior sound is removed from the timeline.

## Sound Effect List

All sound effect clips that match the current search criteria appear in this scrollable list. Double-clicking anywhere on an item of this list plays that sound effect in its entirety.

- **Clip Name:** The name of that sound effect file in the storage system.
- **Description:** Any metadata that's embedded within the files of professionally created sound effect libraries appears here.
- **Duration:** The duration of that sound effect file.
- **Audio Channel:** The number of channels in that sound effect file.
- **Star rating:** A clickable control you can use to rate sound effects within DaVinci Resolve. Star rating information is not saved outside of DaVinci Resolve.
- **Waveform:** The overall waveform of the entire sound effect library is stretched or compressed within the available width of the Sound Library, regardless of the actual duration of each clip.

## Index

The Index provides a handy interface for listing all of the clips in the current edit, all the tracks in the current Timeline, and all the markers in the current Timeline. Using these lists, multiple items can be selected, tracks can be managed, and marker notes can be consulted with ease. Each of these three categories of information is displayed in separate panels: the Edit Index, Tracks, and Markers.

### Edit Index

Displays the Edit Index as seen in the Edit page. Each audio clip in the currently open Timeline corresponds to a row in the Edit Index, with columns for video track, Source In and Out, Record In and Out, Name, and other descriptive metadata. All selected clips (including clips that are automatically selected because they intersect the playhead) are selected in the Edit Index. The Option menu lets you filter the Edit Index by various criteria, for example showing only clips with a particular color of flag, marker, or color, only clips with speed effects, only clips with audio filters, or compound audio clips.

Edit Index											Tracks	Markers
#	Ree	V	C	Dur	Source In	Source Out	Record In	Record Out	Name	Comments		...
1	A1	C			00:59:37:09	01:00:05:21	01:00:00:00	01:00:28:12	xOpening Cap...			
2	A2	C			00:00:01:09	00:00:11:18	01:00:00:00	01:00:10:09	Ambience_Dr...			
3	A7	C			00:00:00:00	00:00:28:13	01:00:00:00	01:00:28:13	detritus_022_i...			
4	A3	C			00:00:00:00	00:00:21:03	01:00:07:09	01:00:28:12	SDR0127 Amb...			
5	A5	C			00:00:00:11	00:00:21:14	01:00:07:09	01:00:28:12	1786 footstep...			
6	A2	C			00:00:05:05	00:00:23:08	01:00:10:09	01:00:28:12	SDR0235 Win...			
7	A6	C			00:00:00:07	00:00:01:10	01:00:14:07	01:00:15:10	800370 Motor...			
8	A6	C			00:00:10:09	00:00:12:05	01:00:15:10	01:00:17:06	800370 Motor...			
9	A4	C			00:00:01:20	00:00:13:13	01:00:16:20	01:00:28:13	CROWD-HALL...			
10	A6	C			00:00:00:00	00:00:02:08	01:00:18:23	01:00:21:07	10 - Metal Imp...			
11	A6	C			00:00:00:06	00:00:02:15	01:00:24:01	01:00:26:10	800272 Door, ...			

The Tracks panel shows a row of information for each of the tracks in the Timeline

## Tracks

Every track in the currently open Timeline corresponds to a row of controls and information in this panel. From left to right, each track has a color control, a visibility control, a number, a name, track controls, a format, ADC, Tags, and, if a VCA is used, the number of that VCA group. These controls can be used to hide or show tracks, color code them, rename them, turn track controls on singly or by dragging over several at a time, change their format, add to (or remove them from) the audio monitor list, and rearrange them (by dragging one or more rows up and down this list) and toggle the automatic delay compensation (ADC) on/off (on by default).

Tracks											
	#	Name	Track Controls			Format	Monitor	ADC	VCA	Tags	
•	A1	Intense Pt. II	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 1
•	A2	Intense Pt. I	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 1
•	A3	Traffic FX	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 3
•	A4	Copter FX	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 2
•	A5	Car Pass By	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 2
•	A6	Creature Voice	<input type="checkbox"/>	R	S	M		1.0	<input checked="" type="checkbox"/>	168	VCA 3
•	A7	Whoosh	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	VCA 3
•	A8	Wing Flaps 1	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	
•	A9	Wind	<input type="checkbox"/>	R	S	M		2.0	<input checked="" type="checkbox"/>	168	
•	B2	Verb Return		M		2.0	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
•	B1	Main		M		2.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	168		
•	B3	7.1 Mon		M		7.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

The Tracks panel shows a row of information for each of the tracks in the Timeline.

**NOTE:** The ADC column (automatic delay compensation) has a check box allowing the enabling of ADC on a track-by-track basis.

### Audio Monitor Checkbox

A monitor checkbox appears for each bus or track in the Tracks list. When checked, that track or bus will appear in the Audio Monitoring drop-down menu as a choice for monitoring. All busses are checked on by default, and will appear in the list unless unchecked here.

### MPEG-H Options in the Tracks Panel

If you have MPEG-H enabled for immersive audio authoring in the preference pane of Video and Audio I/O, additional columns appear in this panel.

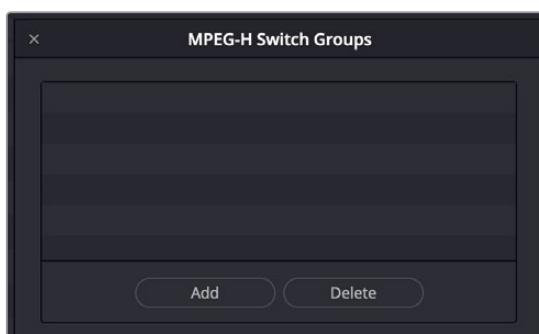
Tracks													
	#	Name	Track Controls	Format	Monitor	ADC	VCA	Tags	Type	Kind	Language	Switch Group	Presets
○ A1	Intense Pt. II		R S M	2.0	■	✓ 168	VCA 1		Static	Music	Unknown	None	
○ A2	Intense Pt. I		R S M	2.0	■	✓ 168	VCA 1		Static	Music	Unknown	None	
○ A3	Traffic FX		R S M	2.0	■	✓ 168	VCA 3		Static	Effect	Unknown	None	
○ A4	Copter FX		R S M	2.0	■	✓ 168	VCA 2		Static	Effect	Unknown	None	
○ A5	Car Pass By		R S M	2.0	■	✓ 168	VCA 2		Static	Effect	Unknown	None	
○ A6	Creature Voice		R S M	1.0	■	✓ 168	VCA 3		Static	Effect	Unknown	None	
○ A7	Whoosh		R S M	2.0	■	✓ 168	VCA 3		Static	Effect	Unknown	None	
○ A8	Wing Flaps 1		R S M	2.0	■	✓ 168			Static	Effect	Unknown	None	
○ A9	Wind		R S M	2.0	■	✓ 168			Static	Effect	Unknown	None	

When MPEG-H is enabled, the Tracks panel shows additional columns of metadata information for defining each track in the Timeline.

These columns include:

- **Track Type:** Allows definition of either a static component or a dynamic object. When dynamic is selected, the dynamic track-level pan automation from that track is also exported. Only a track can be set to dynamic.
- **Kind:** A content type label, such as Mixed content, Music, Dialogue, Effect, etc. When Kind is defined for a bus (rather than the default state of Undefined), that bus is automatically bounced during the export process.
- **Language:** The content-specific language for that track.

**Switch Group:** Allows the track to be assigned to a user-defined switch group. A switch group allows the track to be grouped together with other tracks in the final content, forming a selectable item when rendered. For example, a switch group of dialogue, containing an English and a Chinese language track, could allow the user to select between these languages on playback. In order to define a switch group, click that track's cell in the Switch Group column, and choose "Sw Groups..." to open the Switch Groups Manager window, which lets you create new switch groups.



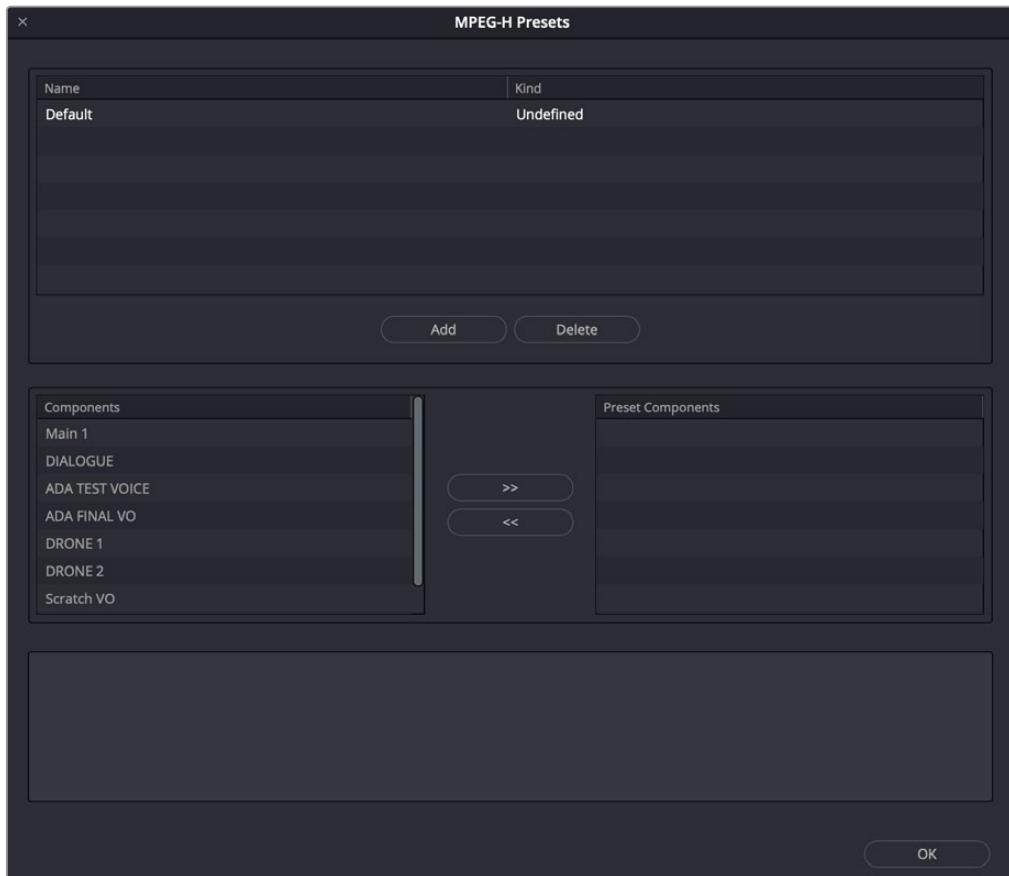
The Switch Group Manager

Once one or more groups has been created, they're available for selection in the drop-down menu of any cell in the SW Groups column. This lets you quickly make a variety of custom assignments.

pe	Kind	Language	SW Group	Presets
Static	Dialogue	English	Dialogue	High Qual
Static	Dialogue	English	None	High Qual
Static	Dialogue	English	Dialogue	High Qual
Static	Effect	Unknown	SW Groups...	High Qual

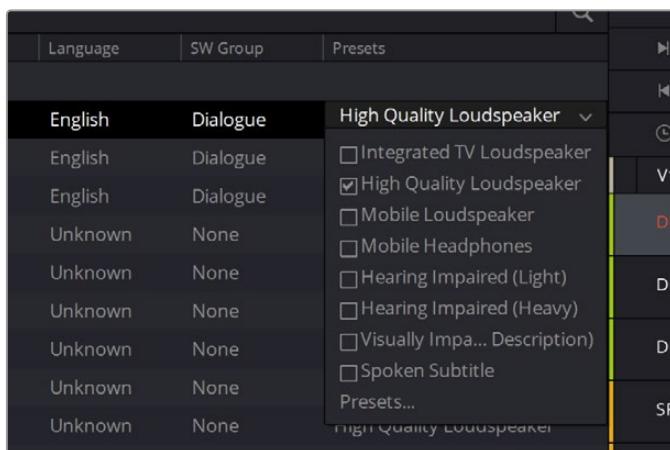
The drop-down in the SW Group column

— **Presets:** Allows a track to be assigned to a user-defined preset. For example, a Bed Mix and Language switch group could form one preset, while the same tracks and a spoken subtitle could form another. In order to define a Preset, click that track's cell in the Presets column, and choose "Presets..." to open the Preset Manager window, which lets you create new Presets.



The Preset Group Manager

Once one or more presets has been created, they're available for enabling in the drop-down menu of any cell in the SW Groups column. Any track can be added to multiple presets, so the Presets drop-down contains one checkbox per preset so you can make multiple assignments.



The drop-down in the Presets column

Once configured, the metadata from these presets form how the content is exported in the final deliverable, so there will be a set of presets that contain all configured components and switch groups.

## Markers

The markers panel can be displayed in either thumbnail or list mode. In thumbnails mode, each marker in your timeline corresponds to a thumbnail displaying the timecode of its location underneath it, and the color of the marker to the left of the timecode location. In list view, each marker displays a row with the following information; marker number, frame (showing a thumbnail), marker name, start timecode, end timecode, duration, marker color, and notes.

Markers							
#	Frame	Name	Start TC	End TC	Duration	Color	Notes
1		Marker 1	01:00:02:03	01:00:02:04	00:00:00:01	<span style="color: blue;">■</span>	
2		Marker 2	01:00:03:23	01:00:04:00	00:00:00:01	<span style="color: blue;">■</span>	
3		Marker 3	01:00:08:13	01:00:08:14	00:00:00:01	<span style="color: blue;">■</span>	
4		Marker 4	01:00:12:03	01:00:12:04	00:00:00:01	<span style="color: blue;">■</span>	
5		Marker 5	01:00:16:05	01:00:16:06	00:00:00:01	<span style="color: blue;">■</span>	
6		Marker 6	01:00:19:17	01:00:19:18	00:00:00:01	<span style="color: blue;">■</span>	
7		Marker 7	01:00:24:10	01:00:24:11	00:00:00:01	<span style="color: blue;">■</span>	

The Markers panel shows a row of information for each of the markers in the Timeline.

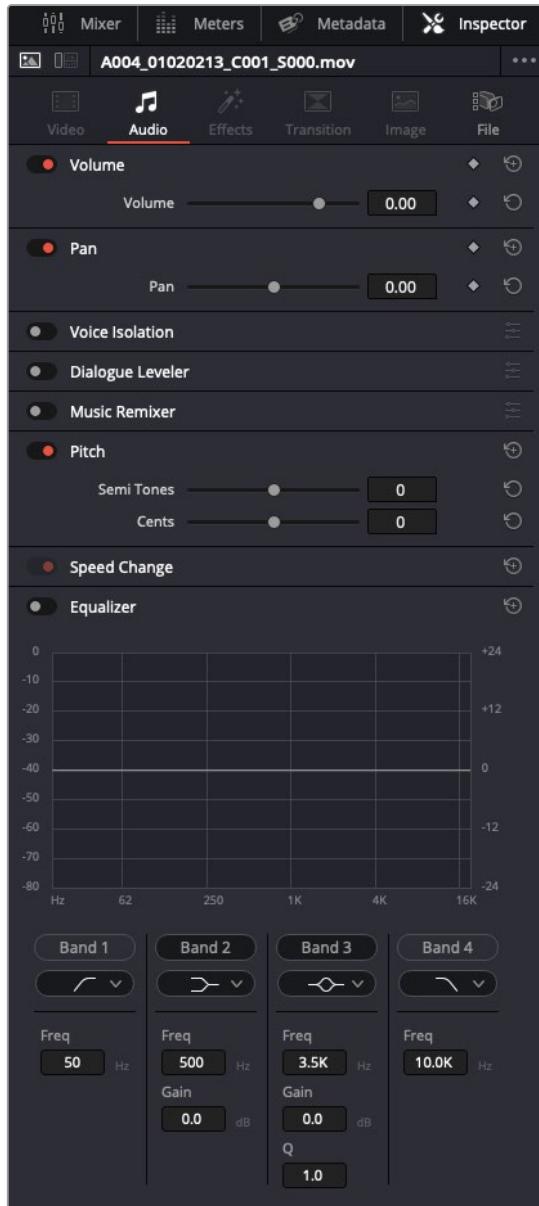
## Inspector

The Inspector's Audio, Effects, and File panels on the Fairlight page offer features for working with selected tracks, buses, and clips on the Audio Timeline.

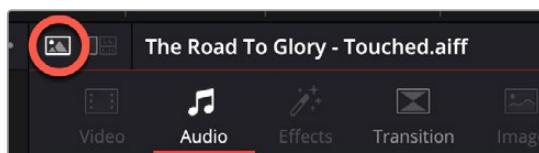
### The Audio Tab

The Audio tab lets you adjust the volume level of a selected track and apply and adjust Track FX.

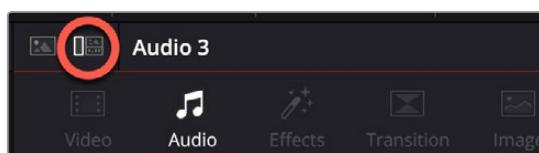
When working with audio clips on the Audio Timeline or Media Pool, you can adjust the volume level and pan setting of a selected clip, apply and adjust a selection of Fairlight FX and EQ, and raise or lower the clip's pitch.



Fairlight page - Inspector - Audio tab



The Audio Inspector in Clip mode (circled)



The Audio Inspector in Track mode (circled)

## The Effects Tab

Audio Effects added to a track or bus via the Effects section of its Mixer channel strip or to a Timeline clip from the Effects Library will appear in this panel.

## The File Tab

This panel lets you view and edit the metadata and configuration of selected Timeline or Media Pool clips.

For details on the Inspector for the Fairlight page, see *Chapter 173, "Using the Fairlight Inspector."*

## Clip Mode vs. Track Mode

The Inspector includes a Clip Mode and Track Mode button to eliminate confusion about whether your parameter property changes in the Audio tab are applied to an audio clip or a track.

- Selecting an audio clip in the Media Pool or on the Timeline activates the Clip Mode button, and the clip name appears at the top of the Inspector, to the right of the Track Mode button.
  - Clicking the Track Mode button while a Timeline clip is selected causes subsequent changes in the Audio tab to apply to the corresponding Mixer channel. The clip name at the top of the Inspector will switch to the track name.
- For details on the Fairlight Page Inspector, see *Chapter 173, "Using the Fairlight Inspector."*

# Test Tone Settings for Generating Tone, Noise, and Beeps

The Fairlight page has a general purpose oscillator, the settings of which you can customize by choosing Fairlight > Test Tones Settings. This opens the Test Tones Settings window that you can configure to generate tones, noise, or beeps using five sets of controls:

- **Enable/Disable Test Tones toggle:** Lets you turn the Oscillator on or off system-wide.
- **Frequency control:** Sets a custom frequency of oscillating tone, from 20 Hz to 15kHz. Defaults to 1kHz.
- **Frequency buttons:** Lets you quickly select 100, 440, 1K, or 2K preset tones, or a continuous rising sweep of frequencies from 20 Hz to 15kHz.
- **Noise type buttons:** Two buttons let you choose from White noise or Pink noise.
- **Level dial:** Sets the output level for the tone or noise, from -50dB to +10dB. Defaults to -15 dB.

You can set up the Oscillator to output whatever kind of tone or noise you require, and then patch it to tracks for recording tones, or patch it to audio outputs for calibrating speakers. If you use the beep options of the ADR panel, those are performed via the Oscillator.

## To play the Test Tone out of your speakers:

- 1 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window.
- 2 Choose System Generator from the Source drop-down menu, and choose Audio Outputs from the Destination drop-down menu.
- 3 At the left, click the button of what you want to output, Osc (Oscillator) or Noise.
- 4 At the right, click the connected audio outputs that you want to patch to, and click Patch. Tone or noise should immediately start playing out of your configured speakers. Depending on any particular track's I/O settings, if you have patched the Osc through a track you may need to either Arm the track by pressing the R (record) button, or in the channel's Path Settings press the Thru button, to have the signal pass through for output monitoring.
- 5 To stop, select one of the patched buttons, and click Un-Patch.

## To record a tone or noise from the Oscillator to an audio track:

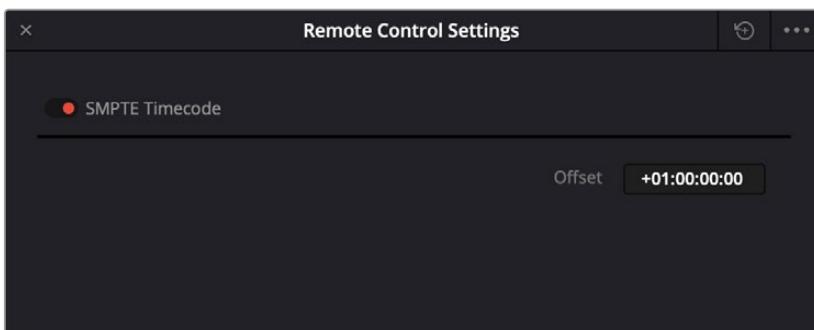
- 1 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window.
- 2 Choose System Generator from the Source drop-down menu, and choose Track Input from the Destination drop-down menu.
- 3 At the left, click the button of what you want to output, Osc (Oscillator) or Noise.
- 4 At the right, click the connected audio outputs that you want to patch to, and click Patch. Close the Patch Input/Output window.
- 5 Click the Arm Record (R) button in the track header of the track you patched the Oscillator to. If your Main is properly patched to your outputs, you should hear the tone or noise, and that track's audio meter should reflect the level being output by the Oscillator.
- 6 Click the Record button of the transport controls to initiate recording of that tone to the patched track. Click the Stop button or press the Spacebar to halt recording when you're done.

# Generating Timecode

SMPTE timecode can be generated as an audio signal directly from DaVinci Resolve. The signal can be used to synchronize another DaVinci Resolve system (requires a Fairlight SX36 audio interface) or any system that can use timecode audio as a reference.

## To generate timecode:

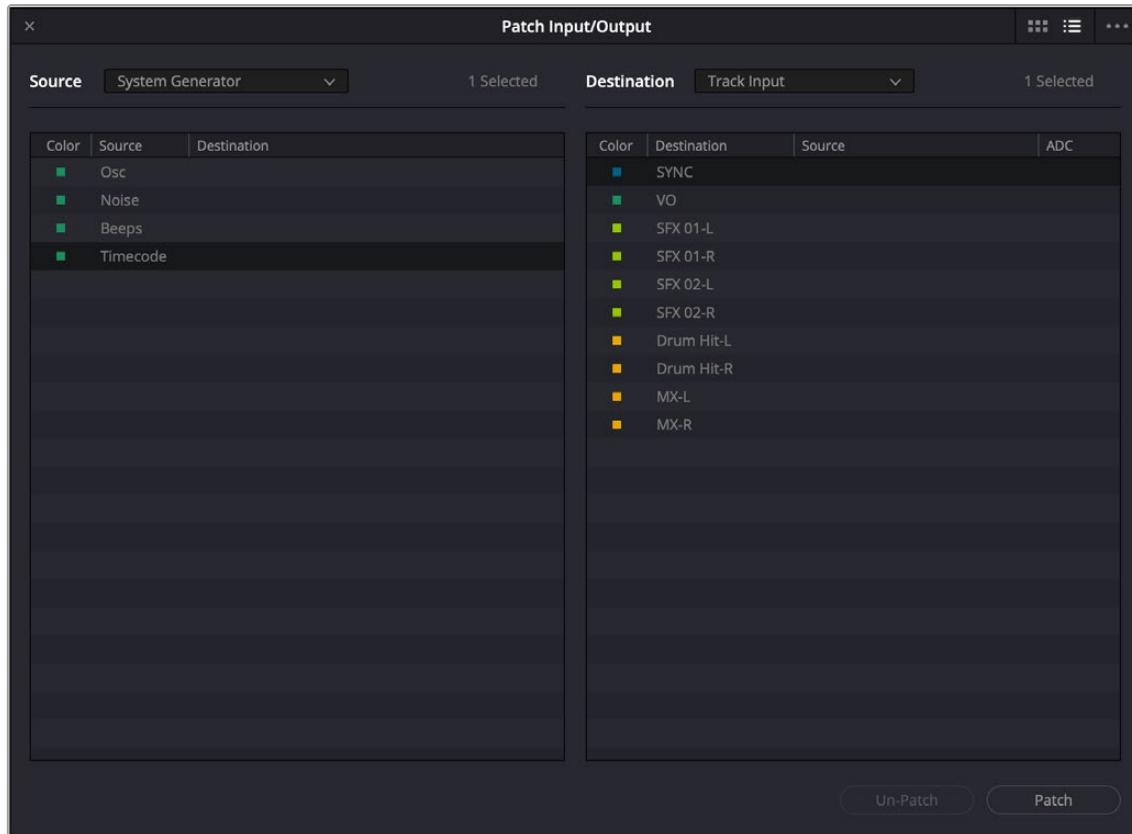
- Choose Fairlight > Remote Control Settings.
- In the dialog box that appears, set your desired time code start time (generally you'll want the starting time code position to match whatever you have set as the start time for the current Timeline).
- Turn on the SMPTE Timecode switch on the upper left.



The Remote Control Settings dialog

- To patch the audio signal from the timecode generator to an output or recording path, choose Fairlight > Patch Input/Output.
- In the dialog that appears, choose System Generator from the Source drop-down on the upper left.
- Choose Timecode from the source list on the left, and choose the destination you want to route timecode to.

Now, whenever you are playing the timeline, timecode is output to your destination until you press stop. You can disable timecode generation via the Remote Control Settings dialog.



Patching timecode from the System Generator Source list to Track Input destination

## Pro Tools AAF Import

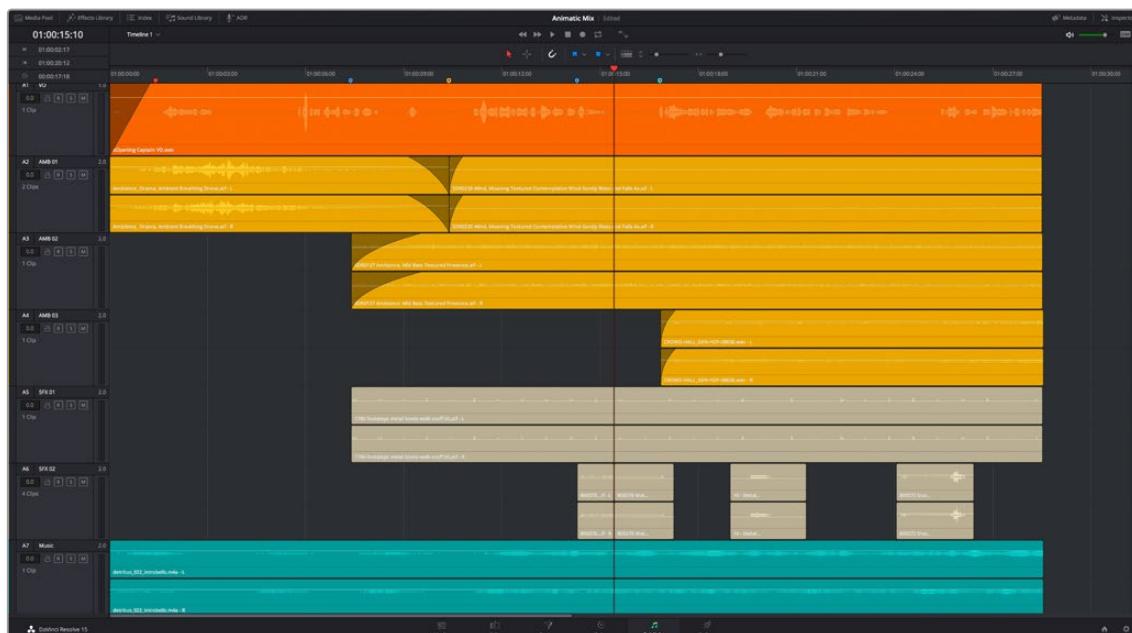
DaVinci Resolve can import AAF projects and media from Pro Tools, enabling you to move an audio project from a Pro Tools workstation to a Fairlight workstation. AAF import supports the import of embedded audio and track automation. To do so choose File > Import Timeline > Import AAF/EDL/XML.

## Dual Monitor Layout

The Audio page has a dual monitor layout that provides maximum space for the mixer and audio meters on one screen and a full-screen timeline on the other.

### To enter dual screen mode:

- Choose Workspace > Dual Screen > On.



The Fairlight page in dual screen mode

#### To switch which UI elements appear on which monitors:

- Choose Workspace > Primary Display > Display 1 or Display 2, which reverses the contents of both monitors in dual screen mode.

## Customizing the Fairlight Page

The default layout is quite efficient for a number of tasks on most displays. You can always return to the default layout by choosing Workspace > Reset UI Layout. However, the Fairlight page can be customized to create more room for specific areas of the interface to accommodate different tasks.

### To resize any area of the Fairlight page:

- Drag the vertical or horizontal border between any two panels to enlarge one and shrink the other.

### To resize the height of individual audio tracks:

- Move the pointer to the bottom border of any audio track header, and when it becomes a resize cursor, drag that border up or down to resize that track. Each track can have an independent size when you do this.

### To resize any column of the Index:

- Move your pointer over the divider between any two columns and drag when the horizontal resize cursor appears.

### To rearrange Index columns:

- Drag the header of any column to the left and right to move that column.

**NOTE:** if you want to retain the height view set for your tracks when a project is closed and re-opened, right-click on the track header and choose “Lock Track Height to.” You can choose “Custom” as the size for any track height you may want other than standard sizes.

**TIP:** You can also use the option key to adjust heights for all selected tracks or Command-option to adjust all selected tracks.

## Fairlight Configuration Presets

You can store and recall complete configuration presets for the Fairlight page, or individual areas of it, using the Presets Library functions, found in Fairlight > Presets Library. For more information on using the Presets Library, see *Chapter 168, “Setting Up Tracks, Busses, and Patching.”*

## Undo and Redo in DaVinci Resolve

No matter where you are in DaVinci Resolve, Undo and Redo commands let you back out of steps you've taken or commands you've executed, and reapply them if you change your mind. DaVinci Resolve is capable of undoing the entire history of things you've done since creating or opening a particular project. When you close a project, its entire undo history is purged. The next time you begin work on a project, its undo history starts anew.

Because DaVinci Resolve integrates so much functionality in one application, there are three separate sets of undo “stacks” to help you manage your work.

- The Media, Edit and Fairlight pages share the same multiple-undo stack, which lets you backtrack out of changes made in the Media Pool, the Timeline, the Metadata Editor, and the Viewers.
- Each clip in the Fusion page has its own undo stack so that you can undo changes you make to the composition of each clip, independently.

- Each clip in the Color page has its own undo stack so that you can undo changes you make to grades in each clip, independently.

In all cases, there is no practical limit to the number of steps that are undoable (although there may be a limit to what you can remember). To take advantage of this, there are three ways you can undo work to go to a previous state of your project, no matter what page you're in.

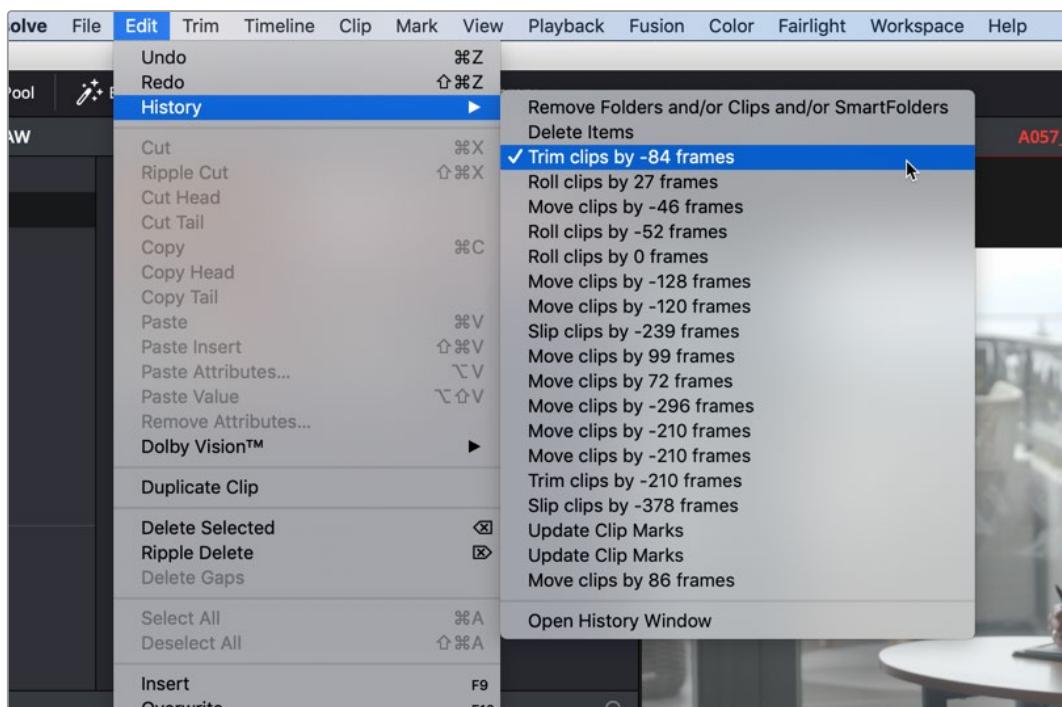
### To simply undo or redo changes you've made one at a time:

- Choose Edit > Undo (Command-Z) to undo the previous change.
- Choose Edit > Redo (Shift-Command-Z) to redo to the next change.

You can also undo several steps at a time using the History submenu and window.

### To undo and redo using the History submenu:

- 1 Open the Edit > History submenu, which shows (up to) the last twenty things you've done.
- 2 Choose an item on the list to undo back to that point. The most recent thing you've done appears at the top of this list, and the change you've just made appears with a check next to it. Steps that have been undone but that can still be redone remain in this menu, so you can see what's possible. However, if you've undone several changes at once and then you make a new change, you cannot undo any more and those steps disappear from the menu.

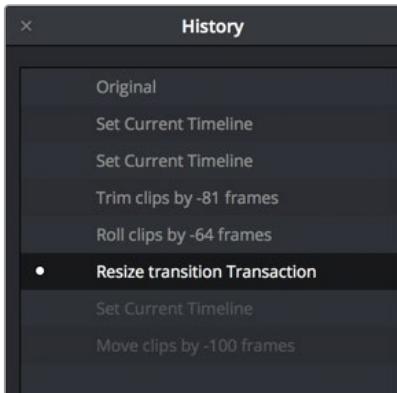


The History submenu, which lets you undo several steps at once

Once you've selected a step to undo to, the menu closes and the project updates to show you its current state.

## To undo and redo using the Undo window:

- 1 Choose Edit > History > Open History Window.
- 2 When the History dialog appears, click an item on the list to undo back to that point. Unlike the menu, in this window the most recent thing you've done appears at the bottom of this list. Selecting a change here grays out changes that can still be redone, as the project updates to show you its current state.



The Undo history window that lets you browse the entire available undo stack of the current page

- 3 When you're done, close the History window.

# Setting Up Tracks, Busses, and Patching

One of the first things you need to do when you’re setting up a new project for mixing in the Fairlight page is to define the audio tracks and busses you’ll need to route and combine the elements of your mix.

This chapter covers how to create audio tracks and how to use busses to manage your mixes in the most efficient possible way. However, the Fairlight page gives you the flexibility to add or change your set up at any time; you can also concentrate on being creative and deal with any required housekeeping as your mix evolves.

Fairlight’s FlexBus structure supports bus-to-bus, track-to-bus, or bus-to-track signal routing, along with expanded Dolby Atmos capabilities, including import, export, and manipulation of Atmos ADM files.

## Contents

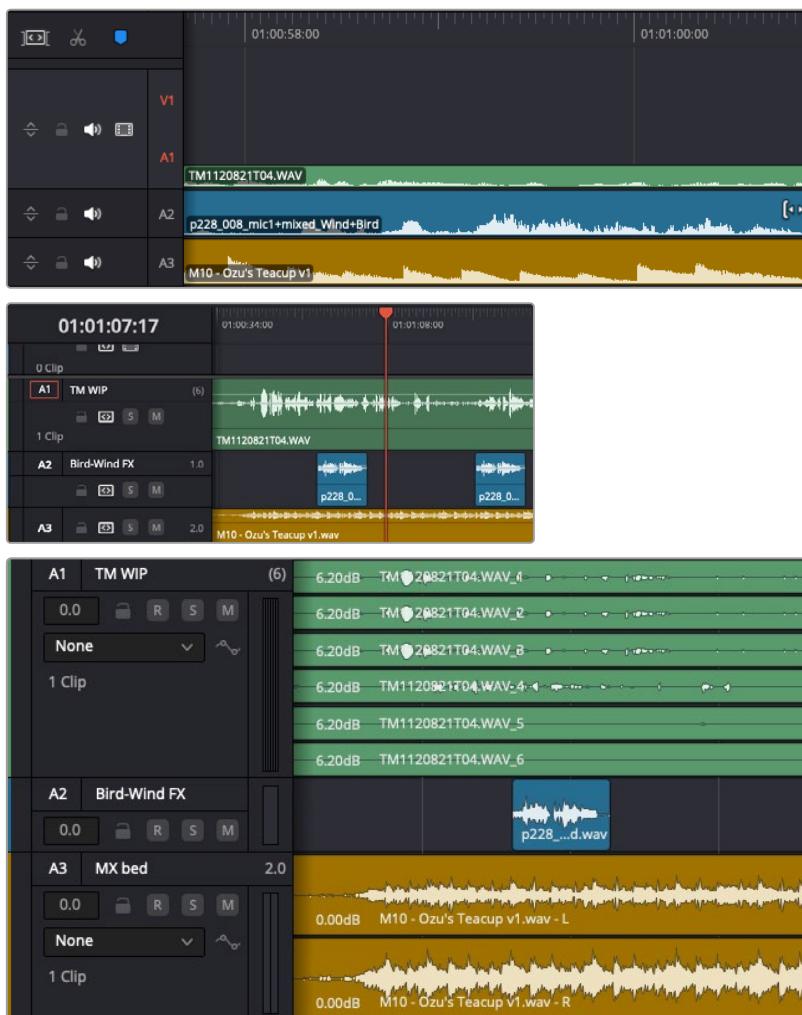
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# Audio Tracks

Each audio track in a DaVinci Resolve timeline corresponds to a single channel strip on the Mixer's left side. Depending on how an audio track has been configured, each audio track is assigned a specific audio format, such as mono, stereo, 5.1 or 7.1 surround, or Dolby Atmos. Track routing allows multiple audio channels within the clips on a track to be correctly routed to the proper audio output for monitoring and rendering via the lanes that can be seen within each track on the Fairlight timeline.

Audio tracks in DaVinci Resolve often contain multiple channels from a given clip, but how those individual audio channels are displayed depends on the page:

- The Cut and Edit pages display a single clip “lane” per audio track in the Timeline, regardless of how many channels the clips on that track are representing. The waveform displayed is a composite, showing a mix of the various channels within the clip.
- This can make it easier to work with multichannel tracks without the distraction of viewing multiple channel lanes, which could make things look a lot “busier.” However, the tradeoff is that detailed activity on any of the various channels on that track are not seen.
- The Fairlight page displays the same number of tracks as the Edit page, but each track on the Fairlight page is divided into lanes, which shows each individual channel of a clip’s audio. This additional visual information can help with editing and mixing.



(Top) 6 channel and stereo audio in the Cut and Edit pages represented by single composite tracks. (Bottom) The same audio in the Fairlight page shows the six channel and stereo tracks with multiple lanes that correspond to each of the file types.

Now that you understand how tracks work on the Fairlight page, the next important concept you need to understand in order to unlock the power of the Fairlight page is FlexBus, which lets you combine multiple audio tracks in different ways.

## What Is a Bus?

A bus is simply a common signal connection point in an audio mixer. Busses can be mono, stereo, or any larger format, like 5.1 or Dolby Atmos 9.1.6 (where 16 audio signals are used). Bussed connections are mixed together into a single signal that can be controlled via a single bus channel strip. For example, by default a single bus called “Bus 1” combines the levels of every clip edited onto every track of a timeline into the mixed signal that is output to your speakers or headphones.

You can use busses in creative ways to organize mixing of tracks in a timeline. For example, if you have five audio tracks that have all of the edited dialogue audio clips for a particular program, you can route the output of all five dialogue tracks to a dedicated submix bus. This allows the combined levels from all the contributing dialogue tracks to be processed, adjusted, and mixed at once using a single channel strip’s controls.

You can use multiple busses to organize a mix, including routing submix busses into other “main busses.” Individual tracks can be routed to submix busses, then multiple submixes can be routed to one or more “main output” busses. For example, you could have four submix busses, one for German dialogue, one for English dialogue, one for Music, and one for Effects. You could route the German, Music, and Effects submix busses to a Main 1 bus to output the German version of the program, and route the English, Music, and Effects submix busses to a Main 2 bus to output the English language version of the program.

## Surround Panning and Bussing

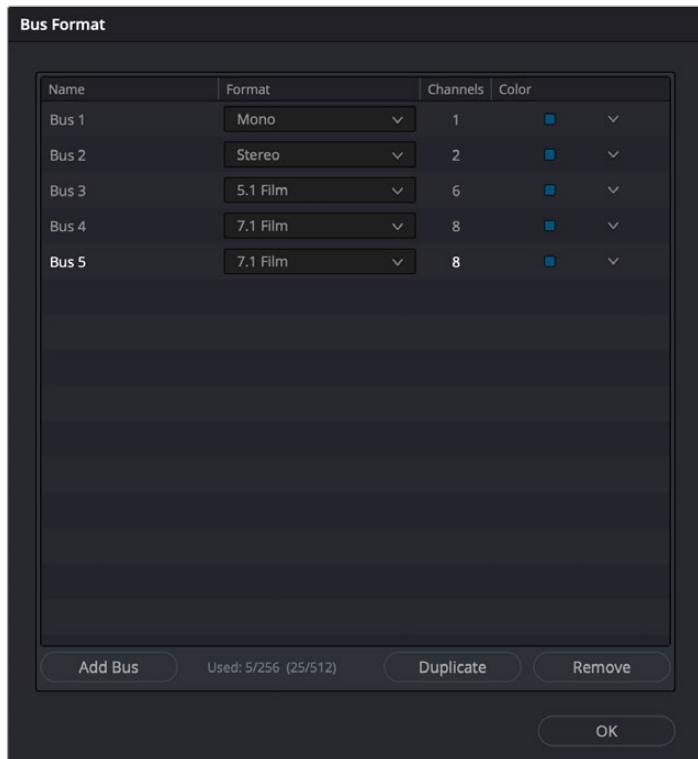
When working on surround or immersive formats, audio tracks from the Timeline are routed to busses via each channel strip’s multi-format surround panner, so busses can be configured to accommodate specific audio formats, such as mono, stereo, LCRS, 5.1 surround, or 7.1 surround, and immersive formats, such as Atmos. By using multiple bus routing, you can even output different formats simultaneously.

## Bus to Bus Routing and Mixing

Fairlight’s FlexBus structure offers complete user flexibility for bus types and signal routing, allowing completely user-definable bussing, and making it possible to patch outputs and/or sends in any way you need, as dictated by your project. Each track can output to up to ten busses and sends with additional level and pan controls to a further ten busses. Busses can be sent to other busses up to six layers deep, facilitating complex stem building, processing, and allowing discrete deliverables.

User-definable busses allow for bus-to-bus, bus-to-track, or track-to-bus routing, with each bus having the ability to pass signals from mono to fully immersive formats, such as Dolby Atmos. As with any and all of the track types in Fairlight, these bus types can be changed at any time if needed.

The power of the FlexBus system is that it allows users to direct signals to many different places at one time, achieving complex mixing scenarios. Perhaps you need to generate two mixes that are identical in content but need to be of different output levels. You can designate two mix busses, one with an output level of -2dB true peak and one with an output level of -10dB true peak. The final mix signal is sent to one bus that is then broken into two more busses, one with a limiter set to -2dB and one set to -10 dB, creating these two different mixes at one time.



The FlexBus structure allows for many different bus track types to be created or changed.

## Using Legacy Fixed Bussing

If you want to work using the previous method of Fixed Bus mapping, you can do so for new projects by opening the Fairlight panel of the Project Settings, and turning on the "Use fixed bus mapping" checkbox.

If your project has Fixed Bussing enabled and you want to change to FlexBus, then uncheck the "Use fixed bus mapping" checkbox. Note that once you have made the change it will not allow you to change it back to legacy bussing. For more information see *Chapter 174, "Mixing in the Fairlight Page."*

## Converting Older Fixed Bus Projects to FlexBus

Older Fixed Bus projects can be converted to FlexBus by doing the following:

- Open Project Settings > Fairlight.
- Under the Bussing heading, uncheck "Use fixed bus mapping."
- A dialog will appear allowing you to convert the project to FlexBus.

## Busses in Nested Timelines

When you nest a timeline inside another timeline that has busses set up for mixing in the Fairlight page, all bus routings continue to work as intended within the nested timeline, which exposes all channels via the default main bus (Bus 1) in the enclosing timeline. In this sense, the audio of the nested timeline can be considered to be a submix that outputs its resulting audio to the audio track it's edited onto. However, you can also decompose your nested timeline into its own bus structure within the main timeline you've imported into, exposing all of the original tracks as they were. This is a very powerful feature for combining work done at different times or by different contributors, see *Chapter 174, "Mixing in the Fairlight Page."* in section *Nested Audio Timelines* for more information.

## Exposing Bus Tracks in the Timeline

You can expose any bus as a track in the Timeline. This makes it possible to view and edit automation that is applied to parameters on that bus.

### To show a bus in the Timeline:

- 1 Enable the Toggle Automation button on the Fairlight toolbar. All busses are visible by default.
- 2 If you want to hide a bus, open the Index, and click the eye button for the bus you want to hide in the Timeline.
- 3 If you want to work with automaton on a bus, choose the desired automation curve you want to view from the drop-down menu in the track header controls.

## Controlling Signal Flow

A good process for setting up editing and mixing in the Fairlight page is:

- Organize and configure the tracks on your timeline as required.  
For example, clips well organized on tracks, set track types, color, grouping, etc.
- Create the busses needed to organize the desired signal flow in the mix.
- Route the audio tracks, or any submix busses to the desired bus destinations for the mix layout.

## Defining Audio Track Types

If you decide to create a new audio track, you have to choose what kind of audio track it will be. Right-clicking in the bottom audio portion of the Timeline track header reveals a contextual sub-menu that lets you create different kinds of audio tracks.

- **Mono:** Holds a single channel with only one lane.
- **Stereo:** Holds stereo left and right channels, with two lanes.
- **3.0:** Holds three channels, with three lanes in either LRC (Left, Right, Center) or LCR (Left, Center, Right) format.
- **4.0:** Holds four channels, with four lanes in either LRCS (Left, Right, Center, Surround), LCRS (Left, Center, Right, Surround), or Quad format.

— **5.x:**

5.0 holds five channels corresponding to a 5.0 surround mix, for a total of five lanes. For broadcast, SMPTE specifies Left, Right, Center, Surround Left, and Surround Right. For cinema distribution (5.0 Film), these tracks are ordered Left, Center, Right, Left Surround, and Right Surround.

5.1 holds six channels corresponding to a 5.1 surround mix, for a total of six lanes. For broadcast, SMPTE specifies Left, Right, Center, LFE, Surround Left, and Surround Right. For cinema distribution (5.1 Film), these tracks are ordered Left, Center, Right, Left Surround, Right Surround, and LFE.

— **7.x:**

7.0 holds seven channels corresponding to a 7.0 surround mix, for a total of seven lanes.

For broadcast, SMPTE specifies Left, Right, Center, Left Surround, Right Surround, Back Left Surround, and Back Right Surround. For cinema distribution (7.0 Film), these tracks are ordered Left, Center, Right, Left Surround, Right Surround, Back Surround Left, and Back Surround Right.

7.1 holds eight channels corresponding to a 7.1 surround mix, for a total of eight lanes.

For broadcast, SMPTE specifies Left, Right, Center, LFE, Left Surround, Right Surround, Back Left Surround, and Back Right Surround. For cinema distribution (7.1 Film), these tracks are ordered Left, Center, Right, Left Surround, Right Surround, Back Surround Left, Back Surround Right, and LFE.

— **Adaptive:** Holds up to 24 audio channels, each with its own lane within the track. An adaptive audio track can hold clips with different combinations of channels, up to the maximum number of channels allowed within that track. The number of channels allowable on a particular Adaptive track is user-definable (1-24) at the time that track is created. If you edit a clip with more channels into an Adaptive track that was created to hold fewer channels, the extra clip channels are muted.

— **Dolby Atmos:** There are several Dolby Atmos formats available: 5.1.2, 5.1.4, 7.1.2, 7.1.4, and 9.1.6. The naming of the channel configurations in the Dolby Atmos format includes the height channels in the nomenclature. Channel configurations are presented as three digits separated by periods, such as 7.1.4. The first digit describes the number of main, or ear-height monitoring channels that surround the listener. The second digit describes the number of subwoofer channels. The third digit describes the number of height channels, which are speakers positioned on, or in the case of a soundbar pointed to, the ceiling.

**NOTE:** The Dolby Atmos bus formats of 9.1.4, 9.16, and 22.2 are only available in DaVinci Resolve Studio and also require that Dolby Atmos be enabled in Preferences > Video and Audio I/O > Immersive Audio.

## Adding Tracks (Contextual Menu)

There are two commands related to adding tracks in the right-click contextual menu on any audio track's header controls:

- **Add Track:** Adds a single audio track of the type you choose from a submenu.
- **Add Tracks:** Lets you insert as many tracks as you like, designating the track type and position in relation to other tracks in the Timeline.

## Rearranging Tracks

You can rearrange tracks by right-clicking in a track's header area and choosing either Move Track Up or Move Track Down in the contextual menu that appears. You can also move tracks in the Index by grabbing them and moving them to the desired position. This method works when moving multiple tracks at once.

## Changing Track Type

If you had set up your timeline with one kind of audio track, but you discover you actually need a different type, you can change it at any time. Just right-click anywhere in that audio track's Timeline header, and choose an option from the Change Track Type To submenu of the contextual menu.

## Deleting Tracks

Right-click within a track's Timeline header and choose Delete Track. If there are clips on a track you remove, they are also deleted from the Timeline, but preserved in the Media Pool.



Right-clicking on a track or the track field reveals the Delete Tracks and Delete Empty Tracks functions

You can delete a multiple selection of tracks in the Fairlight timeline by right-clicking any selected track header and selecting Delete Tracks from the contextual menu.

You can remove all empty audio tracks in the Fairlight timeline by right-clicking any track header and selecting Delete Empty Tracks from the contextual menu.

# Link Grouping

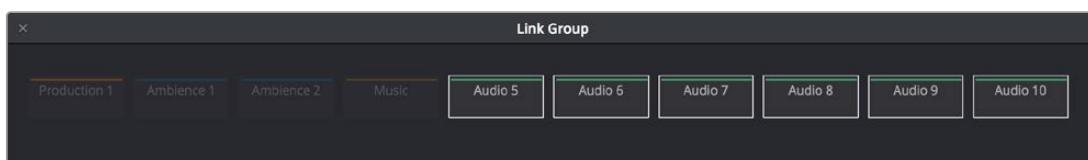
The Link Group function allows you to link mono tracks of material that are related and manipulate them as a one entity controlled by a single fader on a single channel strip. Only mono tracks can be used to create a link group; other track types such as stereo, 5.1, 7.1, Atmos, or Adaptive cannot be used.

Unlike a multi-channel track with lanes, a link group of mono tracks functions as independent, editable tracks in the Timeline. However, each track is mapped when choosing a track type, using one of the standard multi-channel mappings (stereo, 5.1, 7.1, Adaptive).

Link groups are extremely useful. For example, if you've been given independent ".L./R" sides of a stereo mix, or a set of six independent related audio files that need to be assembled as a single 5.1 surround mix, or when you have surround channels that need to be specifically re-edited on a channel by channel basis.

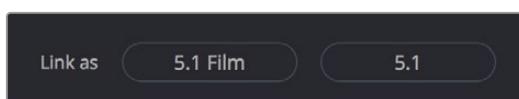
## To create a Link Group from individual mono tracks:

- 1 Create two or more Mono audio tracks that you want to group together. If you need to create a link group with a specific channel mapping, such as 5.1, make sure you create enough tracks (in this case, 6).
- 2 Choose Fairlight > Link Group.
- 3 When the Link Group dialog appears, mono audio tracks are represented by active buttons (all other track types are disabled, since they can't be linked). Click to enable the button of every track you want to include in the link group you're about to create. The available track type mappings when creating your group depends on how many tracks you've selected.



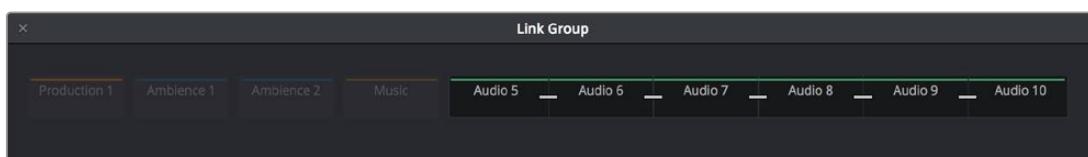
Selecting six tracks to use for creating a link group

- 4 After you've selected all the tracks you need, click one of the available "Link as" buttons below. In this example, six tracks have been selected, so you could click 5.1 Film or 5.1.



When you select enough tracks, you can create groups linked as specific surround mappings.

Afterwards, the tracks you selected should turn into a single block, showing they've been linked.



The Link Group window shows the link indicator line next to the track names.

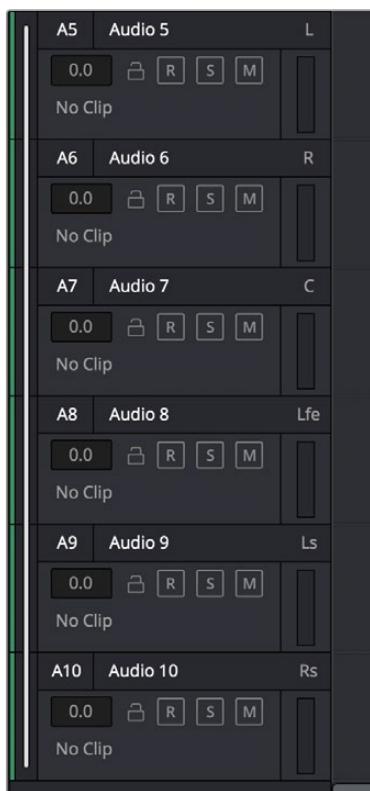
Depending on the number of mono channels selected, Fairlight will offer possible linking options. For instance, when ten channels have been selected, both Atmos 7.1.2 and 5.1.4 are option choices.



The Link As option is dependent on the number of channels being linked.

- 5 Close the Link Group window when you're finished.

Once you've created a link group, you'll see a single bar on the left side of the headers, spanning the group. If the tracks are tall enough, each will be labeled, indicating its assigned channel based on the track mapping chosen in step 4. For example, with a 5.1 surround mapping, L, R, C, LFE, Ls, Rs, and so on. You also have the freedom to edit additional or different contributing elements of a surround mix into the appropriate track that represents that channel.



Tracks in a Link Group are labeled to identify which track corresponds to which surround channel.

## Working Separately with Multichannel Audio File Elements

If you've edited a multichannel audio clip onto a multichannel track, you can convert that track and its contents into a Link Group of mono tracks, each of which contains a single clip for that track's channel. This can be useful if you need to fix a multi-channel surround audio clip with an incorrect track mapping. You can convert it into a Link Group, at which point you can easily rearrange the channels.

## To create a Link Group from a single multichannel timeline:

- Right-click the track header of a multichannel audio track, and choose Convert to Linked Group from the contextual menu. This automatically creates one new audio track for each channel, all of which are linked together. For example, converting a 5.1 audio track results in six new tracks with six individual audio clips (one for each channel), all of which are linked together.

If necessary, you can also unlink a linked group to turn it back into independent mono tracks.

## To unlink a Link Group:

- 1 Choose Fairlight > Link Group.
- 2 When the Link Group dialog appears, select the link group you want to unlink.
- 3 Click Unlink.
- 4 Close the Link Group window when you're finished.

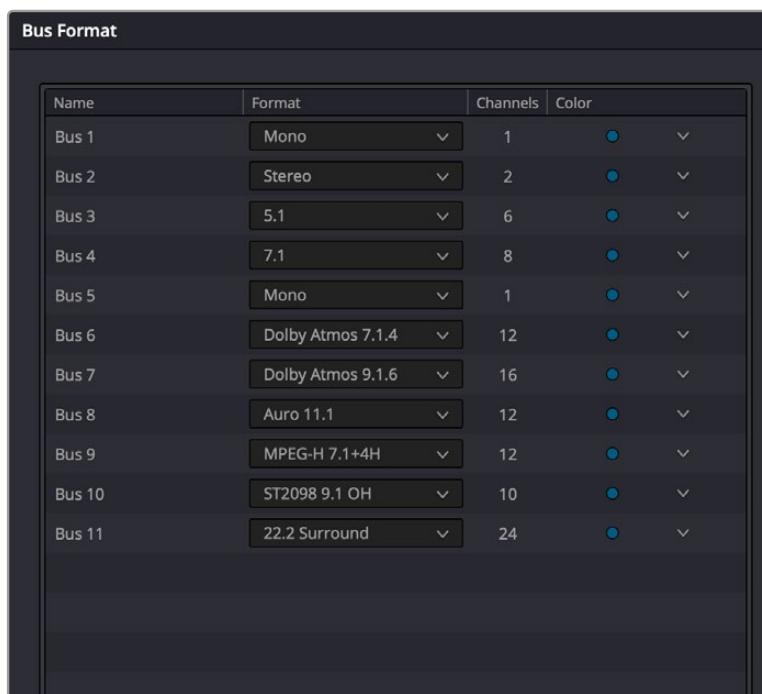
## SMPTE and Film order Standards

The variations of routing of the multichannel files are due to the path order of SMPTE or Film standards. They are:

- **5.1 film order:** L, C, R, Ls, Rs, LFE
- **5.1 SMPTE order:** L, R, C, LFE, Ls, Rs
- **7.1 film order:** L, C, R, Lss, Rss, Lsr, Rsr, LFE
- **7.1 SMPTE order:** L, R, C, LFE, Lss, Rss, Lsr, Rsr

# Creating Busses

Choosing Fairlight > Bus Format opens the Bus Format window, which lets you create the busses you need (up to the limitations of your system) to organize the tracks and channels of your program.



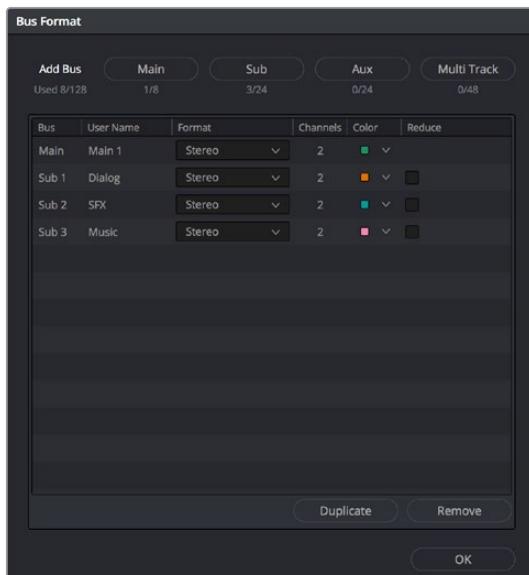
The depth of options in the FlexBus system

The Bus list lets you rename the bus, choose the format of each bus (a drop-down menu appears in the Format column of each entry of the list), shows the number of channels associated with a bus, and lets you color-code each bus (a Color drop-down lets you choose that bus's color). Simply click any item on the Bus list to select it, and choose different options from the Format and Color drop-down menus, or click on the Name of any bus to select it, and type a custom name.

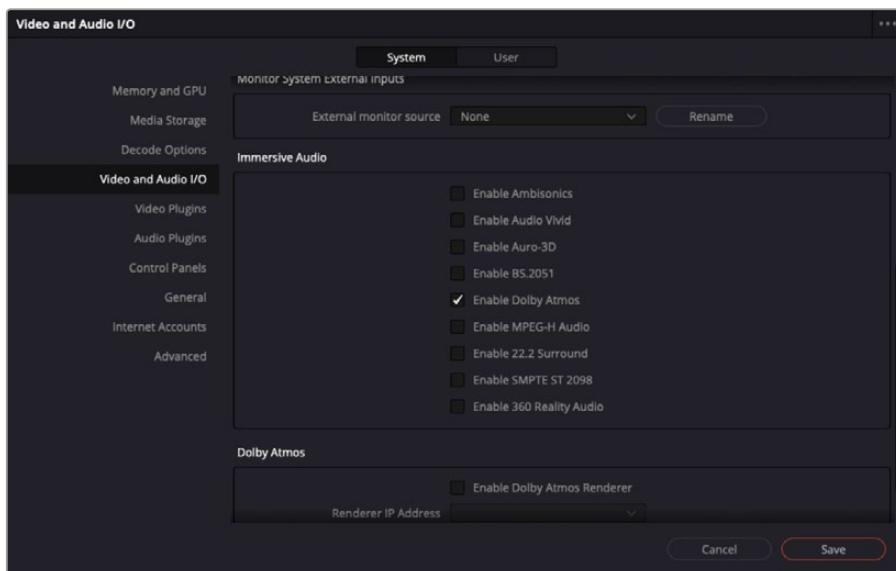
At the bottom of the list are three buttons that let you Add Bus, Duplicate, or Remove selected busses. When you're done modifying the available busses, you can click OK to accept the changes and close the Bus Format window, or Cancel to close the window without any changes (although all pre-existing busses remain in place). The bottom button row also has a Used tally of what has been used and what is available for your workstation.

## Immersive Formats (Studio Version Only)

To turn on the immersive formats, go to Preferences > Video and Audio I/O > System Panel > Immersive Audio, and choose from among the appropriate options. Once enabled, the various immersive bus formats are available in the Bus Format panel's Bus list.



The legacy Bus Format window lets you add busses to the mixer.



The Video and Audio I/O panel lets you enable or disable Immersive Audio options.

## Legacy Fixed Bussing

Working with the FlexBus topology is highly recommended for its flexibility. In addition, some newer features are only available using FlexBus. At some point, however, you may need to work with legacy Fixed Bussing in a new project. To use Fixed Bussing in a newly-created project, prior to adding any timeline, open Project Settings > Fairlight, and under the Bussing heading, check “Use fixed bus mapping.” Now all bussing is handled with the legacy Fixed Bus topology.

### Bus formatting with Fixed Bus

The legacy Bus Format window has four buttons that let you create the various Fixed Bus types. Creating a new bus, whether it's a Main, Sub, Aux, or Multi Track, adds the new bus to the list that appears beneath.

The legacy Bus list works the same as the FlexBus list with choices for rename, format, color code, and so on, and buttons that let you Duplicate or Remove selected busses.

When you're done modifying the available busses, you can click OK to accept the changes and close the Bus Format window, or Cancel to close the window (although any busses you've made remain in place). The bottom button row also has a Used tally of what has been used and what is available for your workstation.

# Assigning Busses

Once you've created one or more busses, you can assign different tracks to specific busses or perhaps also busses to busses, busses to tracks, and the final Main bus destinations.

## Bus Assignment Using the Mixer

You can easily assign your track(s) to any available busses simply by using the plus (“+”) icon on a Mixer channel strip:

- Select a mixer channel, and click on the plus (“+”) icon in the Bus Output or Bus Sends section.
- In the drop-down menu, choose the desired destination.
- A rectangle appears with the name of the bus, and the bus is now assigned.



Bus routing drop-down menu on a channel strip

**TIP:** You can quickly assign a bus to any selected group of tracks, or to all tracks, by holding down the Option key (Mac) or the Alt key (Windows) for all selected tracks or Command-Option (Mac) or Control-Alt (Windows) for all mixer channel strips prior to performing the operation. These shortcuts can save a lot of time in your workflow.

## The Bus Assign Window

When you have a lot of busses or tracks to handle, the Bus Assign window lets you easily manage connecting to all of them at once. Choose Fairlight > Bus Assign to open the window. Multiple bus assignments can be created within the dialog; these new assignments will be reflected in the Bus Outputs section on the channel strips in the Mixer.

The top shows the Send and the Out of each available bus, while the bottom shows a list of all available tracks and busses to connect to. The Bus Assign window defaults to List view, in which each bus and track is shown as a list, but by using the icon in the upper right of the window, it can be switched to Icon view, in which Available Tracks are shown as buttons.

### Making Bus Assignments

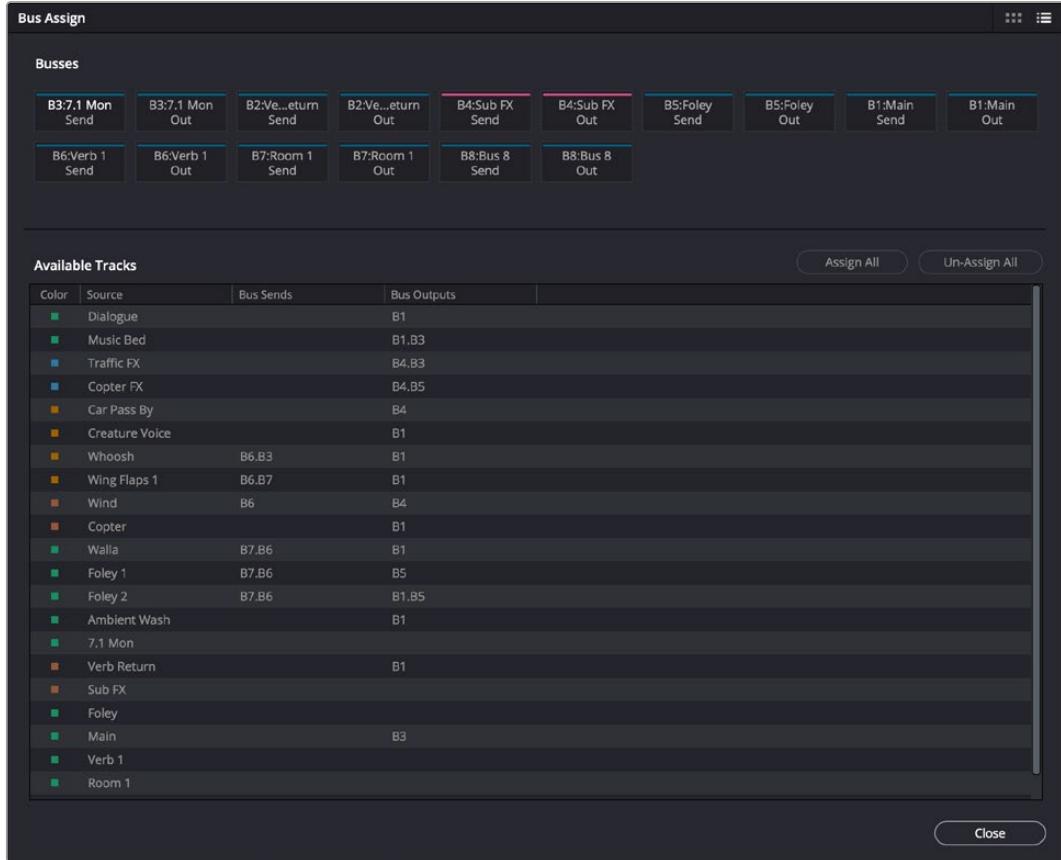
#### Assigning Using List View

Click a button in the Busses section to select the Send or Out of that bus, and then click on any destination in the tracks/busses list below, or drag over a group of tracks or busses to assign to all of them. When assigned, the bus number will appear in the Bus Sends or Bus Outputs column.

- **To assign every track, Sub, and Aux to a bus:** Click a button in the Busses section to select that bus, and then click Assign All.
- **To clear all track assignments from a particular bus:** Click a button in the Busses section to select that bus, and then click Unassign All.

When you're done making bus assignments, click the Close button to close the dialog.

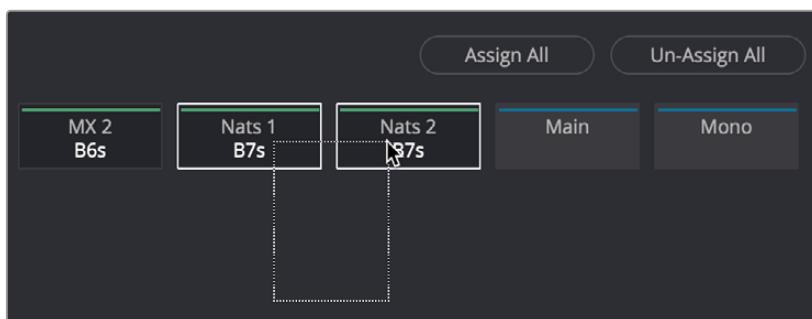
**NOTE:** While the dialog is open, you can undo any assignments you've made, one at a time, or redo them, using Command-Z and Command Shift-Z respectively.



Bus Assign window

## Assigning Using Icon View

- Click a button in the Busses section to select the Send or Out of that bus, and then either click on a target track button or drag a bounding box over all of the buttons for available tracks that you want to assign to that bus.
- Once assigned, the Available Tracks buttons display which bus they've been assigned to. When assigned, the Bus number will be followed by an "o" or an "s" to indicate if it's the send or the out of that bus.



Assigning multiple tracks to a bus in Icon view by dragging a bounding box

# Setting Signal Paths

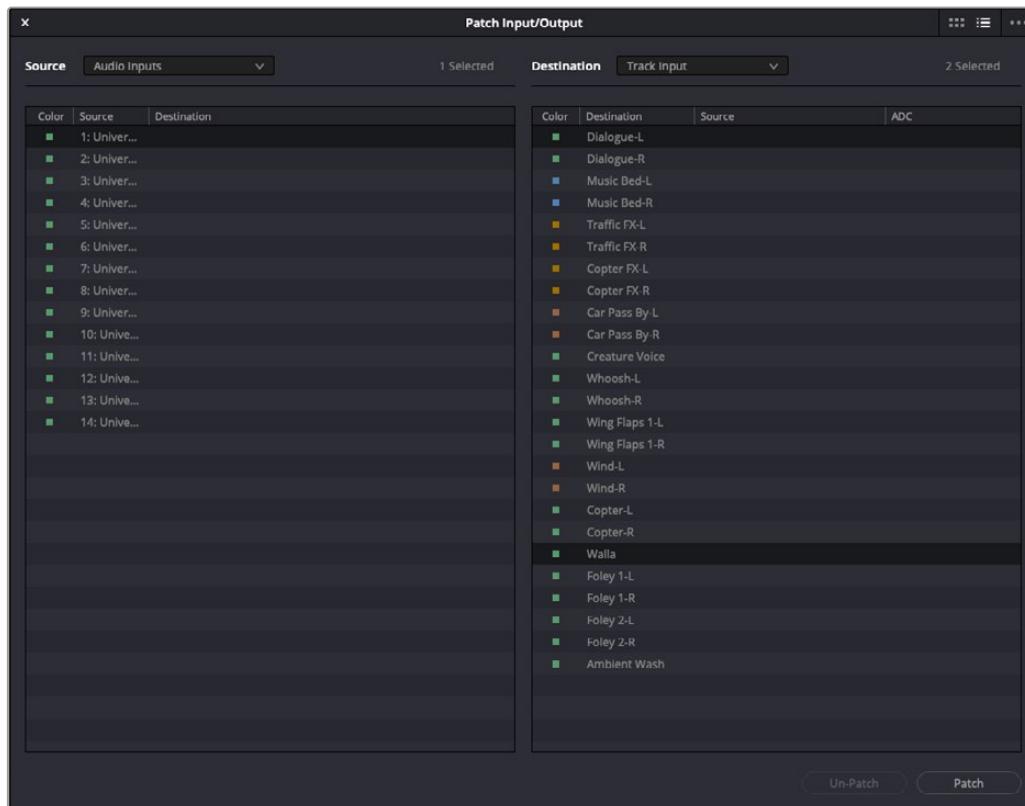
While bus creation and assignment allows you to submix tracks or route from one bus to another, you often need to route signals from individual, external sources to a track or bus. For example, if you need to record audio to a track, you need to patch the audio input on your hardware to the track you want to record to. Making this type of connection is called “patching” in Fairlight and is accomplished using the Patch Input/Output window, which is available on the Fairlight, Edit and Deliver pages, providing patching changes on any of these.

## Using the Patch Input/Output Window

Choosing Fairlight > Patch Input/Output opens the Patch Input/Output window, which can be displayed in either List (default) or Icon view. This window is split into two halves, with the left half containing whichever Source controls you choose and the right half containing whichever Destinations you choose.

### Creating a Patch

By default, the Patch Input/Output window shows the available Audio Inputs as the Source and the Track Inputs as the destination. This makes it easy to patch whatever audio source (such as a microphone connected to a USB audio interface) to a specific audio track of the Timeline to prepare for recording. Patching and unpatching a source to a destination is straightforward. In the following screenshot, the Audio 1 Input from an audio interface is highlighted and is being patched to a track named “Walla.”



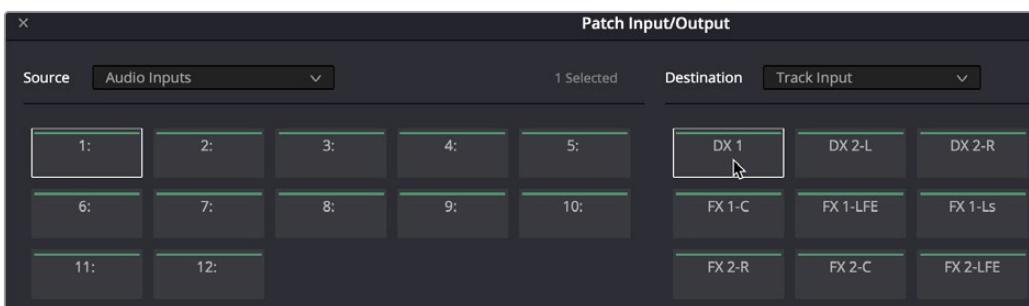
The Patch Input/Output window showing Source Audio Inputs and Destination Track Inputs

## Patching a source to a destination:

- 1 Choose a type of source from the Source drop-down menu at the upper left-hand side of the window.
- 2 Click the item on the source list (or action button in Icon view) that you want to patch from on the left side of the Patch Input/Output window.
- 3 Choose a destination from the Destination drop-down menu at the upper right-hand side of the window.
- 4 Click the list item (or action button) of the destination you want to patch to on the right side.
- 5 Click the Patch button at the bottom right of the window. The source and destination will both display the connection they're patched to.

## To unpatch a source and destination pair:

- 1 Click a list item or action button corresponding to a source or destination you want to unpatch.
- 2 Click Unpatch.



Patching in Icon view

## Choosing Source and Destination Controls

The Audio Source and Destination drop-down menus let you choose different categories of sources and destinations to patch together.

### The following Source options are available:

- **Audio Inputs:** The available physical audio inputs on your workstation, for example the Fairlight SX-36 audio interface, MADI, third party interfaces (for example, USB or Thunderbolt), or system audio. Useful when patching to record audio.
- **Bus Out:** Any Busses.
- **Monitor Direct:** Monitor system Direct Out, routed post fold up/down matrix, pre the Monitor VolumeLevel/Dim/Mute.
- **Monitor Out:** Monitor system output. Post fold up/down matrix and Monitor VolumeLevel/Dim/Mute.
- **System Generator:** Provides various utility sources, including beeps and timecode generation:
  - OSC:** Provides a test oscillator. The oscillator controls appear in a floating window accessed via Fairlight > Test Tone Settings.
  - Noise:** Uses the Noise generator with choice of white or pink noise, which can be selected via Fairlight > Test Tone Settings.
- **Beeps:** Refers to beeps generated by operations on the ADR panel, with controls found on the ADR setup page.
- **Timecode generator:** Generates timecode when enabled and the transport runs, with controls provided in a floating window accessed via Fairlight > Remote Control Settings.

- **Track Direct:** Track Direct Out, can be pre or post the track fader, with an offset.
- **Track Reproduction:** This is the track playback signal, directly from disk, before any processing.
- **Dolby Atmos Renderer:** The output from the Dolby Atmos Renderer in the currently selected Atmos output monitoring format. There is also a parallel stereo binaural output to feed headphones.

### The following Destination options are available:

- **Audio Outputs:** For example, the Fairlight SX-36 audio interface, MADI, third party interfaces (for example, USB or Thunderbolt), or system audio. Useful when patching to playback audio to speakers or headphone systems.
- **Talk Back:** The system for patching the General Purpose Input and General Purpose Output used for talkback.
- **Track Input:** The inputs to the available audio tracks in the current timeline, which are the inputs to the Record and Thru path.
- **Dolby Atmos Send:** You will need to patch this manually if you are creating original content. If you import a Dolby Atmos master file, the Send patching for the bed and object tracks will be created automatically. When an external Dolby RMU renderer is enabled, all sources patched to these sends will be mirrored on the physical outputs to the external renderer, as defined by the base audio outputs set in system preferences.

## Legacy Fixed Bus Patching

If you choose to use the legacy Fixed Bussing in the Project Settings, the options appear a bit differently.

### The following Audio Source options are available:

- **Audio Inputs:** The available physical audio inputs on your workstation, for example SX-36, MADI, or system audio. Useful when patching to record audio.
- **Monitor Direct:** Monitor system Direct Out. Post fold up/down matrix, pre the Monitor VolumeLevel/Dim/Mute.
- **Monitor Out:** Monitor system output. Post fold up/down matrix and Monitor VolumeLevel/Dim/Mute.
- **Main Direct:** Main Bus Direct Out; can be pre or post the Main bus master fader, with an offset.
- **Main Out:** Main Bus Out; always post the Main bus master fader.
- **Main Send:** Main bus master insert send.
- **System Generator:** Provides various utility sources, including beeps and timecode generation:
  - OSC:** Provides a test oscillator. The oscillator controls appear in a floating window accessed via Fairlight > Test Tone Settings.
  - Noise:** Uses the Noise generator with choice of white or pink noise, which can be selected via Fairlight > Test Tone Settings.
  - Beeps:** Refers to beeps generated by operations on the ADR panel, with controls found on the ADR setup page.
  - Timecode generator:** Generates timecode when enabled and the transport runs, with controls provided in a floating window accessed via Fairlight > Remote Control Settings.
- **Track Direct:** Track Direct Out; can be pre or post the track fader, with an offset.
- **Track Reproduction:** This is the signal from the track playback, before any processing.
- **Track Send:** Track Insert send.

## The following Audio Destination options are available:

- **Audio Outputs:** The available physical audio outputs on your workstation. For example, the Fairlight SX-36 audio interface, MADI, third party interfaces (for example, USB or Thunderbolt), or system audio. Useful when patching to play back audio to speakers or headphone systems.
- **Main Return:** Main Bus master insert return.
- **Talk Back:** The system for patching the General Purpose Input and General Purpose Output for talkback.
- **Track Input:** The inputs to the available audio tracks in the current timeline, which are the inputs to the Record and Thru path.
- **Track Return:** Track insert return.
- **Dolby Atmos Send:** You will need to patch this manually if you are creating original content. If you import a Dolby Atmos master file, the Send patching for the bed and object tracks will be created automatically. When an external Dolby RMU renderer is enabled, all sources patched to these sends will be mirrored on the physical outputs to the external renderer, as defined by the base audio outputs set in system preferences.

## Using a Channel Strip's Input Menu

The Input drop-down menu at the top of each track's channel strip in the mixer provides some shortcuts for patching different inputs and busses to the tracks of your mix. Each option in this menu makes the Patch Input/Output window appear with various Source and Destination selections automatically set up.

### Input

The Patch Input/Output window appears set up to let you patch different inputs (such as the system audio input) to the tracks of the timeline. This makes it fast for setting up audio inputs in preparation for recording.

### Bus

A shortcut to open the Patch Input/Output window (discussed previously in this chapter) that lets you patch Bus Out or Bus Sends to Timeline track channels.

### Path Settings

This opens the Path Settings window for the track, which contains controls for adjusting the input level of audio signals coming from an input/output device.



The Path Settings window showing audio inputs and track inputs

These parameters are as follows:

## Mic/Inst

Controls will only appear on this panel if you have connected channels 1 or 2 of a Fairlight SX36 audio interface to your system. If connected, you can remotely control all of the options (including level) for the mic/instrument inputs of the SX36 if they are assigned to the channel. If there is no connection to an SX36, the area is empty.

### Record Level

- **Record:** This button is linked and identical to the Record Enable button on the channel strip; here for convenience. If you hit one, it will enable the other.
- **Thru:** Lets the input signal to pass into the mixer without enabling a record path. This is ideal when you want a source signal to always be available and just want to monitor it.
- **Record Level:** Allows you to apply a digital gain adjustment to the record path to disk, post the output of your audio interface's analog-to-digital converter.

Normally, this control should be left at 0.0 (no change, unity gain), as it affects the level you are recording to disk. It is best practice to use the level controls on your audio interface to control the input level into DaVinci Resolve in order to maximize audio fidelity. However, there might be a time where you need a bit more level, or may not have access to an audio interface's controls, and in those cases you can adjust the input.

### Trim

- **Polarity:** This button inverts the polarity of the signal coming into the channel strip (sometimes referred to as "flipping the phase").

For example, you may have an input signal, like an explosion, where the transient attack of the signal produces with a massively positive-going waveform (where the waveform mostly appears above the zero line).

If you invert the polarity, the signal will now be mainly negative-going and the waveform will be concentrated beneath the zero line. Inverting polarity is sometimes used to more closely align signals from multiple microphones and can be used creatively to affect frequency response of such a signal.

- **Trim Level:** The Trim knob lets you adjust the level of the signal coming "off of disk" during playback to optimize the level feeding effects and the busses. This is helpful when you want to slightly trim an otherwise perfect element up or down in your mix.

Trim adjustments are applied post the recorded signal and Track FX (which processes directly "off of disk"), and pre all other effects, and do not affect the recording level.

### Direct Output

Each audio channel strip can enable a direct output that can be used to feed any other input destination. You can patch this source using the Track Direct choice in the Patch Input/Output dialog via the Source drop-down. For more information see *Chapter 168, "Setting Up Tracks, Busses, and Patching."*

- **On/Off:** Enables and disables the direct output.
- **Pre:** Sets the direct output tap-off point to be pre (before) the channel fader. On by default.
- **Level Control:** Sets the direct output level from minus infinity (fully off) to +10 dB. Default is 0.0 (unity gain).

### **Insert**

This button is linked and identical to the Effects In button on the channel strip; here for convenience. Clicking this button in one location enables the other and switches all Fairlight FX, AU, or VST channel effects in or out of the signal path.

## **Input Menu with Legacy Fixed Bussing**

When using the legacy Fixed Busing, the options there are a bit different. Here is how they look when that is enabled.

### **Input**

The Patch Input/Output window appears set up to let you patch different inputs (such as the system audio input) to the tracks of the Timeline. This makes it fast for setting up audio inputs in preparation for recording.

### **Aux Bus**

A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Aux busses to specific submix and Timeline track channels.

### **Sub Bus**

A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Sub (submix) bus channels to specific Timeline track channels.

### **Main Bus**

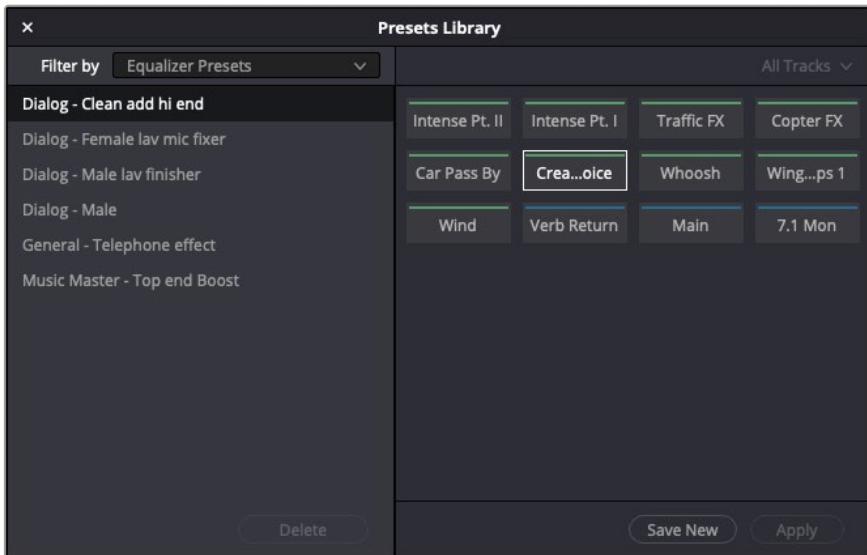
A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Main bus channels to specific Timeline track channels.

### **Path Settings**

This option opens the Path Settings window, which contains controls for adjusting the input level of audio signals coming from an input/output device.

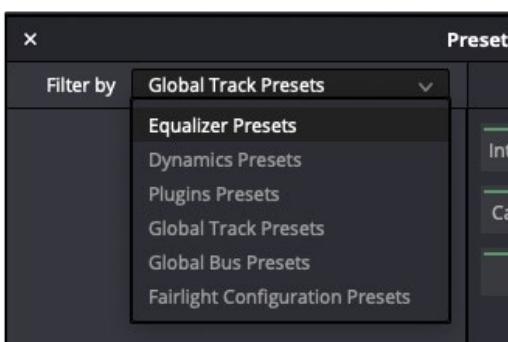
## **The Fairlight Presets Library**

The Fairlight page offers a powerful and flexible preset system that allows you to store and recall presets for everything from the complete configuration of the audio page to individual presets for plugins. To access the presets library, choose Fairlight > Presets Library.



Fairlight Presets Library with stored presets on the left panel and destination tracks on the right

A Filter By drop-down menu on the upper left lets you choose the type of preset you want to work with.



Filter By menu of preset types

The choices are:

**Equalizer Presets:** Presets for the built-in channel EQ.

**Dynamics Presets:** Presets for the built-in Dynamics Processor.

**Plugins Presets:** Fairlight FX, AU, or VST.

**Global Track Presets:** All settings for a Mixer channel strip.

**Global Bus Presets:** All settings for a Mixer bus.

**Fairlight Configuration Presets:** Many parameters of the Fairlight page are stored as a preset including:

- Track height.
- What tracks are shown or hidden in the Tracks pane of the Index.
- Split point in the Mixer.
- Full Track vs. Small Track views in the Mixer.
- Track Groups enable status.

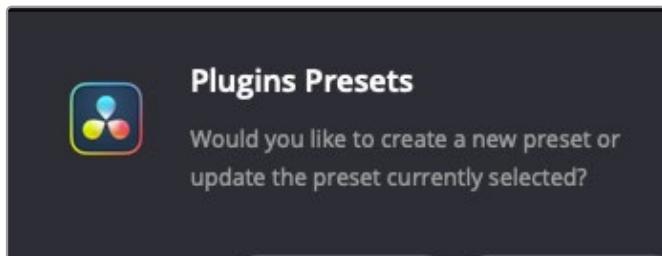
**NOTE:** Some items are not currently stored in Fairlight Configurations, such as which panels are shown (for example, Media Pool or Index), Meter Panel show/hide, Fairlight video window docking, and size if the video window is set to be floating.

## Using the Presets Library

Select the preset type you want to work with from the Filter By drop-down menu on the left.

The tracks list on the right (which appears for most preset types) acts as both a list of sources that contain information you want to store and a list of destinations that you want to assign to when you have presets defined. To store and recall and assign presets:

- If you're storing a preset for the first time, select the source track in the tracks list on the right of the window that you'll be grabbing the preset type from (unless it's a Fairlight Configuration preset, which has no tracks to choose from, as it is global).
- Click the Save New button to save your preset.
- To load your preset onto another track, deselect any tracks currently selected in the track list on the right, and select the track(s) you want to assign to. Click Apply and the preset is loaded.
- To save a new version of an existing preset or update your present version, first choose a track in the track list that has your preset assigned to it. Then click the Save New button, and a dialog appears that allows you to choose to update the current version of the preset or save a new preset based on the current settings.
- To Delete a preset, select it in the list, and click the Delete button.



Update or Create New preset dialog

## Chapter 169

# Transport Controls, Timeline Navigation, and Markers

The Fairlight page has unique transport control, zooming, and scrolling options not found in the other pages of DaVinci Resolve that help you to work with audio more efficiently.

This chapter covers how to navigate around the Fairlight version of the Timeline.

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# Transport Controls and JKL Navigation

Because of the Fairlight page's audio-focused workflow, the transport and playback controls differ from those found in the Media, Edit, Color, and Deliver pages.

## Transport Controls



Fairlight page transport controls

The Fairlight transport controls are also designed to mirror their counterparts on the Fairlight control panels. They include the following functions:

- **Rewind and Fast Forward:** Initiates accelerated playback through the Timeline in either direction. Pressing either of these buttons multiple times speeds up this motion, cycling through 8x, 24x, 60x, 150x, and 360x play speeds.
- **Play:** Plays forward. Identical to pressing the Spacebar or L keys while playback is stopped.
- **Stop:** Stops playback. Identical to pressing the Spacebar or K keys while playback is engaged.
- **Record:** Initiates recording if you have an audio source patched to a track, and if that track is enabled for recording. For more information about recording, see *Chapter 170, "Recording."*
- **Loop:** Toggles looped playback off and on. While looped playback is on, playback will loop at the end of the Timeline, and will also loop when you use the Play In to Out command, and will continue to loop automatically until you stop playback.
- **Automation controls:** This button exposes the automation toolbar. For more information about recording automation, see *Chapter 175, "Mix Automation."*

## Using JKL to Control Playback

The JKL keyboard shortcuts are common to many editing applications, and experienced editors know these to be some of the most useful controls for playback and editing there are. Here's a list of the many different ways you can use these three keyboard shortcuts to play through clips and timelines as you work.

J	Plays 100% backward.
K	Stops playback.
L	Plays 100% forward.
Press J repeatedly	Increases backward play speed each time you press J, for a range of fast-reverse speeds.
Press L repeatedly	Increases forward play speed each time you press L, for a range of fast-forward speeds.

<b>Shift-J</b>	Plays in fast reverse.
<b>Shift-L</b>	Plays in fast forward.
<b>K+J</b>	Plays backward at slow motion (with slow motion audio playback).
<b>K+L</b>	Plays forward at slow motion (with pitch-corrected audio playback on OS X).
<b>Pressing K while tapping J</b>	Moves the playhead back one frame.
<b>Pressing K while tapping L</b>	Moves the playhead forward one frame.

If you're using Fairlight with the keyboard, then this will probably become one of the main ways you move the playhead around in DaVinci Resolve.

**NOTE:** All of the keyboard commands listed in this document are based on the DaVinci Resolve keyboard customization preset. There is great power in the remapping of keyboard commands to systems that may be more familiar to you like Premiere Pro or Pro Tools. However, if their keyboard command set does not offer the same commands as the DaVinci Resolve keyboard commands, they won't work the same. For instance, the Pro Tools keyboard preset does not support J-K-L timeline navigation.

## Dragging the Playhead to Scrub

You can also drag the playhead left and right to scrub through the visible area of the Timeline by clicking and dragging anywhere within the Timeline ruler at the top of the Timeline, directly below the toolbar. If you're zoomed in at a reasonable level for editing, scrubbing the playhead using your pointer will result in smooth, tape-like slow and fast audio playback, giving you a great deal of precision while trimming audio.

## Looping Playback

Two controls govern looping on the Fairlight page, similarly to how looping works on the Edit page.

- **Loop:** Command-Forward Slash (/). Toggles looped playback off and on. While looped playback is on, playback initiated with any of the following commands will loop automatically until you stop playback.
- **Play In to Out:** Option-Forward Slash (/). If you've marked a section of a clip or timeline with In and Out points, this command lets you preview how it will play.

## Loop Jog Scrubbing

Currently available only on the Fairlight page, choosing Timeline > Loop Jog enables a brief sample preview to be heard while scrubbing the playhead through the Timeline. This can make it easier to recognize bits of dialog or music as you're quickly scrubbing through tracks, in situations where you're trying to locate specific lines or music cues. It also enables this brief sample preview to loop endlessly

when you hold the playhead on a frame, so you can pause while scrubbing and hear (by default) the current 80 ms prior to the playhead as it loops.

A pair of settings in the User Preferences let you customize this behavior.

- **Loop Jog Alignment:** Three options let you choose whether you loop audio Pre the position of the playhead, Centered on the playhead, or Post the position of the playhead.
- **Loop Jog Width:** A field lets you choose how many milliseconds of audio to loop when Loop Jog is enabled. How many milliseconds of audio corresponds to one frame depends on the frame rate of the video. For example, at a frame rate of 25 fps, there are  $1000/25 = 40$  ms per frame, so the default value of 80 ms equals two frames of looping.

## Moving the Playhead Using Timecode

You can use absolute or relative timecode entry to move the playhead in the Timeline. Timecode entry lets you move the playhead very precisely or jump to specific timecode values really quickly.

### How to Enter Timecode Values

When entering timecode, type each pair of hour, minute, second, and frame values from left to right, with a period representing a pair of zeros for fast entry. The numbers you enter appear in the Timecode field at the upper right-hand corner of the Viewer with focus. When you're finished typing, press the Enter key to execute the timecode command. The rules for timecode entry are as follows:

- The right-most pair of timecode values (or period) you enter is always the frame number.
- A period to the left or to the right of any number you type is considered to be a pair of zeroes.
- A single period between two numbers is considered to either be a single zero or ignored if it's between two pairs of numbers.
- Any untyped pairs of values to the left of what you enter are assumed to be whatever those values were prior to the timecode you entered; this makes it easy to type partial timecode values even when the Timeline starts at hour one.
- It's not necessary to enter colons or semicolons.

**IMPORTANT:** With full length keyboards, you can use the number pad for implicit timecode entry without invoking the Go To Timecode action (=). When using a multicam or printer light operation, any already mapped number pad key will continue to invoke actions like switching angles or incrementing color values.

When using the number keys above the letters on a keyboard, you must first select Go To Timecode (=), or click in the field you wish to change before entering a new value.

### Absolute Timecode Entry

Absolute timecode is entered simply by typing the timecode value you want to move the playhead to, and when you press the Return key, the playhead will move to that timecode value.

Here are some examples of absolute timecode entry using this method:

Original TC Value	User-Typed Value	New TC Value
01:10:10:10	15245218	15:24:52:18
01:10:10:10	2..	01:02:00:00
01:10:10:10	15	01:10:10:15
01:10:10:10	12	01:10:10:12
01:10:10:10	1.2	01:10:01:02
01:10:10:10	1115..	11:15:00:00
01:10:10:10	23...	23:00:00:00

## Relative Timecode Entry

Relative timecode is entered by starting the timecode value with a plus (+) or minus (-). Adding a plus results in the value you type being added to the current timecode value for purposes of offsetting the playhead from its current position. Adding a minus will subtract the value you type from the current timecode value. Here are three examples of relative timecode entry:

User-Typed Value	Result
+20.	00:00:20:00 is added to the current timecode value.
+3..	00:03:00:00 is added to the current timecode value.
-5	00:00:00:05 is subtracted from the current timecode value.

# Clip, Marker, and Track Navigation

The Up and Down Arrow keys are used to move the playhead from one edit point to the next in the Fairlight page Timeline, just as in the Edit page Timeline.

However, holding Command-Option down while using the Arrow keys gives you Fairlight page-specific behaviors that are used to navigate among clips, markers, and tracks in the Fairlight page in a way that's different than other pages of DaVinci Resolve but very useful to the way the Fairlight page operates. This section covers the basics.

## Selecting Tracks

Which tracks are selected determine the behavior of the Arrow keys.

- **In Pointer mode:** You can select tracks by clicking or Command-clicking (to select multiple tracks) anywhere in the background area or on the track number of the track headers. If you click and drag in the track header, you can use a bounding box to select multiple tracks. Pointer mode will not select in unused areas of the Timeline.
- **In Range or Focus mode:** You can select tracks by clicking or Command-clicking anywhere either in the background area or on the track number of the track header, or in any unused area of the track itself in the Timeline. If you click and drag, you can use a bounding box to select multiple tracks.

## Moving the Clip Selection

The Command-Option-Left and Command-Option-Right Arrow key shortcuts are used to move the playhead left and right in the Timeline, navigating from clip to clip or from marker to marker. How these keys function depends on whether or not one or more tracks is selected in the Timeline.

- **If no tracks are selected:** The Left and Right Arrow keys will jump the playhead from Timeline marker to Timeline marker. Clip markers will be ignored.
- **If one or more tracks are selected:** The Left/Right Arrow keys will jump the playhead among clip In points, clip Out points, and Timeline markers.

## Moving the Track Selection

The Command-Option-Up and Command-Option-Down Arrow key shortcuts are used to move the track selection up and down in the Timeline, changing which tracks are selected. By changing which tracks are selected, you can alter which clip's In and Out points are used to jump the playhead around the Timeline.

If no tracks are selected, then nothing happens.

## Zooming and Scrolling

The Fairlight page has several methods of zooming into and out of the Timeline, and scrolling when you're zoomed to the point where your edited sequence of clips extends past the left and right edge of the visible timeline.

### The Playhead

Zooming is always centered on the position of the Playhead. By default the Playhead moves along the Timeline as it plays. However, Fairlight offers the option of a Fixed Playhead where the Timeline moves while the Playhead remains centered.



The Playhead options are found in the Timeline Scrolling panel.

## Setting the Zoom Level of the Timeline

Depending on how you like to work, there are several methods of zooming into and out of the Timeline.

- **Using the Vertical Zoom slider:** A pair of sliders at the right of the toolbar let you zoom vertically and horizontally. The first one lets you scroll vertically in order to see more detail in the height of your waveforms. If no tracks are selected, then zooming is centered on the top audio track in the Timeline. If one or more tracks are selected, then zooming is centered on the topmost selected audio track.
- **Using the Horizontal Zoom slider:** A pair of sliders at the right of the toolbar let you zoom vertically and horizontally. The second one lets you zoom horizontally in order to see more detail in the width of your waveforms.
- **Pressing Command-Equal (=) and Command-Minus (-):** Command-Equal (also referred to as Command-Plus) and Command-Minus let you zoom horizontally into the Timeline.
- **Use Shift-Z to Zoom to Fit:** Command-Z lets you zoom horizontally to fit all clips in your program to the available width of the Timeline.
- **Using scroll controls of your pointing device to scroll horizontally:** Holding the Option key down and using the scroll wheel (or scroll control) of your pointing device will zoom horizontally into the Timeline. Holding the Command key down and using the scroll wheel will move the Timeline earlier or later than its current time, without moving Playhead.
- **Using scroll controls of your pointing device to scroll vertically:** Holding the Shift key down and using the scroll wheel (or scroll control) lets you zoom vertically in the Timeline. In this case, if no tracks are selected, then zooming is centered on the top audio track in the Timeline. If one or more tracks are selected, then zooming is centered on the topmost selected audio track.
- **Using the Fairlight panel's Jog/Edit wheel:** If you have a Fairlight panel, you can hold the ZOOM button down while turning the Jog/Edit wheel to zoom into the Timeline at the position of the playhead.

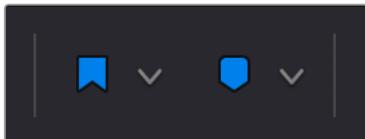
## Scrolling Through the Timeline

However closely you're zoomed into the Timeline, if you're zoomed enough so that clips extend past the visible area of the Timeline, scroll bars appear below. If the playhead is offscreen, a small orange tick mark indicates its position relative to the entire timeline, which is represented by the total width of the scroll bar's background.

If you drag the playhead, or otherwise use any of the transport controls or playback key shortcuts to move through the Timeline, the contents of the Timeline refresh every time the playhead hits the left or right edge of what's visible.

## Using Flags

Flags are meant to mark an entire clip, and they also flag every other clip in the Timeline that shares the same Media Pool source clip, making this a handy way of quickly identifying which clips in a given timeline come from the same Media Pool source. Flags are visible in every page of DaVinci Resolve, making them an excellent method of tracking media from page to page.



The Flag and Marker buttons and pop-ups.

You can apply multiple flags to clips, with a variety of colors to choose from. In addition to flagging specific media files, flags can be useful for sorting by column in the Media Pool, as well as a variety of other operations. Whenever you enter text into a flag, it displays a small dot that indicates there's more information inside of it.

### Methods for flagging clips in the Fairlight page:

- **To flag a clip:** Select one or more clips, and either click the Flag button to flag that clip with the current color, or click the Flag pop-up in the toolbar to choose a different color and then click the Flag button. In the Edit page, flags appear in the Timeline superimposed in the name bar of each clip.
- **To remove all flags from a clip:** Select one or more clips with flags you want to remove, then click the Flag pop-up in the toolbar, and choose the top "Clear All" option.
- **To change the Flag color or remove individually:** Double-click the Flag icon on the clip and a Marker dialog box appears to change the Flag color, remove the flag, or make a note regarding the flag.

# Using Markers

Markers are used to call attention to a particular frame within a specific clip. Markers can be individually colored, and can have customized name and note text. Whenever you enter text into a marker, that marker displays a small dot that indicates there's more information inside of it. Once placed, markers snap to In and Out points, edit points, the playhead, and other markers whenever snapping is enabled, making it easy to use markers to "measure" edits and trims that you make in the Timeline. Markers are visible in every page of DaVinci Resolve, making them an excellent method of tracking frames in clips and specific moments in the Timeline from page to page.

You can add markers to the Timeline (in the Timeline ruler) or to clips. The full procedures for placing and editing markers in the Fairlight page's onscreen interface are identical to those for the Edit page, so for more information, see *Chapter 41, "Marking and Finding Clips in the Timeline."* For now, here's a summary.

## Adding Markers to Clips

The following procedures describe how to add markers to clips in the Timeline of the Media page.

### To mark a clip in the Timeline, do one of the following:

- Select one or more clips you want to mark, then move the playhead to the frame of a selected clip in the Timeline, and click the Marker button in the toolbar (or press M) to place a marker at that frame, using the current color (if multiple overlapping clips are selected, you'll add a marker to all clips).
- To place a marker during playback and immediately open the marker dialog to enter a name or note within it, select one or more clips you want to mark, play through the selection until you want to place a mark, then press Command-M. Playback pauses until you enter some text and close the marker dialog again, at which point playback continues.
- Select one or more clips you want to mark, and then click the Marker pop-up to choose a different color, and click the Marker button.

## Adding Markers to Timelines

You can also place markers of any color into the Timeline ruler to denote specific times for future reference, or add notes about issues you want to keep track of. You should note that all markers placed on clips or in the Timeline also appear within the Mini-Timeline of the Color page, making it easy to place notes to reference particular audio cues that might be valuable when editing or grading.

### To mark the Timeline itself, make sure all clips are deselected, and do one of the following:

- Click the Marker button (or press M) to place a marker of the currently selected color in the Timeline ruler.
- To place a marker during playback and immediately open the marker dialog to enter a name or note within it, select one or more clips you want to mark, then press Command-M. Playback pauses until you enter some text and close the marker dialog again, at which point playback continues.
- Click the Marker pop-up to choose a different color, and click the Marker button.
- Right-click in the Timeline ruler and choose a marker color from the Add Marker submenu of the contextual menu.

# Recording

It's possible to record to one or more tracks on the Fairlight page, accommodating workflows as varied as editors recording scratch voiceover or temp sound effects, recording engineers recording narration, ADR, or foley as part of the audio finishing process, music studios recording orchestras for the music score, or garage bands recording their latest magnum opus.

While DaVinci Resolve is a comprehensive post-production environment for cinema and video, the Fairlight page can be used for any audio recording application you might have, from books on tape to live music to feature films and television.

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# Setting Up to Record

Depending on how your workstation is set up, it's possible to simultaneously record to multiple tracks in the Fairlight page at once. How many tracks you can record to depend entirely on what hardware you have available. This section describes the process of recording to tracks in the Fairlight page.

## Patching Inputs

Before recording audio anything, you need to use the Patch Input/Output window to patch an available audio input to a track.

DaVinci Resolve allows you to designate a full-time default input that is automatically patched to the track input when the R (Record Arm) button is clicked or manually patching in an audio input before record-arming it.

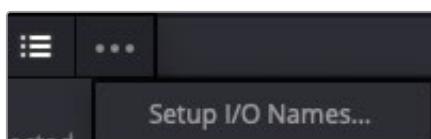
If you don't have an audio interface connected, you can use your workstation's inputs to connect whatever audio device is set up as the default audio input on your system to the track you want to record on.

### Automatic Input Patching

The steps in this section explain how you can configure DaVinci Resolve to automatically patch in a designated default audio input whenever you click the R (Record-Arm) button in the track header or mixer channel of a track you want to record on.

#### To set up Automatic Input Patching:

- 1 Click the Fairlight menu > Patch Input/Output.
- 2 When the Patch Input/Output panel opens, select Setup I/O Names in the Options menu in the upper-right corner. This opens the I/O Setup panel.



The Patch Input/Output Options menu

- 3 Place a checkmark in the Default column for the audio input you want to designate as the default track input source, then close the I/O Setup panel.

**I/O Setup**

I/	Numb	Name	Protected	Hidden	Default
Input:	1	1: Microsoft Teams Audio	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	2	2: Microsoft Teams Audio	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	3	1: Universal Audio Thunderbolt	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Input:	4	2: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	5	3: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	6	4: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	7	5: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	8	6: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	9	7: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	10	8: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	11	9: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	12	10: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	13	11: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	14	12: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	15	13: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	16	14: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	17	15: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	18	16: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	19	17: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	20	18: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	21	19: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	22	20: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	
Input:	23	21: Universal Audio Thunderbolt	<input type="checkbox"/>	<input type="checkbox"/>	

Default audio input selection in the I/O Setup panel

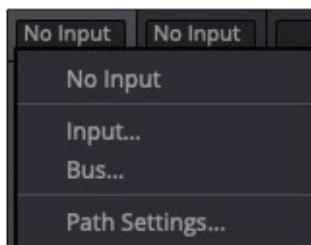
This input is automatically patched in when you record-arm any audio track using the R button in the Track header or Mixer channel. The audio input name will appear in the channel strip's input section.

## Manual Input Patching

You can follow the steps below to manually select an input source without affecting the default audio input you may have already set up.

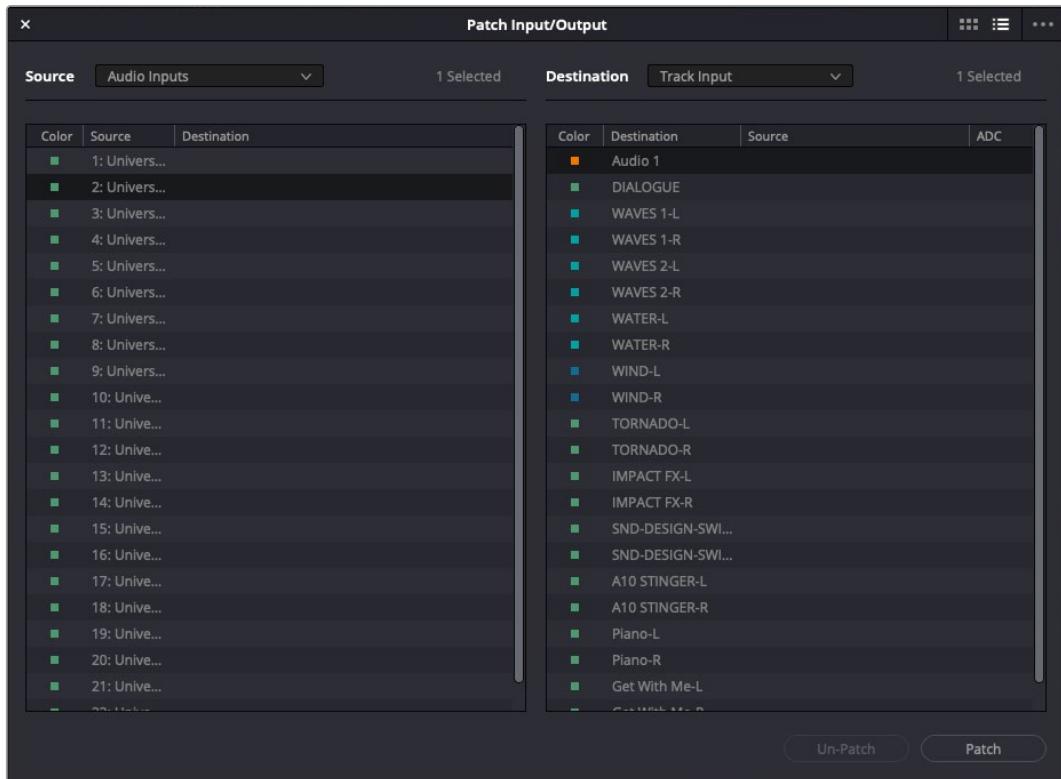
### To manually patch in an auto input:

- 1 Open the Patch Input/Output pane by clicking the Input button at the top of the Mixer channel you want to record on and select Input. Alternatively, you can select Patch Input/Output from the Fairlight menu.



Mixer channel strip Input button menu

- 2 When the Patch Input/Output panel opens, select the audio input source and destination track input. You can repeat this step until you've patched all the inputs you want to record from to all the tracks you want to record to. You can patch as many inputs to as many tracks as your system can accommodate.
- 3 Click the Patch button in the lower-right corner of the panel.



The Patch Input/Output panel with an Audio Input and Track Input selected

## Arming Tracks

When you're ready to record on a track, click the R (Record Arm) button on either the Track header or corresponding Mixer channel.

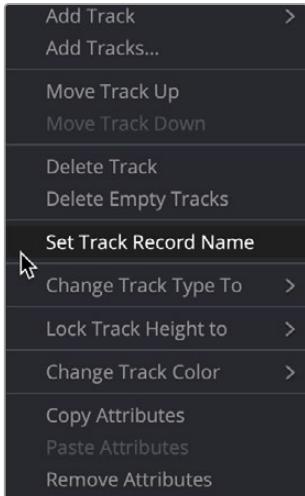
Audio tracks cannot be record-armed unless they've been patched using one of the methods explained above.



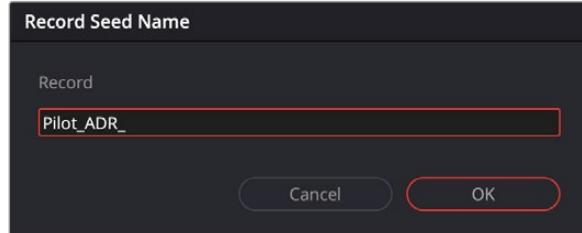
(Left) The Record Arm button activated on a Track header.  
(Right) The Record Arm button activated on a channel strip

## Record Name Prefix

A right-click on the designated record track header has the option to set a recording name prefix to the recordings for that track. This is a useful way to keep tabs of the various recordings required by your project. For instance, if recording ADR you can add a prefix for each character's recordings as in the example below for a character named Pilot.



Right-clicking a track header reveals the Set Track Record Name option



Example of a recording name prefix for a character called Pilot

## Choosing Where to Record Audio Clips To

The process of recording in the Fairlight page creates new clips and generates additional media on disk. You can specify the location on disk where you want to save these recordings by opening the Capture and Playback panel of the Project Settings. In the Capture section use the Browse button, found underneath the "Save clips to" field, to choose a new location (a folder named "Capture" on your scratch disk is the default location).

To choose where the new clips that are created are placed in the Media Pool, simply open the Media Pool and select any bin in the Bin list, or create a new bin and select it if you want to put your recordings in their own location.

## User-Selectable Input Monitoring Options

The Fairlight > Input Monitor Style submenu presents five options governing how you want to monitor inputs while recording.

- **Input:** You only hear the live signal being input; you never hear the contents of tracks.
- **Auto:** When one or more tracks are armed for recording, you hear the live input signal; on playback you hear the contents of each track.
- **Record:** You only hear the live input signal while actively recording, meaning the Record button has been pressed while one or more tracks are armed for recording. You don't hear the input signal while tracks are merely armed.
- **Mute:** You hear nothing.
- **Repro:** While recording, you only hear what's just been recorded, played from the track. In other words, you're not listening to the live input, but you're reviewing what's just been recorded as it's recording.

# Recording Using the Onscreen Controls

You can record anywhere you want on the currently armed track or tracks by placing the playhead where you want recording to begin. In this way, you can record to specific areas of your program as you record voiceover, sound effects, foley, or other timed performances that need to fit into a particular region of the edit.

## To begin recording:

- 1 Position the playhead where you want recording to begin.
- 2 Click the Record button in the transport controls. Recording immediately begins, and the material being recorded immediately begins drawing a waveform in real time, giving you immediate feedback that the input you're recording is properly connected or not, as well as where on the currently armed track material is being recorded.

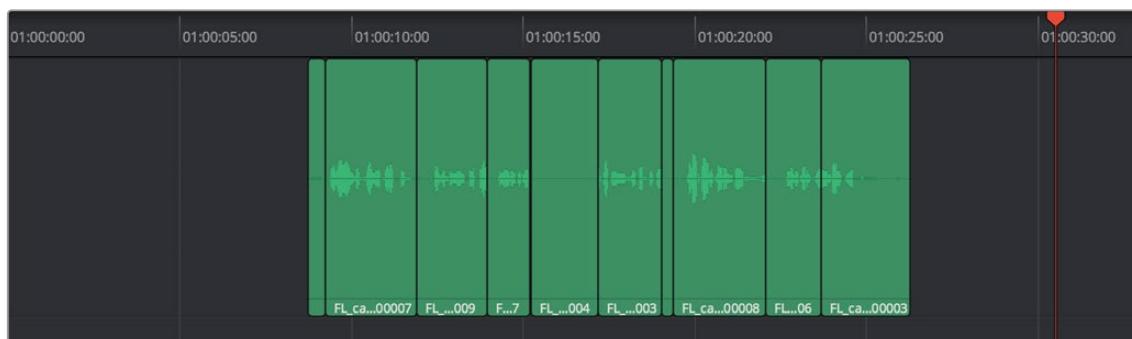
## To stop recording, do one of the following:

- Click the Stop button in the transport controls.
- Press the Spacebar.

# Recording and Editing Multiple Takes Using Layering

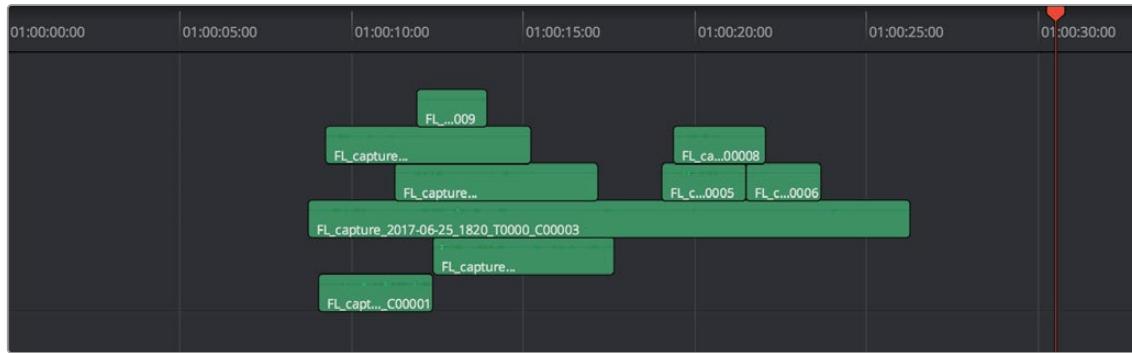
There are two ways you can record multiple takes. You can either record them one after the other, sequentially, and then edit them later. However, you also have the ability to record multiple takes to the same region of the timeline, one on top of another, while at the same time preserving every take using track layering.

In the following screenshot, multiple takes have been recorded over the same section of the timeline, including some partial takes to correct specific phrases in the voiceover being recorded. When you do this, the result looks like a series of cuts and overwritten clips, with the most recently recorded segments being the ones that play back over the previously recorded segments.



Overlapping recordings with Audio Track Layers turned off

However, if you choose View > Audio Track Layers, you'll see that all your recordings have actually been preserved via a vertical stack of overlapping audio clips.



Overlapping recordings with Audio Track Layers turned on, showing layering within the same track

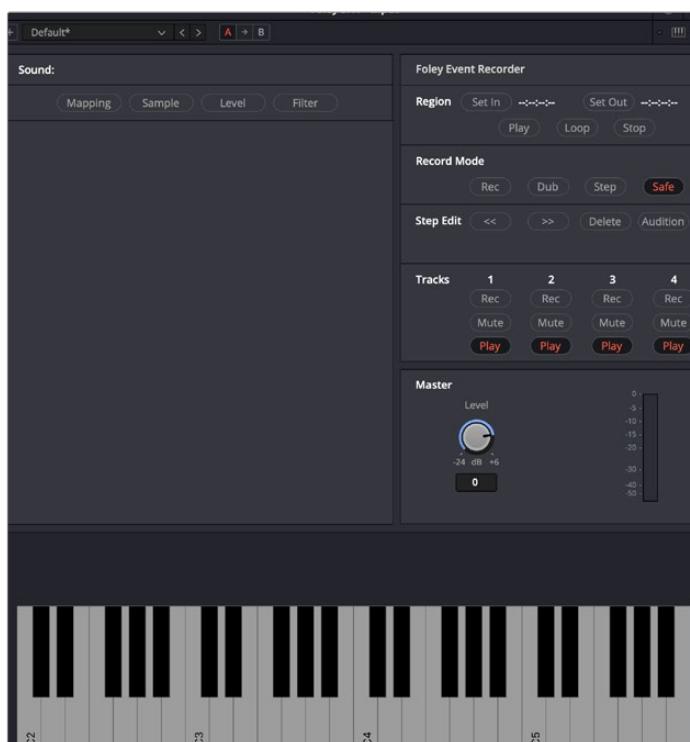
The layering of audio clips in DaVinci Resolve means that the topmost superimposed clips in a layered stack like this mutes the audio of overlapping clips that are lower in the stack.

Using layering, it's easy to edit the best segments of the best takes, while preserving all other takes, simply by adding edits and rearranging clips in the stack so the best parts are on top.

For more information about audio layering, see *Chapter 172, "Editing Basics in the Fairlight Page."*

## Recording VSTi Instruments

DaVinci Resolve supports VSTi instruments working with connected MIDI controllers to trigger instrument sounds that can be recorded live on audio tracks of the Timeline. DaVinci Resolve Studio includes the Fairlight FX Foley Sampler. This can be loaded with foley sounds such as footsteps or human movements, so you can perform these sounds in real time and record the result to another track as you watch performers walking or punching in the edit, even if you lack a recording booth with foley pits and props.



The Foley Sampler ready to be filled with sounds

For more information about the Foley Sampler, see Chapter 178, "Fairlight FX."

On the other hand, if you're a musician, there's nothing stopping you from loading VSTi musical instruments of different kinds for playback, and using the Fairlight page as a multi-track recorder. DaVinci Resolve doesn't have MIDI sequencing functionality, but you can record live playback straight to the Timeline, using layered audio to manage multiple takes for later re-editing. Bet you never thought you'd be recording music in DaVinci Resolve.



A VST Instrument (in this case Serato Sample) loaded into a track of the Timeline

### To enable a MIDI controller in macOS:

- 1 If DaVinci Resolve is running, quit before connecting your MIDI controller and setting it up.
- 2 On macOS you'll use the Audio Midi Setup utility to choose output hardware and select a speaker configuration to be made available on your system. In the Finder, use Spotlight and search for Audio MIDI Setup to open it.
- 3 In Audio MIDI Setup, choose Window > Show MIDI Studio. A window showing icons for all connected MIDI controllers appears. Your controller should be showing an icon. If it's not, you may need to install drivers for it.
- 4 Select the icon for your controller and turn on the "Enter test MIDI setup mode" button (it looks like a little keyboard) to test if your keyboard is connecting with the computer. If it is, then turn this off.

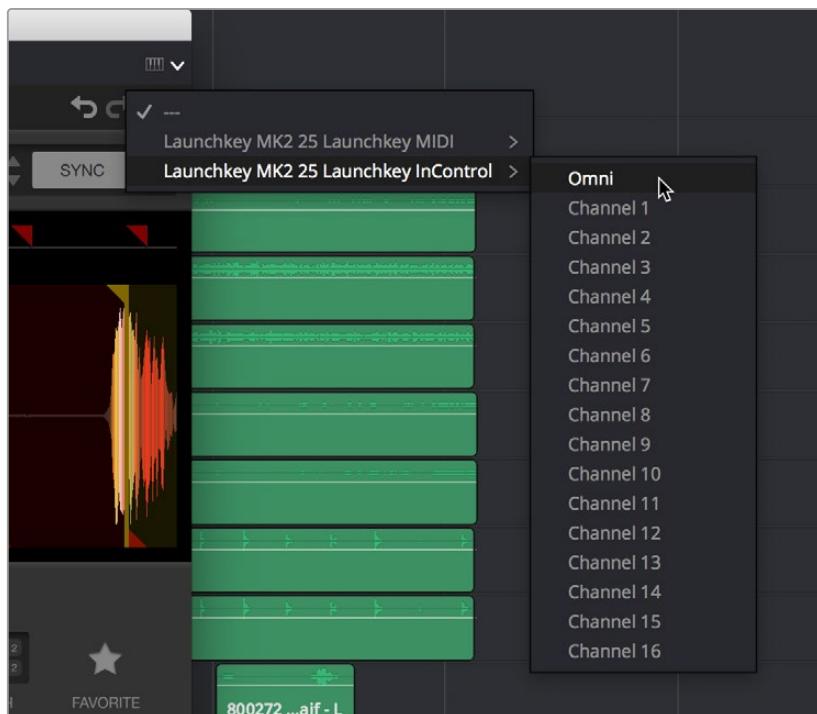
For more information on setting up MIDI on different systems, see the DaVinci Resolve Configuration Guide, available on the web from the Blackmagic Design support page at <https://www.blackmagicdesign.com/support/family/davinci-resolve-and-fusion>.

## To set up the Fairlight page for VSTi instrument recording using a sampler:

- 1 Open DaVinci Resolve.
- 2 Make sure you have at least two available audio tracks in the Timeline, one for the instrument you'll be playing, and one to record into. This example will use tracks A4 and A5 for this.
- 3 Open the Effects Library, find a VSTi sampler you have installed on your system, and drag it to the track header of the track you want to use for playing, for example track A4.

Massively-featured sampler/synth combinations such as Native Instruments Kontakt and Steinberg Halion are ubiquitous and useful when you want to specifically map a collection of sound effects to specific keys or pads to create re-usable multi-purpose instruments. However, more streamlined samplers that emphasize automatic audio clip slicing such as Serato Sample (Windows and macOS) or Image Line Slicex (Windows only) can make short work of the more specialized task of loading library sound effects recordings (or custom recordings you create) with multiple footsteps, punches, keyboard presses, cloth rustles, or other foley activities, and quickly splitting them up into individually playable samples you can trigger with pads or a keyboard.

- 4 When the VSTi interface window appears, open the MIDI menu at the upper right-hand corner of the VSTi window and choose the correct MIDI channel from your MIDI controller's submenu. If you've selected the correct MIDI channel, the instrument should start responding to the keys or pads on your controller.



Enabling MIDI control

- 5 Next, configure the VSTi instrument you're using to play the sound effects you want to use for foley. In this example, the Serato Sample VSTi plugin is being used to automatically slice up a recording of footsteps from one of Sound Ideas' many sound effects libraries. Because the VSTi you added is patched to that track's Insert (if you look at the Mixer you should see that the I button is enabled on the channel strip the instrument is patched to), the Send is PRE the Instrument. This means you need to patch that track's Track Direct output to the input of another track to record the instrument.

- 6** Choose Fairlight > Patch Input/Output to open the Patch Input/Output window, then set the Source drop-down menu to Track Direct and the Destination drop-down menu to Track Input. Click Audio 4 to the left, and Audio 5 to the right, and click the Patch button; this sets you up to play the VSTi plugin on track A4, and record its output on track A5.

Be aware that after patching Track Direct from the track with the instrument to the track you're recording onto, you also need to turn "Direct Output" on for that track in the Path Settings of that track's channel strip in the Mixer.

- 7** Open the Mixer (if necessary), click the Input drop-down menu at the top of the channel strip that shows the VSTi instrument you're using, and choose Path Settings. When the Path Settings window appears, click the ON button for Direct Output, then close the Path Settings window.

At this point, you're ready to begin recording.

#### **To play and record a VSTi instrument:**

- 1** Click the Record Arming button of the track you're recording to (in this example A5), move the playhead to where you want to begin recording, and then click the Record button to begin recording.
- 2** As the video of your program plays, use your MIDI controller to trigger sound effects as necessary. When you're finished, click the Stop button.

If necessary, you can record multiple takes using track layering until you get the timing right. When you're finished, you can remove the instrument from the track it's on since the recorded audio is all you need.

## Chapter 171

# ADR (Automated Dialog Replacement)

The Fairlight page of DaVinci Resolve has a sophisticated interface for doing ADR, or automated dialog replacement, in a structured and straightforward manner.

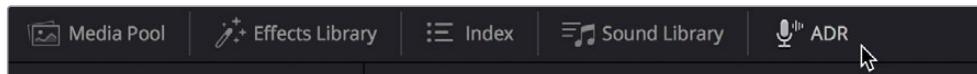
Simple, yet powerful, the ADR panel incorporates Cue list management, industry-standard audio beeps and visual cues, and sophisticated take management with star ratings and layered take organization to create and manage the re-recording of dialog in any program. With this sophisticated organization and layering, it's easy to edit together the best parts of each take into your program.

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# ADR (Automated Dialog Replacement)

Clicking the ADR button on the Interface toolbar opens the Fairlight ADR panel, which offers a thoroughly professional automated dialog replacement workflow. Dialog replacement, for those who don't know, is the process whereby audio professionals bring in actors to re-record unusable dialog recordings from the comfort of their recording studios, line by line and with a great deal of patience.



The ADR panel on the Fairlight page

It's an old joke that ADR isn't really automatic, but the Fairlight page aims to help you make this a structured and straightforward process. Simple, but powerful, Cue list management lets you efficiently assemble a re-recording plan.

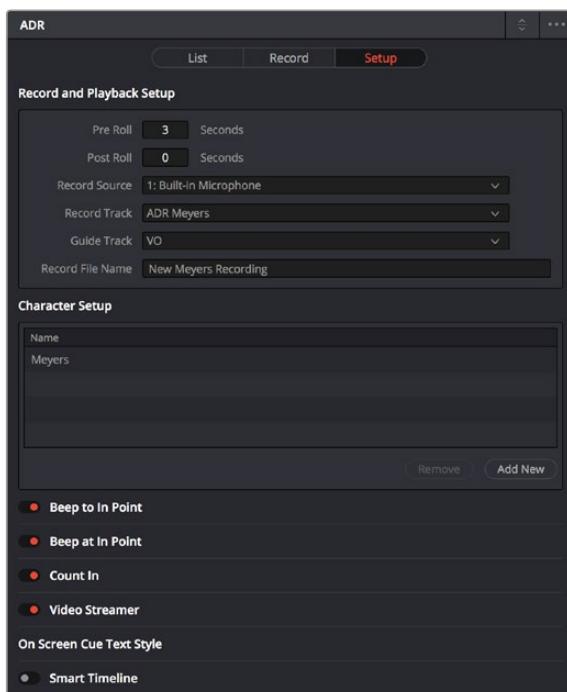
Industry-standard audio beeps and visual cues via your BMD video output device help the actors in the booth nail their timings and their lines. Then, sophisticated take management with star ratings and layered take organization in the Timeline help you manage the resulting recordings to pick and choose the best parts of each take when you edit the results.

## The ADR Interface

The ADR interface consists of three panels to the left of the Timeline: a List panel, a Record panel, and a Setup panel. The controls of these panels are described in the order in which they're used..

### The Setup Panel

As its name implies, the Setup panel is where you configure your ADR session.



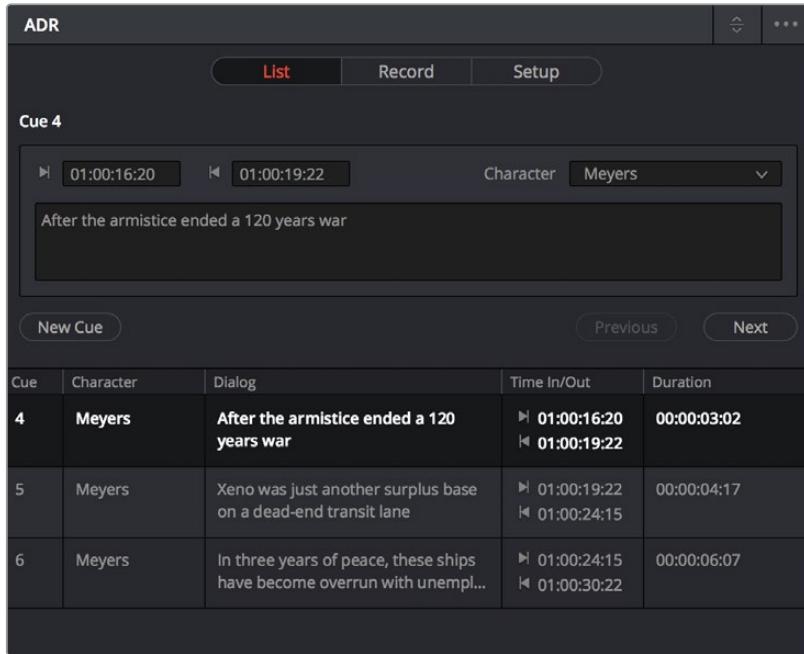
The Setup panel of the ADR interface

This panel presents the following controls:

- **Pre Roll and Post Roll:** Specifies how many seconds to play before and after each cue's specified In and Out points, giving actors a chance to listen to what comes before and after each cue in order to prepare. If you enable the Beep options below, they'll provide a countdown during the specified pre-roll.
- **Record Source:** This drop-down menu lets you choose the audio input you want to record from, creating a patch to the Record Track. However, this menu is disabled until you select a track in the Record Track drop-down menu.
- **Record Track:** This menu lets you choose the track you want to record on. Making this selection creates a patch from the Record Source to the Record Track and automatically toggles Record Enable on.
- **Guide Track:** This drop-down lets you choose the track containing the production audio you want to re-record. The talent will use the audio playback from this track as a guide when recording their replacement performance.
- **Record File Name:** This text field lets you enter a filename for the recorded audio.
- **Character Setup:** This is where you can add the character names you'll be re-recording, which helps with cue creation and management. Click the Add button to enter a new character name. To delete a character from the list, click the character name and then the Remove button.
- **Beep to In Point:** Enables a three-beep sequence, which the talent hears leading up to the recording. For the beeps to be audible, the Beeps channel of the System Generator must be patched to your audio outputs by going to Fairlight > Patch Input/Output.
- **Beep at In Point:** Enables one last beep at the In point. For the beep to be audible, the Beeps channel of the System Generator must be patched to your audio outputs by going to Fairlight > Patch Input/Output.
- **Count In:** Provides an onscreen counter that counts down to the start of the cue.
- **Video Streamer:** A visual cue for the talent to watch during pre-roll to ready them for recording. A pair of vertical lines superimposed over the program being output to video move towards one another across your video output screen during the pre-roll to the cue. This gives the talent a visual indication of the time remaining until they should begin talking. When the beeps play, these lines get taller. Both lines come together at the Time In frame, at which point a cross shows that recording is beginning.
- **On Screen Cue Text Style:** Clicking this heading reveals a set of parameters for configuring the look and placement of onscreen text cues.
- **Smart Timeline:** When turned on, this option automatically moves the playhead to each cue as it's selected in the Cue list, and zooms in to frame the duration of that cue in the Timeline.
- **Mixing Control:** Enables automated switching of audio playback, to independently control what the talent and the audio engineer hear at various stages of the ADR recording process. For example, with this enabled, the Guide track is not routed to the Control room while the engineer is reviewing a take.

## The List Panel

This is where you create a list of cues you need to re-record, either from within the Fairlight page or imported from a .csv file.



The List panel of the ADR interface

This panel includes the following controls:

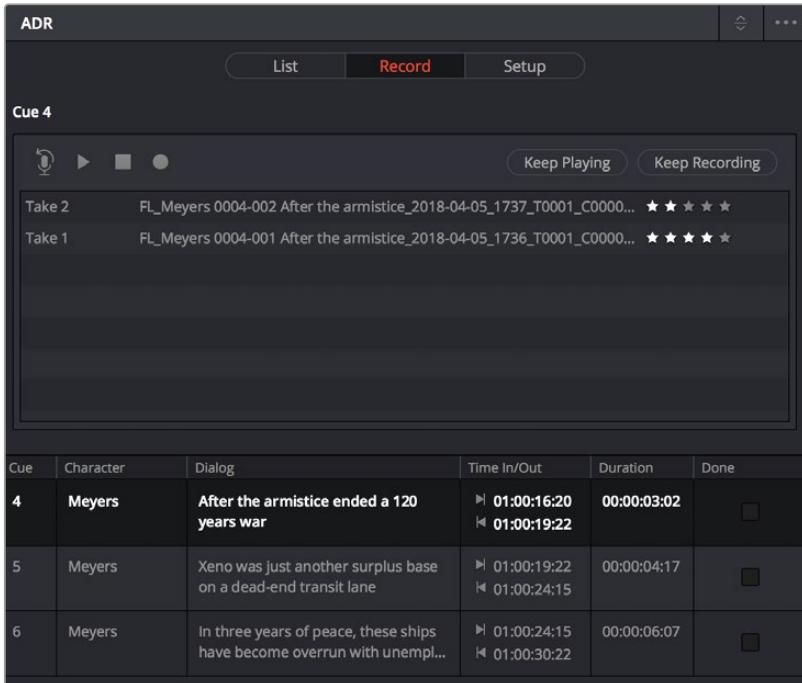
- **Cue editing controls:** Displays the data for the currently selected cue (or a cue that was just created). In and Out timecode fields store the Timeline In and Out points that were set when the cue was created but can be manually edited for fine tuning. A Character drop-down menu lets you choose which character that line of dialog belongs to. A text entry field lets you enter the dialog cue that's to be re-recorded, so you and the talent can both refer to it.
- **New Cue button:** Clicking this button adds a new cue to the list using whatever In and Out points have been set in the Timeline, and whatever character was last selected.
- **Cue list:** The list of all cues that have been entered or imported. The Cue list can be filtered using the Filter drop-down menu at the top-right of the ADR panel (next to the option menu). You can choose to show the cues for all characters, or for any selected combination of characters. You can also choose to hide all cues that are marked as done to experience the joy of this list shrinking more and more the closer you are to being finished.

Additionally, the ADR interface option menu has three commands pertaining to the List panel:

- **Import Cue List:** Lets you import a properly formatted .csv file to create cues that have been prepared in a spreadsheet. Correct formatting for cue lists you want to import is no headers, one line per cue, with four individual columns for In timecode, Out timecode, Character Name, and Dialog.
- **Export Cue List:** Lets you export the contents of the Cue list to a .csv file, for exchange or safe-keeping.
- **Clear Cue List:** Deletes all cues in the Cue list. It's recommended you export a copy of your Cue list before eliminating it completely, in case you ever need to revisit a cue.

## The Record Panel

This is where you actually run the ADR recording session you've set up, using the dialog cues you've put into the Cue list.



The Record panel of the ADR Interface

This panel presents the following controls:

- **Record and rehearse controls:** Four transport controls and two buttons let you control recording during ADR sessions. These controls are only clickable when you've selected a cue from the Cue list to record.
  - Rehearse:** Runs the section of the Timeline specified by a cue without actually recording anything, giving the talent an opportunity to run through their dialog and practice their timing and delivery. Beeps and on-screen streamers are not played during a rehearsal.
  - Play:** Plays the currently selected take from the Take list (described below). If no take is selected, the most recently recorded one on top is played.
  - Stop:** Immediately stops rehearsal, playback, or recording.
  - Record:** Initiates recording of the cue to the specified audio track, with cue beeps and video streamer cues.
  - Keep Playing:** At the end of a take you may wish to keep playing, so the talent can hear the next section of the track. Pressing the Keep Playing button at any time, even while recording, results in post roll being ignored and normal playback resuming after the cue's Out point.
  - Keep Recording:** At the end of a take you may wish to keep recording until you manually stop. Pressing the Keep Recording button at any time, even while recording, results in the Out point of the current cue being ignored and recording continuing until you stop it.
- **Take list:** The Take list shows every take you've recorded for the current cue, with take number, name, and a five-star rating that you can set to keep track of which takes worked and which didn't. Earlier takes are at the bottom of this list, while recent takes are at the top (the same order in which the corresponding layered audio clips appear in the Timeline track they've been recorded to).

— **Cue list:** The list of all cues that have been entered or imported. The Cue list can be filtered using the Filter drop-down menu at the top-right of the ADR panel (next to the Option menu). You can choose to show the cues for all characters, or for any selected combination of characters. You can also choose to hide all cues that are marked as done to experience the joy of this list shrinking more and more the closer you are to being finished.

— **Cue list Done column:** A sixth column appears in the Record panel only, labeled Done. It contains check boxes for each cue that you can turn on to keep track of which cues you've successfully finished.

Additionally, the ADR interface Option menu has one command pertaining to the Record panel:

— **Record Early In:** Enables recording during pre-roll, in the event you're working with talent that likes to start early.

# Setting up to Do an ADR Session

Setting up to record ADR is straightforward but requires a few steps.

## **Creating tracks in preparation to record ADR:**

- 1 In the Timeline, create a new audio track to which you'll be doing ADR recording. Make sure it has the correct channel configuration for your recording (mono is typical for dialog).
- 2 If you're recording ADR to your main timeline, you may want to Solo both the Guide track and the Record track, so you and the talent can focus on the audio being re-recorded without hearing all the other tracks of the current mix.

Now you're ready to configure the Setup panel.

## **Configuring the Setup panel:**

- 1 Open the ADR interface, and then open the Setup panel.
- 2 Choose the Pre Roll and Post Roll you want to use, in seconds. A pre roll of at least 3 seconds is recommended to give the talent time to get ready.
- 3 From the Record Source drop-down menu, choose the microphone you patched earlier.
- 4 From the Record Track drop-down menu, choose the Record track you created.
- 5 From the Guide Track drop-down menu, choose the track with the original production audio that you're replacing.
- 6 At the bottom of this panel, turn on which Preroll Cue options you and the talent want to use as you record each cue. Options include:
  - a) Beep to In Point and Beep at In Point provide an audible count down to when to start performing.
  - b) An animated Video Streamer gives a countdown to the start time, shows the duration of the cue being recorded, and also displays the text of the dialog for that cue on screen for the actor to refer to, so they can keep their eyes on the screen and not a script.

Next, if you've enabled Beep to In Point and Beep at In Point, you need to patch the Fairlight oscillator to your output channels so the talent can hear the preview beeps.

### **Patching the Oscillator to play beeps over your audio output:**

- 1 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window.
- 2 Choose System Generator from the Source drop-down menu, and click to select Beeps.
- 3 Choose Audio Outputs from the Destination drop-down, and choose the left/right outputs you want these preview beeps to play out of. You can drag a bounding box to select multiple outputs, thereby connecting the mono Beeps input to stereo output for comfortable listening.
- 4 Click Patch to make the connection, then close the Patch Input/Output window.

## **Creating and Importing ADR Cue Lists**

You must have a list of cues to be able to use the ADR interface properly. There are two ways you can create a Cue list to record with, make one from scratch on the Fairlight page, or import one. The ADR panel accommodates both workflows.

### **Manually Creating an ADR Cue List**

If you've been doing all of your dialog editing inside of DaVinci Resolve, you can go ahead and create a list by marking the sections of the Timeline you need to re-record and creating cues from those timings. To create cues properly, you should start by adding the names of each character you'll be creating a cue for in the Setup panel. These names make it easier to enter cues and will help you to filter and sort the list as necessary later on.

#### **To add character names before entering cues:**

- 1 Open the Setup panel of the ADR interface.
- 2 Click Add New.
- 3 When a selected entry appears in the Character Setup list, type a name.
- 4 Press Return when you're done.

#### **To edit the Character Setup list, do one of the following:**

- If you mis-spell a name, you can double-click any name in this list to edit it.
- To delete a name, you can select it and click Remove to eliminate it.

Once you've created a complete set of character names, you can begin creating your Cue list.

#### **To manually add cues to the Cue list:**

- 1 Open the List panel of the ADR interface. This is where all the controls for creating and editing cues are.
- 2 In the Timeline, set In and Out points to mark the section of dialog you want to turn into a cue. Those timecode values appear in the Cue Editing section of the List panel.
- 3 Click New Cue to add a blank cue to the Cue list.

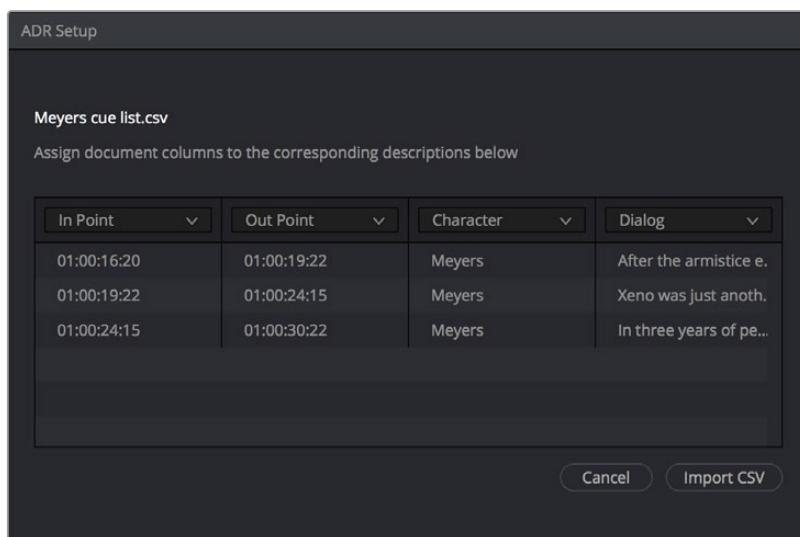
- 4 In the Cue Editing section, choose the character who's speaking that cue from the Character drop-down (only names that have been entered in the Setup tab appear in this list).
- 5 If necessary, select the text field below, and type the dialog that needs to be re-recorded.
- 6 Repeat steps 2 through 5 until you're finished creating all the cues you intend to re-record. If you need to edit any cue, simply click to select that cue, and edit it in the Cue Editing section above.

## Importing Cues

If you or an assistant has already created a Cue list using a spreadsheet with separate columns for character names, dialog, and In/Out timecode values, then you can also create a Cue list by importing this data from an exported .csv file.

To import a .csv file to the Cue list:

- 1 Choose Import Cue List from the ADR option menu, then use the dialog to choose the .csv file containing the Cue list you were given, and click Open.
- 2 An ADR Setup dialog appears, showing the data from the .csv file previewed as a series of columns. This lets you see if each column of incoming data is being assigned correctly. If it's not, you can reassign each column of the incoming data to the correct column of the ADR panel.  
Correct formatting for Cue lists you want to import is to have no header text, and to enter information using one row per cue, with four individual columns for In timecode, Out timecode, Character Name, and Dialog. If any of these columns are transposed, you can correct this by choosing the correct data type for each column from the drop-down menus at top.



Dialog for rearranging columns of cue data, if necessary

- 3 Click Import CSV. The cues should appear in the Cue list.

### To export a .csv file from the Cue list:

- Choose Export Cue List from the ADR option menu, choose a location to save the file, and click Save.

# Recording ADR to the Timeline

Once you've configured your workstation for recording, and you've set up a Cue list to work with, it's time to start recording each cue.

## To record a cue from the Cue list:

- 1 Open the Record panel of the ADR interface.
- 2 If you want to record a particular character's cues, you can select each unnecessary character in the ADR Option menu to uncheck that character, hiding their dialog in the Cue list.
- 3 With the list showing the character cues you need, select the cue you want to start recording. That cue contains the timecode necessary to determine which part of the Timeline to record to, and the playhead automatically moves to that part of the Timeline.
- 4 Click the Rehearse button a few times to run through the cue with the talent. When you click Rehearse, both audio and video corresponding to that cue will play, including pre roll and post roll, along with all beep and onscreen cues.
- 5 When the talent is ready to try a take, click the Record button, and let the Fairlight page do the work of playing through pre roll with beep notifications and visual streamer cues, initiating recording, and then stopping recording automatically once the cue is done. To record another take, simply click the Record button again.

Every time you complete a recording, a take appears in the Take list. Making multiple recordings results in multiple takes in the list. In the Timeline, all new takes appear as layered audio, so you can record as many takes as you like into the same area of the Timeline. Once you've finished recording takes, you'll have a neatly organized stack of alternate takes to draw upon as you edit together the best parts of each recording.

- 6 If you or the talent want to hear a particular take again, select it in the Take list and click Play. You can use the 5-star ratings control to keep track of how you liked each take.
- 7 When you're finished recording a cue, click the Done checkbox for that cue, and select the next cue you want to record. When you're finished re-recording dialog, simply close the ADR interface.

## Chapter 172

# Editing Basics in the Fairlight Page

You can use the Fairlight page to refine the editing of audio that was initially assembled in the Edit page, or you can use the Fairlight page to both record and edit audio programs from scratch.

Because audio clips have properties that video clips do not, audio editing encompasses additional procedures that are not available in the Edit page. This chapter takes you through the fundamental steps of editing audio the Fairlight way.

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# Compatible Audio Formats

DaVinci Resolve is compatible with WAVE, Broadcast WAVE, AIFF, MP3, AAC (M4A), CAF (macOS only), both MTS and QuickTime containers that use the AC3 audio format, and Enhanced AC-3 (macOS and Windows only). DaVinci Resolve is compatible with audio at sample rates including 32, 44.1, 48, 88.2, 96, and 192 kHz. Linux users have the added ability to encode and decode MP3 files in Fairlight.

DaVinci Resolve 17 adds Dolby Atmos ADM file creation and manipulation as well as the ability to export Dolby Atmos masters as IMF deliverables. IMF (Interoperable Master Format) is a SMPTE standard for a single master file format that incorporates all the media and metadata necessary to deliver what's necessary..

## ADM Import

Importing an ADM file into a project will open the Bed mix or mixes and any associated Object tracks into a timeline. They will be imported onto corresponding track types of the audio files embedded into the ADM. For instance, if a Bed file is 7.1.2, then on import that file will open in a 7.1.2 track in Fairlight. Object files will be created as separate tracks in Fairlight containing all of their panning data.

**NOTE:** If bringing in a Dolby Atmos file from the Media Pool, it will render the file dynamically to the chosen output format directly on the Timeline using the Dolby Renderer. However, Fairlight can import the full Atmos file with beds and objects if imported from the Fairlight menu instead - Fairlight > Immersive > Audio > Import Master File. By bringing a file in this way, it will create a timeline with all of that file's Atmos program and dynamic metadata properly mapped and routed.

# Editing Audio Clips Into the Timeline

The Fairlight page offers a complete audio editing environment that lets you either record and assemble clips from scratch, or refine tracks full of audio clips that have been edited together in different ways. There are four ways of adding media to the Timeline in the Fairlight page, depending on the type of work you do:

- Recording new audio into one or more tracks, for more information, see *Chapter 170, "Recording."*
- By dragging and dropping new audio clips from the Media Pool into the Fairlight timeline
- By editing audio clips into audio tracks on the Edit page
- By importing a project with audio clips
- By auditioning and confirming sound effects from the Sound Library

However audio clips come to be in your timeline, the rest of this chapter covers the myriad methods available to edit and sweeten the contents.

## Overwriting Vs. Layering Clips That Overlap

When you add clips to the Timeline, what happens when you add a clip that overlaps another clip that's already in the track you're editing depends on the Timeline > Layered Audio Editing setting. By default, with Layered Audio Editing turned off, overwriting one audio clip with another results in the overlapping part of the overwritten clip being non-destructively deleted from the Timeline by the incoming clip.

However, if you turn Layered Audio Editing on, then incoming clips do not overwrite overlapping clips in the Timeline; instead, they're layered within that track, such that the incoming audio clip takes precedence over what was previously there, but overlapping audio segments that were previously in the Timeline are preserved, which can be seen when you choose View > Show Audio Track Layers.

In this way, you can choose whether you want to overwrite previously edited clips, or layer newly edited clips, as your needs require, regardless of whether or not Audio Track Layers are visible. Audio layering can be enabled in both the Edit and Fairlight pages.

For more information about audio layering, see the section later in this chapter.

## Choosing Parts of Clips to Edit in the Media Pool

The Media Pool has a preview player at the top that provides a place to open selected source clips in the Media Pool, play them, add marks to log them, and set In and Out points in preparation for editing them into the Timeline via drag and drop. The Media Pool Preview Player effectively acts as a Source monitor for editing in the Fairlight page.



The preview player in the Media Pool

- Various viewing controls populate the title bar at the top. A drop-down menu at the upper left lets you choose a zoom level for the audio waveform that's displayed. To the right of that, a Timecode window shows you the duration of the clip or the duration that's marked with In and Out points. Next to the right, a real-time performance indicator shows you playback performance. In the center the title of the currently selected clip is shown, with a drop-down menu to the right that shows you the most recent 10 clips you've browsed. To the far left, a Timecode field shows you the current position of the playhead (right-clicking this opens a contextual menu with options to change the timecode that's displayed, and to copy and paste timecode).
- The center of the Media Pool Preview Player shows you the waveforms in all channels of the currently selected clip, at whatever zoom level is currently selected.
- Transport controls at the bottom consist of a jog bar for scrubbing, Stop, Play, and Loop buttons, and In and Out buttons.

# Dragging Audio Clips Into the Timeline

You can show the Media Pool in the Fairlight page, and edit audio clips into the Timeline in their entirety by dragging and dropping individual clips onto whichever audio track you want them to appear. You can drag any clip onto any track, regardless of whether or not the channels of the clip match the channel mapping of the track. However, if you edit a clip with more channels than a track has (for example, editing a stereo clip onto a mono track), only the channels supported by that track will be output, with all other channels in that clip being muted. If this happens, you can always remap the audio track by right-clicking the track header and choosing a new mapping from the Change Track Type To submenu.

**TIP:** Dragging one or more clips to the empty area underneath the existing audio tracks of the Timeline results in the creation of new tracks, each of which is automatically mapped to however many channels are required by each audio clip being edited.

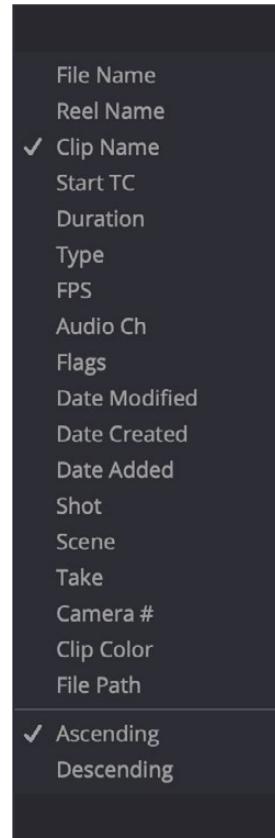
When working with Ambisonics files, dragging a clip to the timeline or creating a new timeline that refers to a clip creates a track of the appropriate type, matching the file's Ambisonic order and channels.

If you want to edit several clips into the Timeline at once by dragging them from the Media Pool, you'll probably want to do a bit of preparation to make sure they're edited in the right order.

## Dragging several clips into the Timeline as one contiguous series of edited clips:

- 1 Change the sort order of the Media Pool's browser area to put the clips into the order in which you want them to appear. In Thumbnail view you can use the Sort Order menu, but in List view you can click the header of any metadata column to sort by that column's data.
- 2 Use the Media Pool thumbnails, the Media Pool List view Filmstrip, or the Source Viewer to set In and Out points to define the part of each clip that you want to edit into the Timeline.
- 3 Select the Media Pool clips you want to edit into the Timeline by dragging a bounding box, Command-dragging multiple bounding boxes over different sets of clips, by Shift-clicking a range of clips, or by Command-clicking individual non-contiguous clips.
- 4 Drag any of the selected clips to the desired position in the Timeline to perform an overwrite edit.

The clip(s) you drag overwrite whatever other clips they overlap in the Timeline. Multiple clips dragged from the Media Pool will be edited in the order in which they're sorted in the Media Pool, using each clip's In and Out points.

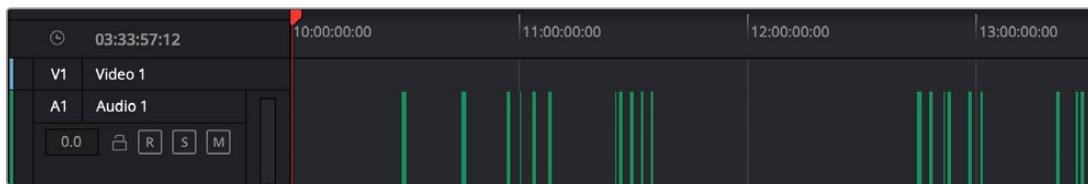


Using the Sort Order menu to change the sort order of clips in the Media Pool

It's possible to edit audio clips into the Timeline so that each clip's timecode lines up with the Timeline Ruler. This can be useful if you're organizing multiple source audio recordings that you want to synchronize together on multiple tracks.

### Dragging multiple clips to edit them into a track at their timecode positions:

- 1 Select the Media Pool clips you want to edit into the Timeline by dragging a bounding box, Command-dragging multiple bounding boxes over different sets of clips, by Shift-clicking a range of clips, or by Command-clicking individual non-contiguous clips.
- 2 Hold Command-Shift down, and drag the selected clips into the track you want them to appear, to perform an overwrite edit.



A series of audio clips edited into the Timeline by timecode position

Each clip edited into that track appears at the same timecode position as its embedded timecode. This means that if you were recording time-of-day timecode, each clip will appear on the Timeline at the time it was recorded. A series of clips recorded during hour 10 through 13 will appear distributed throughout hours 10-13 on your timeline.

You can also edit two or more audio clips into the Timeline as a stack, in preparation for layering multiple sound effects for doing sound design work.

### Dragging multiple clips to edit them into a track as a parallel stack:

- 1 Select the Media Pool clips you want to edit into the Timeline by dragging a bounding box, Command-dragging multiple bounding boxes over different sets of clips, by Shift-clicking a range of clips, or by Command-clicking individual non-contiguous clips.
- 2 Command-drag the selected clips into a track of the Timeline. The first of the selected clips appears in the track you're dragging to, the other clips appear either in audio tracks underneath the first one, or if there are no audio tracks available, in new audio tracks that will be created to hold those clips.

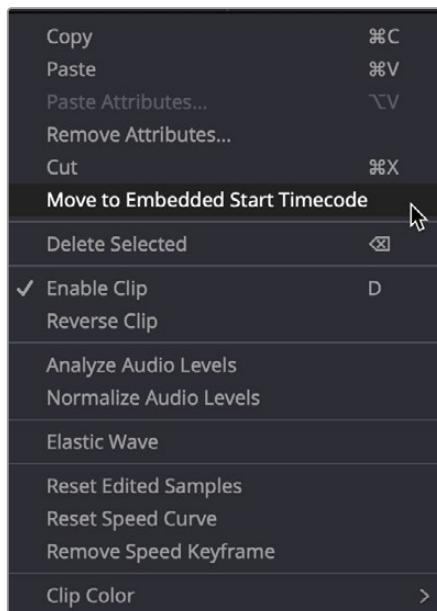
All clips you've edited appear as a parallel stack, in separate tracks, one on top of another.

## Moving Audio Clips to Embedded Timecode Position

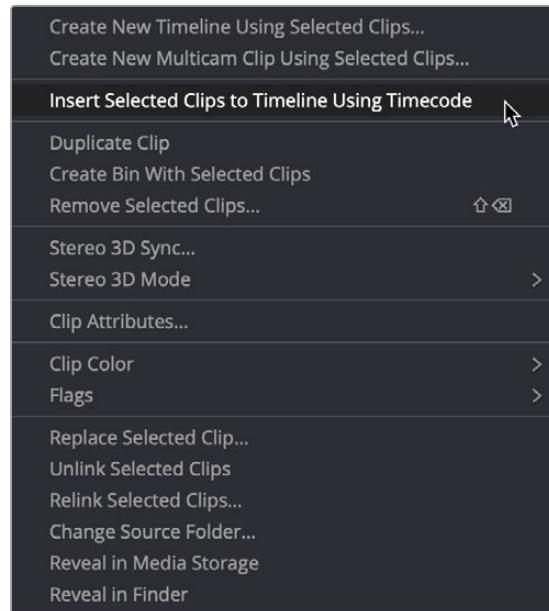
All clips have a timecode embedded into their metadata. There are options to place clips onto the Timeline from either the Media Pool or in the Timeline itself with this metadata.

Right-clicking a clip in the Timeline has the choice to Move to Embedded Start Timecode. When this is clicked the clip will spot onto the Timeline on a selected track with the timecode.

It's important to be aware of the embedded audio timecode and the Timeline timecode. The two must have overlapping timecode, or this function will not work. For example, a clip that has an embedded timecode of 00:00:00:00 may be difficult to find on a Timeline that starts at 00:59:58:00. If you have spotted a clip using these tools and still don't see the clip in question, then check the embedded timecode in the Metadata panel of the Inspector as well as the timecode of the Timeline itself.



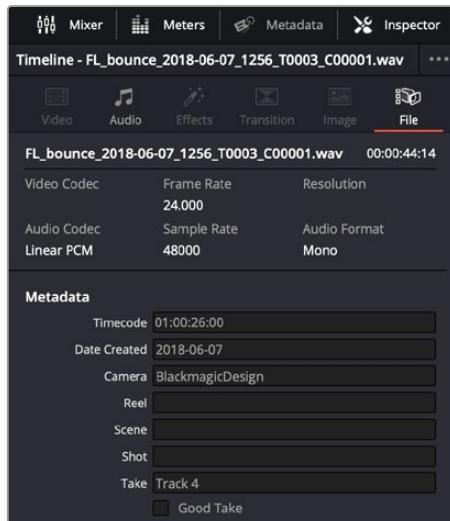
Right-clicking a clip in a Timeline reveals the Move to Embedded Start Timecode option.



Right-clicking a clip in the Media Pool reveals the Insert Selected Clips to Timeline option.

Right-clicking a clip in the Media Pool has the choice to Insert Selected Clips to Timeline Using Timecode. When this is clicked the clip will spot onto the Timeline on a selected track with the embedded timecode.

**NOTE:** You can find the embedded timecode for a clip in the Inspector in the File tab under timecode.

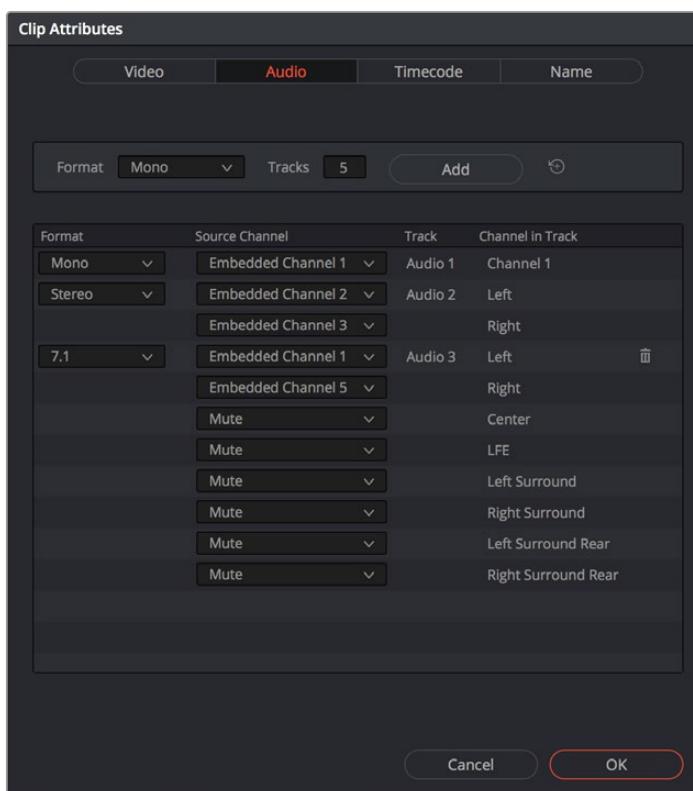


Timecode metadata is in the Inspector window under the File tab.

## Support for Mixed Audio Track Formats from Source Clips

DaVinci Resolve supports media with multiple audio tracks that have differently formatted channels embedded within them. For example, a clip with one stereo track, one 5.1 surround track, and six mono tracks can all be appropriately set up in the Audio panel of Clip Attributes after that clip has been imported.

The Audio panel of Clip Attributes has controls over what format (Mono, Stereo, 5.1, 7.1, Adaptive) the channels embedded within a particular audio track should be configured as. This means you can set up clips with multiple tracks, each one using different formats of audio employing different combinations of channels, which is useful for setting up imported audio mix files that you want to output when mastering a program.



Clip Attributes now lets you assign channels among different tracks with different channel assignments

## Making Audio Clip Selections in the Timeline

Nearly every editing operation described in this chapter and others requires you to make a selection to define which clips will be affected. Three editing modes in the toolbar give you different ways of selecting clips, depending on what you're trying to do, and how you like to work. These are (from left to right) the Pointer mode, the Range mode, and the Focus mode. Which mode you choose determines how clips and clip segments are selected in the Timeline in preparation for all manner of editorial operations.



The Pointer, Range, and Focus modes seen in the toolbar

## Fairlight Edit Mode Remains Between Application Restarts

Fairlight retains the Edit Mode the project was saved with between restarts. Whatever edit mode you were working in prior to closing the application will be active when reopened.

### Why Are There Three Edit Modes?

While the Pointer and Range modes can also be used with the pointer, they're really designed to enable automatic selections based on the position of the playhead. This is accomplished when using the Fairlight Editing console, the Fairlight Desktop Console, or keyboard shortcuts to control Timeline transport, while specific tracks are selected to enable selection and editing on those tracks.

The Focus mode is designed for efficient selections made using the pointer via a mouse, trackpad, or pen and tablet, made in conjunction with a variety of commands for extending and editing selections triggered via keyboard shortcuts. If you're editing with a keyboard and mouse, this mode is designed to let you work quickly by enabling a variety of different selection functions based on clicking different parts of clips.

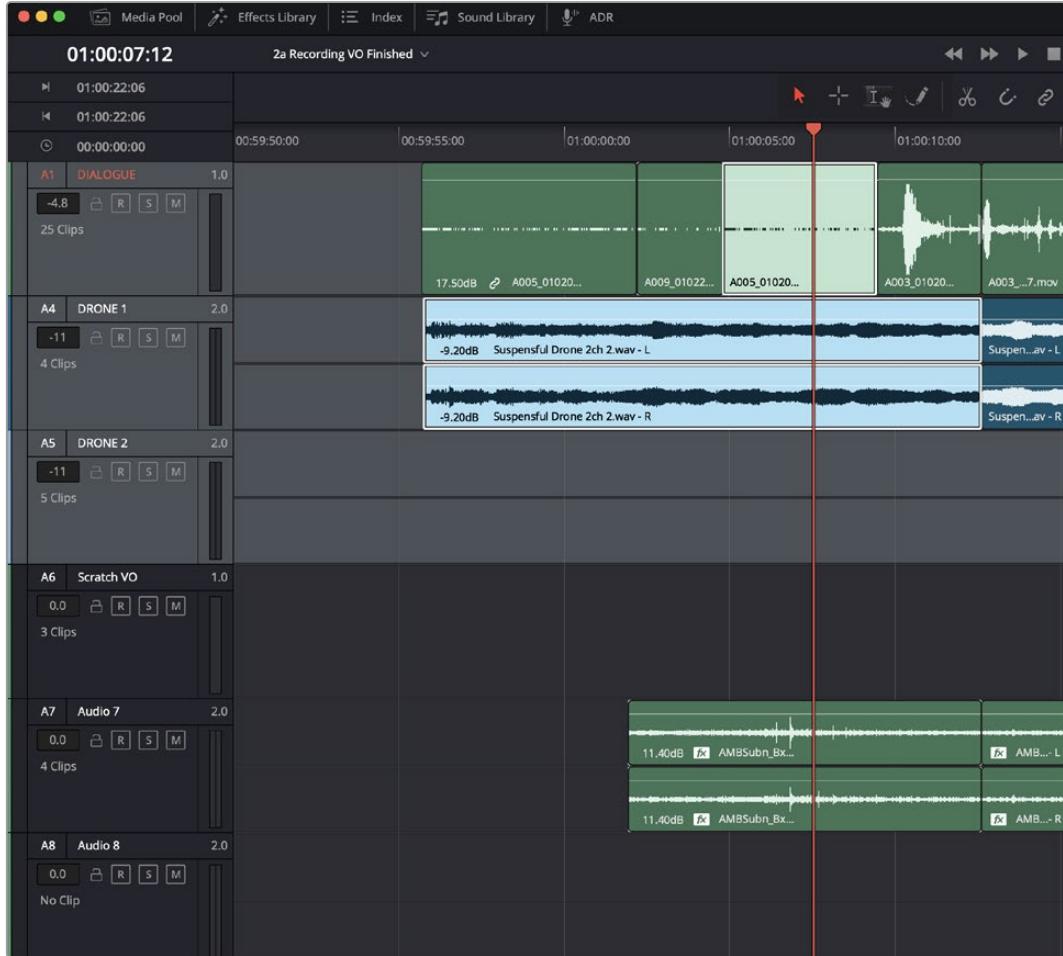
## Selecting Tracks

In order to understand clip selection, you must first understand track selection. The Timeline on the Fairlight page lets you select entire tracks to facilitate the automatic selection of clips that intersect the playhead on those tracks using keyboard shortcuts, the Fairlight Desktop Console, or the Fairlight Editing panel, in Pointer and Range modes (described in upcoming sections).

For example, were you to select tracks A2, A3, and A4, then moving the playhead to intersect two clips on those tracks in Pointer mode automatically selects them, so they're ready for any operation you want to perform on both clips. To give a few examples, you could now split both clips at the playhead, Cut Head or Tail to the playhead, Delete both clips, or Copy them in preparation for pasting elsewhere.

Additionally, there are times when clicking or dragging on one or more clips with the pointer results in both those clips being selected, along with the tracks on which they sit. For example, selecting clips using the Focus mode will also select the tracks those clips are on.

If you're manually selecting tracks using the pointer, there are different ways to do so.



Command-clicking multiple track headers selects those tracks

### Methods of selecting and deselecting tracks in the Fairlight page Timeline:

- **To select a single track:** Click anywhere in the background or on the track number of that track's header (not on a button). In Range mode you can also click in any unused area of the track itself.
- **To deselect a single track:** Click anywhere in the background or on the track number of a previously selected track's header (not on a button). In Range mode you can also click in any unused area of the track itself. If multiple tracks are selected, Command-clicking one will remove just that track from the selection.
- **To select multiple tracks:** Command-click in the track header background of every track you want to select. In Range mode you can also Command-click in any unused area of the tracks themselves. Command-clicking an already selected track will deselect it.
- **To select multiple continuous tracks:** Click anywhere in the background or on the track number of a track header, and then drag a bounding box up or down over all other tracks you want to select. In Range mode you can also drag a bounding box over any part of the tracks themselves, while also defining a range in which you want to work.
- **To move the selection to higher or lower tracks:** Press Control-Option-Up Arrow or Down Arrow to move the selection state to the next track higher (Control-Option-Up Arrow) or lower (Control-Option-Down Arrow). If multiple tracks are selected, then the multi-selection will be moved as a block; for example, selecting tracks A2 and A3 and then pressing Control-Option-Down Arrow will result in tracks A3 and A4 being selected.

# Using Pointer Mode

Pointer mode uses the position of the playhead to make automatic selections when using the Fairlight Editing console or keyboard shortcuts to make clip selections on selected tracks. However, you can also use this mode in conjunction with the pointer and keyboard shortcuts to make selections in a different style. Pointer mode is primarily intended to allow efficient editing of whole clips.

- **If no tracks have been selected:** Clips that intersect the playhead are not selected. You can use the pointer to select one or more clips by clicking, Command-clicking, or dragging a bounding box. Clips you select in this way are highlighted in orange. Making selections in this way is similar to making clip selections in the Timeline of the Edit page.
- **If tracks have been selected:** All clips that intersect the playhead on selected tracks will be automatically highlighted selected, but no In and Out points will be set. Clips on de-selected tracks will be ignored. Selecting one or more clips with the pointer (by Command-clicking or dragging a bounding box) creates an orange-highlighted selection.
- **If you set In and Out points:** Some functions will affect ranges of clips between In and Out points on selected tracks. Clips on unselected tracks are ignored.

## To choose Pointer mode:

- Click the Selection tool (the arrow) in the toolbar.
- Choose Trim > Pointer mode.
- Press A.

## To automatically select clips using the playhead position in Pointer mode:

- 1 Press A to enter Pointer mode.
- 2 Select one or more tracks with clips you want to select.
- 3 Move the playhead to intersect those clips.

All clips that intersect the playhead on selected tracks of the Timeline are automatically selected in their entirety. Automatic selections are illuminated brighter to indicate their selection. Intersecting clips on unselected tracks are not selected.



Clips intersecting the playhead in Pointer mode are automatically selected with orange highlights

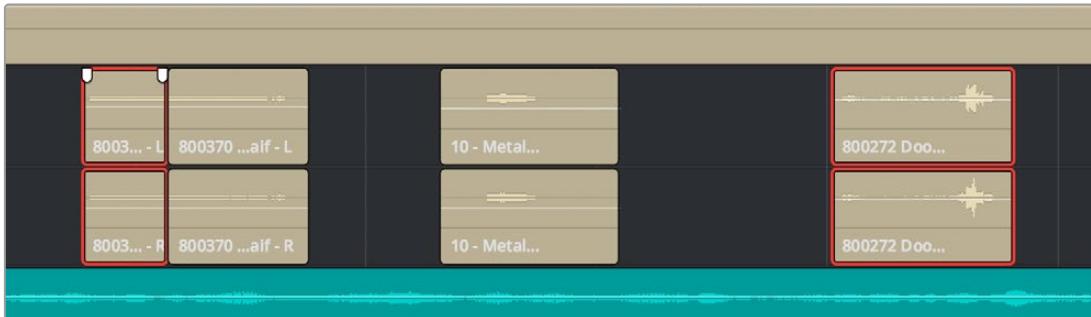
## Methods of selecting clips using the pointer:

- Click any clip to select it.



Click a clip to select it

- Command-click multiple clips to select them all at once.



Command-clicking multiple clips selects those clips, even if they're separated by other clips

- Click anywhere in the background of the Timeline and drag a bounding box over multiple clips.



Dragging a bounding box over multiple clips selects all of them

## Using Range Mode

Range mode also uses the position of the playhead to make selections of a partial range of clips in the Timeline when using the Fairlight Editing console or keyboard shortcuts. You can also use this mode in conjunction with the pointer and keyboard shortcuts to make partial selections of clips.

- **If no tracks have been selected:** Clips that intersect the playhead are not selected. You can use the pointer to click a clip and select it in its entirety along with the track it's on. You can also use the pointer to drag on one or more clips to select a partial range in preparation for different editing operations. Whenever you make a selection with the pointer, Timeline In and Out points are set to the boundaries of the selection.

- **If tracks have been selected:** Selected tracks are brightened in the Timeline, and any clip on a selected track that intersects the playhead will be automatically highlighted brighter. Clips on de-selected tracks will be ignored. Dragging a crosshairs over one or more clips with the pointer overrides all automatic selections and selects the regions of the clips you drag over, and the tracks they're on.
- **If you set In and Out points:** Partial regions of all clips on all selected tracks between the In and Out points will be highlighted brighter. Clips on unselected tracks are ignored. While In and Out points are set, the playhead no longer makes automatic selections; you must set new In and Out points to modify the selection in this mode.

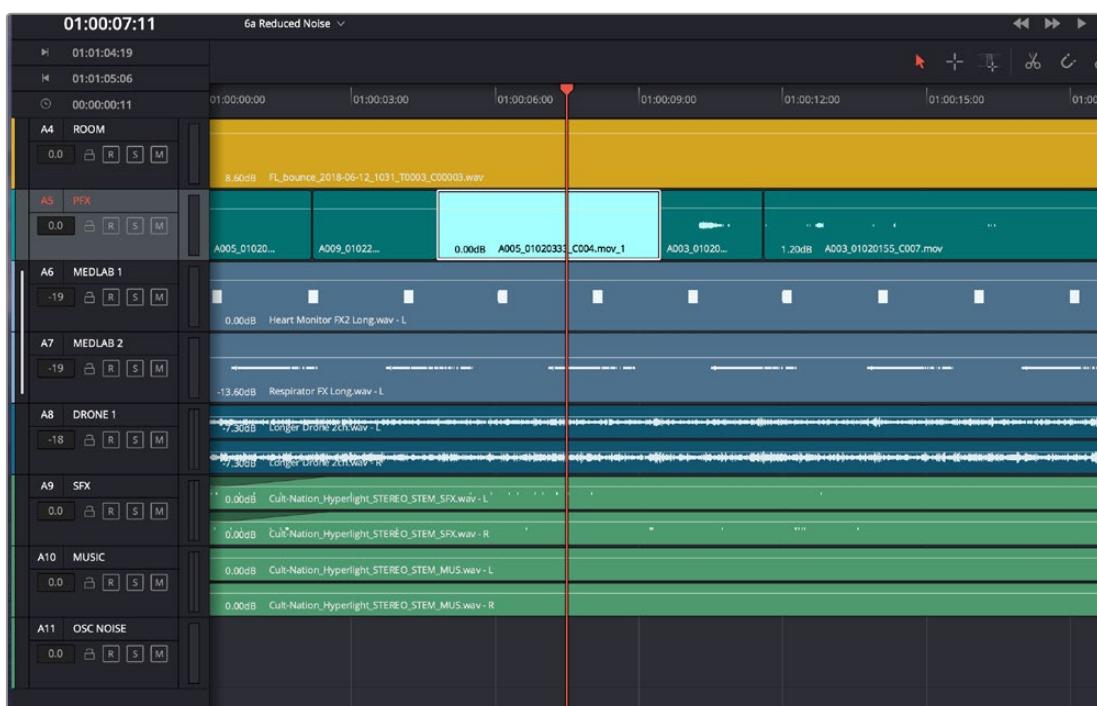
#### To choose Range mode:

- Click the Range Selection tool (the crosshairs) in the toolbar.
- Choose Trim > Range mode.
- Press R.

#### To automatically select clips in Range mode using the playhead position:

- 1 Press R to enter Range mode.
- 2 Select whichever tracks have clips you want to select.
- 3 Move the playhead to intersect those clips.

All clips that intersect the playhead, on the tracks you selected, define a selected range from the beginning of the first selected clip to the end of the last selected clip.

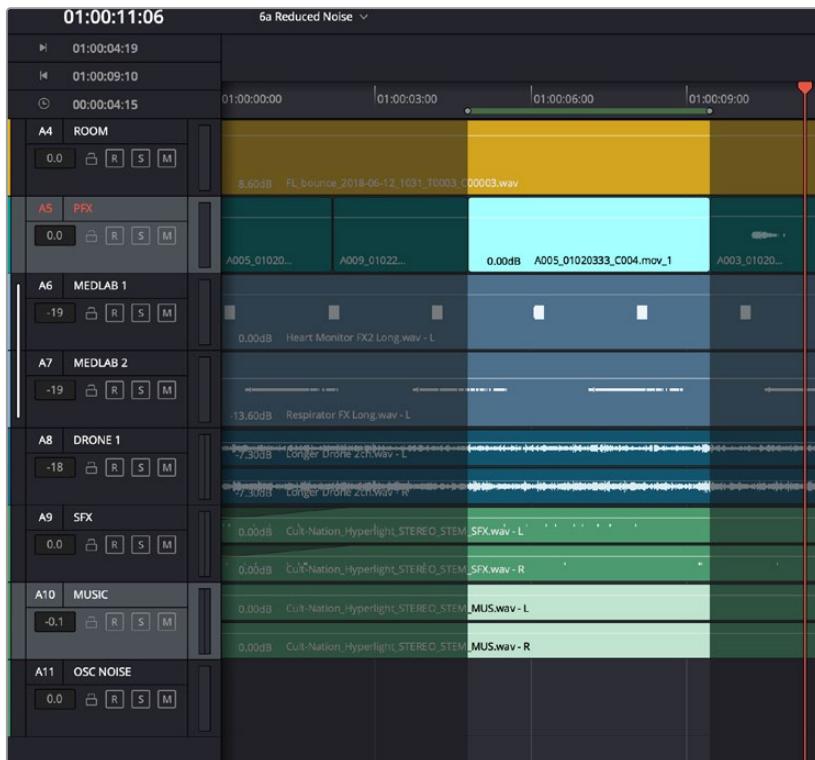


Clips intersecting the playhead on a selected track in Range mode are automatically selected

#### To create custom clip ranges using In and Out points in the Timeline:

- 1 Press R to enter Range mode.
- 2 Select whichever tracks have clips you want to select.
- 3 Move the playhead and press the I (Mark In) and O (Mark Out) keys to define a range in the Timeline.

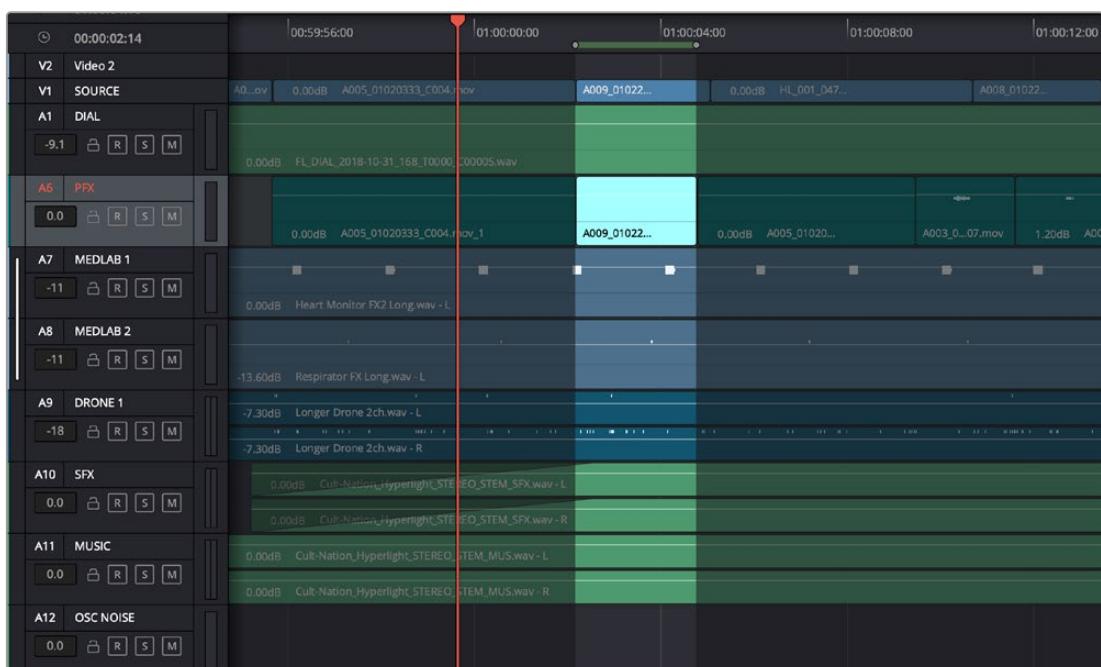
All clip segments that fall within the range of your In and Out points on selected tracks will be selected.



Using the Range mode to select clip segments on selected tracks using In and Out points

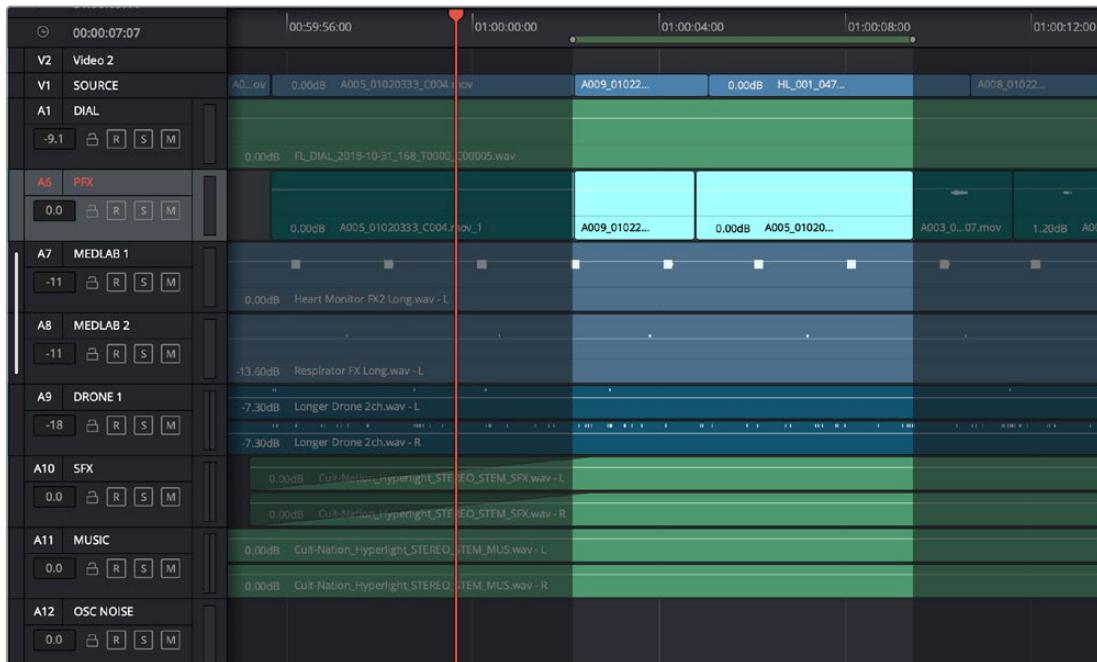
### Methods of selecting clips in Range mode via clicking and dragging:

- To select a single clip: Click any clip to select both it and the track it's on, and define a range in the Timeline that matches the duration of that clip.



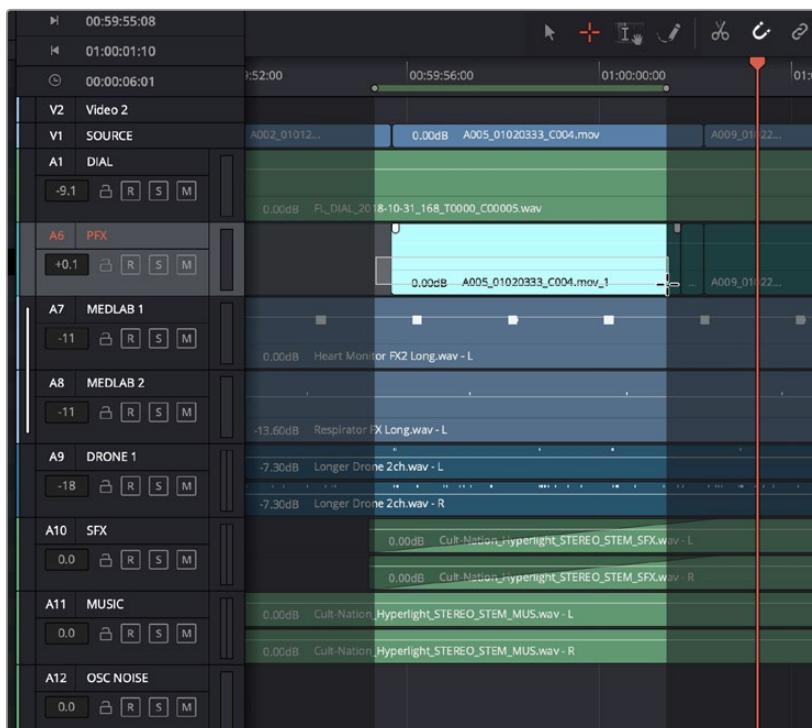
Click to select a single clip as well as the track it's on

- **To select multiple clips:** Command-clicking multiple clips to select them all at once defines a range in the Timeline that matches the total overlapping duration of all clips in the selection, from the beginning of the first selected clip to the end of the last selected clip.



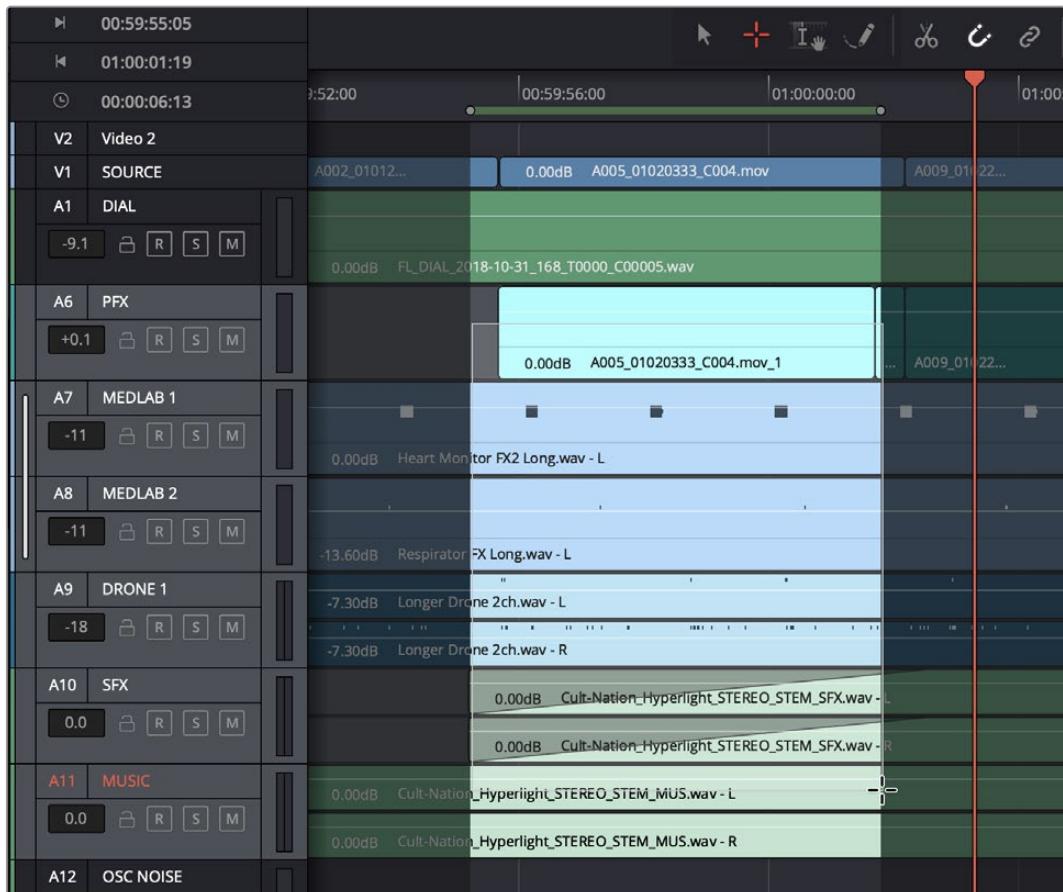
Range selection by Command-clicking multiple clips

- **To drag to select a range within a single clip:** With the Range Selection tool selected, drag anywhere on top of a clip to drag a bounding box over whatever segment of that clip (or of one or more clips) to select both that clip segment and the track it appears on. This is a good way of selecting part of a recording you want to move or delete.



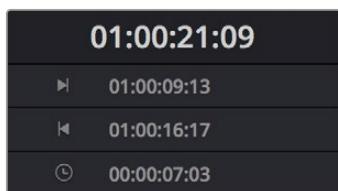
Ranged selection within a clip using a bounding box

- **To drag to select a range within multiple clips:** Click and drag a bounding box over whatever segment of one or more clips you want to select to select both those clip segments and the tracks they appear on. Or, Command-click and drag anywhere on top of any clip to drag a bounding box over whatever region of clips and tracks you like.



Ranged selection across multiple clips using a bounding box

In Range mode, whenever you make a selection, the In and Out point fields update with the range that you've created.



The range fields showing you the In and Out point values that define the current range

These ranges can be cleared if necessary.

#### **Methods of clearing In and Out points to clear the current range:**

- Press Option-I to clear the current In point.
- Press Option-O to clear the current Out point.
- Press Option-X to clear both the In and Out points.

# Using Focus Mode

Focus mode works as a Multi Tool that is designed for making efficient pointer-based selections and edits, in conjunction with an assortment of commands for extending and editing selections that can be triggered via customizable keyboard shortcuts. If you're editing with a mouse and keyboard, this mode is designed to let you work quickly by enabling a variety of different functions based on clicking different parts of each clip in the Timeline.

Additionally, an important aspect of working in Focus mode is that this is the only mode that lets you edit the Timeline during playback, which you can't do in Pointer and Range modes.

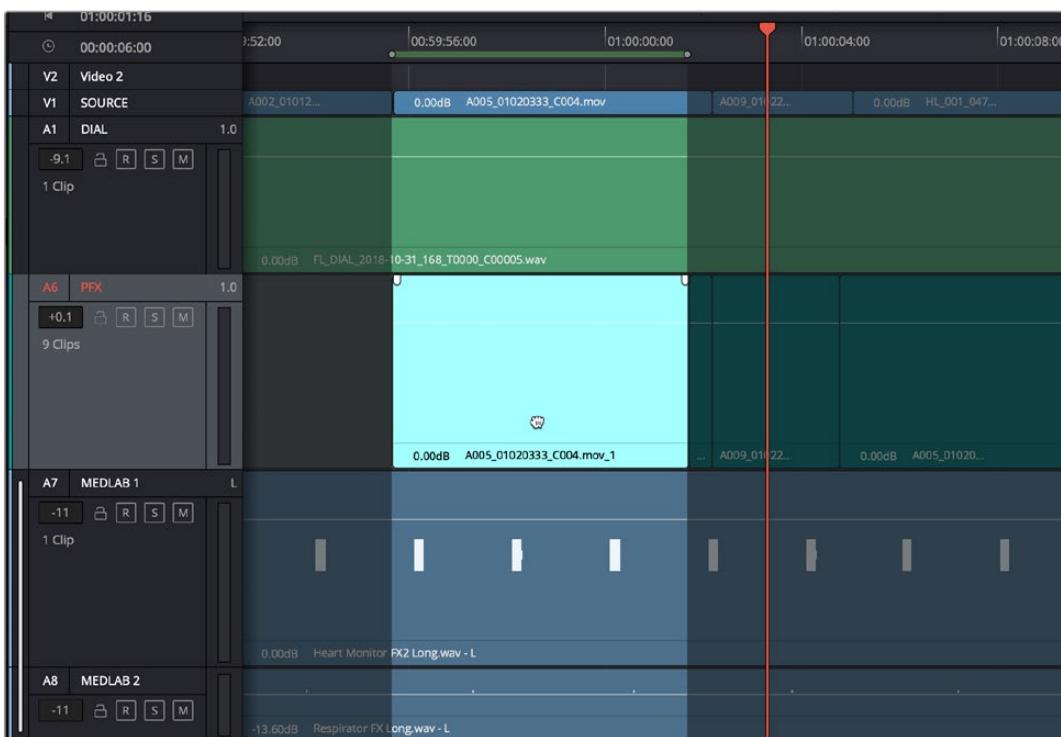
- **If no tracks have been selected:** Whenever you make a selection with the hand, Timeline In and Out points are set to the boundaries of the selection. Whenever you make a selection with the crosshairs, Timeline In and Out points are set to the boundaries of the region you dragged. In all cases, the tracks that contain selected clips and regions of clips are also selected.
- **If tracks have been selected:** Any clip on a selected track that intersects the playhead will be automatically highlighted brightly. Clips on de-selected tracks will be ignored. Dragging a crosshairs over one or more clips with the pointer overrides all automatic selections and selects the regions of the clips you drag over, and the tracks they're on.
- **If In and Out points have been set:** Clicking the bottom half of clips in the Timeline will select that clip and track, and the In and Out points will change to encompass that clip.

## To choose Range mode:

- Click the Range Selection tool (the crosshairs at the bottom of a track) in the toolbar.
- Choose Trim > Range mode.
- The keyboard shortcut is pressing - R.

## To select an entire clip using the Hand tool of the Focus mode:

- Move the pointer to the bottom half of a clip until a hand cursor appears, and click once to select that clip in its entirety.

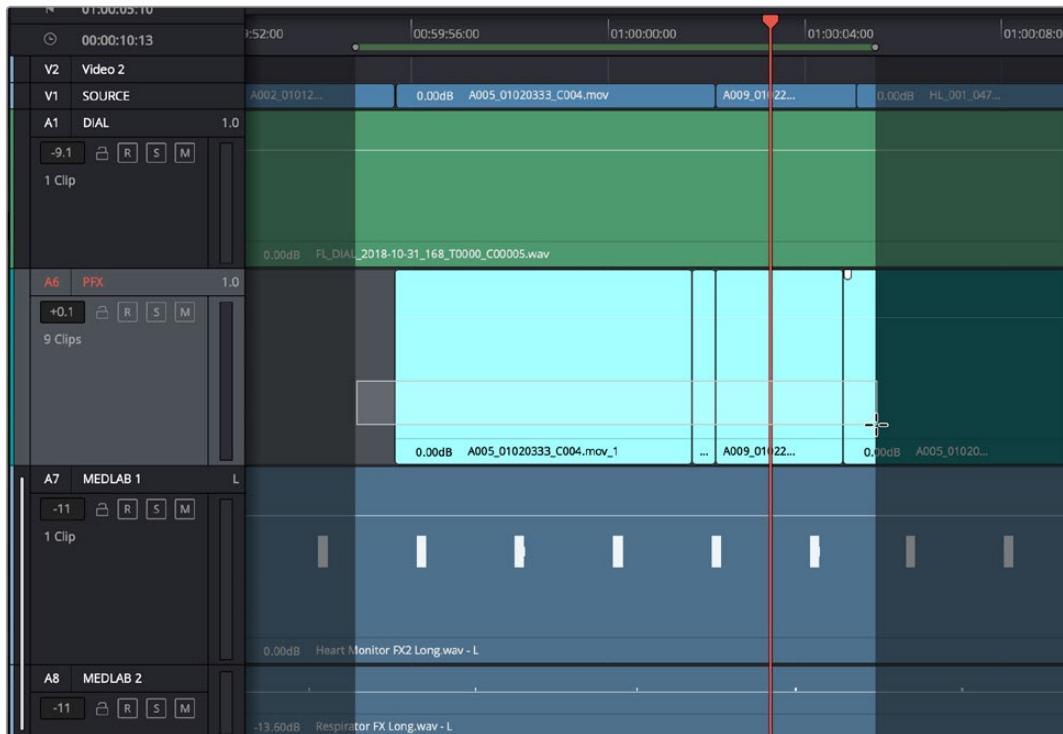


Clicking the bottom half of a clip to select that clip in Focus mode

- Use the Hand to Command-click multiple clips to make either contiguous or noncontiguous selections.
- Use the Hand to Shift-click multiple clips to make contiguous selections.

#### To select a range using the I-beam cursor of the Focus mode:

- Move the pointer to the top half of a clip until an I-beam cursor appears, and drag to select a region of one or more clips. As you drag, the playhead follows the Out point.

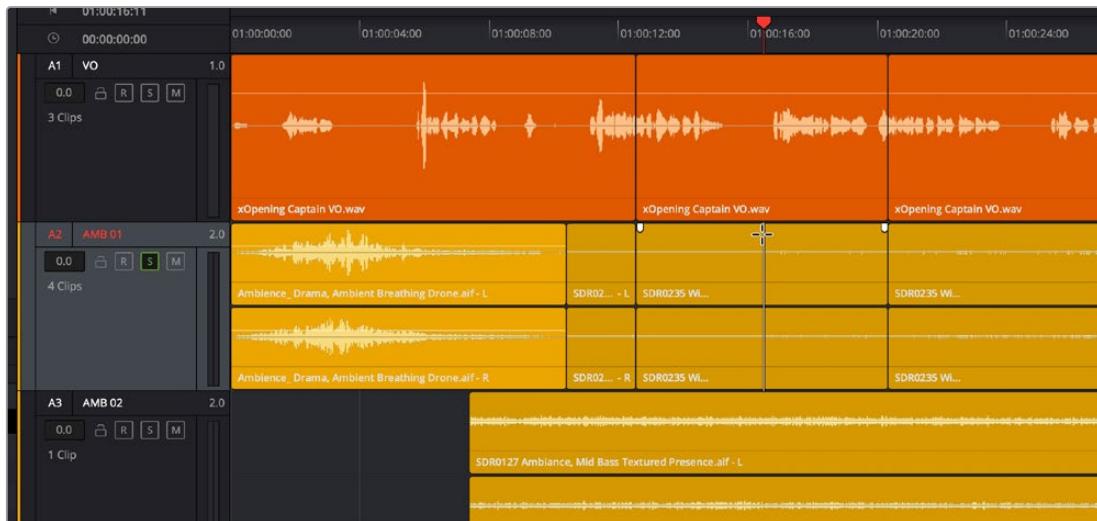


Dragging within the top half of a clip to select a region in Focus mode

- Using the crosshairs, you can also Shift-click to expand or contract the selected region across one or more clips.
- Using the crosshairs, you can also double-click to select an entire clip.
- Partial edit selections that contain a fade will copy with the fade intact.

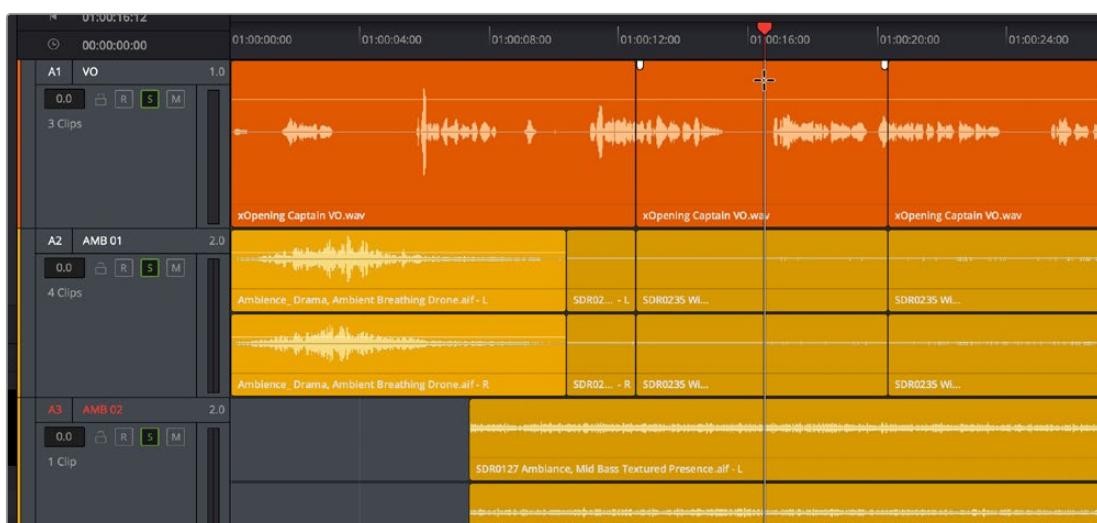
#### To select a single frame using the I-beam cursor of the Focus mode:

- Move the pointer to the top half of a clip until the I-beam cursor appears, and click once to place a point selection at the frame you clicked. The playhead also moves to this frame.



Clicking within the top half of a clip to make a single frame selection

- Using the I-beam cursor, you can also Command-click clips on higher and lower tracks to add them to the single frame selection, aligned at the same frame. For example, you could do this to split multiple clips at once. One frame selections can be on discontiguous tracks.



Command-clicking within the top half of multiple clips on multiple tracks to add single frame selections at the same frame

#### To move a selection using the Hand tool of the Focus mode:

- Once you've made a selection of one or more clips or regions using the Hand or I-beam cursor of the Focus mode, you can move the pointer to the bottom half of any selected clip and drag the selection to another position on the Timeline.

## Commands For Editing and Extending the Selection

Once you've made one or more selections in the Timeline, there are a series of commands you can use to modify or expand the selection. These commands were designed to be used alongside the Focus mode, but they can be used in any mode.

## Editing the Selection

There are six commands for changing the current selection, moving it from one clip or group of clips in the Timeline to another. These commands only move the range of clips/frames that are selected; they do not move the clips themselves. These commands are found within the Timeline contextual menu when you right-click on a clip.

- **Move To Previous/Next Edit:** Moves the current selection to the next clip/edit point to the left or right in the Timeline.
- **Move To Previous/Next Track:** Moves the current selection to the next track up or down in the Timeline.
- **Move to Previous/Next Frame:** Nudges the current selection to the left or right in the Timeline.

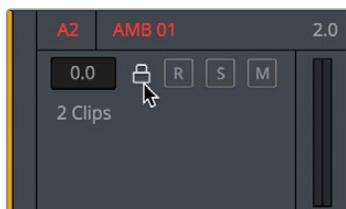
## Extend Edit Selection

There are four commands for expanding the range of what's selected in the Timeline, one clip or track at a time. These commands are found within the Timeline contextual menu when you right-click on a clip.

- **To Previous Edit:** Expands the selection to include the previous clip to the left in the Timeline.
- **To Next Edit:** Expands the selection to include the next clip to the right in the Timeline.
- **To Previous Track:** Expands the selection to include the clip in the next track up in the Timeline.
- **To Next Track:** Expands the selection to include the clip in the next track down in the Timeline.

# Locking Audio Tracks

Another step you can take to prepare before performing any kind of editorial operation is to lock tracks with media that you don't want to be affected by whatever it is you're about to do. For example, if you have a complex set of music edits on track A3 that you don't want to be affected by operations that will delete media that overlaps it, you can lock track A3 so those clips remain unaffected.



Locking an audio track

Clips on locked tracks cannot be moved, deleted, cut, or otherwise affected by editorial operations. Furthermore, parameters of clips on locked tracks cannot be edited in the Inspector. However, clips on locked tracks can be played back and mixed like any other audio clips.

### To toggle the lock or unlock state of audio tracks in the Fairlight page, do one of the following:

- Click any track's lock control to toggle lock on and off.
- Click any track's lock control and drag over the lock controls of other tracks in the Timeline to quickly lock or unlock several adjacent clips.
- Open the Index and click/drag one or more track lock controls to toggle lock on and off.

# Splitting Clips

In many situations you may find yourself splitting audio clips in order to separate multiple rolling takes.

## To split one or more clips in either Pointer or Range mode:

- 1 Select each track that has a clip you want to split.
- 2 Move the playhead to intersect the clips you want to split at the frame where you want the split to happen.
- 3 Do one of the following:
  - a) Choose Timeline > Split Clip or press Command-\ (backslash).
  - b) Choose Timeline > Razor or press Command-B.

When you split a clip in the Edit page, a through edit appears to show that you currently have an edit with continuous timecode running from the outgoing to the incoming half. This is called a through edit and is displayed in the Edit page with a dotted line running along its edge so you know that it's special. The Fairlight page doesn't display through edits as of the time of this writing.

## Linked Clips in the Fairlight Page

Clips can be linked together in the Fairlight page. When multiple clips are linked, Fairlight editing commands treat all linked clips as if they were a single clip. Anything you would do to a single clip is done to all linked clips at once. Selecting one item of a linked clip selects all items. Editing the In point of one item of a linked clip edits them all.

## To link two or more clips together:

- 1 Select all clips you want to link together.
- 2 Right-click one of the selected clips, and choose Link Clips from the contextual menu.  
A link indicator at the bottom left of every clip you've just linked shows their new linked status.

# Trimming Clips Without Rippling the Timeline

Most basic adjustments in the Fairlight page only affect the selected clip or region of the Timeline. Clips to the right of the adjusted area of the Timeline are generally left alone so as not to inadvertently change sync when you don't expect it. This section covers the most basic parts of the Fairlight page's "seven-point editing" paradigm.

## Multi-Point Editing Overview

Each clip in the Timeline has several draggable handles and click targets that let you perform different editing tasks using the pointer.

- **In point:** The left edge of the clip can be dragged to resize the beginning of the clip.
- **Out point:** The right edge of the clip can be dragged to resize the end of the clip.
- **Fade In handle:** A handle at the upper left-hand corner of the clip that only appears when the mouse is positioned over that clip, used to fade the audio in by dragging it to the right, or as part of a crossfade between two audio clips. Fades can be reset (eliminated) by double-clicking the fade handle.
- **Fade In curve:** A handle at the center of the Fade In curve that only appears when the curve is exposed, used to adjust the power of the fade in. This handle can be dragged vertically to change the X-Level of the fade, and horizontally to change the X-Point of the fade. Fade curves can be reset by double-clicking the curve handle.
- **Fade Out handle:** A handle at the upper right-hand corner of the clip that only appears when the mouse is positioned over that clip, used to fade the audio out by dragging it to the left, or as part of a crossfade between two audio clips. Fades can be reset (eliminated) by double-clicking the fade handle.
- **Fade Out curve:** A handle at the center of the Fade Out curve that only appears when the curve is exposed, used to adjust the power of the fade out. This handle can be dragged vertically to change the X-Level of the fade, and horizontally to change the X-Point of the fade. Fade curves can be reset by double-clicking the curve handle.
- **Level:** Considered an editorial characteristic, the level of any given audio clip can be adjusted via a level overlay running across each clip. The level of any clip can be reset to the default 0.0 dB by double-clicking the level overlay.
- **Position:** Clicking anywhere within the middle of a clip in Pointer or Range mode, or on the bottom of Focus mode, lets you drag that clip either forward or backward in time, or to another track.

## Resizing the In and Out Points of a Clip

Trimming the head or tail of a clip in the Fairlight page means to resize the In or Out point of that clip, making it shorter or longer accordingly.

### To resize the beginning or end of a clip:

- **To shorten or lengthen clips:** Move the pointer over the beginning or end of a clip, and when it turns into the Resize cursor, drag the In or Out point to the left or right to change the clip's length. As you drag the In or Out point of an audio clip in the Fairlight page, an overlay appears showing the waveform of all available media at the head (if you're dragging the In point) or tail (if you're dragging the Out point) of the clip you are resizing.



The overlay seen when resizing the In point of an audio clip in the Fairlight page

**To quickly resize the beginning or end of a clip to the very beginning or end of available media:**

- Double-click the In point of the clip to move the In point to the very beginning of that clip's media.
- Double-click the Out point of the clip to move the Out point to the very end of that clip's media.

If you resize a clip's In or Out point to overlap one or more neighboring clips in the Timeline, the overlapping parts of the neighboring clips will be overwritten by the clip you've resized.

## Trim Start and Trim End

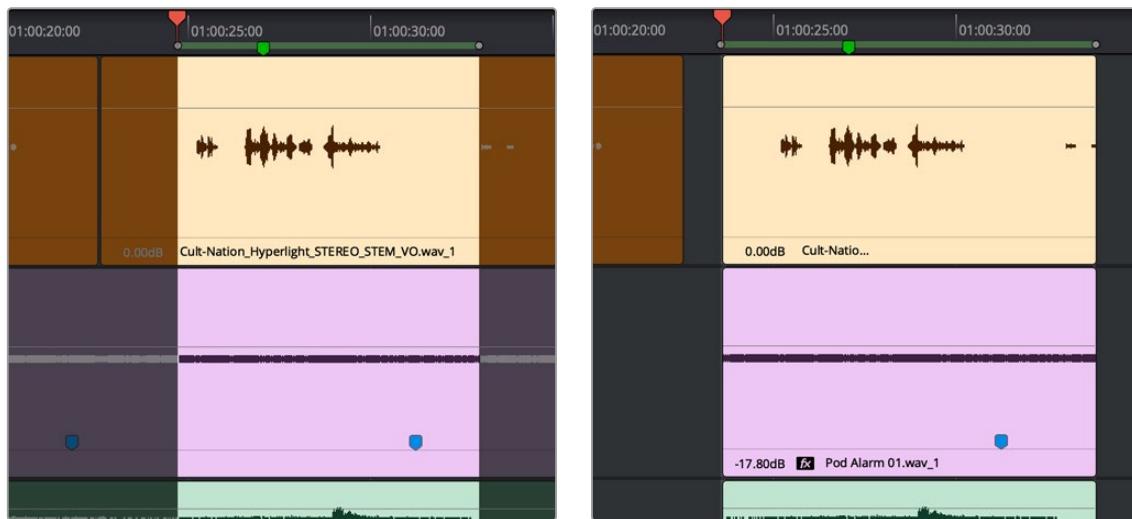
The Trim > Trim Start (Shift-[) and Trim End (Shift-]) commands let you move the In or Out point of all clips that intersect the playhead as either a ripple operation (in Trim mode) or a resize operation (in Selection mode). You do not need to make a selection to use Trim Start and Trim End, making these commands fast to use in the right situation. A classic use of Trim End is when you have several superimposed clips of different lengths that you want to either start or end at the same time.

- Trim Start resizes or ripples (depending on what mode you're in) all clips that intersect the playhead, so that each clip's In point is moved to the current playhead position.
- Trim End resizes or ripples intersecting clips so that each intersecting clip's Out point is moved to the current playhead position.

Clips that don't intersect the playhead are not affected. Furthermore, you can exclude clips on specific tracks from this operation by locking those tracks.

## Trim to Selection

The Trim > Trim to Selection (Shift-Command-T) command simultaneously trims the heads and tails outside of a selection of one or more clips so that the selection is all that remains. This command is found within the Timeline contextual menu when you right-click on a clip.



(Left) A selection that includes parts of two clips, (Right) The result of using Trim to Selection to eliminate the heads and tails outside of this selection.

# Moving and Overwriting Clips

There are a number of ways to move clips in the Timeline. Clips can be nudged and moved within a track, changing the timing of that clip's position in the edit or they can be moved up or down to other tracks.

## To move clips in the Timeline, do one of the following:

- **To move one or more selected clips in the Timeline:** Drag any clip in the Timeline to any other position. If you're in Focus mode, you must drag using the bottom half of the selection. If you drag a clip to overlap another clip, the clip you're dragging overwrites the clip you're moving it over.
- **To nudge one or more selected clips in the Timeline by frame using the keyboard:** Make a selection, then press the Comma key (nudge 1 frame left) or Period key (nudge 1 frame right) to roll the selected edit to the left or right. Shift-Comma and Shift-Period nudges by 5 frames.
- **To move one or more selected clips up or down to other tracks at the same time:** Make a selection, then hold the Shift key down while dragging one of the selected clips up or down in the Timeline to lock their position in time while moving them to other tracks. Or, you can hold the Option key down and press Up or Down Arrow.

## Sync Offset Indicator

Audio clips in the Fairlight page display an "out-of-sync" or sync offset indicators when they're moved out of sync with the video items they're linked to.

## Snap to Playhead

While in Focus Mode, you can snap the head (beginning) or tail (end) of an audio clip to the playhead location (destination). This is useful when you want to line up audio with an onscreen event, such as a ball smashing a window.

Although "Automation follows edit" works with this function, there are some things to consider:

- This function works even if the playhead is offscreen.
- Clips can only be snapped individually and to a location on the same track.
- A "snapped" clip overwrites existing audio at the destination, even if the affected audio is on the top layer of a layered clip.
- A group of clips on a single track selected in Range mode using the playhead position can also be a destination. However, you would need to snap the clip to the side of the playhead that doesn't have pre-existing audio you want to keep. For more information Range Mode, see "Using Range Mode."

### To Snap to the clip head to the playhead:

- 1 Activate Focus Mode and move the playhead to the intended destination.
- 2 Hold down Command-Option and click the clip you want to move.

The Audio is now in the new location with the head of the clip snapped to the playhead.

### To Snap to the clip tail to the playhead:

- 1 With Focus Mode active, move the playhead to the intended destination.
- 2 Hold down Command-Option-Control and click the clip you want to move.

The Audio is in the new location with the tail of the clip snapped to the playhead.

## Subframe Nudging

In the Preferences/User/Editing panel under General Settings you can change the nudge amount by either subframes or by milliseconds for the Fairlight page. These are completely user definable so that you can type your desired nudge amount into the corresponding box.

Be sure to fully investigate this settings panel, which includes pre-roll and post-roll settings and other useful Fairlight adjustments.

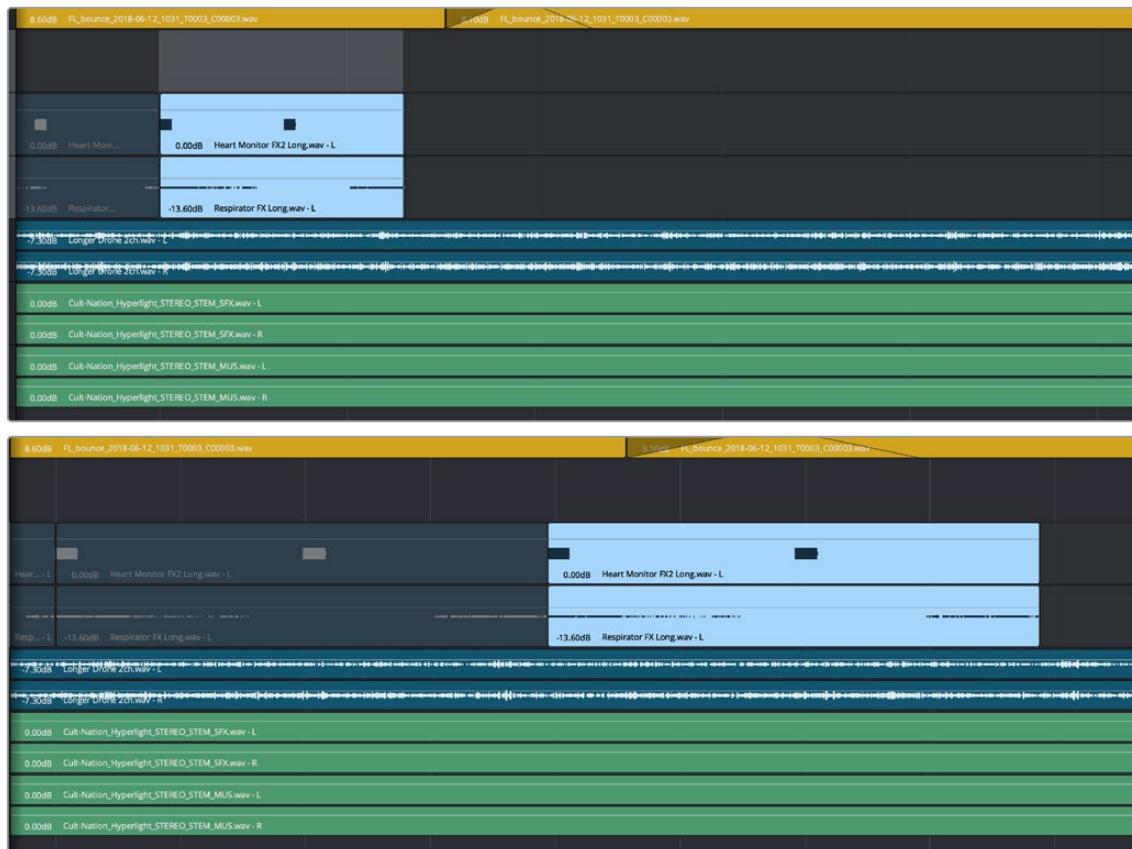
## Slipping

Formerly called re-syncing, slipping an audio clip keeps that clip in the same place in the Timeline while changing the range of media that appears in that spot. Slip edits do not change the duration of the overall Timeline, and they don't move the clip's position relative to the other clips in the Timeline. Slipping simply changes the range of media that clip represents.

**NOTE:** While available in previous versions of Fairlight, slipping is not available at the time of this writing.

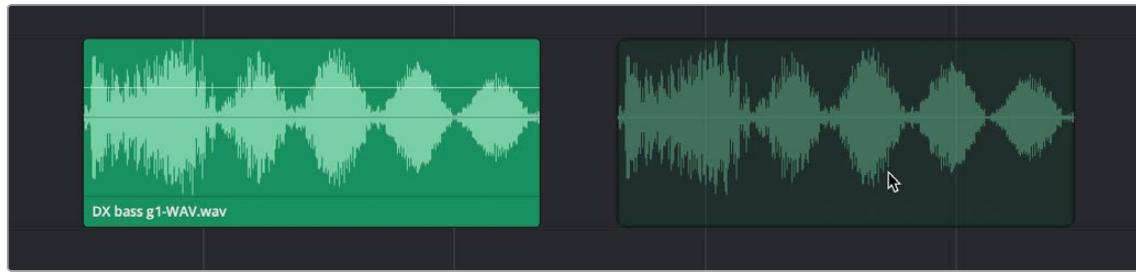
## Duplicating Clips

The Duplicate Selection command duplicates one or more selected clips, placing the duplicates immediately after the Out point of the selection. If you're duplicating a region of a clip with tails, or a clip that's in between other clips, the duplicated selection will overwrite whatever is to the right of the current selection, for the duration of the duplicate.



Using the Duplicate Selection command to duplicate a selected region

If you hold the Option key down while dragging a clip in the Timeline, you'll place a duplicate clip wherever you drop it.



Option-dragging to duplicate a clip in the Timeline

## Disabling and Re-Enabling Clips in the Timeline

Sometimes there's one or more audio clips in the Timeline that you don't want to play along with the rest of the edited sequence, but you don't want to remove from the Timeline either, in case you change your mind later. For this reason, it's possible to disable clips, effectively turning them off without removing them. Previous versions of Fairlight referred to this operation as Mute clip.

Disabled clips appear dimmed in the Timeline. They don't play back, they're not rendered, and they're not output to video. However, their position is preserved in the Timeline, so you can always re-enable them at a later time if you change your mind and decide you want to use them.

Disabled clips appear in the Timeline in gray.

### To disable or re-enable one or more selected clips:

- Right-click part of the selection and choose Enable Clip from the contextual menu.
- Choose Clip > Enable Clip.
- Press D.

## Deleting Audio Clips and Regions

You can delete any clips or clip regions that are selected, in either Pointer or Range modes, by pressing the Delete key, or by right-clicking a clip and choosing Delete Selected from the contextual menu. By default in the Fairlight page, deleting anything leaves a gap. Under the Edit Menu > Ripple Delete you can ripple delete selected clips changing the placement of all of the clips that follow.

# Cut, Copy, and Paste

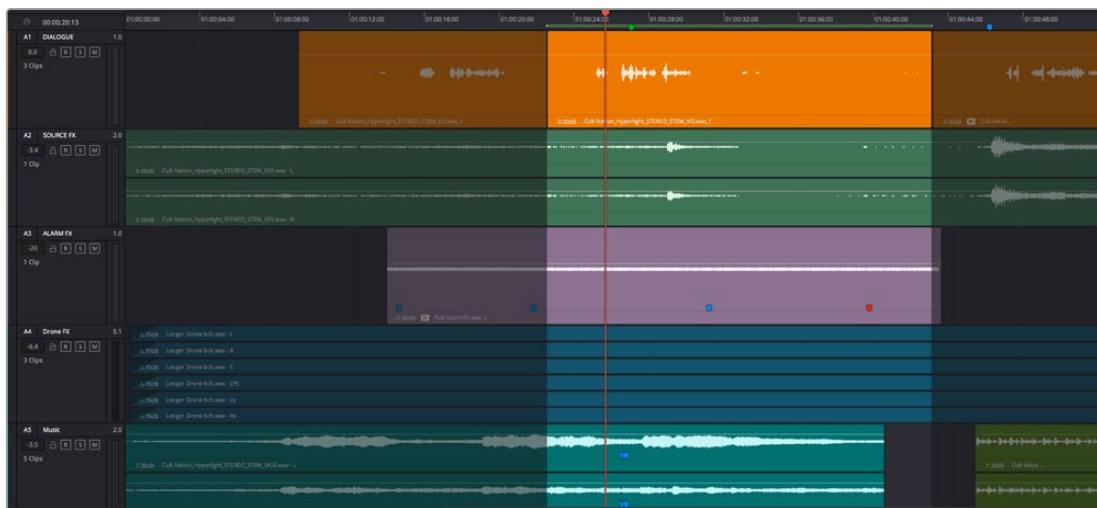
The Fairlight page has a unique copy and paste methodology that takes advantage of the “ghost” overlays that are used for the waveforms of selected audio clips. This method makes it easy to copy and paste clips using keyboard shortcuts and the JKL keys.

## Conventional Cut, Copy, and Paste

The typical cut, copy, and paste commands expected of every software application are available in the Fairlight page, but with a unique twist that’s particularly advantageous for users of the Fairlight control surface, or for anyone who uses the JKL transport key shortcuts to move around the Timeline for keyboard-driven editing.

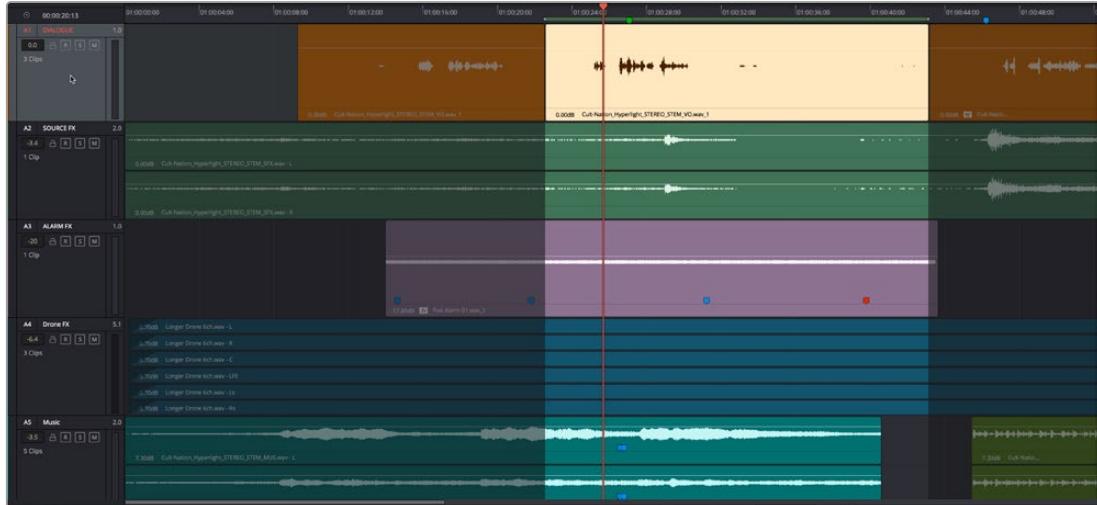
### To cut or copy and paste either all or part of a clip:

- 1 If you’re cutting or copying a whole clip, then choose either the Selection (press A) or Range Selection (press R) mode. If you’re cutting or copying part of a clip, then make sure you’re in Range mode (press R).
- 2 To use the playhead to make a clip selection, select the track that contains the clip you want to copy or cut. If one or more tracks are already selected, you can use the Control-Option-Up or Down Arrow key shortcuts to move the track selection state up or down to the tracks with the clip you want to cut or copy.



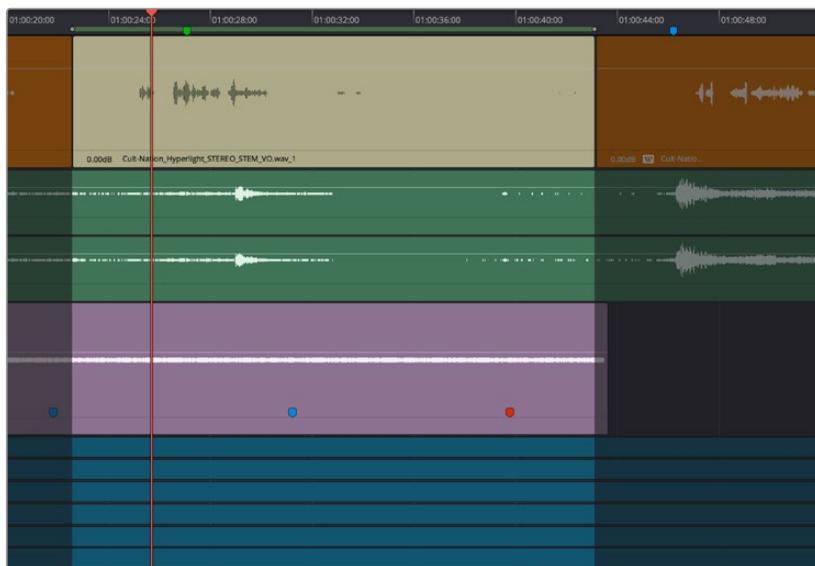
Selecting the track with a clip you need to cut

- 3 Do one of the following:
  - a) To cut or copy a whole clip, move the playhead so that it intersects the clip you want to cut or copy. If the playhead intersects a clip on a selected track, that clip should become selected. You should note that even if you use the mouse to select a clip without selecting a track first, you should still move the playhead to intersect the clip you’re copying or pasting, as this sets up an important reference point for the operation.
  - b) To cut or copy a segment of a clip, move the playhead so that it intersects the clip you want to cut or copy. If the playhead intersects a clip on a selected track, that clip should become selected. Then, using JKL and the I (In) and O (Out) keys, mark a range in the Timeline that includes the segment of the clip you want. That segment should appear highlighted as a result.



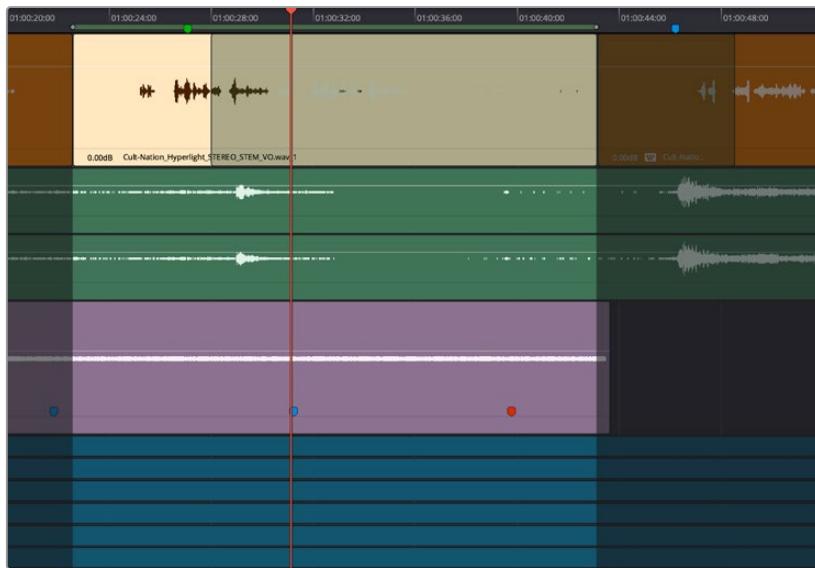
Cutting or copying a segment of a clip using In and Out points

- 4 Making sure the playhead is over the section of the waveform that you want to use as the frame to move the clip by, press Command-X to cut or Command-C to copy that clip (you can also right-click a clip and choose Copy or Cut). That clip will immediately become highlighted.



Cutting or copying a clip at the position of the playhead

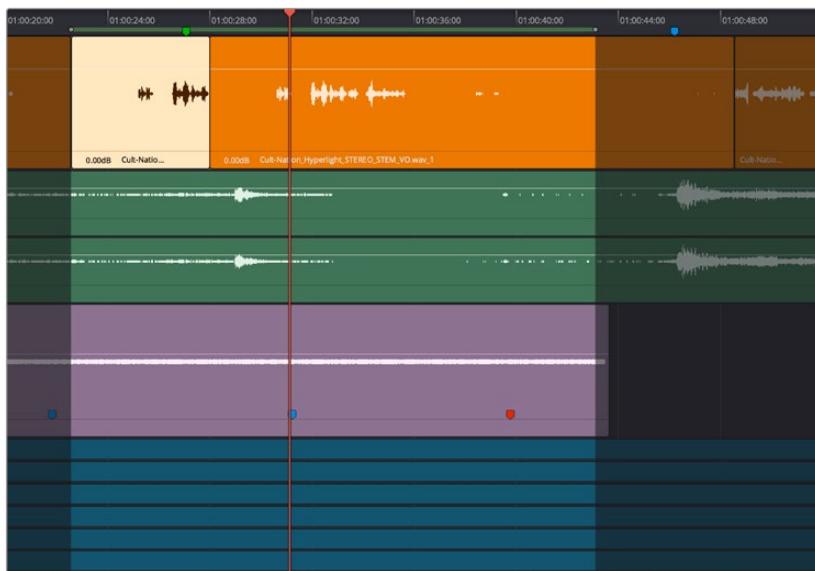
- 5 At this point, there are two things you can do to position the cut or copied clip to the position in the Timeline at which you want to paste it:
  - a) Moving the playhead will now also move the clip you cut or copied, shown as a ghost clip with waveform that's "attached" to the playhead at the frame you chose. Whether you drag the playhead with your mouse or use JKL to move the playhead through the Timeline, the cut or copied clip will move along with it, so that moving the playhead repositions the cut or copied clip on that track.
  - b) If you want to move the cut or copied clip to another track, use the Control-Option-Up or Down Arrow key shortcuts to change the selected track; the ghost clip will move along with change in track selection.



Positioning the cut or copied clip before you paste it

This way, you can use the playhead to align the ghost waveform with other audio clips surrounding it in preparation for pasting it.

- 6 When the clip is positioned where you want it, press Command-V to paste the clip at the position you've chosen (you can also right-click a track and choose Paste from the contextual menu). The clip becomes solid, and you're finished.



The pasted clip

Using this method of cutting and pasting makes it quick to cut or copy clips using only keyboard commands, with the clip's ghost overlay making it easy to precisely align the clip you're pasting to fit exactly where you need it to, perfectly in sync.

# Using the Cut/Copy Head and Tail Commands

Four additional commands make it easy to cut or copy portions of one or more clips that intersect the playhead, either from the In point to the current position of the playhead (the Head), or from the current position of the playhead to the Out point (the Tail).

## To cut or copy the head or tail of a clip, and paste the result:

- 1 Using these commands, there's no need to make a partial selection, so you can use either the Selection (press A) or Range Selection (press T) modes.
- 2 Select the track that contains the clip you want to copy or cut. If one or more tracks are already selected, you can use the Control-Option-Up or Down Arrow key shortcuts to move the track selection state up or down to the tracks with the clip you want to cut or copy.
- 3 Move the playhead so that it intersects the clip you want to cut or copy at the frame you want to define, either the end of the head or the beginning of the tail. If the playhead intersects a clip on a selected track, that clip should automatically become selected. You should note that even if you use the mouse to select a clip without selecting a track first, you should still move the playhead to intersect the clip you're copying or pasting, as this sets up an important reference point for the operation.
- 4 Choose Edit > Cut/Copy Head/Tail to cut or copy the portion of the selected clip you want to paste. That portion of the clip will immediately become highlighted.
- 5 At this point, there are two things you can do to position the cut or copied head or tail of the clip to the position in the Timeline at which you want to paste it:
  - a) Moving the playhead will now also move the clip you cut or copied, shown as a ghost clip with waveform that's "attached" to the playhead at the frame you chose. Whether you drag the playhead with your mouse or use JKL to move the playhead through the Timeline, the cut or copied clip will move along with it so that moving the playhead repositions the cut or copied clip on that track.
  - b) If you want to move the cut or copied clip to another track, use the Control-Option-Up or Down Arrow key shortcuts to change the selected track; the ghost clip will move along with change in track selection.

This way, you can use the playhead to align the ghost waveform with other audio clips surrounding it in preparation for pasting it.

- 6 When the clip is positioned where you want it, press Command-V to paste the clip at the position you've chosen (you can also right-click a track and choose Paste from the contextual menu). The clip becomes solid, and you're finished.

# Paste and Remove Attributes

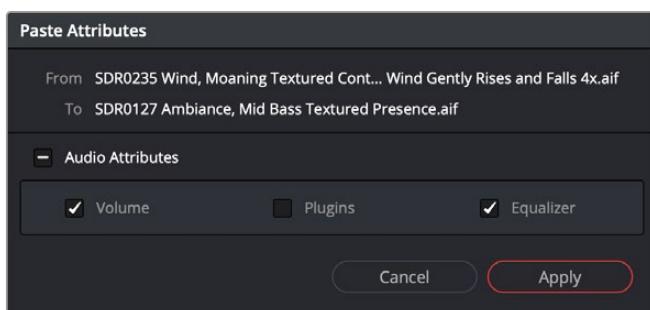
The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio parameters and effects, similar to the same commands on the Edit page.

## Clip Attributes Naming

By double-clicking any clip in the Timeline, you can access the Clip Attributes window to rename the clip. You can still access this window with a right-click, revealing the drop-down menu of options.

## Copying and Pasting Clip Attributes

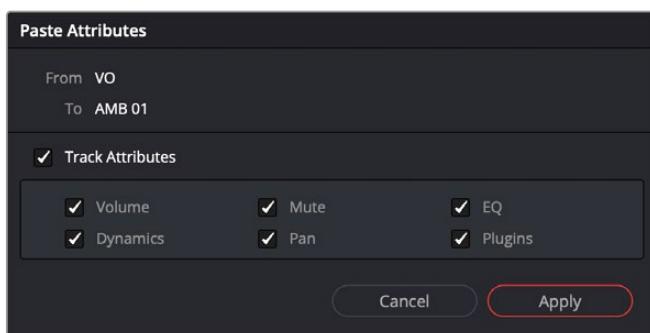
For clips, this works as simply as copying a clip, then selecting one or more audio clips and right-clicking another clip and choosing Paste Attributes from the contextual menu. A dialog appears letting you choose which audio attributes you want to paste before clicking Apply.



The Paste Attributes dialog in the Fairlight page

## Copying and Pasting Track Attributes

For tracks, it works a little differently. Right-click on a track header and choose Copy Attributes to copy all track settings and effects. Then, select one or more other track headers, right-click the selection, and choose Paste Attributes. A dialog appears letting you choose which track attributes you want to paste before clicking Apply.



The Paste Attributes dialog in the Fairlight page,  
used to copy attributes from one track to another

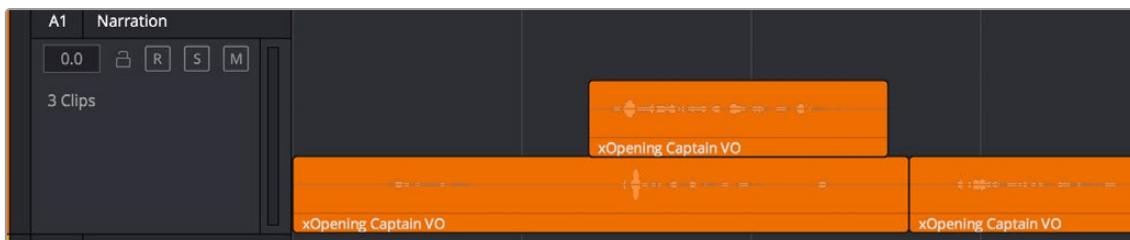
## Removing Attributes

For either clips or tracks, you can right-click and choose Remove Attributes to open a dialog with which to choose which attributes you want to reset to their default settings.

**NOTE:** By choosing the Volume check box in Remove Attributes you will delete all of the Clip Gain keyframes that have been added to a clip.

## Audio Clip Layering

Audio layering is a special audio editing mode that lets you superimpose multiple audio clips in the same track, with audio clips edited into the top layers muting overlapping sections of audio clips appearing on lower layers. With audio layering enabled, superimposed audio clips are treated similarly to superimposed video clips that have opacity set to 100%, with clips on top obscuring (or muting) clips underneath.



An example of multiple audio performance editing using layers, where the top layer mutes overlapping sections of audio clips in lower layers

Audio layering is incredibly useful for any situation where you're combining segments of multiple takes together to create a single voiceover, audio vocal track, or dramatic performance, as you can choose which segments to use via their superimposed position in the stack of clips appearing in that track, while at the same time you're preserving the other takes underneath in case you might want them later.

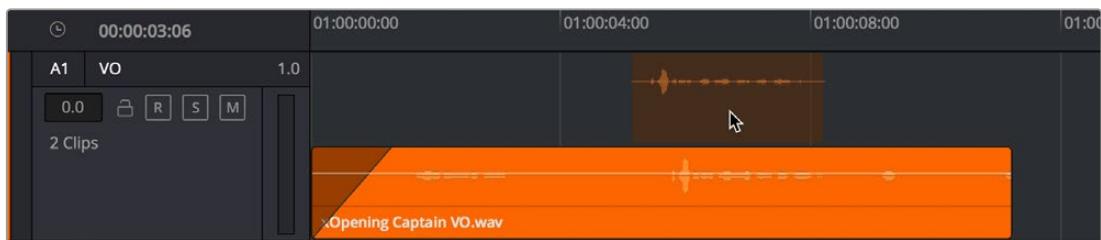
**TIP:** Track layering can be used on the Edit page as well.

### To enable audio layering:

- Choose Timeline > Layered Audio Editing so that a check mark appears by the command. All overlapping audio will be layered instead of overwritten from that point forward.

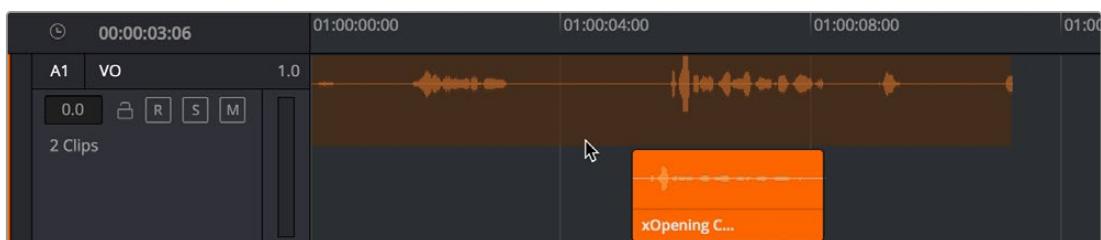
## To view audio layering:

- 1 Choose View > Show Audio Track Layers to reveal track layers for each audio track (and each lane within a given audio track) in the Timeline. When layering is on, space appears at the top of each track in the Timeline which provides a region into which you can edit layered audio clips.
- 2 To edit an audio clip or segment as a layer within a particular audio track, drag it from elsewhere in the Timeline or from the Media Pool, and drop it into the empty area above whatever audio is already in that track.



Dragging an audio clip to become layered above another clip

- 3 Edit the different superimposed layers of audio such that the segments of each take that you like are on top. Only the topmost clip segments will be audible. Audio segments that overlap underneath are silent. To put another layer on top, drag it from its current position to the empty area at the top of the track.



Dragging a bottom audio layer to appear on top

- 4 When you're finished editing clips in track layers, choose View > Show Audio Track Layers again to hide the individual layers, so that only the topmost clips appear as a flat sequence in each track and lane.

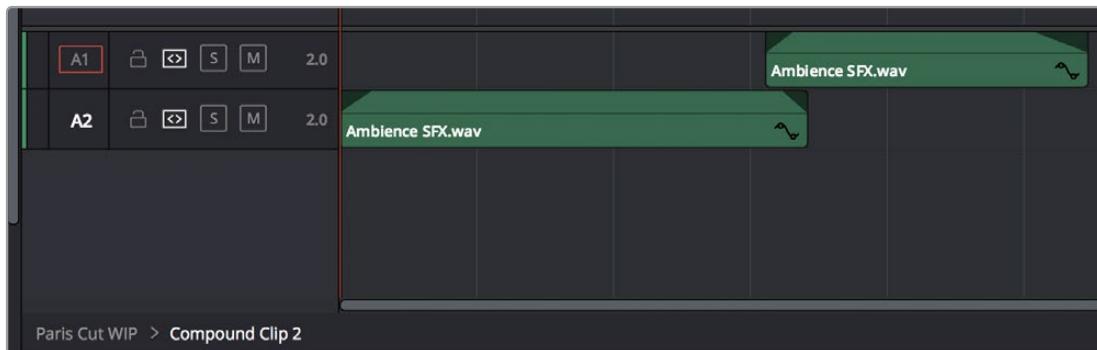


Hiding layers makes all audio layers appear on a single track, as if the top clips are overwriting what's underneath, except the muted material underneath is preserved

# Audio Compound Clips

DaVinci Resolve supports audio compound clips, which are created just like any other compound clip, by selecting multiple audio clips, right-clicking one of them, and choosing New Compound Clip. Alternately, compound clips with video clips may now contain multiple audio items as well.

When compound clips containing audio are opened in the Edit or Fairlight pages by right-clicking an audio compound clip and choosing Open in Timeline, breadcrumb controls appear beneath the Timeline that let you exit the compound clip and get back to the master Timeline.

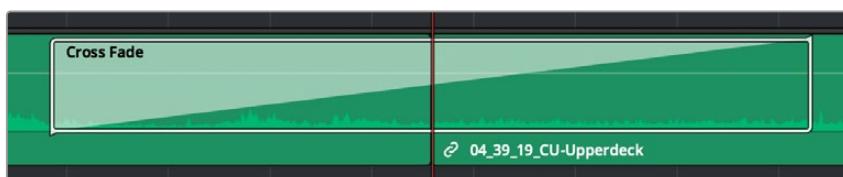


Opening an audio compound clip; note the path control at the bottom left of the Timeline

# Audio Crossfades

You can add Cross Fade transitions to any edit point between two audio clips that have enough handles similarly to how you add video transitions, by dragging and dropping from the Effects Library, by right-clicking an edit and choosing an option from the contextual menu, or by selecting an audio edit point and choosing Timeline > Add Audio Only Transition (Shift-T).

Cross Fade transitions are a quick and easy way to fade the volume of the outgoing clip down while simultaneously fading the volume of the incoming clip up, letting you create a smooth aural transition between two audio clips.



An audio Cross Fade transition applied between two clips

You can double-click a Cross Fade transition to open it into the Inspector, revealing the following parameters:

- **Duration:** The duration of the transition, shown in both seconds and frames.
- **Alignment:** A drop-down that lets you choose the transition's position relative to the edit point it's applied to. Your choices are "End on Edit," "Center on Edit," and "Begin on Edit."

- **Transition style:** You can choose -3dB, 0dB, or +3dB to set both the Fade In and Fade Out levels to the same value. For more information on what these levels mean, see the following parameter.
- **Fade In/Fade Out levels:** There are three options that affect the incoming and outgoing halves of the Cross Fade effect independently. 0dB applies a linear fade (this is the default). +3dB applies a boosted curve; when applied to both Fade In and Fade Out, this can compensate for diminished levels in the middle of a Cross Fade. -3dB applies an attenuating curve, which deliberately lowers the level of the Cross Fade.

Crossfades can be created and edited on both the Edit and Fairlight pages.

## Fades and Crossfades

Part of audio editing in the Fairlight page is the use of fades and crossfades. This section shows you how to create these effects for smoothly segueing from one audio clip to another.

Basic fades can be created on Dolby Atmos master files placed on a timeline as a clip. However, complex fades and batch fades are not supported.

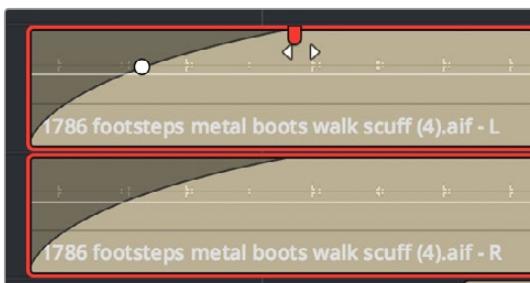
### Using Fades

Like the Edit page, each audio clip has fader handles that appear at the upper right and left corners of a clip you're hovering the pointer over.



Fader handles appear when you hover the pointer over a clip

Pulling these handles out creates a fade effect with a duration equal to the length you extended the handle.



Creating a fade effect by pulling out one of the fader handles

Once you've created a fade effect, you can adjust the curve of the fade by dragging the handle that appears right on top of the fader curve. Dragging the handle up and down affects the angle of the curve, and dragging the handle left and right affects the shape of the curve. In this way, you can create all manner of fade effects.



Adjusting the curve of the fade

## Batch Fade and Crossfade Editor in the Fairlight Page

Multiple fades are available to multiple clips with multiple tracks selected, significantly increasing fade functionality. The Batch Fades window has fade shapes for Fade In, Cross Fade, and Fade Out. The Fade Length is user definable by frame for each of these fade types, and there is an option to overwrite existing fades on the highlighted clips.



All of the settings in the Batch Fades window

There are six options per Fade type for precise usage. When adding Fades between sources, it's important to determine the shape so that only the desired media is included in the fade. The curves indicate the ramping slopes of the fade.

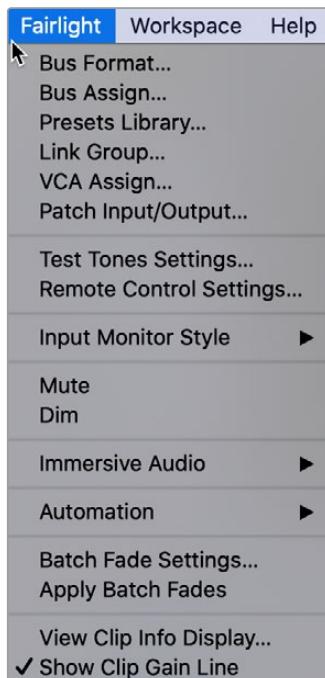
Each box has similar controls for affecting the individual Fade type.

- 1 Next to the Fade type name is the on/off toggle
- 2 There are six Fade curves to create the precise fade needed.
- 3 A Length box determines how many frames the fade will extend,
- 4 A click box to overwrite any previous fades, if needed.

The Crossfade box has three additional controls.

- 1 Equal Power maintains the signal level through the fade.
- 2 Equal Gain is used when crossfading media that could phase when combined. For instance, if a music cue is crossfaded at the mid-point of the fade, there could be a jump in level or added phasing issues. Using this option maintains the gain across the fade for that type of media.
- 3 Unlinked allows for a different curve type on either side of the crossfade.

This window will retain the settings that were last made so once a series of Fade types have been chosen, then Batch Fades can be made without opening this window and can be accessed via the Fairlight menu with a single click across highlighted regions. The Apply Batch Fades in the Fairlight menu are applied with the settings made in the Batch Fades window.



Batch Fade options in  
the Fairlight menu

This graphic shows highlighted clips and tracks ready to have Batch Fades applied.



Tracks and clips highlighted for Batch Fades

The graphic below shows how the Batch Fades are applied. Clips that are not connected have Fade In and Fade Out applied. Clips that are connected have Crossfades applied. The Batch Fades window determines each of the Fade parameters and then applies them to all of the selected clips. In this example, the Overwrite box was unchecked. Compare the fades that were already there and see that they retain their original Fade length and shape.

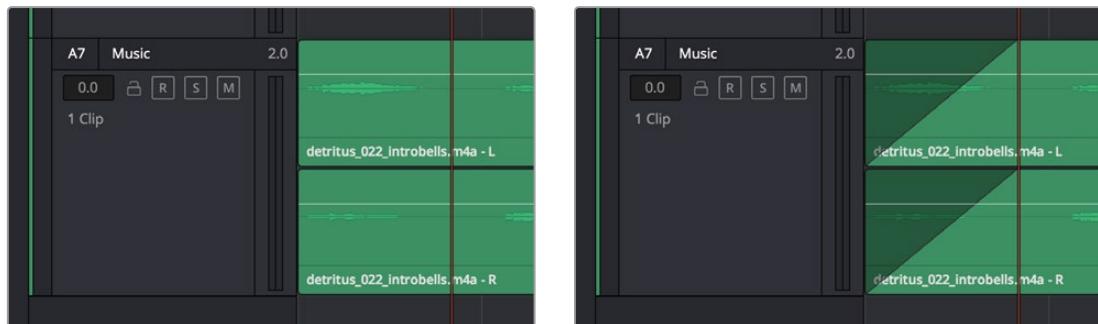


All of the highlighted clips have been faded according to the Batch Fades window.

**NOTE:** If the media is too short, a dialog box will alert you that there are insufficient handles and that the fade could not be created. You can then choose to trim clips, skip clips, or cancel the Batch Fade. If you cancel, you can then alter the settings to better suit the media.

## Fade In and Out to Playhead

A pair of commands in the Trim menu let you move the playhead over a clip, and use the playhead position to “Fade In to Playhead” or “Fade Out to Playhead.” These commands work in both the Edit and Fairlight pages.



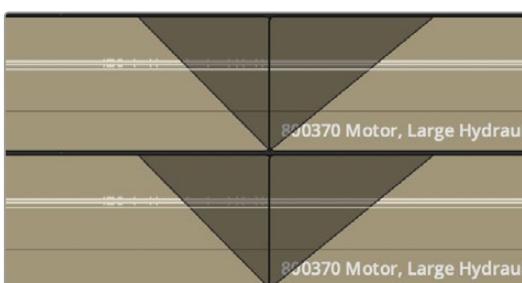
(Left) Placing the playhead where you want a fade in to end, (Right) Using Fade In to Playhead

## Creating Crossfades With Overlapping Fades

While a fade gradually fades a single track of audio up or down, a crossfade fades two overlapping clips at the same time, fading one clip up and another clip down, for the aural equivalent of a cross dissolve. There are currently two ways of creating a crossfade in the Fairlight page. Both depend on clip layering to allow you to have overlapping fades over overlapping clips.

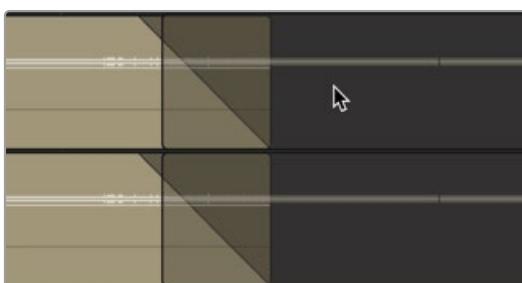
### To create a crossfade by overlapping two clips together:

- 1 Add a fade out to the end of one clip, and a fade in to the beginning of another clip. By default, all fades you add in this way are linear, although you can adjust them to whatever gain you want.



Adding fades to adjacent clips

- 2 Drag the first clip to overlap the second clip by the length of the fade you've created.



Dragging the clips to overlap, the overlapping parts will be preserved via clip layering

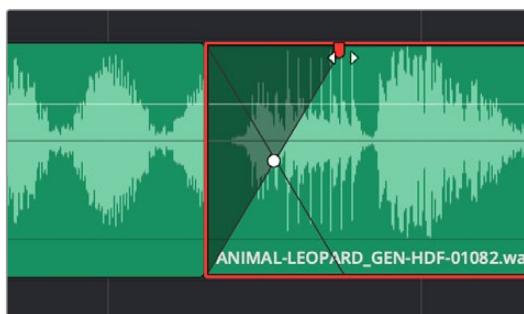
- 3** Drop the clip. The overlapping fades will both be preserved thanks to clip layering, and a crossfade will appear in the Timeline.



The resulting crossfade

#### To create a crossfade over two clips that are already layered:

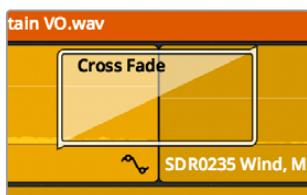
- Drag a fader handle at the beginning or end of a clip that's layered, and a crossfade will automatically appear.



Creating a crossfade by adjusting the fader handle of a layered clip

## Using Crossfades From the Edit Page

You can also add crossfades in the Edit page, but they appear in the Fairlight page as transitions in the Edit page style.



The resulting crossfade

# Finding Clips in the Media Pool

You can right-click any clip in the Timeline and choose Find in Media Pool to automatically select that clip in the Media Pool, for instances where you might want to edit another copy of that clip somewhere else in the Timeline, or re-edit another segment from that clip into the same area.

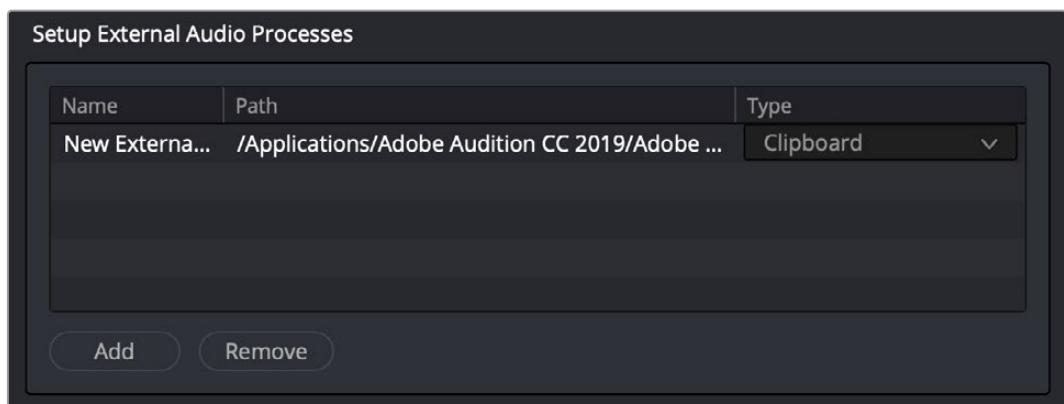
**NOTE:** Automation Follows Edit when clips with embedded automation are moved or pasted from the Timeline. When clips with automation are instead pulled from the Media Pool, they are in their default state with no automation attached.

## Changing Clip Color in the Timeline

You can right-click one or more selected clips in the Timeline to change the clip color, to be more organized. For example, you might set production audio clips containing dialog from different actors to different colors, or you could set clips with dialog, music, and effects to different colors in order to easily differentiate each clip's purpose.

## Editing Audio Clips in External Editors

While working in the Fairlight page, you have the ability to process an audio file using a third-party application if necessary, in the event you need to use another application's capabilities to create an effect or solve an issue that can't be accomplished in the Fairlight page itself. To do this, you must first add one or more applications to the External Audio Process list in the Audio Plugins panel of the System Preferences.



The External Audio Process list configured to send audio to Adobe Audition

### To add an external audio process:

- 1 Open the System tab of the DaVinci Preferences, and select the Audio Plugins panel.

- 2 Click the Add button in the “Setup External Audio Processes” section.
- 3 To give the audio process a different name, double click in the Name column and type a new name.
- 4 Double-click in the empty Path column for the new process, and choose an application to assign to that process from the dialog.
- 5 Choose the type of process you want it to be from the drop-down menu in the Type column.

Once you have one or more external audio applications configured in Preferences, you can use them to process any audio clip in the Fairlight page by right-clicking an audio clip and choosing the application you want to use from the External Audio Process submenu of the contextual menu.

When you do this, a duplicate of the audio clip media is copied (bounced) to the directory location specified by the “Save clips to” field of the Capture and Playback panel of the Project Settings. At that point, the external application is either opened or launched as a command from the command line (depending on how the external application has been configured in Preferences).

Once the bounced audio is opened in the external application, you can process it however you need to and bake in any changes made by saving/rendering/outputting and overwriting the original copied audio media file. DaVinci Resolve detects when changes have been made, and the altered result is automatically reimported as an additional audio layer on top of the original clip in the Timeline.

The way an audio application is configured in the DaVinci System Preferences dictates how the bounced audio file is passed to the external program. There are three choices:

- **Command Line:** As a command line parameter, if your audio application is able to be run from the Terminal.
- **Clipboard:** By placing the path to the bounced file in the clipboard, so you can paste it into the application which has been automatically launched, or import it via a File > Open dialog.
- **Reveal:** By revealing the bounced copy in the file manager of your workstation, so you can drag and drop it onto the application which has been automatically launched.

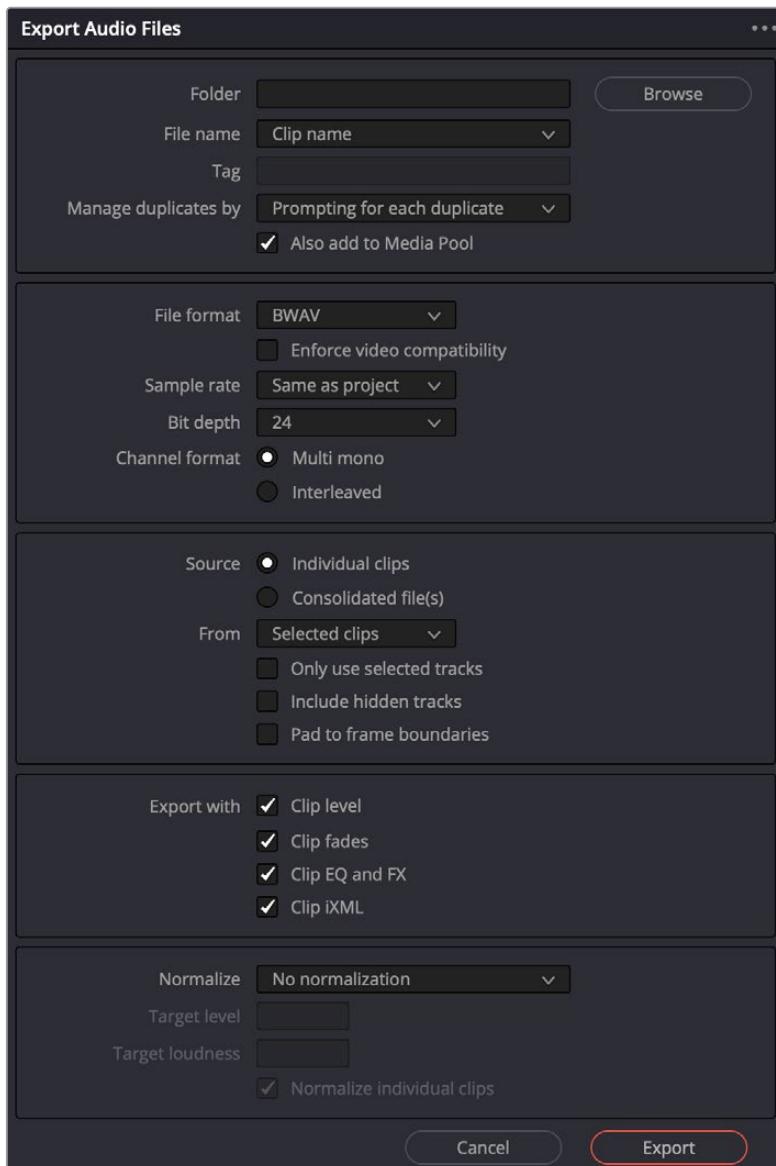
## Exporting Audio Clips to External Files

For any workflow where you need to write clips from the Timeline to external files with extensive file altering capabilities, you can use the Export Audio Files command.

### To export clips to external files:

- 1 Select one or more clips in the Timeline.
- 2 Right-click the desired selected files and choose Export Audio Files from the contextual menu.
- 3 When the Export Audio Files dialog appears, choose the following:
  - a) Click Browse to choose a location to save the exported audio files.
  - b) (Optional) Enter a tag and one of the various Name options.
  - c) Choose a File Format, Sample Rate, and Bit Depth for the exported files.
  - d) Choose a Channel Format of Multi-Mono or Interleaved for the exported files.

- e) Choose a Source of Individual Clips or Consolidated Clips; a drop-down menu further defines the ranges of the complete timeline, a selected range, or just the selected clips.
- f) Checkboxes can further define using only the selected tracks, including hidden tracks and padding to frame boundaries.
- g) When exporting you can choose to include the Clip Level, the Clip Fades, the Clip EQ and FX, and the Clip iXML.
- h) The exported files can be normalized to predetermined target levels and target loudness values with all of the standards offered throughout the Fairlight page.



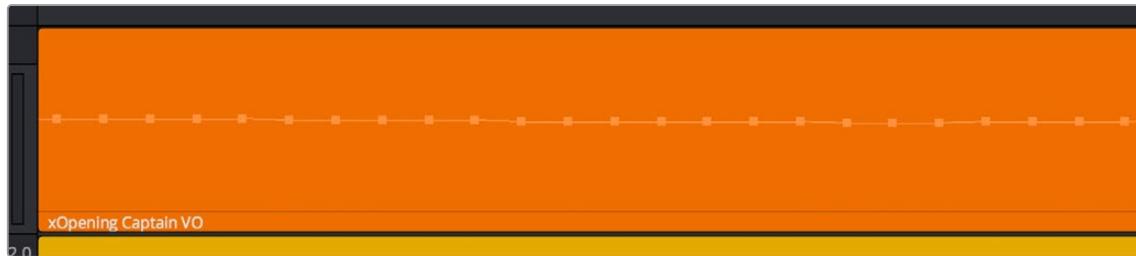
The dialog that lets you choose options for exporting clips to files

#### 4 Click Export.

The selected audio files are written to the location you chose.

# Sample Editing

You can zoom quite far into audio clips on the Fairlight page timeline, until you see the individual samples that comprise the audio waveform of each clip. Samples are represented by control points once you've zoomed in far enough.



When you zoom in far enough, you can see the individual samples of an audio clip as control points

You can non-destructively edit these control points to eliminate clicks and pops, and to effect other fixes to problem audio clips.

## Methods of editing audio samples:

- **To see the editable audio samples:** Zoom all the way into an audio clip until you see the sample control points, using either Command-Plus or Command-Minus, the scroll wheel of your pointing device, or by holding down the ZOOM button of your Fairlight editing panel and turning the JOG/EDITING wheel.
- **To edit a single audio sample:** Click and drag that audio sample up or down to change its height.
- **To edit a section of samples:** Click and drag horizontally left or right across the samples you want to edit to “redraw” the waveform any way you’d like.
- **To reset all edited samples to their original state:** Right-click an audio clip with edited samples, and choose Reset Edited Samples from the contextual menu.



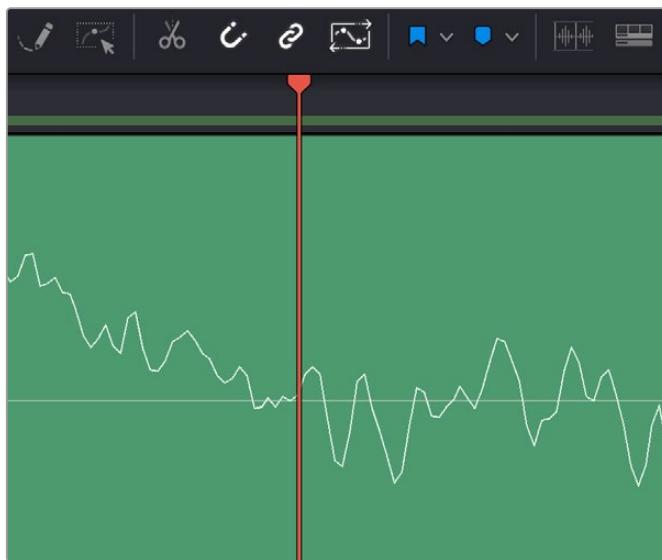
Black points show the previous levels when samples have been edited in a clip

Sample editing can be undone, just like any other editing procedure, as the edited sample points are stored non-destructively within the DaVinci Resolve project.

## Waveform Zero Crossing Indicator

Waveforms have a zero crossing indicator line. Since a waveform is an image representation of sound continually moving positive to negative, the zero crossing point is the level at which that fluctuation occurs. When zooming into a waveform at the sample level, the waveform will display the zero crossing line to enable precise editing.

The zero crossing is a useful feature when editing audio, since clean edits are made at the zero crossing to avoid inducing clicks or pops. A crossfade between two audio clips automatically brings both sides of the fade to the zero crossing.



The center line in the waveform indicator is the zero crossing.

# Using the Fairlight Inspector

Each Timeline and Media Pool clip and every audio track or bus have settings and properties that can be adjusted, animated, and edited in the Fairlight Inspector. This lets you easily perform tasks, such as matching the levels or EQ of several clips while reserving the track level for your overall mix or adjusting levels or audio effect parameters on tracks and busses.

It is important to note that clip-based effects differ from real-time track and bus effects in that they only apply to individual clips on the timeline or in the Media Pool, rather than all clips on a track.

This chapter describes how to use these controls within the Fairlight Inspector.

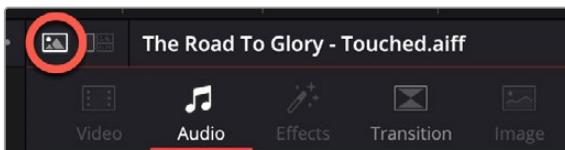
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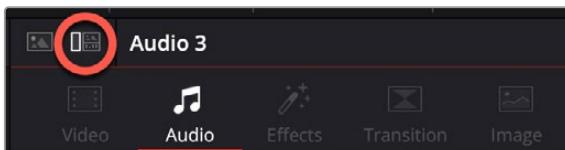
# Using the Inspector

## Clip Mode vs. Track Mode

The Inspector includes a Clip Mode and Track Mode button to eliminate confusion about whether your parameter property changes in the Audio tab are applied to an audio clip or a track.



The Audio Inspector in Clip mode (circled)

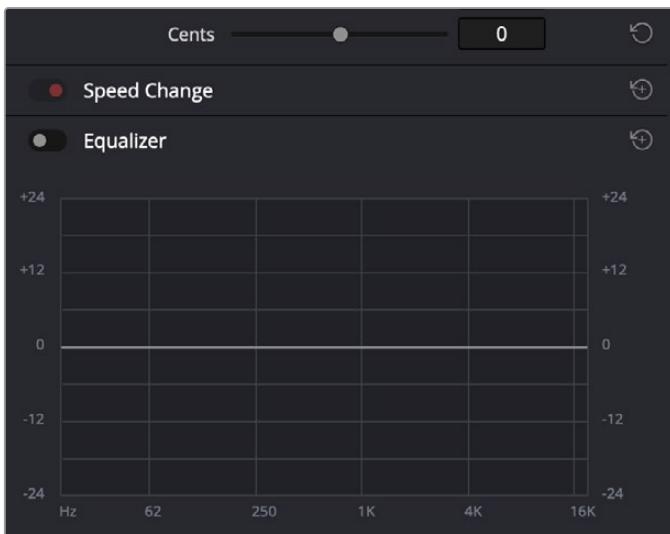


The Audio Inspector in Track mode (circled)

- Selecting an audio clip in the Media Pool or on the Timeline activates the Clip Mode button, and the clip name appears at the top of the Inspector, to the right of the Track Mode button.
- Clicking the Track Mode button while a Timeline clip is selected causes subsequent changes in the Audio tab to apply to the corresponding Mixer channel. The clip name at the top of the Inspector will switch to the track name.

## Common Controls

Selecting an audio clip, audio track, or bus channel strip in the Mixer exposes some common audio-specific parameters and controls in the Audio and Effects panels.



Closed and open Inspector group controls in the Fairlight page

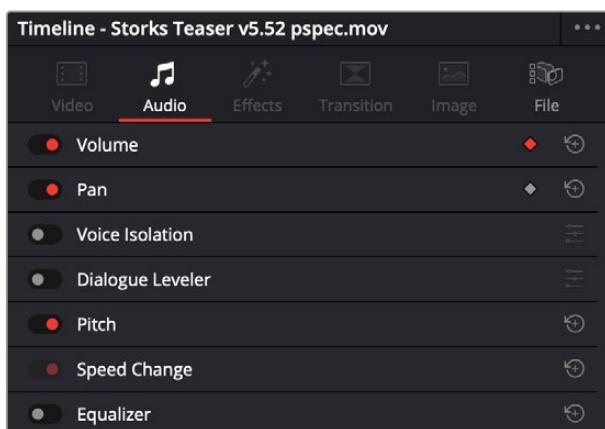
These controls include:

- **Enable button:** A toggle control to the left of the parameter group's name lets you disable and re-enable every parameter within that group at once. Orange means that track's enabled. Gray is disabled.
- **Parameter group title bar:** Double-clicking the title bar of any group of parameters collapses or opens them. Even more exciting than that, Option-double-clicking the title bar of one parameter group collapses or opens all parameter groups at once.
- **Keyframe and Next/Previous Keyframe buttons:** This button lets you add or remove keyframes at the position of the playhead to or from every single parameter within the group. When the button is highlighted orange, a keyframe is at the current position of the playhead. When it's dark gray, there is no keyframe. Left and right arrow buttons let you jump the playhead from keyframe to keyframe for further adjustment.
- **Reset button:** Lets you reset all parameters within that group to their default settings.

## The Audio Tab

When working with audio clips (Clip mode) on the Audio Timeline or Media Pool, the Audio tab offers the following controls and audio effects:

- **Volume:** Each clip has a single volume control, which corresponds to the volume overlay over each audio clip.
- **Pan:** A Pan slider that controls stereo panning.
- **Pitch:** Each clip has two pitch controls for altering clip pitch without altering clip speed. You can control pitch in Semi Tones and Cents.
- **Speed Change:** Any adjustments made using Elastic Wave are reflected here.
- **Equalizer:** Each clip also has a four-band EQ, complete with low-pass, high-pass, and parametric settings for fine tuning and problem-solving audio issues at the clip level.

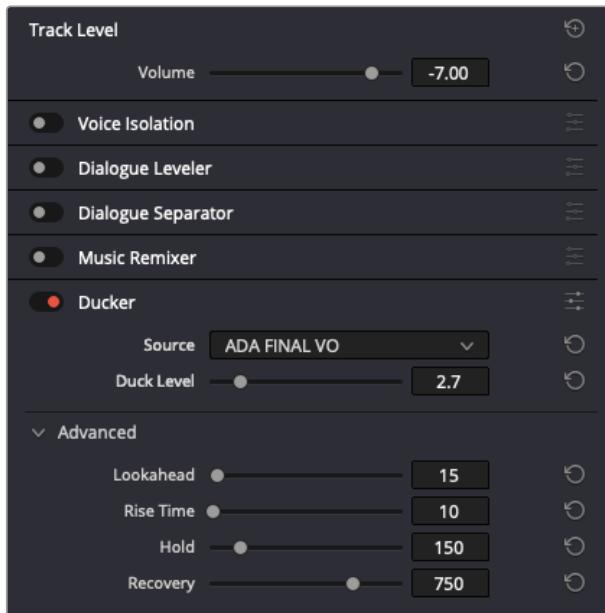


The Audio tab of the Inspector

**NOTE:** Parameters for audio clips on locked tracks cannot be edited in the Inspector. For more information on locking audio tracks, see *Chapter 172, "Editing Basics in the Fairlight Page."*

## Track Mode

When working with audio tracks or busses (Track mode) the Audio tab lets you adjust the volume level and enable and adjust Fairlight Track FX.

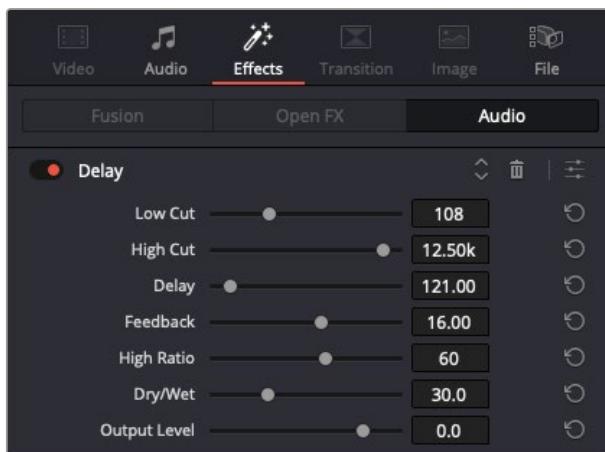


Audio tab - Track mode

**NOTE:** Parameters for locked tracks cannot be edited in the Inspector. For more information on locking audio tracks, see *Chapter 172, "Editing Basics in the Fairlight Page."*

## The Effects Tab

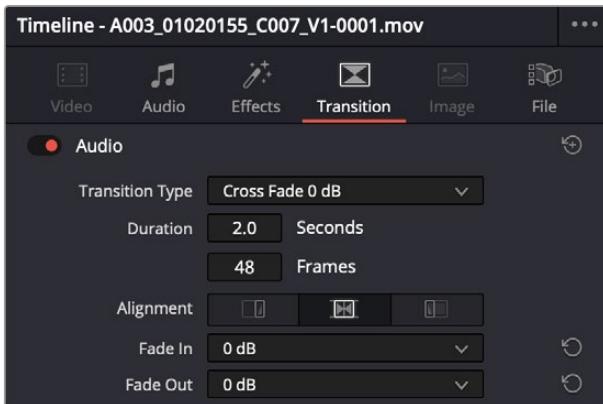
Audio Effects added to a track or bus via the Effects section of its Mixer channel strip or to a Timeline clip from the Effects Library will appear in this tab. For more information, see *Chapter 177, "Audio Effects."*



Fairlight FX Delay controls in the Effects tab

## The Transition Tab

If you've applied any Transitions (Crossfade) between clips in either the Edit or Fairlight pages, you can adjust them in the Transition tab, which can be opened by double-clicking a Crossfade transition.



Crossfade controls in the Transition tab of the Inspector

### The following properties can be edited:

- **Transition Type:** The currently selected transition. You can change to any other installed transition by selecting one in the drop-down menu.
- **Duration:** The duration of the transition, shown in both seconds and frames.
- **Alignment:** A drop-down that lets you choose the transition's position relative to the edit point it's applied to. Your choices are "Start on Edit," "Center on Edit," and "End on Edit."
- **Fade In:** This drop-down offers selection from -3dB to 3dB.
- **Fade Out:** This drop-down offers selection from -3dB to 3dB.

For more information on adjusting crossfades, see *Chapter 172, "Editing Basics in the Fairlight Page."*

## The File Tab

The File tab includes different sections where you can view or edit the properties and configuration of audio clips on the Timeline and in the Media Pool:

### File Information

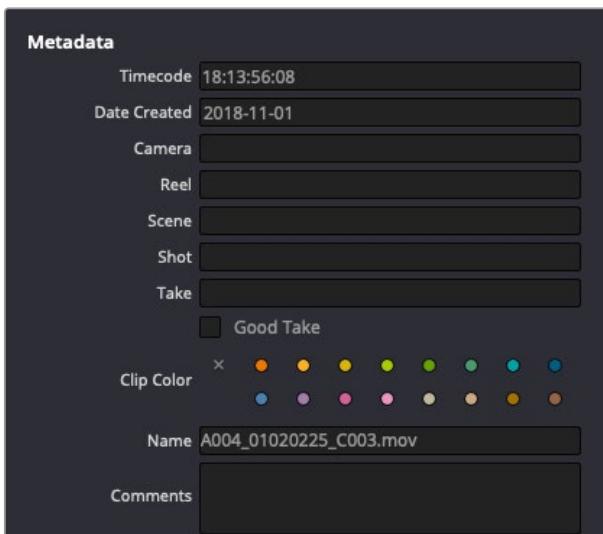
In addition to the name of the audio clip, this section of the File tab provides additional details about the file, as shown in the screenshot below.

NaturesFury.wav		00:01:48:16
Video Codec	Frame Rate	Resolution
	24.000	
Audio Codec	Sample Rate	Audio Format
Dolby Atmos	48000	Dolby Atmos 7.1.4

File tab - File Information section

## Metadata

Except for the embedded Timecode field, every text field can be edited with information of your choice.

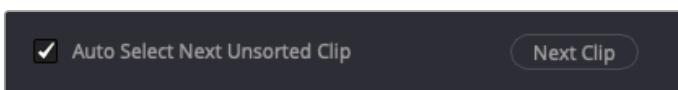


File tab - File Metadata section

## Auto Select Next Unsorted Clip

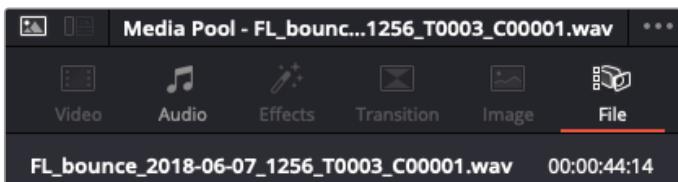
When this box is checked, pressing the Return key after filling in a metadata field selects the next Media Pool clip with the cursor in the same field.

This allows rapid sequential metadata entry without clicking the Next Clip button or manually clicking the next Media Pool clip.



Auto Select Next Unsorted Clip checkbox and Next Clip button

Whenever a Media Pool clip is selected, the name displayed to the right of the Clip and Track and Mode buttons will begin with "Media Pool -".



File tab - Media Pool clip selected

## Audio Configuration

This section of the File tab includes the following features and controls to offer a more intuitive and visual way of changing an audio clip's channel properties:

- **Format:** When an audio clip is selected in the Media Pool, the Format drop-down displays its channel format.

This menu offers a selection of standard channel configurations, which you can apply to the clip without manual rerouting. When working with multichannel adaptive clips, the options also include stereo pairs.

If you need to use customized routing, you can select the Custom option, which opens the Clip Attributes dialog. For more information on using the Clip Attributes dialog, see *Chapter 172, “Editing Basics in the Fairlight Page.”*

- **Waveforms:** The first waveform immediately below the Format drop-down is a single composite of the clip, with the name it was given during the recording process layered over it. Below the composite waveform, you'll see the clip broken out into individual waveforms representing each audio channel.

You can listen to the audio by skimming it with your mouse cursor or clicking the Play button in the transport control below the last waveform.

- **Channel Controls:** Each clip channel has its own Enable/Disable checkbox and Mute button:

- **Enable/Disable:** Filling in the checkbox enables the channel, making it audible and available for editing operations. Conversely, when the checkbox is empty, the channel is inaudible and not affected by editing operations, as if it were removed from the clip.

Using the multichannel Media Pool clip shown in the screenshot as an example, if you deactivate channel 2, only five tracks (1, 3, 4, 5, and 6) will be included when it's dragged from the Media Pool to the Timeline.

- **Mute:** Clicking this button mutes the channel while leaving it in place within the clip.

So, in the case of our six-channel Media Pool clip, all six channels will be included when it's dragged onto the Timeline.



File tab - Audio Configuration section

## Adjusting Multiple Clips in the File Tab

You can select multiple audio clips and adjust their properties in the Audio Configuration pane.

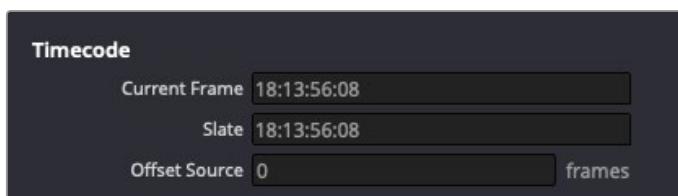
For example, you can select a group of audio files and remove Track 2 from all of them at once.

However, the following should be noted:

- In a multiple clip selection, only the last selected clip will appear in the track layout of the Audio Configuration Pane. However the top composite waveform will be named “Multiple Clips” to let you know that more than one clip has been selected.
- Any adjustments, like muting or enabling/disabling a track will be applied to all the selected clips at once.

## Timecode

This pane includes controls that were formerly handled by Clip Attributes in the Media Pool (though that option is still available). These controls let you override the timecode details for a clip or clips in the Media Pool.



File tab – Timecode section

- **Current Frame:** This is where you can assign a new time for the timecode at the currently viewed frame of the clip.
- **Slate:** In situations where source media comes from a shoot where a timecode slate was used during the shoot, then you can assign the slate timecode as a second timecode track that can be used for various operations without changing the primary timecode of the clip, which may already be in use for program sync.

To set the appropriate Slate timecode, select a Media Pool clip with a visible timecode slate and move the playhead to a frame where the timecode in the slate is clearly readable. Then, open the Timecode panel of the Clip Attributes window and type the timecode value you see in the image into the Slate Timecode field.

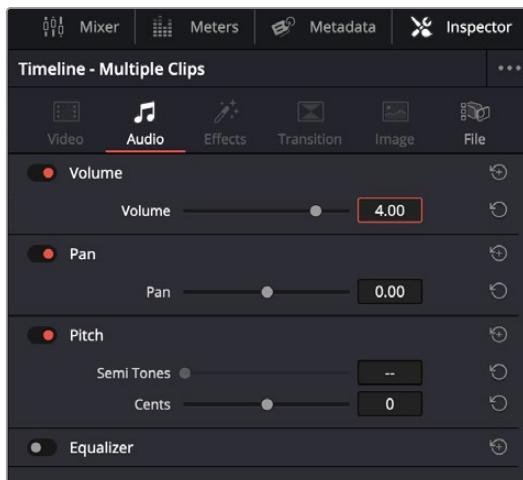
- **Offset Source:** If an entire set of clips has timecode that's merely offset, you can correct the timecode offset for as many selected clips as you like.

## Adjusting Multiple Clips at the Same Time

There's an easy way to make adjustments to the Inspector parameters of multiple clips at the same time, without needing to use Paste Attributes (described later in this chapter). All you need to do is simultaneously select every clip you want to alter, and then modify the parameter in the Inspector that you want to change. As a result, every selected clip will be adjusted by the same amount. This works for compositing effects, transforms, text parameters, filters, and audio settings, just about anything that can be simultaneously exposed in the Inspector for multiple selected clips.

When you select multiple clips, the Inspector will display “Multiple Clips” as the title. If each of the selected clips have different values in the parameter you’re adjusting, that parameter will have two dashes in the value field. There are two ways you can make adjustments to multiple clips:

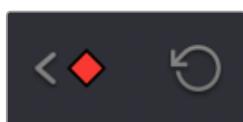
- If you want to make a relative adjustment to all selected clips while keeping their original offsets from one another, then drag the virtual slider in the parameter field which will display a + or – before however many units your adjustment is.
- However, if you want to set all selected clips to the same value, you can double-click in the number field, type the value, and press Return.



Making a relative adjustment of plus 4.00 in the Volume level of all selected clips

## Animated Inspector Adjustments

Key-framing in the Edit page works slightly differently than when using the Keyframe Editor in the Color page. Most simple key-framing tasks can be performed in the Inspector using three buttons that appear to the right of any parameter that’s capable of being keyframed. It takes two keyframes at minimum to create an animated effect.



The three keyframe controls that appear in the Inspector, from left to right: Previous keyframe, Create/Delete keyframe, Next keyframe

### Methods of key-framing parameters in the Inspector:

- **To add a keyframe:** Select a clip, open the Inspector, then move the Timeline playhead to the frame where you want to place a keyframe, and click the Keyframe button next to the parameter of the Inspector you want to animate. Once you’ve added at least one keyframe to a parameter, all other adjustments you make to parameters in the Inspector, or using the onscreen Transform/Crop controls in the Timeline Viewer, add new keyframes automatically if the playhead is at another frame.

- **To move the playhead to the next or previous keyframe:** Click the small left- or right-hand arrow to either side of a parameter's keyframe control to jump the playhead to the next or previous keyframe. You can also press Right-Bracket ( [ ) and Left-Bracket ( ] ) to go from keyframe to keyframe.
- **To edit an existing keyframe of a parameter:** Move the playhead to be on top of the keyframe you want to edit, and then change that parameter, either in the Inspector, or using the onscreen controls of the Timeline Viewer.

#### **Methods of changing keyframe interpolation in the Inspector:**

- **To change a keyframe to Ease In or Ease Out:** Eased keyframes create animated changes that begin slowly and accelerate to full speed, or slow down gradually to decelerate to a stop. This only works when you have two or more keyframes creating an animated effect. Move the playhead to a frame with a keyframe using the next/previous keyframe controls, then right-click the orange keyframe button and choose Ease In, Ease Out, or Ease In and Out, depending on which keyframe you're editing and the effect you want to create.
- **To change a keyframe to Linear:** Move the playhead to a frame with a keyframe using the next/previous keyframe controls, then right-click the orange keyframe button and choose Linear.

#### **Methods of deleting keyframes and disabling keyframed effects:**

- **To delete a single keyframe:** Open the Inspector, move the Timeline playhead to a frame with a keyframe, and click the orange Keyframe button in the Inspector to delete it.
- **To delete all keyframes for one parameter:** Click the reset button to the right of a parameter's keyframe control in the Inspector.
- **To delete all keyframes in a group of parameters in the Inspector:** Click the reset button to the right of a parameter group's title bar in the Inspector.
- **To disable or enable a single parameter's keyframed effect:** In the Timeline, click the toggle control at the left of a parameter's keyframe track. Orange means that track's enabled. Gray is disabled.
- **To disable or enable a group of parameters in the Inspector:** Click the toggle control at the left of a parameter group's title bar in the Inspector. Orange means that group is enabled. Gray is disabled.

## **Paste and Remove Attributes**

The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio Inspector parameters and effects, similar to the same commands on the Edit page. For more information on how to do this, see *Chapter 172, "Editing Basics in the Fairlight Page."*

# Setting Clip Volume

Each audio clip, or audio item in the case of audio clips with linked audio on multiple tracks, has its own Volume level. This means that audio clips with multiple channels share a common Volume setting. There are several ways you can adjust these levels simply.

## Adjusting Volume in the Inspector

Each clip has individual Volume parameters that are accessible in the Audio tab of the Inspector when one or more audio clips are selected.



The Volume parameters available for audio clips in the Inspector

Selecting an audio clip in the Timeline and adjusting its Volume only alters the volume levels of that clip, which lets you adjust basic levels for individual clips in your program. The Volume control affects every channel within that clip simultaneously.

If you select multiple clips in the Timeline, then adjusting the Volume or Pan sliders or virtual sliders for all of them simultaneously will make a relative adjustment to all of the clips, preserving their offsets from one another. If you want to set all clips to the same level, then making a numeric adjustment will set all selected clips to the same absolute level.

## Adjusting Volume in the Timeline

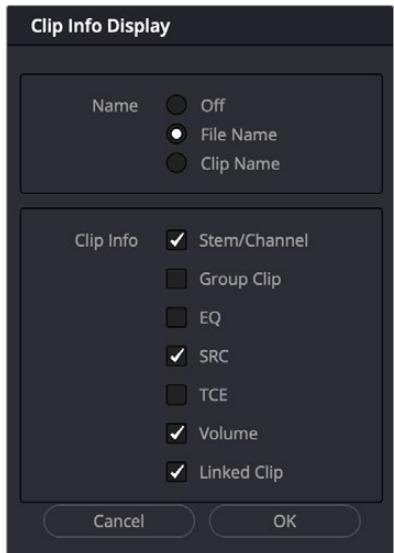
Each clip (or item) of audio in the Timeline has a Volume overlay that lets you set that clip's gain level by simply dragging it up or down with the pointer. This overlay corresponds to the Volume parameter in the Inspector.



Dragging a Volume overlay to adjust the clip level

Additionally, you can click any clip's Audio Curve Editor button, at the bottom right-hand corner of each audio clip, to open an audio-specific Curve Editor with which you can keyframe not just volume, but pan, and the parameters of any audio filters you might have applied to that clip.

**NOTE:** Under the Fairlight menu > Show Clip Gain Line, you can show each clip's gain in the Timeline. This is a handy way to quickly see all of the relative gains of clips in the Timeline.



Clip information for all clips in the Timeline can be enabled in the Clip Info display.

## Adding and Adjusting Volume Keyframes in the Timeline

Mixing audio by adding and adjusting individual keyframes can be a fast and effective way of balancing clip levels with one another and of fixing clip-specific dynamic level problems. When manually editing any audio parameter curve, you can use the following procedures.

### Methods of adjusting the Volume curve using the pointer:

- **To adjust any curve segment:** Position the pointer over the overall segment for clips with no keyframes, or position it between any two keyframes, directly on top of the curve segment you want to raise or lower. When the move cursor is displayed, click and drag up to raise the Volume, or down to reduce the Volume.
- **To adjust a section of level in a clip:** Use the Edit Selection tool to highlight the portion to adjust. Then with the Clip Gain line showing, increase or decrease to the desired level and keyframes will automatically be created at the boundary of the gain adjustment.
- **To add keyframes to the level curve:** Hold the Option key down and click the curve to place a keyframe at that frame. You must add at least two keyframes to create an automated change in Volume. By using the Option and Command key you can remove any keyframe.
- **To adjust a keyframe in any direction:** Move the pointer over a keyframe so that the four-way cursor appears, and then click and drag up or down to change the Volume, or side to side to change its timing.
- **To adjust a keyframe in only one direction:** Move the pointer over a keyframe so that the four-way cursor appears, and then click and drag in the intended direction of adjustment, either vertically to change the volume of the clip at that frame, or horizontally to move the keyframe to

a different point in time. Once you start dragging a keyframe into a particular direction, keyframe movement is constrained in that direction until you release that keyframe.

- **To select one or more keyframes:** Click any keyframe to select it.
- **To select multiple discontiguous keyframes:** Command-click all keyframes you want to select, whether they're next to one another or not.
- **To select multiple contiguous keyframes:** Click the first keyframe you want to select, and then shift-click the last keyframe you want to select, and all keyframes between will also be selected.

**NOTE:** When adjusting the gain on clips, the tooltips will show the current gain level and reflect whatever changes you make indicating the amount of change as the keyframe moves.

## Normalize Audio Levels Command

The Normalize Audio Levels command automatically adjusts the level of clips to a specific target level, and you can choose the method used to analyze each audio clip's levels to determine how to normalize each clip's volume. Options include a variety of loudness normalization algorithms specific to various international standards, which are useful for balancing the perceived overall loudness of several clips to one another, regardless of transient levels throughout each clip. You can also do Peak normalization, with options for both Sample Peak and True Peak.

The various loudness options are designed to analyze an audio signal based on its perceived loudness to the listener, which results in a more accurate automatic balancing of different clips' audio levels to one another, regardless of transient peaks occurring throughout different clips.

The target peak meter now uses the BS.1774 standard for measuring maximum "true peak," which means that this meter is capable of measuring "inter-sample peaks," rather than only the peaks at each sample of a waveform. However, you still have the option to measure Sample Peak, which is the previous method of measuring the actual peak of the samples in a media file.

The change made by the Normalize Audio Volume command is only a volume adjustment; no dynamics are applied, so the result of using this command is that the loudest parts of each selected clip are going to match one another at the target level. This command is also available in the Fairlight page.

### To normalize one or more selected audio clips:

- 1 Right-click one of the selected clips and choose Normalize Audio Levels. The Normalize Audio Level dialog appears.



The Normalize Dialog in the Fairlight page

- 2 Choose the Normalization Mode you want to use. You can choose among a variety of standardized loudness measurement algorithms, or Sample Peak, or True Peak.
- 3 Choose the reference level that you want to set the peak volume of the selected clips to match, in dBFS.
- 4 Choose how you want to set the level of multiple selected clips:

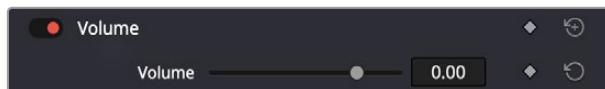
When Set Level is set to Relative, all selected clips are treated as if they're one clip, so that the highest peak level of all selected clips is used to define the adjustment, and the volume of all selected clips is adjusted by the same amount. This is good if you have a series of clips, such as a dialog recording, where the levels are consistent with one another, and you want to normalize all of them together.

When Set Level is set to Independent, the peak level of each clip is used to define the adjustment to that clip, so that the volume of every selected clip is adjusted by an amount specific to that clip. The end result may be a set of very different volume adjustments intended to make the peak levels of each audio clip match one another. This is good if, for example, you're trying to balance a series of different sound effects with one another that have very different starting levels.

For more information about loudness normalization, see *Chapter 179, "Audio Meters and Audio Monitoring."*

## Volume

Each audio clip in the Timeline has a simple Volume control that lets you adjust the gain of that clip.



Volume Control in the Inspector

## Pan

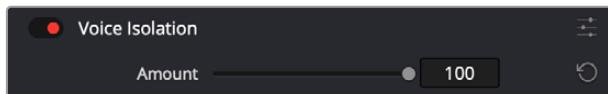
Each audio clip in the Timeline has a simple stereo Pan control that lets you pan that clip. While most professional mixes will restrict panning to the more robust panner found in the Fairlight page Mixer, this simple clip-based Pan control is useful for editors of visuals working in the Edit page to quickly create simple panning effects to aid in a craft edit. Dragging the slider lets you pan audio left to right. This control is centered at 0 by default.



Pan Control in the Inspector

# Voice Isolation (Studio Version Only)

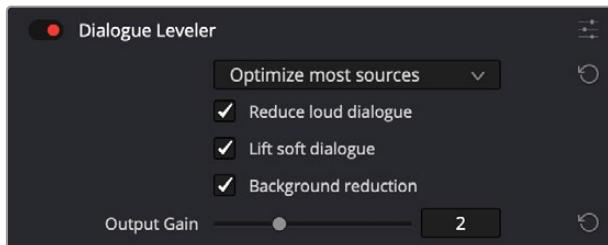
Each audio clip in the Timeline has a simple control for applying Voice Isolation. For more information about Voice Isolation, see *Chapter 178, "Fairlight FX."*



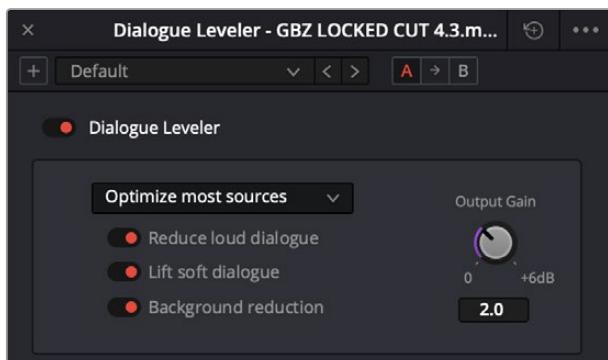
Voice Isolation control in the Inspector

# Dialogue Leveler

Each audio clip in the Timeline has Dialogue Leveler controls that let you apply the effect to the clip. For more information about Dialogue Leveler, see *Chapter 178, "Fairlight FX."*



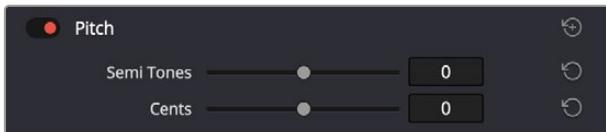
Dialogue Leveler controls in the Inspector



Dialogue Leveler Controls in the Inspector

# Pitch Controls

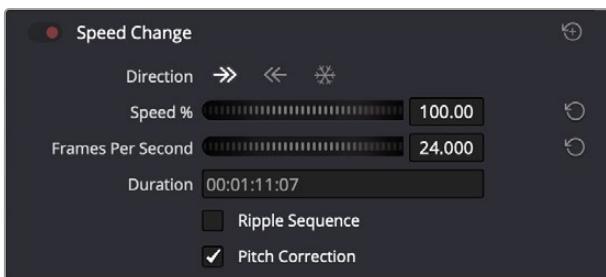
Each audio clip in the Timeline has Pitch controls that lets you alter the pitch of a clip without changing the speed. Two sliders let you adjust clip pitch in semi tones (large adjustments, a twelfth of an octave) and cents (fine adjustments, 100th of a semi tone).



Pitch control in the Inspector

# Speed Change Controls

Each audio clip in the Timeline has Speed Change controls that lets you alter the speed of the clip. It has the option to have the clip's pitch follow the adjusted speed change or maintain the original speed's pitch.



Speed Change control in the Inspector

## The Speed Change window has the following overall controls:

- **Enable button:** Turns the overall Speed Change effect off and on, without resetting the controls.
- **Reset button:** Resets all controls of the Speed Change window to their defaults.
- **Direction:** The Right Arrow maintains the forward direction of the waveform, the Left Arrow reverses the direction of the waveform, and the Snowflake icon creates a freeze frame.
- **Speed %:** A flywheel control to adjust the speed by a percentage plus or minus 100%.
- **Frames Per Second:** A flywheel control that syncs with the Speed % control showing the FPS relative to the speed change.
- **Duration:** Indicates the new timing of the clip.
- **Ripple Sequence:** When checked this moves all the media after the action to ripple edit to the new duration.
- **Pitch Correction:** When checked this maintains the original pitch of the clips when speed changed. When unchecked the audio will speed up or slow down with the speed adjustment. The slower the speed change, the lower the pitch; the higher the speed change, the higher the pitch.

**NOTE:** When in the Speed Change controls, do not use the freeze frame option. This will negatively affect the selected audio file.

# Equalizer Controls

Each audio clip in the timeline has a four-band equalizer that has both graphical and numeric controls for boosting or attenuating different ranges of frequencies within that clip, before it even gets to the EQ built into the mixer. Each band has controls for the filter type (Bell, Lo-Shelf, Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ changing depending on the filter type.

When a channel strip's EQ is enabled, the equalization curve that's being applied is displayed in the Mixer. A channel strip's EQ settings affect all the clips on that track, so you must open the EQ window to make those modifications.



The channel strip's EQ indicator

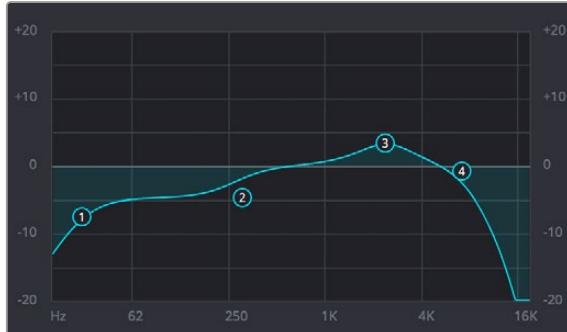
## Master EQ Controls

### The Equalizer window has the following overall controls:

- **Enable button:** Turns the overall EQ effect off and on, without resetting the controls.
- **Reset button:** Resets all controls of the EQ window to their defaults.

## Graphical EQ Controls

A graph at the top shows a curve with handles that correspond to each of the enabled EQ bands listed below. You can drag any numbered handle to boost or attenuate the range of frequencies governed by that band, using whatever type of equalization that band has been set to.



The EQ graph with user-draggable handles

Dragging the numbered handles on this graph in turn modifies the parameters of the corresponding band, and changing each band's parameters will also alter the EQ graph, which serves the additional purpose of providing a graphical representation of the equalization being applied to that track.

## Bands 1 and 4

The outer two sets of band controls let you make high-pass and low-pass adjustments, if necessary.

- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 1 and 4 can be switched among six specific filtering options for processing the lowest or highest frequencies in the signal. These include (from top to bottom) Hi-Shelf, Hi-Pass, Bell, Notch, Lo-Pass, and Lo-Shelf. Bands 2 and 3 can be switched among Lo-Shelf, Bell, Notch, and Hi-Shelf.
- **Freq:** Adjusts the center frequency of the EQ adjustment.
- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.

## Bands 2 and 3

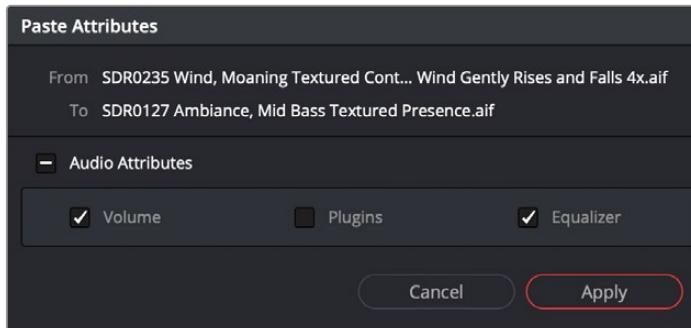
The middle two sets of band controls let you make a wide variety of equalization adjustments.

- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 2–5 can be switched among four different filtering options (from top to bottom): Lo-Shelf, Bell, Notch, and Hi-Shelf.
- **Frequency:** Adjusts the center frequency of the EQ adjustment.
- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.
- **Q Factor:** Adjusts the width of affected frequencies. Lower values include a wider range of frequencies; higher values include a narrower range of frequencies.

**NOTE:** This may seem obvious, but not all parameters are available for every curve type. For instance, a Bell curve filter has Frequency, Gain, and Q adjustments, but a Lo-Pass or Hi-Pass filter will only have Frequency available to adjust.

# Paste and Remove Attributes for Clips and Tracks

The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio parameters and effects, similar to the same commands on the Edit page.



The Paste Attributes dialog in the Fairlight page

The Paste Attributes dialog box gives you three types of attributes to choose from. Volume will paste the copied attributes to the clip. Plugins will paste any plugin attributes to the clip. Equalizer will past EQ data copied from another clip. One or all of these can be copied at one time.

The Remove Attributes dialog box gives you the same three types of attributes to choose from for removal of a clip. When the Volume box is enabled, all Clip Gain keyframes will be removed from the clip.

# Mixing in the Fairlight Page

The Mixer is “control central” of the Fairlight page, providing all of the functionality you need to mix the various audio tracks of your program into a harmonious whole.

By using EQ, dynamics, panning, level control, and Fairlight FX, VST and Audio Units audio plugin effects of all kinds, all with full automation, you can hone your sound and balance each track’s elements with one another.

This chapter focuses on explaining the various functions of the Mixer so you can harness its power for yourself.

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# Introduction to Mixing

This chapter describes the use of the Mixer to adjust the levels and fine-tune the audio of each track in the timeline. It's focused on the function of the channel strip controls, with the following exceptions:

- For more information about bussing, see *Chapter 168, "Setting Up Tracks, Busses, and Patching."*
- For more information about recording audio, see *Chapter 170, "Recording."*
- For more information about mix automation, see *Chapter 175, "Mix Automation."*

## The Mixer

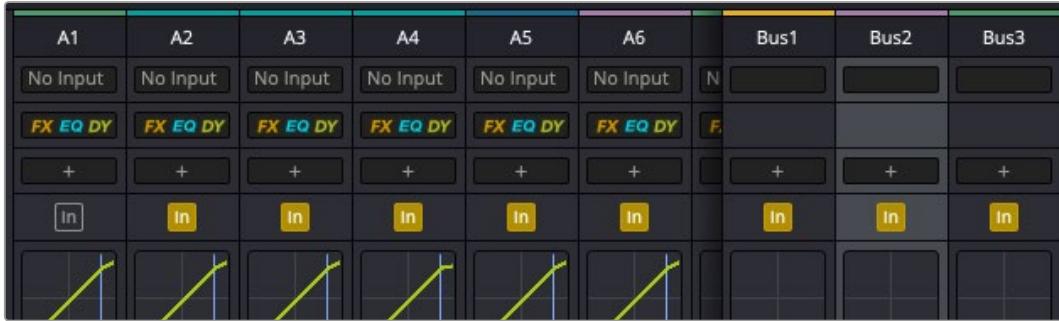
The Audio Mixer provides a set of graphical controls you can use to assign track channels to output channels, adjust EQ and dynamics, set levels and record automation, pan stereo and surround audio, mute and solo tracks, and add Fairlight FX, or VST, or AU effects plugins. At its most basic, each audio track in your timeline corresponds to an individual channel strip in the Mixer, and by default there's a single main stereo mix bus labeled "Bus 1" that combines all these tracks into an overall mix.



The Audio Mixer with channel strips corresponding to the tracks in the Timeline

## Tracks and Busses

Once you start creating busses, the Audio Mixer exposes two sets of channel strips. The leftmost set of channel strips correspond to the audio tracks in the Timeline, while the right-most set of channel strips expose sets of controls for each bus that you've created.



By default, the Audio Mixer is divided into two sections, one for tracks (at left) and one for busses (at right).

If you have more tracks and busses than can be displayed all at once given the width of your computer display, then each half of the Mixer has independent scroll bars so you can choose which tracks and which busses you want to see next to one another. You can also remove the split between sections and have a single, continuously scrollable view with all tracks, or change the order or split point for the channels.

## FlexBus Routing and Mixing

The Fairlight audio engine bussing system is called FlexBus. As its name suggests, FlexBus offers a high level of flexibility for bus types and signal routing. DaVinci Resolve Fairlight's older Fixed Bus configuration (prior to DaVinci Resolve v17) offered a more limited fixed bus topology, and can still be used, but FlexBus makes it possible to patch outputs and/or sends in any way required, as dictated by your project.

With FlexBus, each track can output to up to ten busses and sends with additional level and pan controls to a further ten busses. Busses can be sent to other busses up to six layers deep, facilitating complex stem building, processing, and allowing discrete deliverables.

For more information, see *Chapter 168, "Setting Up Tracks, Busses, and Patching."*

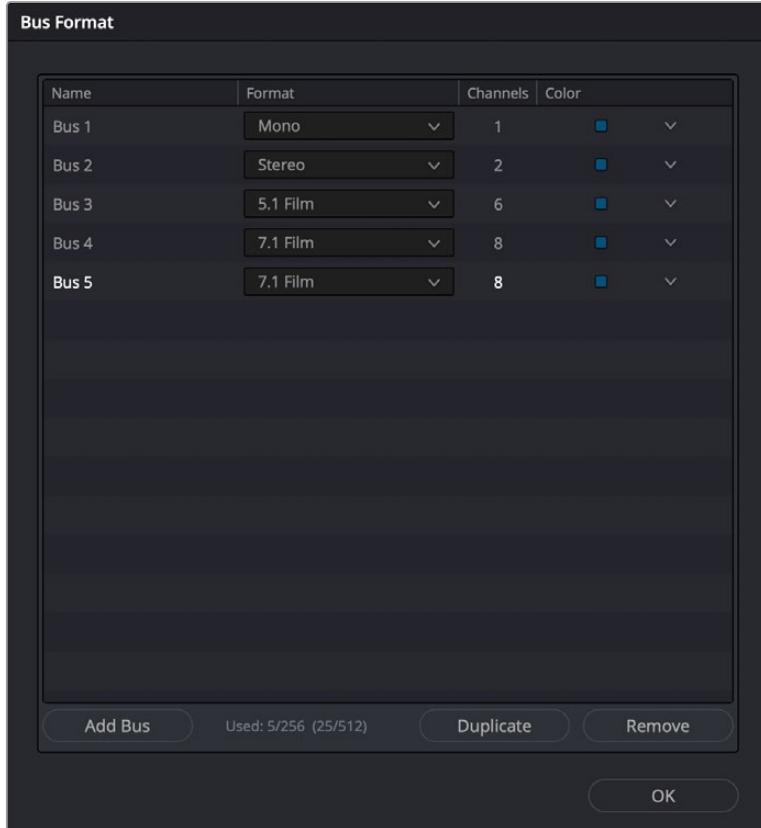
### What is a Bus?

A bus is simply a common signal connection point in an audio mixer. Busses can be mono, stereo, or any larger format, like 5.1 or Dolby Atmos 9.1.6 (where 16 audio signals are used). Bussed connections are mix points for the audio, allowing each audio track feeding their signals to the bus to be summed together to create a master output for that bus.

### Bus-to-Bus Routing

A mix may use a single bus (for example, the default stereo Main 1 bus may be all that you need if you're doing basic stereo mixing). Or you can create "submixes" where multiple busses feed into other busses to create a master mix. For example, you might have a dialogue bus, an effects bus, and a music bus so you have control over those elements separately via the bus "masters" for each, then feed the 3 masters into a main output bus for final mix rendering.

You may want to route the output of a bus to an audio track to record the resulting signal, or route to monitor speakers to listen to the real time output. Finally, the Deliver page can render the output of your designated master bus to create a final bounced file.



The FlexBus structure allows for many different bus track types to be created or changed.

User-definable busses allow for bus-to-bus, bus-to-track, or track-to-bus routing, with each bus having the ability to sum together signals from mono to fully immersive formats (such as Dolby Atmos and Ambisonics) at your discretion. As with any and all of the audio track types in Fairlight, you can change bus types at any time if needed.

The power of the FlexBus system is that it allows you to direct signals to many different places at one time to achieve complex mixing scenarios. Perhaps you need to generate two mixes that are identical in content but need to be of different output levels. You can designate two mix busses, one with a target output level of -14 LUFS and one with a target output level of -24 LUFS. The final mix signal is sent to one bus that is then broken into two more busses, one with a limiter set to accommodate the -14 LUFS mix and one set to the correct level for the -24 LUFS mix, allowing you to create these two different mixes at one time.

In Ambisonic workflows, you can route an Ambisonic bus to another Ambisonic bus, even with differing orders, and any required up- or down-mixing is automatically handled by the Fairlight engine and FlexBus.

FlexBus supports expanded Dolby Atmos capabilities and Ambisonics; for more information see *Chapter 181, "Immersive Audio Workflows."*



FlexBus bus routing buttons

## Legacy Fixed Bussing

Prior to DaVinci Resolve 17, the Mixer had a fixed topology with specific, fixed numbers of sends, submix busses, and main outputs. DaVinci Resolve still supports this older “legacy” bussing topology to maintain compatibility with earlier projects.

With the current FlexBus bussing, the Mixer looks slightly different. The Aux panel on the legacy Mixer has been renamed Bus Send, and the Main/Submix panel has been changed to Bus Outputs.

In the legacy Fixed Bus view:

- Each audio track’s channel strip has a set of Main and Submix bus buttons that let you assign the audio output by that channel strip to a Sub (typically used to combine different subsets of tracks into submixes) or to a Main (typically used to output or render overall mixes).
- Each Sub and Aux’s channel strip has a set of Main buttons so that different combinations of Subs can be assigned to each Main. Main channel strips have no buttons because, from a bussing perspective, they’re the final output.
- Main and Submix buttons let you assign tracks to busses, and busses to other busses.



Main and Submix bus buttons

### Using Legacy Fixed Busing

If you want to work using the previous method of Fixed Bus mapping, you can do so for new projects by accessing the Project Settings > Fairlight panel, and turning on the “Use fixed bus mapping” checkbox. However, as there is no practical advantage to using the older legacy fixed bus system, and several features are only available in FlexBus, using FlexBus is recommended.

## Converting Older Fixed Bus Projects to FlexBus

Older Fixed Bus projects can be converted to FlexBus by doing the following:

- Open Project Settings > Fairlight.
- Under the Bussing heading, uncheck “Use fixed bus mapping.”
- A dialog will appear, allowing you to convert the project to FlexBus.

# Customizing the Onscreen Mixer Controls

The 3 dot Option menu at the upper right-hand corner of the Mixer provides several different options for customizing the appearance of the Mixer, as well as which controls are shown or hidden:

- **Full Track Mixer or Small Track Mixer option:** While the Full Track Mixer provides more room for buttons and controls that are large enough you don't have to squint to see them, the Small Track Mixer allows many more channel strips to be seen at one time.



The Small Track Mixer view

- **Show Labels option:** These are the sectional names for functional areas of the Mixer that appear at the far left of the Mixer channel strip area. If you're first getting started, these labels are useful, but once you've gotten used to the Mixer's layout, hiding the labels can give you a bit more room to work with for another channel strip or two.
- **Channel Strip Control Visibility options:** Allows controls to be shown or hidden in the Mixer. You can hide controls you know you're not going to be using, no longer need to adjust, or wish to not disturb.

# Managing Channel Strips Using the Index

The Index is a consolidated list view of all the tracks in the current Timeline, designed to make it easier to manage timelines with lots of tracks. Columns let you see each track's visibility, track number, name, controls, channel format, monitor assignment (if any), ADC controls, and VCA assignment. The controls in these columns let you manage the tracks in the current Timeline by showing or hiding them, toggling track controls, or rearranging them. You can also right-click on one or more selected tracks to color code them, or change the track type.

Tracklist		Name	Track Controls				Format	VCA
#			L	R	S	M		
A1	SYNC						1.0	VCA 1
A2	VO					M	1.0	VCA 1
A3	SFX 01						2.0	VCA 2
A4	SFX 02						2.0	VCA 2
A5	Drum Hit						2.0	
A6	MX						2.0	

The Tracks panel of the Index shows all tracks on both the Timeline and the Mixer.

## Showing and Hiding Tracks

You can use the Tracks panel of the Index to hide tracks you don't need to work on in order to create more room for tracks you need to see.

**TIP:** To quickly show or hide a number of tracks, click and drag up or down over the eyeball button of each track where you want to toggle the visibility.

## Color Coding Tracks

Select one or more tracks, then right click one of the selected tracks and choose a color from the Change Track Color submenu of the contextual menu.

## Toggling Lock, Record, Solo, and Mute

As with visibility, you can use the Lock, Record, Solo, and Mute controls to quickly enable or disable multiple tracks by clicking and dragging up or down over the Lock, R, S, or M buttons you want to toggle.

## Rearranging Tracks

You can rearrange tracks in the Tracks tab in the Index by clicking any track strip area between other controls, and then dragging that track up or down in the Index. As you drag, a white line shows you where that track will be inserted when you release it. You can even select a contiguous series of tracks and drag them all to a new position in the Timeline at once.

## Managing the Dividing Line

By default, there are two areas of tracks in the Index; one area is for audio tracks, and one area for busses and VCAs with a dividing line separating them. Busses and VCAs can be dragged up out of the

divider and into any position for any order. This can be quite useful when having a series of dialogue tracks, for instance, and pulling the dialogue bus up next to them.

The dividing line's position can be moved to any location by dragging it, so you can keep the split organization of tracks into two different areas but re-order what is shown.

Once the order has been changed in the Index, this is reflected in both the Mixer panel as well as in the Meter panel. By reordering busses and tracks, you can adjust your workflow for whatever set of tasks you are working on.

### Single Mixer View

Clicking the three dot Option menu at the top of the Mixer panel offers an option for Single Mixer view. The Single Mixer view removes the divider line from the Tracks tab in the Index entirely, providing a continuous scroll of the tracks, both in the Mixer panel horizontal scroll and the Index vertical scroll. You can restore the divider at any time.

**NOTE:** You can reset the bus order to its original layout by choosing "Reset Bus Order" from the three dot Options menu on the upper right of the Mixer.

### Changing Track Type

Track type refers to the channel width of the audio track and what format it is. The track type can be changed at any time. For example, you could have a mono track and change it to a stereo, or 5.1 track, or a 12 channel Adaptive.

To change the track type, select one or more tracks, then right-click one of the selected tracks and choose a different track type from the Change Track Type submenu of the contextual menu.

**NOTE:** Keep in mind that if you change from a larger track type to a smaller one, you may need to also set which of the channels in the larger source audio file are now audible on the smaller track type. This can be handled via the contextual menu choice Clip Attributes for a clip, using the Audio tab.

## Selecting Channel Strips and Tracks

When you select a track in the Timeline, you also select that track's accompanying Mixer channel strip, and vice versa:

- To select single tracks, just click.
- To select multiple contiguous tracks, select a starting track or channel strip, hold down Shift, and click on last item you want in your selection.
- You can also select multiple channel strips in the Mixer by clicking and dragging to create a bounding box around the tracks you want to select.
- To select non-adjacent (discontiguous) tracks or channel strips, command-click on each item you want to add to your selection.



Selecting multiple channel strips selects the same tracks in the Timeline

## Track Organization

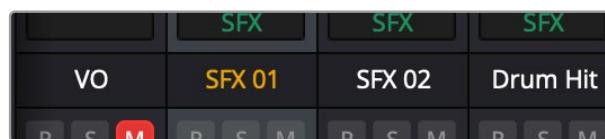
Each channel strip has three organizational properties that let you keep track of which channel strip is responsible for which part of the mix.

- **Track color:** Each track can be differently color coded to help you keep organized. These colors appear in the Timeline track header, the Mixer, and the meters to help you keep track of which track corresponds to which channel strip and meter.



The track color and track number appear at the top of each channel strip.

- **Track number:** The number of the timeline audio track corresponding to each channel strip appears here.
- **Track name:** This mirrors the track name found in the track header of a track on the Timeline. If you customize an audio track's name in the Timeline or in the Mixer, that name appears here.



Each track's name appears between the assignment buttons and the arm/solo/mute buttons

# Fairlight Mixer Signal Path

The signal path or layout (“topology”) of a mixer describes how the audio signals are routed from one place to another.

The default signal flow on the Fairlight channel strip is as follows:

- 1 Audio source: Input menu allows choice of source, including file playback, bus, live input, etc.
- 2 Path Settings: Accessible from the Input menu. Allows adjustments to the input signal.
- 3 Track FX: Built-in effects, Voice Isolation (Studio only), and Dialogue Leveler. Disabled by default.
- 4 Effect: Fairlight FX, AU, or VST effects.
- 5 Dynamics: Dedicated channel dynamics processor with expander/gate, compressor, and limiter.
- 6 EQ: Dedicated 6 band EQ with variable gain, frequency, and Q.
- 7 Output Routing: Panning and bussing.

The main fader for the channel strip then controls the level to any assigned main output busses. Bus Send faders control the level to any destination set for a mixer channel send and can be set pre-or post-fader.

## What Is An Effects Insert?

Each time you add an effect to a channel, a signal processing “insert” (insertion point) is enabled. The source signal flows from the input of the effect to its output, and then onwards to any additional insert(s) to the next stop in the Mixer’s signal flow.

DaVinci Resolve supports a total of six inserts per channel in addition to the built in Dynamics and EQ processing.

Click on the Input area to access the Input drop-down menu, letting you patch inputs, patch busses, and configure the input settings of audio signals routed through Blackmagic or other hardware audio interfaces.

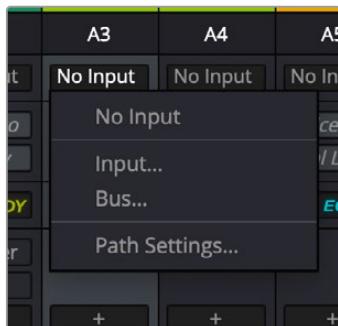
### “Pre” vs. “Post”

The term pre refers to a signal that is routed for use before another connection point. For example, you may prefer to work with pre-fader metering as you can always see the original signal level coming off of disk reflected in the meter level.

A signal that is post occurs after a connection point. For example, you generally want effect sends that go to a reverb effect to follow the level of a track’s main fader so that the reverb level follows the overall level. As a result, Bus Sends are set to have post fader routing by default.

# Input

For more information on using the options of the Input menu, see *Chapter 168, "Setting Up Tracks, Busses, and Patching."*



The Input drop-down menu allows you to initiate patching any available sources using the Patch Input/Output window.

## Path Settings

Choose Input at the top of the Mixer channel strip to access the Path Settings control window. These controls allow you to modify various aspects of the Mixer channel strip that may need adjustment prior to, or post, recording to control the mic/line inputs on Fairlight audio interface hardware, and more.



Path Settings window

### Mic/Inst

Controls will only appear on this panel if you have connected channels 1 or 2 of a Fairlight SX36 audio interface to your system. If connected, you can remotely control all of the options (including level) for the mic/instrument inputs of the SX36 if they are assigned to the channel. If there is no connection to an SX36, the area is empty.

### Record Level

- **Record:** Linked and identical to the Record Enable button on the channel strip; here for convenience. If you hit one, it will enable the other.
- **Thru:** Allows the input signal to pass into the Mixer without enabling a record path. This is ideal when you want a source signal to always be available and just want to monitor it.
- **Record Level:** Allows you to apply a digital gain adjustment to the record path to disk, post the output of your audio interface's analog-to-digital converter.

Normally, this control should be left at 0.0 (no change, unity gain), as it affects the level you are recording to disk. It is best practice to use the level controls on your audio interface to control the input level into DaVinci Resolve in order to maximize audio fidelity. However, there might be a time where you need a bit more level, or may not have access to an audio interface's controls, and in those cases you can adjust the input.

## Trim

- **Polarity:** Inverts the polarity of the signal coming into the channel strip (sometimes referred to as "flipping the phase"). For example, you may have an input signal like an explosion where the transient attack of the signal produces with a massively positive-going waveform (where the waveform mostly appears above the zero line). If you invert the polarity, the signal will now be mainly negative-going and the waveform will be concentrated beneath the zero line. Inverting polarity is sometimes used to more closely align signals from multiple microphones and can be used creatively to affect frequency response of such a signal.
- **Trim Level:** Allows you to trim the level of the signal coming off of disk, post the Track FX (which process directly off of disk) and pre all other effects. Trim Level appears post the recorded signal to disk and doesn't affect the recording level. Trim is a playback adjustment and allows you to adjust the level of the signal coming into your mix to optimize the level feeding effects and the busses, or to slightly trim an otherwise perfect element in the mix up or down in level.

## Direct Output

Each audio channel strip can enable a direct output that can be used to feed any other input destination. You can patch this source using the Track Direct choice in the Patch Input/Output dialog via the Source dropdown. For more information see *Chapter 168, "Setting Up Tracks, Busses, and Patching."*

- **On/Off:** Enables/disables the direct output.
- **Pre:** Sets the direct output tap-off point to be pre (before) the channel fader. On by default.
- **Level Control:** Sets the level from full off (minus infinity) to +10 dB. Default is 0.0 (unity gain).

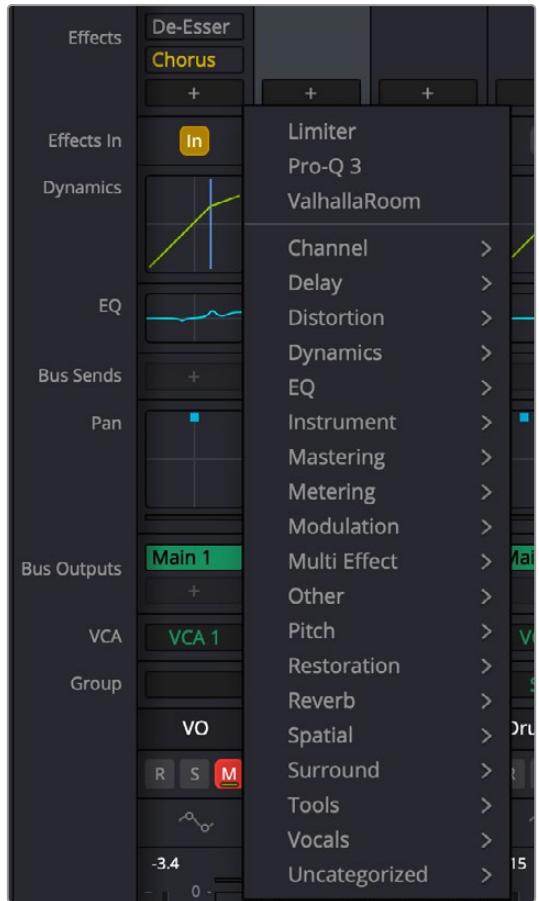
## Insert

Linked and identical to the Effects In button on the channel strip; here for convenience. If you hit one, it will enable the other. Switches all Fairlight FX, AU, or VST effects on a channel in or out of the signal path with a single switched control.

# Effects

Fairlight FX, VST, or Audio Unit effects can be applied on the Mixer's channel strips. Effects are applied on the entire track, not just on one or more clips in the Timeline for that track.

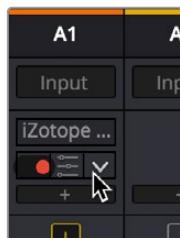
Clicking the plus ("+") button opens a drop-down menu, allowing you to apply any Fairlight FX, VST, or AU effects installed on your machine to that track. The menu is organized by processing type. Within each type, there is a hierarchical choice for Fairlight FX, AU, and VST (if you're on a Mac) or Fairlight FX and VST (if you're on Windows).



**NOTE:** Depending on what you have installed on your machine, the collection of audio effects available for the Mixer channel strip inserts is often close to (or identical to) those that you can access for clip-based audio processing found in the Effects panel on the left side of Cut, Edit, and Fairlight pages.

**TIP:** You can store favorite effects for quick access at the top of the list by marking them as favorites in the Effects panel. Mark a favorite by clicking on the star next to the name.

Clicking on the plus sign shows the Effects drop-down list for assignment



Hovering the mouse pointer over an effect insert reveals controls for that effect.

Hovering the mouse over any listed effect reveals controls for enabling/disabling, replacing or deleting the effect, or opening an effect's custom controls (the user interface for that effect).

## Changing the Order of Effects on a Channel

The order of effects on any Mixer channel strip can be changed by clicking on the Effects Order button. A drop-down menu appears allowing you to change the order between various routing combinations of all insert effects (Fairlight FX, or AU, or VST plugins) and the built-in Dynamics and EQ modules. The default routing is Effects ("FX"), Dynamics, EQ.



Effects Order drop-down menu

Different effects orders can produce very different creative results. For example, it is usually best practice to apply noise reduction first in a signal chain, so you're not affecting the volume or quality of the noise floor you're trying to remove, so the plugin can do its job most effectively. Or you may wish to apply dynamics processing prior to EQ, as changing the spectral content of your source may affect the response of the compressor.

## Moving Inserts by Dragging

You can move inserts from one location to another simply by clicking and dragging to a new location. Using this technique, you can move an effect from one channel to another, or swap or move the location of an effect on a channel to another insert position on that channel (displacing the plugin already present). Note that, at this time, you can't use this technique to copy tracks to busses or vice versa.

## Copying and Pasting Effects

You can copy entire effect chains with their specific effect parameters intact, track by track. Let's say that you've created a plugin chain on a dialogue track that has Noise Reduction, a De-Hummer, and a Dynamics plugin that you have tweaked to the exact settings needed for those dialogue recordings to sound great.

You also have another track that has similar recordings that could benefit from the exact same chain of plugins and those particular settings. Rather than install each plugin to the track and redo the settings, you can simply right-click the track header (A1 for example) and click Copy. Then go to the track header of the new track you want effected, right-click, and click Paste. You will now have the identical plugin chain copied over to the new track, all with each of the settings exactly as you had created on the source plugin dialogue track

## Copying and Pasting Effect Settings

If you have a setting for one effect that you spent a lot of time getting right and see that it could also work just as well on another track's effect, you can copy and paste just those settings.

For example, you have a Reverb on a dialogue track that you have tweaked to perfection. You see that those exact settings will work well for another dialogue track that is on your timeline. Rather than try to recreate those settings, you can duplicate them.

- Hold down the option key and drag the Reverb plugin you want to copy to a new location. This creates a copy at the new location and leaves the original intact.
- Alternatively, you can use Copy and Paste in the plugin three dot Options menu. To apply those settings to the other track, just click Copy from the Options menu of the source Reverb effect, then open the Reverb plugin window of the destination Reverb effect, and click the Options menu to paste. Now all of the parameters are the identical between the two plugins.

For more information on using audio effects, see *Chapter 177, "Audio Effects."*

**TIP:** You can create and load presets for entire channel strips and use them in any project or timeline using the Fairlight > Presets Library.

# Effects In

The Effects In button allows you to bypass all Fairlight FX, AU, or VST effects plugins for the channel with a single control. When it is lit (orange), all effects are enabled; when it is unlit, all effects are bypassed.

**NOTE:** Track FX (Voice Isolation with Resolve Studio and Dialogue Leveler) and the built-in Dynamics and EQ processors are not affected by Effects In.

# Dynamics

Each Mixer channel strip has a built-in Dynamics processor, with a mini Dynamics Indicator graph that appears on the channel strip and acts as the access button. Double-clicking the Dynamics Indicator brings up the Dynamics processor window, with three modules: an Expander/Gate, a Compressor, and a Limiter. Each can be used separately or in concert to manage the dynamics of the audio on the target track.

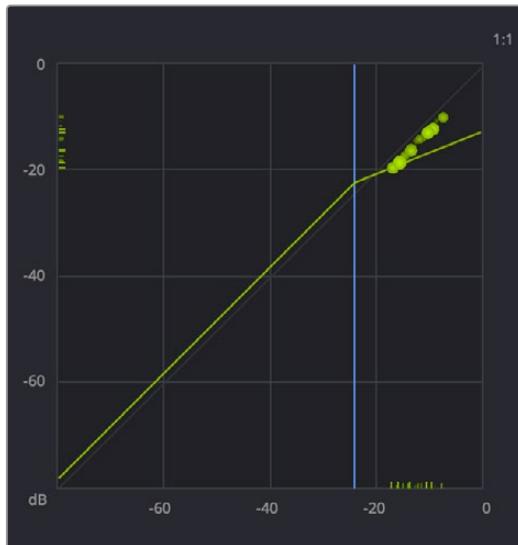


The Dynamics control window

## The Dynamics Graph

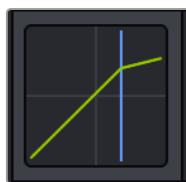
When you enable any combination of the Dynamics window modules you may need for a track, the Dynamics graph updates with curves that show you how the signal is being affected by the Expander/Gate, Compressor, and/or Limiter settings that are being applied. The Dynamics graph also provides a real time animated display that meters the true response of the input/output signals compared to the graphic that shows the basic response curve.

- The X axis (horizontal scale) represents the input signal level.
- The Y axis (vertical scale) represents the output level.
- The blue line represents the threshold.
- The light green line represents the dynamics curve (dependent on the process type and setting; this will change).
- The light green balls that animate in the upper area of the graph follow how the Dynamics control settings affect the signal as it moves above or below the threshold. The balls are affected by the attack and release settings, allowing you to visualize the way the compressor is affecting the input signal.
- The smaller lines that appear on the on the input and outline X-Y lines allow you to see exactly where the input/output levels are.



The Dynamics graph shows the response curve and how the signal is being affected by the current settings in real time.

The Dynamics Indicator on the channel strip displays the same curve, so you can see at a glance what is happening on that channel (but without the real time display). This indicator cannot be adjusted; you must open the Dynamics window to make modifications.



The channel strip Dynamics Indicator

## Master Dynamics Controls

The Dynamics window contains the following overall controls at the top of the window:

- **Enable button:** Turns the overall dynamics effect off and on, without resetting the controls.

**NOTE:** You can also turn dynamics on/off by single clicking on the Dynamics button (the mini graph) in the channel strip.

- **Reset button:** The circular reset icon on upper right next to the three dot Options menu resets all controls of the Dynamics window to their defaults.
- **Preset Menu:** Dynamics presets appear here. You can create, change, and save presets, and use the default presets as good starting points for your track's specific needs.
- **Make Up Gain control:** A post-dynamics level control that lets you boost the signal to compensate for dynamics settings that may have lowered the overall level.

## Expander/Gate

The first of three sets of dynamics modules, the Expander/Gate controls can be switched between expansion and gating. Expansion emphasizes differences in volume by lowering the level of soft parts of the signal relative to the level of louder parts and can be used to minimize noise while increasing the dynamic range of a signal. Gating reduces the level or even silences parts of a signal that fall below the set threshold level in order to reduce or eliminate noise in quiet parts of a recording.

- **Expander:** This button enables the Expander.
  - Threshold:** Sets the signal level below which expansion occurs. Defaults to -35 dB. The range is from -50 to 0 dB.
  - Range:** Amount of decrease in signal level in dB, affected by both threshold and ratio. As ratio increases, range can have more of an effect. At lower ratios, as threshold increases, the effect of range increases.
  - Ratio:** Sets the attenuation ratio (input to output) applied to signals which fall below the threshold level. It controls the rate at which signals will drop, while Range controls how much the signal will drop. Defaults to 1:1.1. The range is 1:1.1 to 1:3.0.
  - Attack:** Adjusts how quickly the expansion occurs when a signal exceeds the threshold. Defaults to 1.4 ms (milliseconds). The range is 0 to 100 ms.
  - Hold:** Controls how long the Expander is kept open after the input has fallen below the threshold, in ms. Defaults to 0 ms. The range is from 0 to 4000 ms (4 seconds).
  - Release:** Adjusts how quickly or gradually the Expander attenuates when the input signal goes back below the threshold. Defaults to 93 ms. The range is 50 to 4000 ms (4 seconds).
- **Gate:** This button enables the Gate.
  - Threshold:** Sets the signal level below which gain reduction occurs. The range is from -50 to 0 dB.
  - Hold:** Controls how long time the Gate is kept open after the input has fallen below the threshold, in ms. Defaults to 0 ms. The range is from 0 to 4000 ms (4 seconds).
  - Range:** Sets the maximum amount of gain reduction that will be applied when the signal falls below the gate threshold. Once the signal has fallen below the level determined by the gate threshold minus the gate range, no gain reduction is applied. The default is 18 dB. The range is from 0 to 60.2 dB.
  - Ratio:** Unused for gate.
  - Attack:** Adjusts how quickly the gating occurs when a signal exceeds the threshold. Defaults to 1.4 ms. The range is 0 to 100 ms.
  - Hold:** Keeps dynamics from being triggered again until a certain amount of time has passed, in ms (milliseconds). Defaults to 0 ms. The range is from 0 to 4000 ms (4 seconds).
  - Release:** Adjusts how quickly or gradually the sidechain detector stops attenuating when the input signal goes back below the threshold. Defaults to 93 ms. The range is 50 to 4000 ms (4 seconds).

# Compressor

The second set of dynamics parameters let you apply compression, which detects the envelope of an audio signal in order to automatically change its level. A compressor is used to compress a signal's dynamic range by reducing differences in level between the loudest and quietest parts of the input signal.

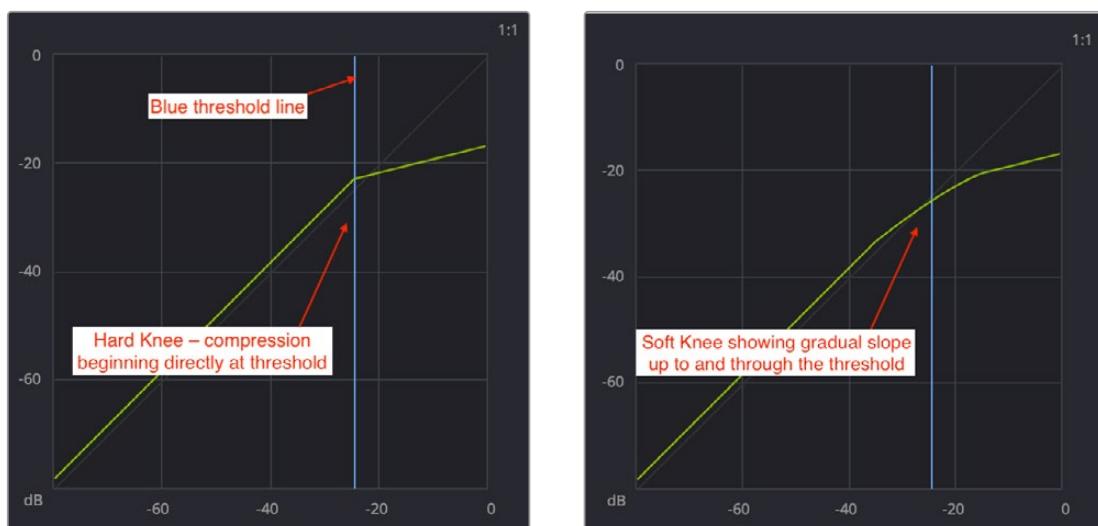
Compression can be used to raise the signal's overall level to be boosted without clipping, increasing perceived loudness. Compression is often used to allow voices to have more presence within a mix, and to smooth out changes in the levels of tracks with too much dynamic range for the task at hand.

However, "overcompressing" can remove natural dynamics of a sound, or remove too many of the natural transients (energy bursts or "attacks") that give the original sound its character. But more extreme compression can also be used creatively to change a sound's character to give it more perceived attack, change its release characteristic, or change the balance and blend of the environment a sound is recorded in (for example, compressing a source signal with a higher ratio and fast release to raise up the presence of a room sound that the source is recorded in).

- **Compressor:** Enables the Compressor.
- **Threshold:** Sets the signal level above which compression is applied. The default is -15 dB. The range is -50 to 0 dB.
- **Ratio:** Adjusts the compression ratio. This sets the gain reduction ratio (input to output) applied to signals which rise above the threshold level. The default is 2.0:1. The range is 1.0:1 to 10:1. Commonly used ratios for dialogue processing are 2.5:1 to 3:1. With a 3:1 ratio, for every 3 dB of increase in signal above the threshold, 1 dB is output.
- **Knee:** Affects behavior with signals that are very near the threshold. The knee can smooth out the transition between where you don't hear any compression and when the "hard compression" (the set ratio) starts.

**The Knee:** Control allows a smoothing of the slope of the threshold point. You can see Knee's effect on the graph when using a ratio like 4:1 and adjusting Knee; the graph will show the line where compression "kicks in" being rounded off by higher values of the Knee control.

Normally, compression begins directly above the threshold. This is known as a "hard knee." For a smoother and less audible handling of compression, you can set a softer knee, so the compression turns on gradually as signals approach the threshold and rise above.



Hard and Soft Knee graphs

**Mix:** Adjusts the mix between the compressed (0) and non-compressed input signal (100), allowing you to balance the compressed signal against the original, unaffected sound. For example, if you're creating a large explosion impact sound effect, it might sometimes be useful to mix in just a bit of the original, uncompressed signal with a more compressed version to preserve more of the original character along with compressed version. The default is 0 (all compression, no original signal).

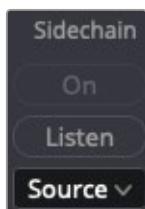
**Attack:** Adjusts how quickly the compression will occur when a signal exceeds the threshold.

The default is 1.4 ms. The range is 0 to 100 ms.

**Hold:** After the attack phase has been completed, the Hold parameter controls how long this initial attenuation is maintained, before entering the release phase. Defaults to 0 ms. The range is from 0 to 4000 ms.

**Release:** Adjusts how quickly or gradually the sidechain detector stops applying compression when a signal falls back below the threshold. The default is 93 ms. The range is 50 to 4000 ms (4 seconds).

**Sidechain:** This redesigned section lets you set up sidechain compression or "ducking" using the parameters and controls listed below, instead of using a Send from a track or bus to feed the sidechain input:



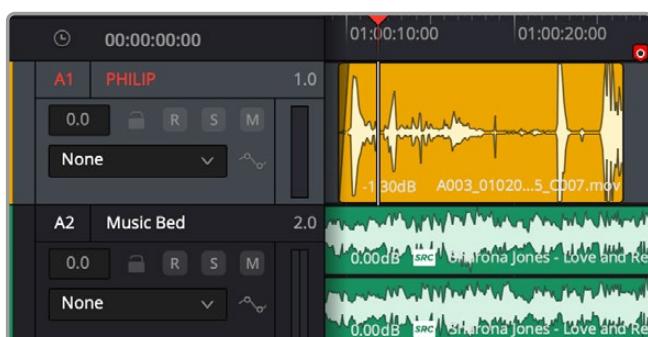
Sidechain module

- **On:** When clicked, this button turns red indicating that the Sidechain module is active.
- **Listen:** Clicking this button lets you hear the incoming signal on its own, which is helpful if you need to confirm that the correct audio signal is being sent to the Sidechain module.
- **Source:** This button selects the track or bus the incoming audio is coming from.

## Sidechaining and “Ducking” with Dynamics

The Dynamics module allows you to set up “sidechain” compression, which lets you temporarily lower the level of a target track or bus using the audible signal from a source track or bus.

For example, you may have a dialogue on a track or bus (the source) and another with music (the target), and you want the dialogue to be heard more prominently. This can be done by following the steps below:



Choosing the track header in the Fairlight timeline to add dynamics

- 1 Open the Dynamics plugin on the music track or bus, and switch on the Compressor.
- 2 Click the Source drop-down and select the dialogue track or bus.

**TIP:** Using a bus as the ducking source lets you use multiple sources to trigger changes in your target track.

- 3 Click the On button, which turns red, indicating that the Sidechain section is active.
- 4 While playing a section of your mix, set the amount of gain reduction by lowering the Threshold and raising the Ratio until the target audio is attenuated to a level that makes the dialogue more audible.
- 5 If needed, adjust the Hold parameter to ensure the gain reduction doesn't fluctuate too wildly.
- 6 You may also need to adjust the Release parameter to stop the gain reduction from ending too abruptly.

Clicking the Listen button lets you hear the incoming signal if you need to confirm that the correct input signal is coming into the Limiter. This button turns yellow when active.

## Limiter

The third set of dynamics parameters let you apply limiting, which imposes a targeted maximum level allowed for a signal. Limiting is similar to compression but essentially has a very high ratio.

**Limiter:** Enables the Limiter.

- **Threshold:** Sets the threshold above which limiting will occur. As the Limiter is designed to hard limit the output, this also essentially sets maximum allowable output level. The default is -21 dB. The range is from -50 to 0 dB. It's best to set the amount of limiting by listening, and looking at the amount of gain reduction in the meter. Too much limiting can "squash the life out of the sound" as all of the internal dynamics of a mix can be lost. Used properly, you can smooth out the final mix and achieve higher average level. You can also watch the yellow animated balls in the display to see how the real time limiting response is affected by the controls.
- **Attack:** Adjusts the attack rate time constant of the sidechain detector. The default is 0.71 ms. The range is 0 to 100 ms.
- **Hold:** Once the input level falls below the threshold, Hold keeps limiting active until the hold time has elapsed, when release time will start. Default is 0 ms. The range is from 0 to 4000 ms.
- **Release:** Adjusts how quickly the sidechain detector stops applying limiting when the signal falls below the threshold. The default is 90 ms. The range is 50 to 4000 ms.

**NOTE:** When limiting is applied to the final output of your channel (or to an entire mix), you often will need to use the Makeup Gain slider to maximize the output level (if a master) or to match the original level of an individual track (unity). You can audition the difference in level by bypassing the Dynamics module overall, or the Limiter only.

# EQ

Each Mixer channel strip has a 6-band equalizer EQ, with a mini-EQ graph that displays the current EQ curve, bypasses the plugin, and opens it when double-clicked.

This plugin offers a choice of high and low shelving, parametric or notch response curves, and high and low pass filters with selectable slopes up to 24dB/octave, with controls for boosting and attenuating different frequency ranges.

Each band has controls for the filter type (Bell, Lo-Shelf, Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ changing depending on the filter type.

You also have a choice of four response curves, from the Native Fairlight response curve to emulations of classic EQs.



The channel strip EQ window



The channel strip's EQ Indicator.  
(Left) EQ is adjusted, and (Right) EQ is flat (no EQ).

## Master EQ Controls

The Equalizer window has the following overall controls:

- **Enable button:** Turns the plugin on and off.
- **Reset button:** The circular Reset icon on the upper right of the EQ resets all parameters to their default settings and values.

- **Equalizer Type:** This drop-down offers the Native Fairlight response curve and three emulations of classic mixing console EQs.
  - Earth:** Native Fairlight response (Default)
  - Air:** SSL 4K
  - Ice:** Neve V
  - Fire:** Focusrite
- **Preset Menu:** Your EQ settings can be saved as presets by clicking the Plus button to the left of the Preset menu.
- **Gain fader:** This post-EQ fader lets you boost or attenuate the processed signal to compensate for your EQ adjustments.

## The EQ Graph

The EQ graph provides a visual representation of the current EQ settings, with numbered “handles” for each active EQ band, which can be dragged in any direction to change the corresponding frequency and level. You can also use your mouse wheel to adjust the Q (bandwidth) of each band.



The EQ graph

Dragging the numbered handles on this graph in turn modifies the parameters of the corresponding band, and conversely, changing each band's parameters will also alter the EQ graph, which serves the additional purpose of providing a graphical representation of the equalization curve being applied to that track. If you have a mouse wheel, it can be used to control Q.

## Bands 1 and 6

The outer two sets of band parameters are for processing the lowest or highest frequencies of an audio signal.



Band 1 controls active

Band 6 controls active

- **Band filter type:** Clicking the Band 1 or Band 6 buttons activates or deactivates their respective controls.
- **Band filter type:** Bands 1 and 6 are switched off by default, but when active, they each allow access to filtering options below:
  - Band 1:** Low Shelf, Low Peak, High Shelf, and High Pass.
  - Band 6:** Low Pass, Low Shelf, High Peak, and High Shelf.
- **Frequency:** Adjusts the center frequency of the EQ band.
- **Filter Slope:** The high and low pass filters offer selectable slopes starting at 6dB/octave up to 24dB/octave.
- **Gain:** When bands 1 and 6 are set to a peaking or shelving response curve, this parameter cuts or boosts the selected frequency with a range of ±20 dB.

## Bands 2–5

The middle four sets of band controls let you make a wide variety of equalization adjustments. They're on by default to make it easy to begin making adjustments.



The Band 3 controls

- **Band enable button:** Clicking these Band buttons activates or deactivates their respective controls.
- **Band filter type:** Bands 2 to 5 offer the following filtering options: Low Shelf, Peaking, Notch, and High Shelf.
- **Frequency:** Adjusts the center frequency of the EQ adjustment.
- **L, ML, MH, H Buttons:** These buttons restrict the center frequency of a band to one of the following frequency ranges: Low, Medium Low, Medium High, or High.
- **Gain:** This control is available when a band is set to a peaking or shelving response curve and adjusts the level of the center frequency within a range of ±20 dB.
- **Q Factor:** This parameter is available when a band is set to a peaking response or when the Equalizer type is set to Fire and adjusts the bandwidth of an EQ band, with a range of .3 to 10.3. Smaller Q factors widen the bandwidth, while higher values make it narrower, determining how much neighboring frequencies are also affected as the center frequency is adjusted.

# Bus Sends

Bus Sends let you route a channel strip's source signals to a bus destination, with control over level, pan, mute, and pre/post fader routing. You can create bus sends on channels that go to any bus destination you've created.

Some common mixing tasks that sends can be useful for:

- **Submixing:** For example, to render separate mixed outputs that are different formats, such as stereo, 5.1 surround, or Dolby Atmos, all at the same time.
- **Feeding signals to a shared effect:** For example, route to a reverb plugin, where post fader sends on various mixer channels feed a reverb placed on a bus channel strip by varying amounts.
- **Headphone cue mixes:** Create separate pre-fader mixes for the talent so you don't disturb what you're listening to on your main monitor speakers.

## Creating Sends

To create a Bus Send and access its controls:

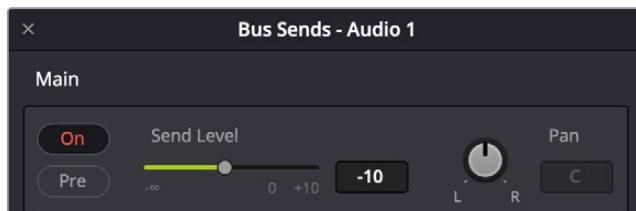
- Click on the assign button with the plus sign (+) in the Bus Sends area of the Mixer.
- A drop-down menu appears with a list of busses; select one to assign.
- Your send is now created.

You can hover over the rectangular name button and access a disable/bypass button, an access icon to show the Bus Send window for the channel, and an “x” to delete the send. A tooltip appears showing the send bus name.



## Accessing the Bus Sends Window

You can access the Bus Sends window to control a channel's sends by clicking in the center of the name button.



Bus Send window controls

Each Bus Send you create exposes the following controls in the Bus Send window:

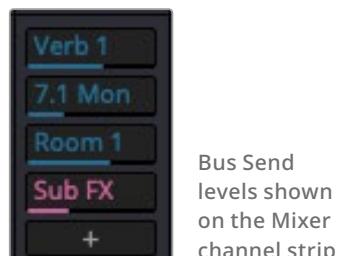
- **On:** Turns the send on or off.
- **Pre:** Switches the send to use pre- or post-fader routing. Enabling this button allows that track to send levels to the destination bus before level adjustments on that track are applied.
- **Send Level:** Adjusts the amount of signal sent from the selected feed to the send bus. The range is OFF to +10dB.
- **Pan:** Provides panning across Bus Send destinations.

### Uses for Pre-fader Routing

One common use of pre-fader sends is for cue mixes to ADR or voice over talent, where the artist wants to hear a completely different mix than the control room mix. Using pre-fader sends and setting up a complete mix to a bus that feeds the headphone system allows a mix that is completely independent.

Pre-fader sends can also be used for special creative effects that might involve a dialogue channel being sent to a reverb plugin via a send. If the send is routed pre-fader, when the main channel fader is lowered to close to zero, the dialogue is still being fed to the reverb, so the dialogue will sound extremely reverberant (almost all of the signal is “wet”). Gradually raising the channel fader will make it sound like the voice is moving closer to the listener, changing the reverb balance and sounding more present.

Bus send levels are shown in the rectangles for each send and have the color codes assigned to the destination busses.



### Legacy Bus Sends – “Auxiliaries”

Prior to DaVinci Resolve 17, the Bus Send panel was called Auxiliaries. Any projects created prior to DaVinci Resolve 17 will use the legacy Fixed Busing. The only difference between the two is the use of “Aux” to refer to sends in the windows and titles.

## Pan

The Fairlight Mixer provides 2D and 3D pan controls that support various audio formats ranging from mono and stereo to conventional 5.1 and 7.1 surround, as well as advanced immersive formats such as Dolby Atmos, Ambisonics, Auro 3D, and NHK 22.2.

## Channel Strip Pan Controls

The Pan section of each Channel Strip includes a Panning Indicator offering visualization and panning control of left, right, front, and back.

Although you can open the Panner to access additional parameters by double-clicking the Panning indicator, you can also do the following in the channel strip Pan section while the Panner is closed:

- Click and drag within the Pan Indicator to adjust the basic panning position.
- Single click to bypass panning.
- Command-drag to adjust the width on multichannel tracks.
- View the Boom level for surround channels, which is displayed as a horizontal blue line at the bottom of the Panning Indicator.



## 2D Panner Controls

### Default View

The Pan window's control set varies based on the mapping of the source audio. Panning adjustments can be made by dragging the icons in the Panner Viewer or using the controls on the left side of the window.



The Panner control window – Default 2D view

The default 2D version of the Audio Pan window includes the following controls:

- **Pan Enable:** Switches the Panner on and off.
- **Spherical:** This button changes the Panner interface from the default 2D view to the 2D Spherical top-down view.
- **3D:** Clicking this button switches the interface to the 3D Cartesian view, offering controls for working with immersive audio formats such as Dolby Atmos, Ambisonics, Auro 3D, and NHK 22.2, as described in the 3D Pan Controls section below.
- Clicking the Spherical and 3D buttons switches the interface to the 3D Spherical view.
- **Left/Right:** Changes the balance of the signal between the left and right speakers, depending on the speaker configuration you're mixing for.
- **Front/Back:** Lets you adjust the balance of the signal between the front and rear speakers based on the surround format you're mixing in.
- **Rotate:** This controller rotates the sound source (or sources) around the listening position in the center of the sound field.
- **Spread:** In the case of multichannel audio, this adjusts the spread or distance between the sound sources. This is measured on a numeric scale of 1-99, where 1 is labeled PNT ("Point") and 99 is labeled FULL.
- **Divergence:** Determines the amount of signal bleed or spillover of a signal from one speaker into adjacent loudspeakers, allowing the sound to occupy more of the sound field, with less focus toward a single speaker position. The amount of signal bleed is represented by green horizontal lines emanating from either side of each speaker position that increases in length as you raise the parameter value.  
**2D:** Clicking this button changes the appearance of the divergence indicators to circles.
- **Boom:** This adjusts the send level to the LFE part of the mix (the Low-Frequency Extension subwoofer system).  
**On:** Enables the Boom output.  
**Pre:** Routes the LFE signal pre-fader.



Boom parameter

**TIP:** To constrain left/right position as you adjust panning, hold down the Shift key.

You can reset any rotary control to its default value by double-clicking it.

## Spherical View



The Panner control window – Spherical view

Clicking the Spherical button at the top of the 2D Panner changes the interface to Spherical view, which has the controls listed below including two parameters for Ambisonic panning:

- **Azimuth:** This control lets you rotate the sound source around the circumference of the sphere.
- **Distance:** This control adjusts the distance between the signal source and the listening position at the center of the sphere.
- **Rotate:** This controller rotates the sound source (or sources) around the listening position in the center of the sound field.
- **Spread:** In the case of multichannel audio, this adjusts the spread or distance between the sound sources. This is measured on a numeric scale of 1-99, where 1 is labeled PNT ("Point") and 99 is labeled FULL.
- **Size:** This parameter is not active at the time of writing.
- **2D:** This parameter is not active at the time of writing.
- **Boom:** This adjusts the send level to the LFE part of the mix (the Low-Frequency Extension subwoofer system).
- **On:** Enables the Boom output.
- **Pre:** Routes the LFE signal pre-fader.

## 3D Panner Controls

DaVinci Resolve includes 3D Cartesian and Spherical versions of this Panner, which lets you do spatial audio positioning when working in advanced surround formats such as Dolby Atmos, Ambisonics, Auro 3D, and NHK 22.2.

## Cartesian View



The 3D Panner control window - Default Cartesian view

Clicking the 3D button changes the Panner interface to the default Cartesian view, which includes a few more controls than the 2D Pan window:

- **Pan enable:** Toggles the Panner on and off.
- **Snap:** This button toggles Speaker Snap mode on and off for a given object. During playback, Speaker Snap mode moves an audio object to the active speaker nearest its established location, to prevent issues like phantom panning.
- **Panner viewer:** A large 3D representation of the virtual room, with a blue sphere representing the position of the track's audio.
- **Perspective Buttons:** These buttons let you view the room from different preset angles. You can freely rotate it by holding down Command-Option-Shift (Ctrl + Alt + Shift in Windows) while dragging it. If you want to return to a default view, click one of the perspective buttons.
- **Front panner:** A 2D panning control that lets you make adjustments along the horizontal Left/Right axis and the vertical Down/Up axis.
- **Side panner:** A 2D panning control that lets you make adjustments along the horizontal Front/Back axis and the vertical Down/Up axis.
- **Top panner:** A 2D panning control that represents the horizontal left/right axis the vertical front/back axis, letting you make these specific spatial adjustments.
- **Left/Right:** Changes the balance of the signal between the left and right speakers, depending on the speaker configuration you're mixing for.
- **Front/Back:** Lets you adjust the balance of the signal between the front and rear speakers based on the surround format you are mixing in.
- **Down/Up:** This lets you change the position of a sound source along the vertical axis.
- **Height Mode Presets:** Located to the right of the Down/Up control, these three height presets lock the interaction of the Front/Back and Down/Up parameters together, providing fixed panning paths that raise the height of a sound source to its maximum (100U), while moving it from one end of the sound field to the other.

**Freeform:** This is the default setting for this section, which lets you adjust the Down/Up and Front/Back controls independently.

**Flyover:** Moves the sound source upwards in a sharp arc to 100U, and then from one end of the sound field to the other while maintaining maximum height.

**Triangular:** This preset moves the source diagonally up to 100U and immediately back down again as it travels from one end of the sound field to the other.

**Arc:** Moves the sound source upwards in an arc to 100U and immediately back down in the same manner as it travels from one end of the sound field to the other.

- **Rotate:** This controller rotates the sound source or mix around the listening position in the center of the sound field.
- **Tilt:** This knob tilts a sound source or mix up to ninety degrees to either side so that it vertically rotates or “swings” around the listening position in the center of the sound field.
- **Spread:** In the case of multichannel audio, this adjusts the spread or distance between the sound sources. This is measured on a numeric scale of 1-99, where 1 is labeled PNT (“Point”) and 99 is labeled FULL.
- **Divergence:** Determines the amount of signal bleed or spillover of a signal from one speaker into adjacent loudspeakers, allowing the sound to occupy more of the sound field, with less focus toward a single speaker position. The amount of signal bleed is represented by green horizontal lines emanating from either side of each speaker position that increases in length as you raise the parameter value.
- **2D:** Clicking this button changes the appearance of the divergence indicators to circles.
- **Boom:** This adjusts the send level to the LFE part of the mix (the Low-Frequency Extension subwoofer system).
- **On:** Enables the Boom output.
- **Pre:** Routes the LFE signal pre-fader.
- **Only:** Allows the panner to output an LFE signal only from the channel. The Boom level line in the channel strip Pan Indicator is gray when this button is active.

## Cartesian View - Dolby Atmos



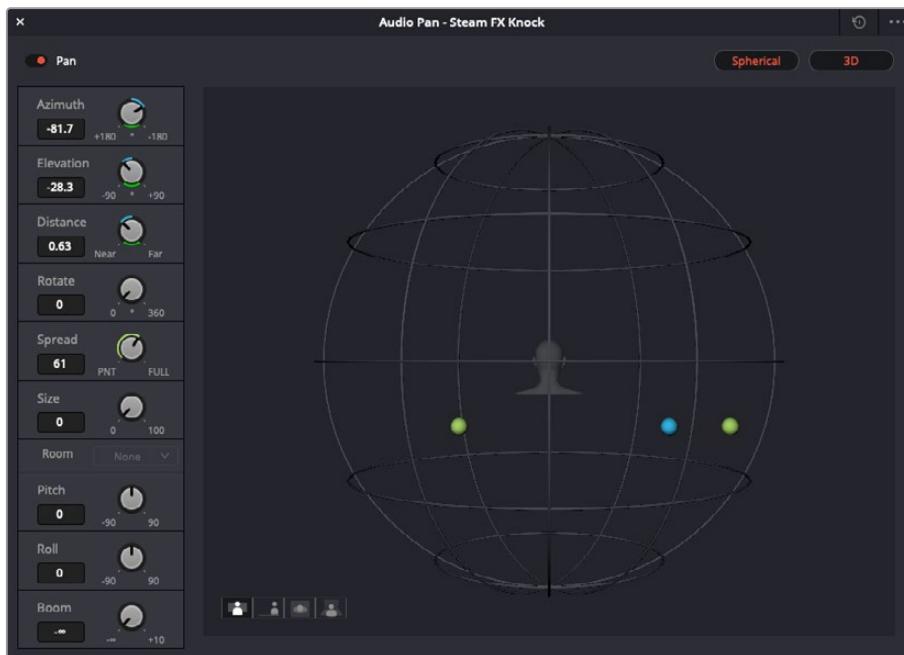
The 3D Panner control window - Cartesian view – Dolby Atmos

When working in a Dolby Atmos workflow, the 3D Cartesian view of the Panner includes all the features mentioned above for the default Cartesian view, with the addition of the following controls located at the top of the interface:

**NOTE:** These controls are not available on Dolby Atmos busses.

- **Elevation Button:** This button hides and reveals the four top speakers in the Viewer.
- **Zone:** In addition to the option to view all speakers this drop-down menu offers five others that let you include or exclude certain speakers from this object's mix:
  - No Back:** Hides the rear surround speakers.
  - No Sides:** Hides the side surround speakers.
  - Center Back:** Shows only the Center and Rear speakers.
  - Screen Only:** Shows only the Center and Left and Right Front speakers.
  - Surr (Surround) Only:** Show only the Surround speakers.

## Spherical View



The 3D Spherical Panner control window

The 3D Spherical Panner lets you position your source anywhere in the sound field, including above and below the listener. Spherical panning is based on Azimuth, Elevation, and Distance.

This view of the 3D panner offers the following controls:

- **Azimuth:** This control rotates the sound source around the circumference of the sphere.
- **Elevation:** This raises and lowers the sound source towards the top and bottom of the sphere, which allows you to place it above or below the listener if you want.
- **Distance:** This control adjusts the distance between the signal source and the listening position at the center of the sphere.

- **Rotate:** Rotates the sound source (or sources) around the listening position in the center of the sound field.
- **Spread:** This control adjusts the spread or distance between the sound sources. This is measured on a numeric scale of 1-99, where 1 is labeled PNT ("Point") and 99 is labeled FULL.
- **Size:** This parameter is not active at the time of writing.
- **Room:** This parameter is not active at the time of writing.
- **Pitch:** This knob tilts the sound source or mix, forward or backward while rotating or "swinging" it up to ninety degrees around the center listening position.
- **Roll:** This knob tilts a sound source or mix, up to ninety degrees to either side so that it vertically rotates or "swings" around the center listening position.
- **Panner viewer:** A large 3D representation of the spherical sound field, with a blue sphere representing the position of the track's audio.
- **Perspective Buttons:** These buttons let you view the Sphere from different preset angles. You can freely rotate it by holding down Command-Option-Shift (Ctrl + Alt + Shift in Windows) while dragging it. If you want to return to a default view, click one of the perspective buttons.

## Bus Assignment Buttons

To route a bus created in the Bus Assignment dialog directly on the Mixer, click the + sign to see a drop-down menu of available busses. To route multiple busses simultaneously, Command-Click (Ctrl+Click) each of your choices in the drop-down menu.



The Bus Outputs panel is where you can route bus signals.

## Legacy Mixer Bus Assignment

In the Legacy Mixer the bus assignments have two sets of buttons that let you route audio from one channel strip's output to Sub and Main busses that you've set up for your mix.



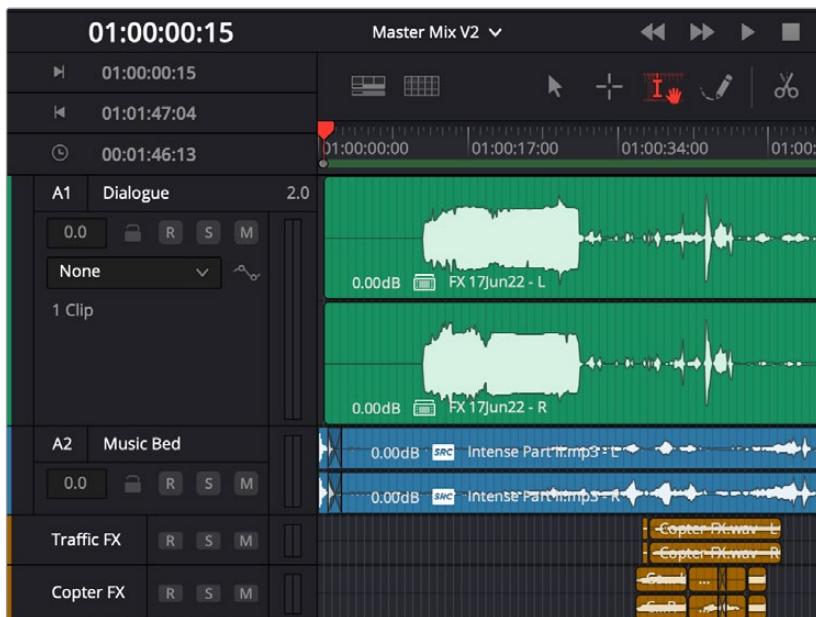
The channel strip's Bus Assignment buttons

- **Main:** These buttons let you assign a track or sub's channels to one or more of the main busses.
- **Submix:** These buttons let you assign that track's channels to one or more submix busses.

# Nested Audio Timelines

Edited timelines can be combined with other timelines by dragging the desired nested timeline onto an empty track in the destination timeline. This is a very powerful and useful feature. For general information about nested timelines, see *Chapter 43, "Take Selectors, Compound Clips, and Nested Timelines."*

For example, you might have created a master timeline that will contain your master mix, and you'd like to bring the work done on a separate timeline that is focused on dialogue editing. The dialogue timeline could now appear as a single nested timeline, represented as single track in the master mixing timeline.

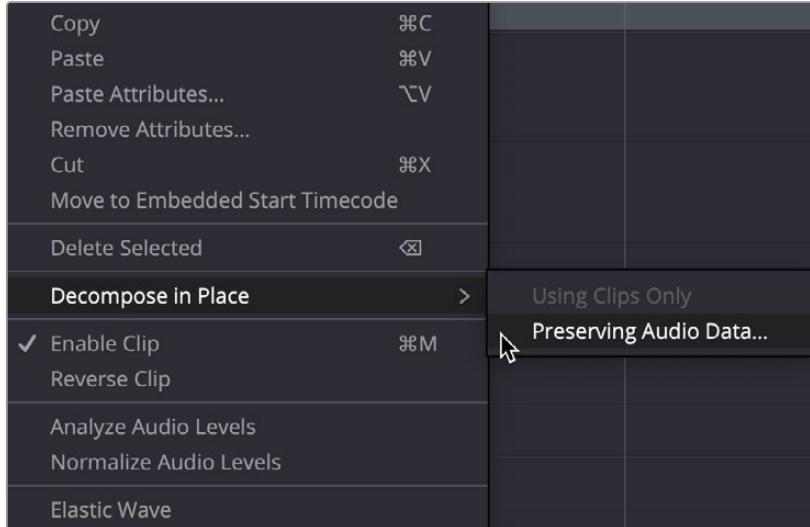


Track A1, Dialogue, is a stereo representation of an edited timeline.

If you want to work with the individual tracks and clips again, you can use a process called decompose to change that single nested timeline track back to the edited sequence. There are a number of options to decompose to the original set of tracks, with several bussing options available.

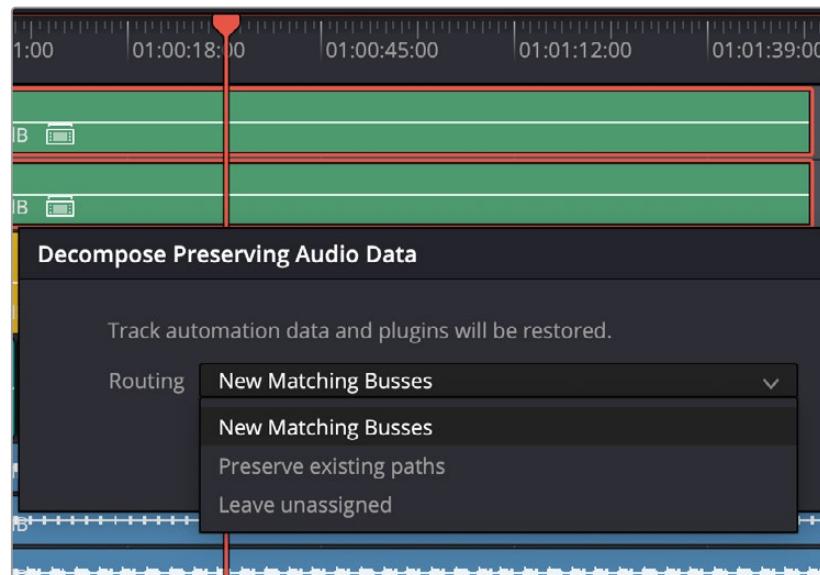
This image shows what was a separate, edited timeline of tracks of dialogue and is now a single track, A1 Dialogue, brought into the destination master mix timeline. By right-clicking the clip, a contextual menu allows you to decompose the track in place, back into its original tracks and clip edits.

There are two decompose options for this. On the Fairlight page, you can Preserve Audio Data, and when on the Edit page, you can Preserve Audio Data as well as decompose by Using Clips Only.



Decompose in Place contextual menu

Once you've chosen to decompose the track into its prior Timeline elements, then the Decompose Preserving Audio Data dialog box appears, making several more options available.



Options for signal routing when decomposing a clip

There are three options when choosing to decompose a nested timeline in the Fairlight page. All three options preserve mix and plugin automation on the source tracks; they only differ in terms of routing. The choices are:

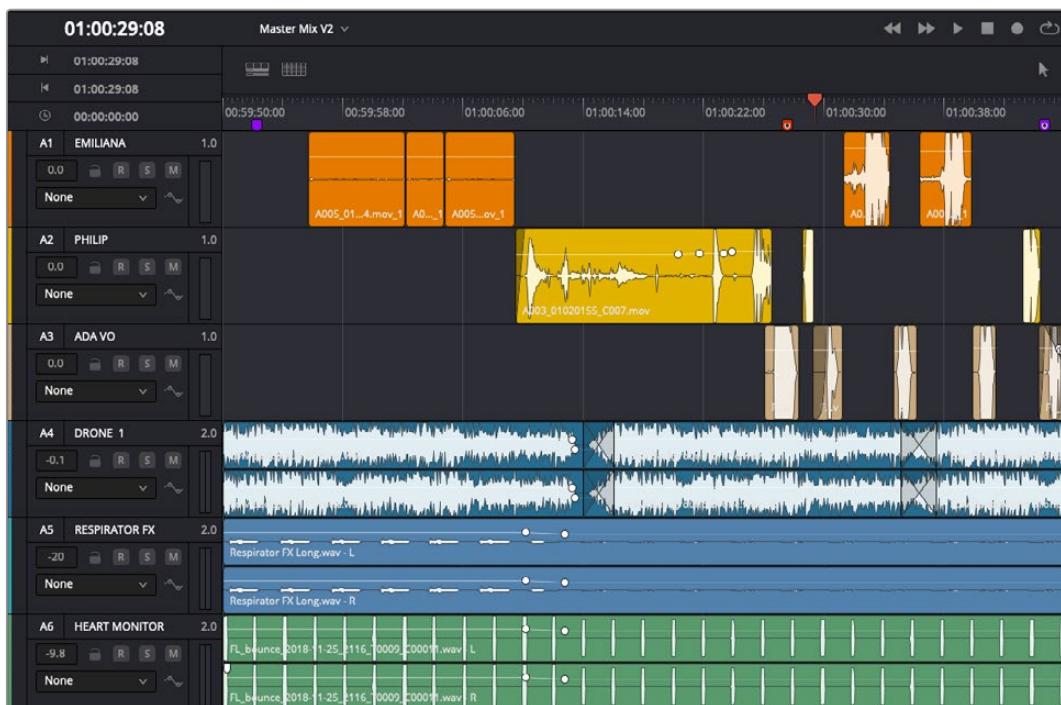
- **New Matching Busses:** All of the busses from the nested source timeline are brought into the current timeline as separate, new busses. These busses will have all of the processing, routings, settings, and automation carried over from the nested source timeline. Any preexisting bus routing in the destination timeline is left unaltered.

This option is best when you want combine different mix layouts and to preserve all preexisting bus routing in the destination timeline, while adding the bus topology from the nested source timeline to the destination to create a single, larger entity.

— **Preserve Existing Paths:** This option preserves all of the master bus information in the current timeline and routes matching busses from the decomposed nested timeline to preexisting, identical busses in the destination timeline.

This option is best when the nested source timeline and the destination timeline share the same bus routing structure, as might be the case of a common layout template. In this case, you just want to add the tracks to the destination timeline and route them to the same designations in the master. You still get all of your mix automation and plugins carried across as well.

— **Leave Unassigned:** This option leaves the new tracks unassigned when created, ready to be routed in whatever way you need.



Decomposed version of the nested dialogue timeline  
showing the original dialogue tracks and edits

Nested audio timelines can be very useful when managing large projects with many tracks and sophisticated routing. Multiple editors can be working on various aspects at one time. For instance, a dialogue editor could be doing the dialogue and ADR in one timeline, an effects editor can be designing and spotting effects in another timeline, a music editor can be cutting and spotting music in another timeline, all separately. Then these interim timelines can be imported later to a master timeline for a final main mix.

This is also useful for picture editors who don't want to have to deal with many tracks of audio when cutting picture. When working in the Edit page, when a track sequence is decomposed, it can also revert back to the original track layout with all of the audio clips ready to be further edited.

# VCA Faders

A VCA fader is used to control the level of multiple tracks with a single control. You can assign multiple faders to a dedicated VCA, and a VCA channel strip then appears at the right of the Mixer. VCAs let you simultaneously adjust the underlying level of multiple faders using one VCA master fader and can be helpful in managing the levels of complex collections of audio tracks.



Group Labels in each control strip,  
above the control strip label

The controls for doing this are found in the VCA and Group label area of each mixer channel strip, which shows which VCA or Track Group each fader has been assigned to.

## Making Fader VCA Assignments

You can assign any channel strip to one of 64 VCAs by right-clicking the VCA label area and choosing a VCA from the drop-down that appears. If a fader is already assigned to a VCA, you can choose "No VCA" to remove it.

**NOTE:** To reduce unneeded clutter, the VCA Assignment drop-down menu will only display 10 VCAs initially; others are added as needed. If the first 10 have all been assigned, the menu display will add VCAs from the available pool, one at a time.



Right-clicking a VCA Label  
reveals a drop-down menu that  
lets you assign faders to or  
remove faders from that VCA.

**TIP:** You can quickly assign VCAs for a selected group of channel strips, or to all channel strips, by holding down the Option key (Mac) or the Alt key (Windows) for all selected tracks or Command-Option (Mac) or Control-Alt (Windows) for all mixer channel strips prior to performing the operation. These shortcuts can save a lot of time in your workflow.

## Using VCA Faders

Once you've assigned multiple faders to a VCA, a dedicated channel strip for that VCA appears at the right side of the Mixer. Making adjustments to the VCA channel strip simultaneously controls all the faders, solo buttons, and mute buttons of all channel strips that are members of that group, as seen below.



Adjusting the VCA 1 fader also adjusts the SYNC, VO, and Drum Hit faders that are assigned to that VCA.

When controlling faders belonging to a VCA, you can still move each individual channel strip fader independently to make relative adjustments.

- Channel strip faders only move together when you adjust the VCA fader.
- While the VCA fader is being moved, each individual fader's relative offset from other faders controlled by the VCA is maintained.

For example, as seen in the screenshot above, the VCA 1 fader is moving the faders in tracks SYNC, VO, and Drum Hit, while each individual channel strip fader in this group maintains its offset from the others.

## Recording Fader Automation for VCAs

You can record automation data to a VCA fader, and all faders in that VCA group will follow even though they're not actually automated themselves. This makes it easy to record complex automation involving multiple faders when you still might want the freedom to finely adjust each individual fader later on.

## Nesting VCAs

VCAs can also be “nested,” where one or more VCAs can be controlled by yet another VCA.

To nest a VCA, simply assign the VCAs you want have controlled to yet another “master” VCA.

# Arm, Solo, and Mute Buttons

These controls are identical to the controls found on the track header of each timeline audio track.

- **Record Arm:** Enables a track for recording when the Record button on the transport is engaged (highlights red when enabled).
- **Solo:** Lets you mute all other tracks in order to play a track you need to focus on in isolation (highlights green when enabled).

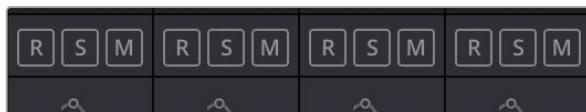
If Solo is enabled for multiple tracks, all soloed tracks will play, and all non-soloed tracks will be muted. Solo status affects rendering, so if one or more tracks are soloed, the muted tracks won’t be output or rendered.
- **Solo Safe:** Command-Shift-click a Solo button to put it into Solo Safe mode (highlights blue when enabled).

Channel strips set to Solo Safe always play even if Solo is enabled for other tracks. Solo Safe can be useful for effect returns busses with effects like reverb where you may want to hear the reverb when tracks feeding it are soloed.
- **Exclusive Solo:** When active, clicking the Solo button on a track takes other soloed tracks out of Solo mode. This means only one track can be soloed and heard at any given time, which is useful if you want to compare audio sources, to hear sonic differences when comparing levels or processing.

**NOTE:** Soloing a track in Exclusive Solo mode will not affect a track that is in Solo Safe mode. If you want to include that track, you need to manually deactivate the Safe Solo button first.

Disabled by default, Exclusive Solo can be enabled by selecting it in the Fairlight menu. You can also map a key command to this function in the Keyboard Customization dialog. For more information on Keyboard Customization, see *Chapter 4, “System and User Preferences.”*

- **Mute:** Turning on Mute disables audio playback from that track (highlights orange when enabled). This affects rendering, so if one or more tracks are muted, they won’t be output or rendered.

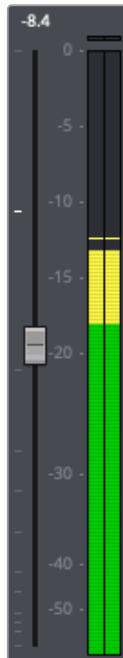


The channel strip’s Record Arm, Solo, and Mute buttons

**TIP:** You can click a button and drag across multiple channel strips to turn that button on or off for multiple tracks easily.

# Fader Controls

Each track's vertical fader lets you control the level that's output by that track, either by using your mouse, or using a physical fader of your Fairlight console or third party control surface. If you're working with a console, then the onscreen faders serve as a visual reference of what levels are set.



**dB Indicator:** Numerical at the top of the track indicates the volume, in decibels, that track is currently set to.

**Fader:** Each track's vertical fader can be dragged with your mouse or other pointing device to adjust the volume of that track and perform automation recording. Dragging up increases volume, dragging down decreases volume. Fader handles turn red while you record level automation, and they turn green when automation has been recorded for that track.

## Methods of adjusting channel faders:

**To change level:** Click and drag any fader up or down.

**To reset the level to default level of 0 dB:** Double-click a fader's handle. This does not work after you've recorded automation for a track, unless you erase the automation first.

# Metering Options

DaVinci Resolve has a variety of metering options that allow you to tailor metering to your workflow. The settings appear in Project Preferences > Fairlight on the Audio Metering pane, but they affect mixer, Fairlight effects, or master metering on the Cut and Edit pages.

## Level Metering Options

You can choose the response characteristic of the level meters for channel strips and Fairlight FX.

The Meter Type drop-down allows you to choose between IEC 60268-18, Digital VU, and Custom response characteristics. Both meter types have separate "hold and fall" metering, allowing you to see the highest peak that is reached.

- **IEC 60268-18:** A digital PPM-type meter with reference standard of -18 dBFS, a fast response to peaks, and a slower release characteristic. This is the default in DaVinci Resolve and is used in all Blackmagic Design software and hardware products.
- **Digital VU:** A dual-value meter, showing the peak level as a single segment with fast ballistics, and the RMS (volume unit) as a bar graph. It has a far faster quasi linear decay characteristic, making it easy to monitor average levels while allowing sounds with quick transients and decays to be more easily tracked. This option can be best for audio editing and mixing.
- **Custom:** Allows each aspect of the meter response to be chosen, including level detector, scale, peak, deck, and peak indication.

## Pre-fader Metering

By default, “Pre fader metering on tracks” is unchecked (disabled), setting the metering on channel strips to be post (after) the fader level and mute button. For example, if the source audio file has peaks that are hitting -2 dBFS, and the channel fader is lowered from 0 to -10, then the peaks that show on the meter will now be at -12.

When pre-fader metering is on, the metering point is set to be before the fader, and is not affected by the fader’s position. However, the meter is affected by clip gain settings or key framing as these level changes occur before the clip’s signal enters the mixer’s signal path.

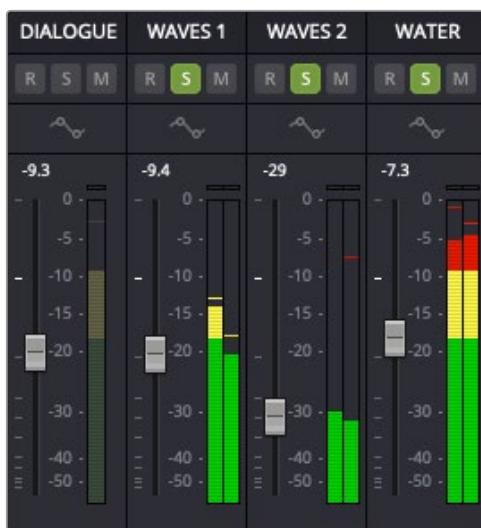
With pre-fader metering, you could lower the fader to be fully off (minus infinity) and the meter will still read the level of the source signal. This allows you to always be aware of the source signal and what it is doing before being altered by mixer’s controls or processing.

Many video editors prefer to work with post-fader metering, but most audio mixers prefer to work with pre-fader in order to be aware of what the actual source level is at any time.

## Solo and Pre-fader Metering

When pre-fader metering is enabled, soloing one or more tracks will show a lighter “ghost” version of meter activity on non-soloed tracks, allowing you to always see audio levels on tracks that are muted by the soloing process. This makes it easy to focus on tracks that are actually audible while still seeing activity on those that are not.

If pre-fader metering is off (the default), when one or more tracks are soloed, no metering occurs on tracks unsoloed tracks.



Pre-fader metering with light shaded meters on non-soloed tracks

## Target Loudness Level

Allows the target loudness level in LUFS for the master Loudness meters to be set to your desired output target level. For example, DaVinci Resolve’s default loudness standard target is -23 LUFS, but the YouTube target LUFS specification is -14 LUFS. If -14 LUFS is set, the “0” mark on the loudness meter scale moves to this level, allowing you to focus your master mix levels towards that loudness standard.

# Bouncing Audio

Bouncing audio refers to mixing and rendering audio from one or more Timeline tracks onto another track of the Timeline, in the process “baking in” processor intensive effects and complicated or intricate audio edits to create a new continuous piece of audio media. The bounced file is written to the directory location specified by the Project Settings > Capture and Playback panel > “Save clips to” field.

There are two commands available for bouncing audio on the Fairlight page:

- Timeline > Bounce Selected Tracks to New Layer
- Timeline > Bounce Mix to Track

## To use Bounce Selected Tracks to New Layer:

- 1 Set In and Out points to define the range of the Timeline you want to bounce. If you don’t do this, nothing will happen.
- 2 Command-click the track headers or mixer channel strips of all tracks you want to bounce in order to select them.
- 3 Choose Timeline > Bounce Selected Tracks to New Layer.

The audio on each track is processed and rendered and appears as the top layer of audio on that track. While View > Show Audio Track Layers is turned off, it will appear as if the new bounced audio is the only clip on that track. However, the original audio (with any unrendered clip-based effects) is still available as the bottom of the stack of layered audio on that track; turning on View > Show Audio Track Layers will reveal this.

The bounced audio is a new audio media file that’s written to the directory location specified by the Project Settings > Capture and Playback panel > “Save clips to” field.

## To use Bounce Mix to Track:

- 1 Choose Timeline > Bounce Mix to Track. The Bounce Mix to Track window appears, showing all busses that are currently available.
- 2 In the Destination Track column, set which mixes you want to bounce by choosing either New Track, or choosing a specific existing track from the drop-down menus.
- 3 Click OK.

The specified mix is processed, mixed, and bounced to the specified track as a new piece of audio. This creates new audio media that’s written to the directory location specified by the Project Settings > Capture and Playback panel > “Save clips to” field.

**TIP:** There’s also a Bounce Audio Effects command in the contextual menu of audio clips in the Timeline that have clip-based audio effects applied to them. For more information, see *Chapter 177, “Audio Effects.”*

For more information on exporting clips, ranges, and files, see *Chapter 172, “Editing Basics in the Fairlight Page.”*

# Third-Party Control Panel Support for Mixing

DaVinci Resolve supports HUI- and MCU-compatible third-party mixing control panels with up to eight faders, such as the Mackie MCU Pro Control Surface, connected via USB MIDI, and selectable in the Control Panels panel of the Resolve System Preferences. Supported basic panel controls that correspond to Fairlight features at the time of this writing include the following.

## **Transport controls including:**

- Rewind (REW)
- Fast Forward (FF)
- Stop (double-press the Stop button for Home in the Timeline)
- Play (double-press the Play button to “play again”)
- Record (press Record+Play to begin recording if one or more tracks is record-enabled)
- Jog control (Press SCRUB and rotate the jog wheel)

## **Channel Strip controls including:**

- Rotary controls for panning, with Rotary Value display and Rotary touch
- Alphanumeric Track Name display
- Record button to record-enable tracks (only works if an input is patched to a track input)
- Solo, with a double-press selecting or de-selecting that track
- Mute
- Select to select the track corresponding to that channel strip
- Fader control and optional Level display
- Channel and Fader Bank buttons to move left and right among banks of channel strips
- Double-press the Fader Bank Left button to move the playhead Home in the mixer (track 1)
- Double-press the Fader Bank Right to move to the Master channel strips

## **Marker buttons:**

- Marker to add a marker
- Pressing the Marker+Stop buttons sets Home
- Pressing the Marker+FF/REW buttons jumps the playhead forward or backward

## **Additional supported controls for control panels that have them include:**

- Master Solo clear/restore
- Undo (pressing the Undo+Option buttons does Redo)
- Arrows to move the selection
- Zoom horizontal and vertical controls
- Audio Tracks, to turn Automation On/Off
- Write/Trim/Touch/Latch switches
- Nudge controls
- Cut, Copy, and Paste

**Monitoring controls include:**

- Level control
- Dim
- Mute
- Alt Speaker

For more information on third-party mixing control panel support, see the Blackmagic Support site at <https://www.blackmagicdesign.com/support/family/davinci-resolve-and-fusion>.

# Mix Automation

The Fairlight page provides straightforward, flexible, and powerful automation capabilities for audio mixing.

Automation data can be created graphically by drawing automation changes, or by recording on-screen mixer or effects controls movement and changes, using a mouse or Fairlight control surface. You can even create panning automation based on the movements of on-screen people or objects in the Fairlight Viewer.

Once recorded, mix parameter automation for any control type—faders or sends, panning, or effects—can be played back in perfect sync with the audio and video.

This chapter covers automation mixing using the combined controls of the on-screen mixer and timeline. For more information on basic mixing operations, see *Chapter 174, "Mixing in the Fairlight Page."*

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# Creating Mix Automation

The Fairlight page includes a comprehensive toolset for creating and editing mix automation. You can draw automation data, or record mix changes by moving on-screen controls, or you can use IntelliTrack-powered Audio Panning to Video, which writes panning automation based on the movements of people or objects in the Fairlight Viewer. Yes, this really is “a thing.”

## Why Use Track Automation?

If you’re a video editor, you may be more familiar with using clip-based automation to make changes to your audio mix, but this approach has limitations. Sometimes there are global changes you may want to make to a track over the timeline or want to adjust groups of tracks at once see *Chapter 176, “Track Groups.”*

When working with time-based effects like reverb or a repeating delay, you may want to dynamically adjust the level of “trails” as the track evolves. For example, you may have a scene that changes perspective from a larger space to a smaller one, and the room ambience or tonal quality of the dialogue needs to change over time as the characters move through the scene.

This is where track automation techniques (whether drawing or recording the movement of controls) can be powerful and creatively inspiring.

## What Can Be Automated

Automation can be recorded for nearly every control in a Mixer channel strip, including the fader, sends, mute, and panning. You can also automate audio plugin parameters as well.

## Audio Panning to Video

IntelliTrack-powered Audio Panning to Video accelerates creativity by automatically tracking people or objects in the Fairlight viewer to generate pan automation that matches their on-screen movements with the precision afforded by Resolve’s state-of-the-art object tracking engine.

## Drawing Automation

If you’re a video editor or audio creative, drawing mix automation data may be more straightforward in many contexts, when making static or ramped level changes or switched changes to controls such as a mute button, especially if you are using a mouse without the benefits of using Fairlight hardware control.

For example, trying to finesse a real-time “performance” of fader movements or effect parameter changes, you could select a timeline range and mute several tracks at once, “carve out” fixed level boosts or drops on tracks at the exact point you want them to occur based on an on-screen event or dialogue, or slowly increase the strength of a reverb applied to foley footsteps as a character walks into a long, dark cavern.

When drawing automation, you don’t need to pay attention to the various Fairlight automation recording modes or control enables/disables for the automation parameter you want to create or edit; you can just draw or adjust your automaton data in the corresponding track “lane” on the Timeline.

## Recording Automation

You can also create mix automation by recording real-time on-screen fader, control movements, or plugin parameter changes during playback. Afterwards, your “performance” can be accurately played back. Another advantage of recording your automation is that you can intuitively “perform” the changes against the picture as actions occur.

In this way, you can create a dynamic mix where different audio levels, pan, EQ, dynamics, and audio processing settings change over time to fade music up or down against effects or dialogue, pan the sound effect of a car driving by from one speaker to another, or gradually increase the strength of a reverb effect as your character walks into that long, dark cavern.

While the recording of keyframe automation is commonly associated with either the on-screen mixer or the Fairlight console, you can also record automation using controls found in the Inspector, or using the controls of the Pan, EQ, and Dynamics plugin effects, thereby enabling you to record automation for the various audio effects that you’ve applied to a track.

## Drawing Mix Automation

Automation can be drawn in the Timeline for any parameter by globally enabling automation recording and playback, viewing a parameter to be automated, then drawing the automation in the Timeline.

### Enabling and Viewing Automation

The Toggle Automation button, to the right of the transport controls, turns automation recording and playback on and off. It must be enabled to draw or record track-based automation and to see busses on the Timeline.



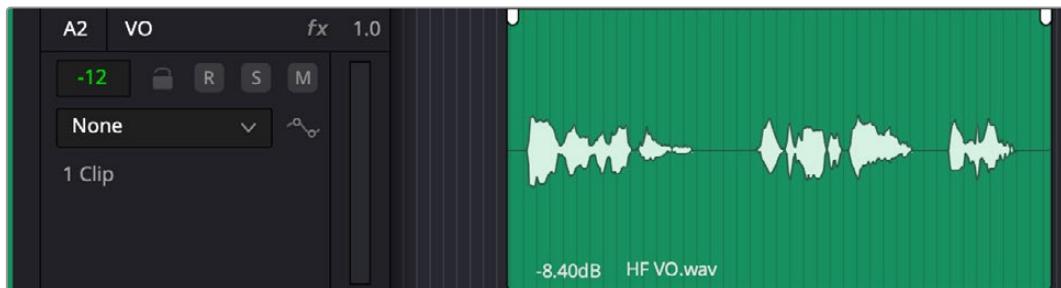
Toggle  
Automation button

**TIP:** You can quickly enable/disable automation safe on or off for a selected group of channel strips, or to all channel strips, by holding down the Option key (Mac) or the Alt key (Windows) for all selected tracks or Command-Option (Mac) or Control-Alt (Windows) for all mixer channel strips prior to performing the operation. These shortcuts can save a lot of time in your workflow.

### Automation View

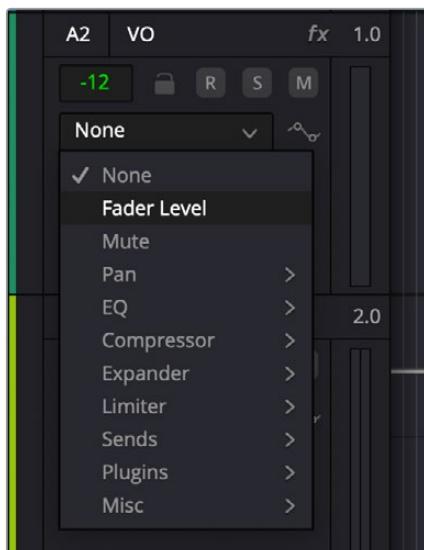
Audio tracks normally display an arrangement of clips on the Timeline (“Clips View”). In Clips View, clips can be placed or edited, and clip gain for individual clips can be adjusted, *see Chapter 173, “Using the Fairlight Inspector.”* Effects can also be added to clips, which can be managed in the Inspector.

Tracks can also show an Automation View, which appears when the automation button is enabled. When active, a drop-down menu appears under the track controls in the track header. By default, the menu will display "None," indicating you are working with clips only; no automation data will appear.



Fairlight Automation View showing "None"

Clicking on the drop-down menu allows you to choose an automation parameter to view or edit. Choices are included for all parameters that can be controlled on a track, including fader, sends, pan, mute, and built-in dynamics and EQ as well as AU or VST plugin effects.



Fairlight Automation View menu choices

Once a parameter is chosen, the automation view changes so that the focus is on editing track automation data rather than manipulating clips. The clips darken and the automation data line is shown in light gray. When automation is drawn or recorded for the parameter, the line will change to bright green.

**NOTE:** When in Automation View you can still move and trim clips, but cut/copy/paste and delete operate on automation keyframe data only. When in Automation View, timeline-based clip gain keyframe adjustment is not available, but overall clip gain can still be adjusted using Volume slider in the Audio tab of the Inspector.

## Vector-based Automation

Audio keyframe automation is vector-based, so levels will smoothly ramp between any 2 points on the Timeline based on the direction of the change in control value and the time between the points.

For example, if you have a single keyframe setting fader level to 0 dB that occurs at 01:00:20:00 on the timeline, and then add a point at 01:00:28:00 at -10.5 dB, the level will change smoothly between 0 dB and -10 dB over the 8 seconds between the 2 points.

This allows you to draw individual keyframes to quickly construct different transition shapes, such as fade-ins or fade-outs, with just a few points, or adjust them up or down by specific amounts quickly and easily.

### Creating Curves

Keep in mind that audio automation keyframes are not Bezier keyframes, so they only let you create a single level adjustment at that point in time. If you make a large adjustment with only a single new keyframe, you can end up with an abrupt level change, or level changes that don't have a curve you may want (exponential changes can be particularly useful on fade ins or outs to get a natural result). You can create convex or concave shapes when drawing by adding just a few keyframes to create your curve, or you can perform the change exactly as you want by recording the automation (see "Recording Mix Automation" later in this chapter).



A fade out transition with 5 keyframes for an exponential shape

## Track Automation Line

Audio automation on a track is represented by a line that extends over length of the Timeline, called the automation line, or "curve." The level of the line can be changed by dragging, entering keyframes one at a time, or using the Pencil tool to draw a series of keyframes.



Automation line for fader level showing multiple keyframes

**Sample Accuracy:** Audio keyframes allow creation of precisely placed parameter changes on timeline tracks. On the Fairlight page, audio keyframes are sample accurate, meaning they can be placed at any sample location with sub-millisecond precision, allowing more precision than keyframe handling on the Cut and Edit pages. However, sample-accurate audio automation data created on the Fairlight page can be accurately played back on the other pages.

Sample accuracy is important when working to picture as the location of audio events often does not fall on exact frame or sub-frame boundaries.

## Working with Audio Keyframes on the Timeline

To draw automated changes to any audio control:

- Enable the Automation button to see Automation View on all audio tracks.
- On the track(s) where you want to create automation, choose the parameter you wish to automate in the Automation type drop-down menu in the track header.
- Using Focus Mode's Multi tool allows you to draw automation using the up/down arrow cursor (to adjust an overall curve), enter or delete keyframes one at a time using modifier keys, create different curves depending on individual keyframe position, select and delete a range of keyframes, and more.

## Adding and Deleting Individual Keyframes

Managing keyframes on the automation line is nearly identical to working with clip gain. For more information see *Chapter 173, "Using the Fairlight Inspector."*

**To add a keyframe:** Hold down the option key and a plus sign appears. Click to place a keyframe on the automation line.

**To remove a keyframe:** Hold down Command-option and a minus sign appears. Click on keyframe to delete it.

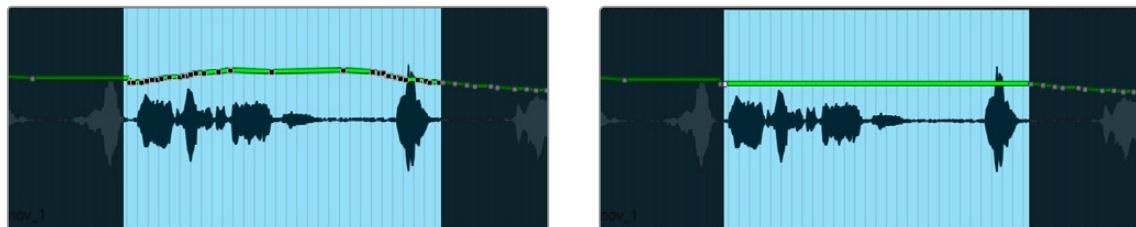
**TIP:** You can quickly flip between Clips View and Automation View using the keyboard shortcut F4. This can be changed by using the DaVinci Resolve > Customization dialog.

# Editing Mix Automation Curves

## Using Edit Operations

Normal editing operations such as cut, copy, paste, delete, and nudge can all be used on automation keyframe data. When automation data is cut or deleted, the value at either end of the selection is preserved.

Nudging can be very useful when fine-tuning the location of automation events.

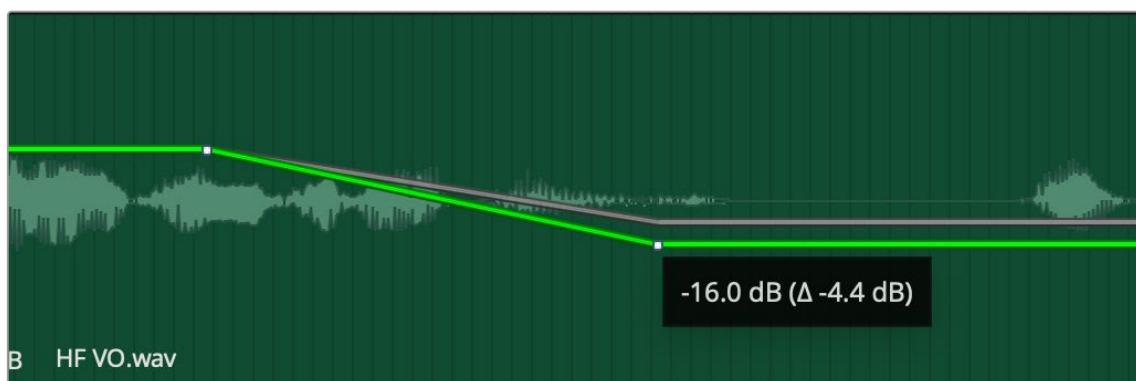


Before and after cut or deletion

## Adjusting the Automation Line

Once one or more keyframes are on the automation line, the resulting curve for the entire track can be adjusted. Individual keyframes can be edited up or down using the same techniques as with adjusting clip gain; the whole line can be adjusted, or a selection can be affected.

If you adjust the last keyframe on a line with multiple keyframe points, the line will change from that point onwards to the newly set level.

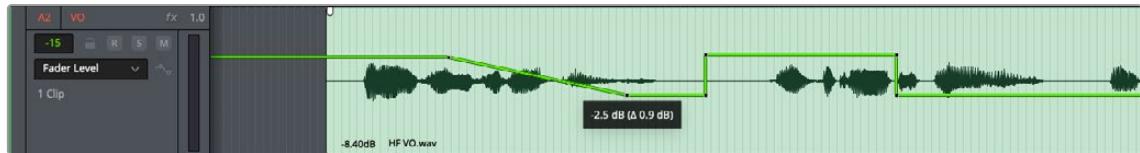


Adjusting an individual keyframe changes the line from that point onwards.

## Adjusting the Entire Line

To adjust the entire line:

- With automation view enabled, click anywhere within the track, and select all automation data on the curve by choosing Command-A.
- Position the cursor close to the line and the dual arrow cursor appears, allowing the level of the entire line to be adjusted.



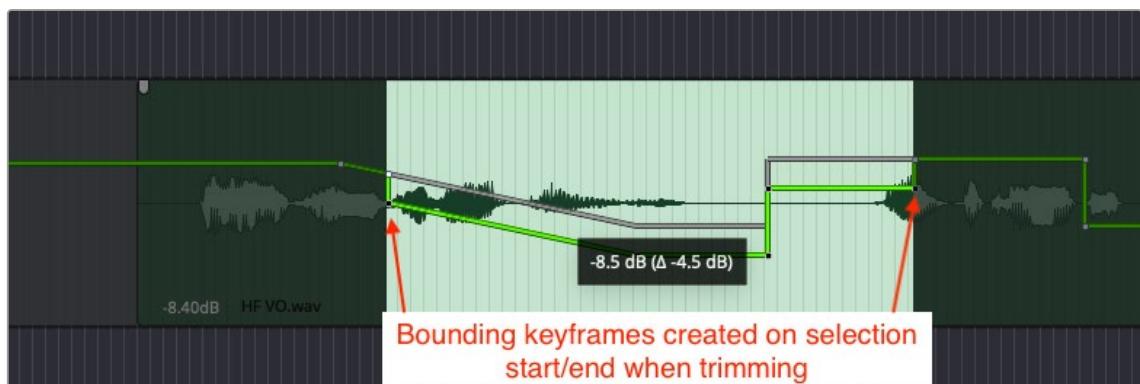
Select all automation to adjust the entire line

## Adjusting a Selected Range

You can perform adjustments to only a specific range of the automation curve. This can be useful when you want to make “snapshot” changes for a specific scene.

### To adjust only a selected range:

- Use the Focus Mode Select tool (I-beam cursor) to select the range you want to affect.
- Position the mouse close to any area of the line, and the up/down arrow cursor appears.
- Trim the line up or down. A tooltip will appear showing the current value and a delta to the original value, so any difference in a control’s value can be seen.
- At the bounds of the selection, “bounding keyframes” are automatically created, so the level at the edge of the selection is preserved.



Trimming a selected range of the automation curve

**TIP:** Hold the Shift key when adjusting levels to maintain precision. When adjusting fader levels this allows .1 dB accuracy, even when working with small track heights.

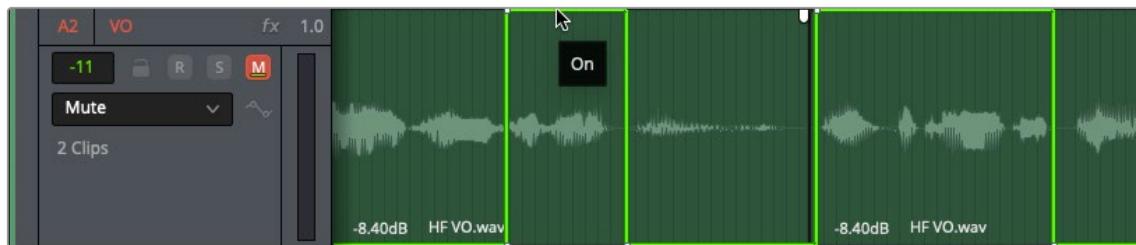
## Drawing Automation with the Pencil Tool

The Pencil tool allows automation keyframes to be drawn freely:

- Choose the Pencil tool in the Automation toolbar, or when in Focus mode, hold down Option-Shift to temporarily switch to the Pencil tool.
- Click the mouse and drag to draw keyframes in either direction.

## Automating Switched Controls

Some automation parameters are switched (i.e., they have only fixed states). Examples of this type of control are mutes (on or off). When adjusting switched automation, keyframes can only be at the bottom end of the Automation view or the top.



Mute automation showing on and off states

## Audio Panning to Video

Audio Panning to Video uses DaVinci Resolve's state-of-the-art object-tracking engine to help you quickly generate precision panning automation based on the movements of people and objects in the Fairlight Viewer.

Audio Panning to Video offers Automatic and Manual modes of operation.

### Automatic Tracking

In Automatic Tracking mode, you can select a person or object on screen, and DaVinci Resolve will automatically process the related movement data across a selected timeline range, and then generate the automation data.

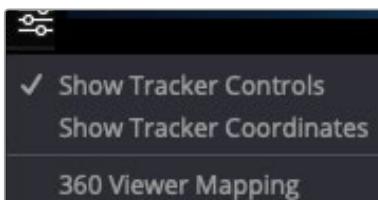
#### To enable and use Automatic Tracking:

- 1 Click the Toggle Automation button to the right of the transport controls.



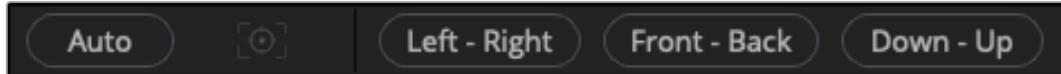
Toggle Automation button

- 2 Click the Fairlight Viewer tools menu and choose Show Tracker Controls.



Fairlight Viewer Tools menu

The Tracker Controls will appear along the lower edge of the Viewer, and you'll see an Auto Tracker Object on screen.



Tracker controls



Audio Tracker Object

You can also select Show Tracker Coordinates, which provides an alpha-numerical representation of the tracker's current on-screen position.



Audio Tracker Object  
with Coordinates

- 3 Select the target track you want to write panning automation to, and use the I-Beam tool to select the Timeline range you want the tracking to work on.



Range Select tool

**NOTE:** Auto-tracking will not occur unless you select a Timeline range.

- 4 Click the Auto button in the Tracking Controls section to activate Auto Tracking.
- 5 Based on the panning movement you want to automate (horizontal or vertical), click the Left-Right (L-R) or Down-Up (D-U) button.

**TIP:** The Front-Back (F-B) button is only available when the Auto button is off.

- 6 On the target track, click the Automation drop-down in the Track Header, then followed by Pan > L/R Pan or Pan > U/D Pan to match your selection in the previous step.
- 7 Move the Auto Tracker Object on top of the on-screen object or person you want to track.
- 8 Click the Track button to begin the Auto-Tracking process.
- 9 Start playback to check your audio track. It should follow the object or person you selected for tracking.

**TIP:** If the track is more complex, for example, a person who is changing their position relative to the camera or may have moved out of frame, you may need to do your tracking in sections.

In this instance, you can select an area that wasn't tracking well, move the tracker object into position, and track over the problem range to redo the track for that portion.

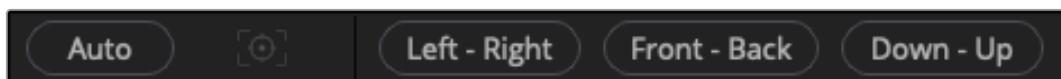
# Manual Tracking

Manual mode lets you create keyframes based on the Playhead position on the Timeline, and DaVinci Resolve will smoothly vector between the keyframes like any other automation curve data.

## To enable and use Manual Tracking:

- 1 Click the Toggle Automation button to the right of the transport controls.
- 2 Select the target track that you want to write your panning automation to.
- 3 Click the Video Viewer tools menu and choose Show Tracker Controls.

The tracker controls will appear along the lower edge of the Viewer, and you'll see a Tracker Object on screen as a simple crosshair.



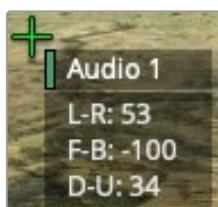
Tracker Controls manual mode



Manual Tracker Object

**NOTE:** The Tracker object will not appear onscreen unless an audio track has been selected.

You can also choose to Show Tracker Coordinates.



Manual Tracker Object with Coordinates

- 4 Ensure that the Auto button is inactive in the Tracking controls. Now you're in Manual Tracking mode.
- 5 In the Tracking Controls, click the panning control you want to automate: Left-Right (L-R), Front-Back (F-B), or Down-Up (D-U).
- 6 On the target track, click the Automation drop-down in the Track Header, then Pan > L/R Pan, Pan > F/B Pan, or Pan > U/D Pan to match your selection in the previous step.  
You can increase the track height if the Automation drop-down is not visible.
- 7 Move the Playhead to the Timeline location where you want the automation to start.

- 8** Write a keyframe at the current position in the video by Option-clicking the Viewer at the location where you want to place the sound at that moment.

A corresponding Automation node is placed at the Playhead position on the automation line.

- 9** To add another keyframe, move the Playhead to another point in your timeline, Option-click the on-screen person or object you're tracking.

The Tracker Object jumps to that position, a keyframe is written, and a new Automation mode is added at the Playhead position.

DaVinci Resolve will smoothly vector between the keyframes, as with any other automation curve data.

- 10** Continue creating keyframes at desired positions by repeating the previous step.

- 11** To create a “bounding keyframe” to lock a position that holds the automaton line before moving to a new position, Option-Shift-Click on a location.

- 12** Start playback to check, and if needed, adjust your automation.

## Recording Mix Automation

Recording mix automation uses many of the same techniques as drawing but allows you to capture a performance where you are moving the controls you want to automate. This can be flexible and creative as you “perform to picture” to get the results you want.

To get started, you’ll need to ensure that Automation recording is enabled (see “Enabling and Viewing Automation” above) and that one or more parameters are enabled for automation recording.



Clicking the Automation Controls button displays the Automation toolbar

## Automation Controls

The Automation Controls button, to the right of the transport controls, lets you show and hide the Automation toolbar.

The Automation toolbar has buttons for each option that’s available for preparing to record automation in your mix.



Automation toolbar options

## The Automation toolbar displays the following options:

— **Automation Modes:** Controls how automation data is recorded.

**Write:** Records absolute changes to a control's position, replacing any data that was there previously.

**Trim:** Records relative changes to a control's position, maintaining relative existing levels created over time, but increasing or reducing those levels overall. This can be very useful when incrementally refining a mix.

— **Touch Modes:** Defines what happens when an automatable control is moved during a mix.

**Off:** No automation is recorded.

**Latch:** Automation is recorded once a control is moved and continues recording after the control is released until the transport is stopped.

**Snap:** Automation is recorded once a control is moved and then smoothly glides back to the pre-existing level at the point it was released, to create a seamless transition.

At the point where the glide transition ends, automation is no longer recorded unless the control is moved once again while the transport is playing. You can continue to capture additional automation with Snap until the transport is stopped.

The time for the glide transition can be set in milliseconds in Preferences > User > Fairlight > Automation. The default is 250 ms.

**Snap Latch:** A combination of Snap and Latch modes, where faders operate in Snap and all other controls operate in Latch. This can be useful when dynamically changing fader levels through a mix pass are desired, while other controls "stick" when they're moved. It is particularly useful when working with Fairlight mix control surfaces where faders and rotary controls can be changed simultaneously during a mix pass.

— **On Stop:** Defines what happens when entering Stop at the end of an automation pass.

**Event:** The last recorded automation value overwrites previous levels to the start of the next available recorded automation data (or event) in that track.

**Hold:** Deletes all previously recorded mixing data after what you've just recorded, to hold the last recorded level for the rest of that track.

**Return:** The last recorded automation value is interpolated to ramp back to the previously recorded automation values on that track.

— **Enables:** The following buttons let you enable or disable different controls for recording automation.

**Fader:** Automates track and bus volume.

**Mute:** Automates the mute button.

**Pan:** Automates all pan controls.

**EQ:** Automates all EQ controls.

**Comp:** Automates just the Compressor controls in the Dynamics window.

**Gate:** Automates just the Gate controls in the Dynamics window.

**Lim:** Automates just the Limiter controls in the Dynamics window.

**Sends:** Automates the Send controls in the Sends window.

**Plugins:** Automates all Fairlight, VST, or Audio Unit (AU) plugins.

**Misc:** Automates Buss on/off, Insert, and Direct Out controls. If a project is using the Fairlight legacy Fixed Bus configuration, it allows automation of fixed bus Main and Sub bus enables.

# How to Record Automation

There are two different ways you can set up the recording of automation for levels, panning, EQ, Dynamics, and other audio controls in the mixer.

## Recording Automation for Multiple Tracks

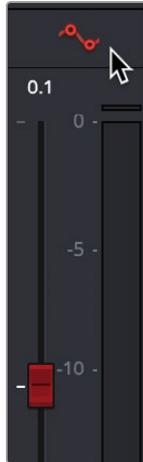
You can use the following steps to record automated changes to any audio control in any control strip:

- 1 Open the Automation toolbar, and do the following three preparatory steps:
  - a) Choose whether you're going to write new automation, or trim automation that's already recorded. Write mode is appropriate when you're recording automation for the first time, or when you're overwriting previous automation with brand new values. Trim mode is appropriate when you're making incremental changes to previously recorded automation. Note that Trim mode works as a delta trim system only with fader positions at zero (unity) on Fairlight control surfaces at this time.
  - b) Next, choose Touch and On Stop behaviors that are appropriate for the kind of automation recording you need to do.
- 2 Move the playhead to the beginning of the section of the timeline you want to record automation for.
- 3 Next, initiate playback using any method (Spacebar, L, Play button, Fairlight or third-party audio control surface), and make whatever adjustments you want to the controls you've enabled automation recording for. As you make adjustments, the affected fader control turns red to let you know you're recording automation.
- 4 When you're finished, stop playback using any method (Spacebar, K, Stop button, third-party or Fairlight audio control panel). Automation recording stops as well.

## Recording Automation for Specific Individual Tracks

You can use the following steps to record automated changes to controls in specifically armed control strips:

- 1 Open the Automation toolbar, and do the following three preparatory steps:
  - a) Choose whether you're going to write new automation, or trim automation that's already recorded. Write mode is appropriate when you're recording automation for the first time, or when you're overwriting previous automation with brand new values. Trim mode is appropriate when you're making incremental changes to previously recorded automation.
  - b) Next, set Touch to Off, which disables across-the-board automation recording and requires you to arm specific tracks that you want to automate.
- 2 Click the automation arm button above the fader of any Mixer track or any track header to which you want to record automation. Even though the Touch control is set to off, moving a control on an armed channel strip will record automation in Latch mode.

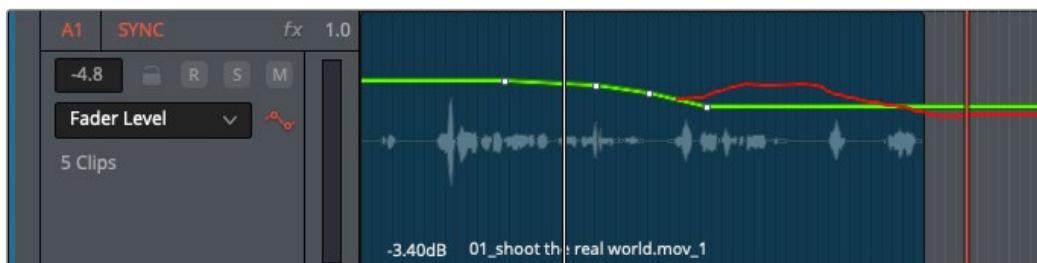


The automation arming button above a fader in the Mixer



The automation arming button in the track header

- 3 Move the playhead to the beginning of the section of the timeline you want to record automation for.
- 4 Next, initiate playback using any method (Spacebar, L, Play button, Fairlight or third-party audio control panel), and make whatever adjustments you want to the controls for which you've enabled automation recording. While you make adjustments, the affected fader control turns red to let you know you're recording automation. If you're displaying the same automation data in the Timeline that you're recording, you can see the new automation being drawn in real time, in red.



New automation line in red while being recorded

- 5 When you're finished, stop playback using any method (Spacebar, K, Stop button, Fairlight or third-party audio control panel). Automation recording stops as well. Displayed automation turns green once recording has stopped.

If you don't like what you've done, you can undo and start over, or you can edit the automation using methods described later in this chapter. Or, you can back the playhead up and overwrite automation at any time with new automation.

## Automation Preview Mode

Preview is an additional mix automation workflow, specifically for working across scene-based material. When enabled, mix items that are in preview are not controlled by pre-recorded automation, so they respond manually to their controls. These can subsequently be placed into write (or trim) to write actual automation.

Typically, Preview mode is used to audition new mix settings for one particular section of a timeline, while other sections already have recorded automation data. Preview mode prevents pre-recorded automation from moving the controls you are trying to adjust in a targeted section. As soon as you're happy with the new adjustments, they can be written to the targeted section.

Preview mode frees the faders (and other controls) from automation control, and lets you move them freely while you experiment with different levels and settings. Ordinarily, moving one or more controls implies writing automation data for those controls, but entering Preview mode lets you play with the controls as much as you like without committing to anything, only writing automation data when you're ready.

**To engage the Preview state on enabled mix items, first enter Preview mode by doing one of the following:**

- Toggle Preview in the Automation toolbar.
- Press the Preview key on the Mix page of the Fairlight controller.

**Once Preview is engaged:**

- Individual parameters can be switched into Preview Touch Latch.
- You can use the AUTO key next to a fader to preview all enabled parameters on a channel.
- You can use the Auto button on the screen mixer strips.
- When you're in Preview mode, all parameters in Preview are indicated by a BLUE automation indicator.

**Once in Preview mode, mix items can be placed into write (or trim) by:**

- Dropping in manually via the Fairlight > Automation > Punch In menu choice.
- Dropping in manually with the In key on the Fairlight controller.
- Automatically using the Active In and Out points on the Fairlight controller.

Once enabled for Preview, parameters remain in that state regardless of transport starts and stops. This is different from putting mix items into WRITE, which must be done again after each transport stop.

**Other Preview-related operations include:**

- Filling a range defined by In and Out points with all parameters currently in Preview.
- Gliding all parameters from their existing values at the Range In point to the Preview values at the Range Out point.

## Automation Active Range

The Automation Active Range allows you to set only a specific range on the timeline to record automation to, so that everything outside of that range is "write protected" and will not be disturbed.

- To enable the Active Range, choose Fairlight > Automation > Active Range, where you can mark the Active Range In/Out points, or enable or disable the Active Range.
- Once a range is defined, automation writing will only take place within the range.
- You can set the automation mode you wish to work in (e.g., Snap).

- Once playback begins, all automation data produced prior to the range automatically occurs in Preview mode (without having to enable the Preview switch), up and until you reach the Active Range in point. Once inside the Active range, automation recording will start.
- At the end of the range, automation recording is automatically punched out.
- The Active Range can be disabled by unchecking Fairlight > Automation > Active Range > Enable.

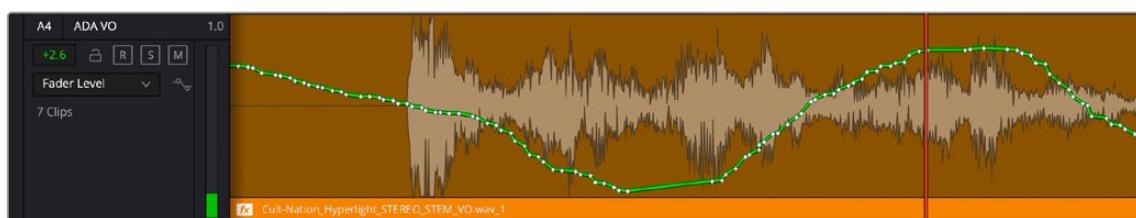
**NOTE:** Any controls in Read mode will play back their automation regardless of the status of the Active Range.



Active Range shown in the ruler with red bar; Automation data being written within the range

## Viewing Automation in the Timeline

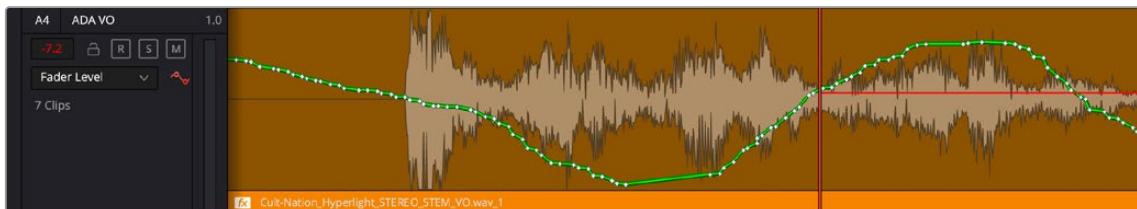
Once you've recorded automation keyframes for a particular parameter, they can be made visible in Automation view on a track. When automation is enabled via the Toggle Automation button, you can use the Automaton drop-down menu on the track header to choose which automation curve to view, with options for Fader, Mute, Pan, EQ, Compressor, Limiter, Aux, Plugins, and Misc controls.



Mixing automation for the Fader shown in the Timeline

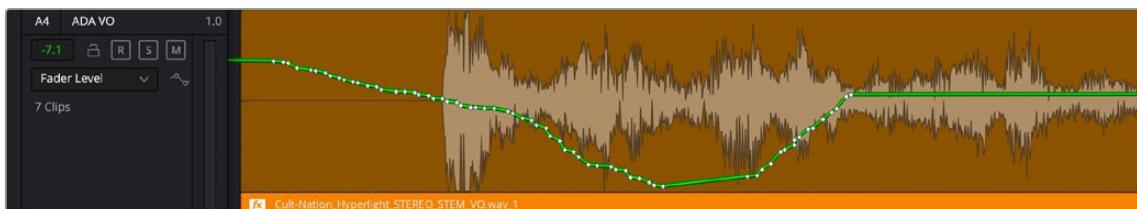
# Overwriting Automation

Once you've recorded automation for a particular clip, you can overwrite that automation in subsequent passes. Using either of the previously described methods of recording automation, adjusting the levels of a track control with previously recorded automation displays a red line that shows the new level relative to the previously recorded level.



Setting new levels to overwrite previously recorded automation displays a red line

Pressing play to actually record this new automation will overwrite the previous levels at this new value.



New automation overwrites the previous levels

Automation data can be copied, pasted, and erased under the Fairlight Menu > Automation > Copy/Paste/Erase.

## Automation Follows Edit

When editing your timeline, you can choose whether automation will follow the movement of clips or stay locked to its position. This is enabled by default but can be changed by unchecking Fairlight > Automation > Follows Edit.

When enabled, anytime you move or edit a clip on the Timeline, the automation you'd written over its range will follow with it, ensuring that as you make changes to the edit, the automation for a given clip range will remain the same.

This is also extremely useful when doing an initial edit of audio clips that contain automation data. For instance, if you have a recurring sound effect that pans left to right, first automate that panning to the audio clip. When this clip is copied through the Timeline it will retain the same panning automation for each new instance. This can be very useful for a variety of edits that require the same automation data for audio clips in a timeline.

Be aware, however, that Automation Follows Edit will need to be turned off when copying and pasting clips or sequences where the automation that has been applied is not relevant to the new edits.

When Automation Follows Edit is enabled, automation data "lives with" the time range it came from. Any of that data, like volume or panning, will travel with clips. So if a complete section has

been removed, all of the automation inside of the clips contained in that section are also removed. If a section of clips changes its location in the Timeline, all of the automation embedded in those clips move to the new location on the Timeline with the clips.

When automation is enabled in the Fairlight toolbar, the Automation Follows Edit button will appear.



The Automation Follows Edit button to the left of the Flag button on the toolbar

## Editing Automation

When automation is enabled (Toggle Automation button is on), the Pencil tool appears. Combined with the Focus mode, these tools let you edit automation in different ways.



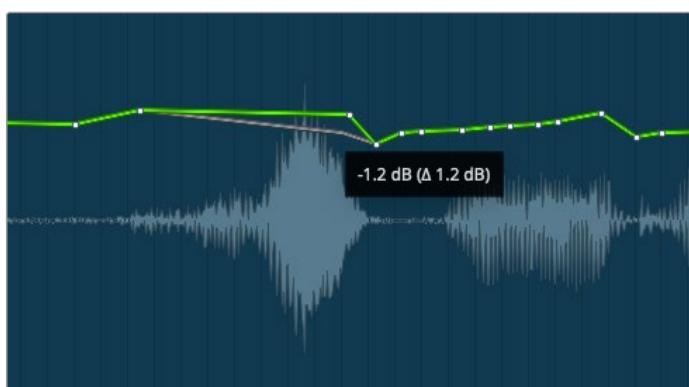
Focus mode provides the main tools used for editing automation.  
The Pencil appears when automation is enabled (Toggle Automation is on).

## Adjusting and Deleting Automation Keyframes

The Focus tools let you adjust automation in two different ways.

### Adjusting Individual Keyframes

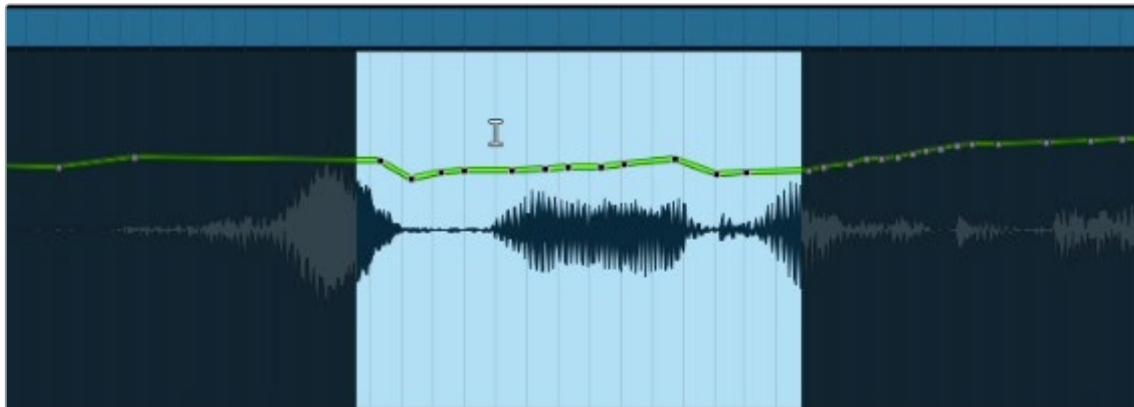
Using the Focus tools, you can click and drag any automation keyframe up or down and left or right (bounded by its neighboring keyframes) to adjust it directly. When zoomed in, this can be an effective way of making precise adjustments. The segment of automation affected by the keyframe being dragged continues to show green to indicate the new curve being created, and a tooltip with the currently adjust value appears, while the previously created data is shown in gray. When you release the mouse button, the curve is adjusted



Single keyframe being adjusted showing prior level in gray

## Adjusting and Deleting Multiple Keyframes

You can also use the Focus mode I-beam selector tool to create a selection of select multiple keyframes, or to move or delete them.



Use the Focus mode I-beam selector to select a range of keyframes

If you delete the keyframes in the range, the remaining section of the curve flattens out to fit the first and last keyframe of the selection.



Automation curve after deleting the selected keyframes

## Adding and Editing New Keyframes

See "Working with Audio Keyframes on the Timeline" earlier in this chapter for more information about working with drawing and editing keyframes.

## Clear All Track Automation

If you want to erase all automation on a track or bus, including all send and plugin automation, you can do so by right-clicking the track header and selecting Clear Track Automation from the menu. A new window will appear offering the following options for changing your mind or erasing the automation:

- **Cancel:** To keep your automation data.
- **Reset:** Clear all automation and return all affected controls and parameters to their default settings and values.
- **Hold:** Clear all automation and retain the settings and values of all affected controls and parameters.

# Fairlight > Automation Controls

A series of commands in the Fairlight > Automation submenu let you initiate various automation tasks. These commands are:

- **All Read:** Switches all parameters that are in Trim or in Write mode back to Read mode.
- **Punch In:** When Preview mode is on, switches all parameters currently in Preview (blue) into Write or Trim. When Preview mode is off, this switches all Automation-enabled parameters on all selected channels into Write or Trim.
- **Punch Out:** When Preview mode is on, switches all parameters currently in Write, Trim or Preview into Read. When Preview mode is off, this switches all Automation-enabled parameters on all selected channels into Read.
- **Fill Range:** When there is an active In and Out range in the Timeline, the current value of all parameters in Preview will be written over that range.
- **Glide Range:** In Preview mode, “glides” all parameters from their existing values at the In point to the preview values at the Out point of the Timeline.
- **Join Mix:** Lets you manually resume writing automation in Latch mode from the current level and moving to any other.

## Automation – Copy/Paste/Erase

The Fairlight > Automation submenu also has special local choices for Copy, Paste, and Erase of automation data. Copy/Paste allows you to do powerful range-based manipulation of automation, or to create a “snapshot” change where all automation data is pasted for a single point in time, allowing all enabled parameters to switch at once to new levels.

Using these commands requires that you choose which automation parameters are affected explicitly by using the Automation Enables controls (the same ones used to choose what automation data is recorded). For example, if you want to affect fader, mute, and pan automation, you must activate the enables for those parameters first. Only the parameters enabled are affected.

**NOTE:** Clip view or Automation view (any parameter) can be used with these commands; the choice of what is affected is governed by the Automaton Enables, not by the view.



Enables set for copy, paste, or erase of Fader, Mute, and Pan data only

- **Copy:** If there is an active In and Out range in the Timeline, Fairlight > Automation > Copy will copy the automation data of all selected channels and enabled parameters within this range to the clipboard. If there is no active In and Out range, this command copies the data of all automated parameters on all selected and enabled data at the playhead (Snapshot mode).
- **Paste:** Pastes the active range or in point for all automation data copied to the clipboard for Automation-enabled parameters.

If there is an active In to Out range defined, then the range will be filled with any automation data copied to the automation clipboard using Automation > Copy. If there is no active In to Out range defined, then the automation clipboard is simply pasted in its entirety.

The contents of the clipboard can potentially target a different channel set and/or with a different target time, just by using a new in point or track selection.

If there is an active In to Out range defined in the Timeline, and the clipboard was in Snapshot mode when the data was copied, then this range will be filled with static values of the snapshot data.

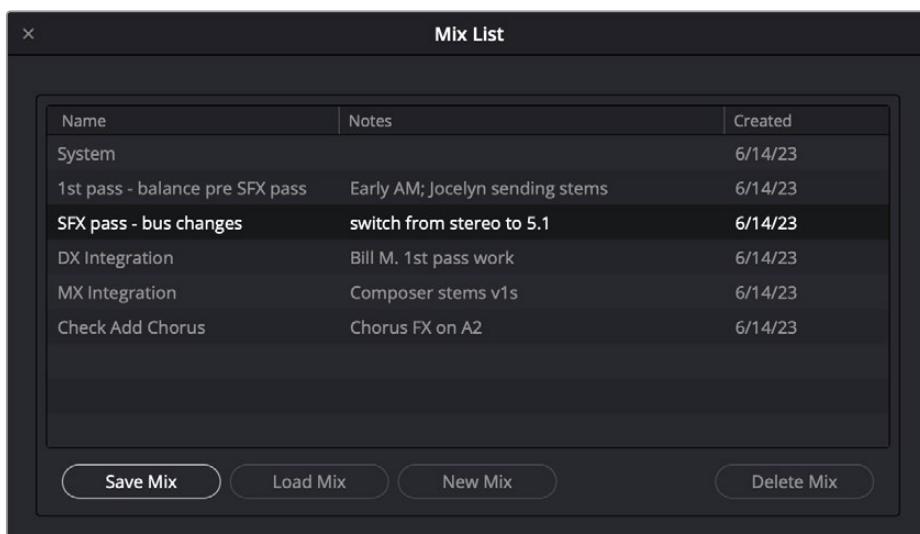
- **Erase:** If there is an active In and Out range in the Timeline, Erase will delete the automation data of all selected channels within the range, obeying all Automation Enable buttons. If there is no range selected, nothing is affected.

**TIP:** To clear all automation from a Timeline or group of tracks, select the entire timeline range, enable the Automation Enable buttons for the types of automation you wish to clear, and choose Fairlight > Automation > Erase. Alternatively, Fairlight > Automation > Mix List can be used to clear all automation from the Timeline.

## Automation – Mix List

The Mix List allows you to create and manage multiple mix “passes” and complete routing and effects setups for a single Timeline. Each stored mix can have totally different mix automation data that is changing over time, routing, plugin setup, track grouping, etc.

This capability is incredibly powerful and allows a lot of creative freedom for creating different versions of mixes (for example moving between stereo, 5.1, and Dolby Atmos as formats), or between using totally different plugin effects or different creative approaches to the mix itself using all of the automated parameters.



The Mix List Window

So the Mix List’s utility is not limited to storing mix automation data; it can be used to store a dynamic preset of literally anything about the setup of the Mixer.

Keep in mind that the Mix List is particular to a single Timeline and also cannot be shared between projects. However, using the Mix List can be more convenient than saving multiple different versions of timelines or projects.

The Mix List can act as a floating window where you can see the various mixes, or it can be hidden until you need to load or save a new version.

## Using the Mix List Window

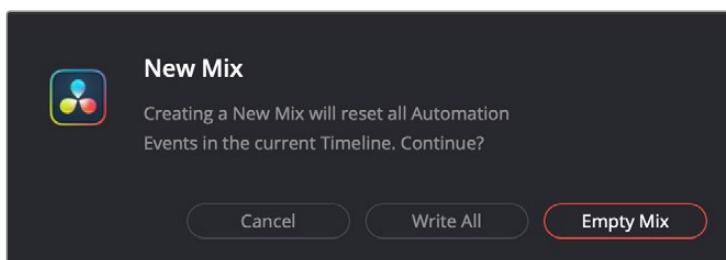
- Set up your mix, including all routing and automation as you like.
- When you're ready to save a mix version, choose Fairlight > Automation > Mix List, then choose "Save Mix" and give it a name, along with any notes you make want to add.
- You can then change your mix automation, any routing, etc. you wish and save a new version, load a different version, or delete an existing mix.

The "System" preset is an internal system preset that can't be altered; it can be ignored.

## The "New Mix" Dialog

For "New Mix" in the Mix List window, a dialog appears with the following options:

- **Cancel:** Lets you cancel the operation.
- **Write All:** Writes present levels of all controls to their automation curves establishing a baseline "snapshot" of all parameters.
- **Empty Mix:** Clears all automation data from the mix, leaving only the assignments, routing, track group enables, etc. This option offers a simple way to start "fresh" with a mixer setup on a new mix.



New Mix dialog

# Playing Automation

After you've automated a mix, playing it back is as simple as moving the playhead to an area of the timeline prior to the recorded automation, and initiating playback. As the timeline plays, the onscreen controls for each automated parameter are shown in green. They move and update to show their recorded levels.



Controls that have recorded automation during playback are shown in green.

## Chapter 176

# Track Groups

Track Groups let you make adjustments and modifications to your mix across multiple tracks at the same time.

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# Track Groups

When editing with a track group, changes made one track, such as adjusting track fader positions, apply to all tracks in the group while maintaining relative mixer settings.

## Editing with Track Groups

Track groups let you switch focus from individual tracks to groups of tracks, which can range from a small number of tracks to a large multitrack sub-mix group.

When a group is enabled, editing operations apply to all tracks in the group. However, some operations that involve moving clip boundaries or trimming do not.

For example, pressing the Up and Down arrows to navigate to a clip boundary obeys the boundaries of the individual tracks within the group, regardless of their vertical position in the timeline.

Groups can be disabled, allowing you to change focus back to the individual tracks within them. But when smaller groups are “nested” within a larger one, turning off the larger group does not affect the smaller group.

In situations where an edit group contains clips of differing lengths, the group behavior still applies, such that all edits, such as trim, cut, or paste, will follow the group at its present boundaries.

## Mixing with Track Groups

When mixing with track groups, changes to one channel are simultaneously made to all others in the group. This includes fader movements, panning, send levels, automation, and changes to the mute, solo, and record-arm buttons.

**NOTE:** Plugin controls cannot be added to Mix groups.

## Showing the Groups List

The Groups list appears beneath the Tracks list in the Index. Closing the Index, or choosing another heading in the Index, will hide the Groups list.

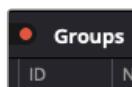
ID	Name	Selected
All	All	-
G1	SFX	-
G2	Dialogue	-
G3	All Non-Dialogue	-
G4	Biggie	-

Groups list

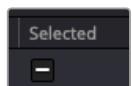
## Groups List Controls



**Group Name:** The group name or "ID" appears in this column.



**Groups Switch:** Toggles all groups on or off, allowing you to switch easily from working with groups to working with individual tracks.



**Selected Checkbox:** When checked, all tracks that are members of the group are selected. If some members are selected, a hyphen is shown.



**Action Icons on Hover:** These icons only appear when hovering over the group row. The Tools icon accesses the Modify Groups dialog, and the Trash icon deletes the group.

## The All Group

The All Group contains all tracks Mixer channels, making it easy to perform edit or mix tasks on all tracks at once. This group is always present at the top of the Groups list.

## The Selected Checkbox

Clicking the Selected Checkbox adds a checkmark, signifying that all tracks within the group are selected. This makes it easy to add to a current group (shift-clicking to add more members and using Create Group) or control the routing of all selected tracks at once by holding down the Option (Alt Windows) keys while assigning or unassigning.

For example, let's say we have Group 1 with six tracks and Group 2 with 10. Just click on the Selected checkbox for Group 1, and all tracks in Group 1 are selected. Hold down Shift and click on the checkbox next to Group 2. Now, all members of both groups are selected, and you can create a new Group 3 that contains all members.

- A hyphen ("-") is shown if only some tracks are selected.
- Clicking the checkbox to remove the checkmark or hyphen deactivates the group.

**NOTE:** The Selected checkbox operates independently of whether a group is enabled or disabled; it's a separate control not directly tied to grouping.

### Group Key Commands

Activate or deactivate Groups using Command + num keypad 0 key (Control on Windows).

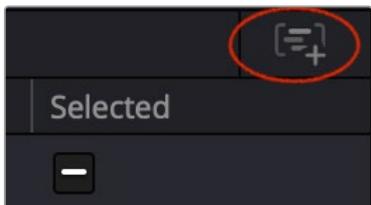
You can use Command (Control on Windows) + num keypad number 1-9 to activate or deactivate the first nine groups.

Use Command (Control Win) + num keypad \* key to toggle the All Group.

# Creating and Editing Track Groups

## To create a track group, do one of the following:

- Select one or more tracks via their track headers in the Timeline. Right-click on any track you want to include in the group and select Create Group. This also works in the Mixer on a channel strip.
- Select one or more tracks via their track headers in the Timeline. Then click the Create Group icon in the upper-right corner of the Groups list.



Create Groups icon

## In the resulting dialog, do the following:

- 1 Type a name for the group. Click the drop-down list to the right of the Group Name field to select a group color.
- 2 Select which controls you want to include for the group (Editing, Fader, Solo, Mute, Arm, Sends, Panning, and Automation). Click Set as Default to use these selections when creating other groups in the future.
- 3 Select tracks in the Add Channels column on the left, then click the >> icon to add selected tracks to the group. You can also select tracks in the Channels Added column on the left and click the << icon to remove those tracks from the group.
- 4 Click Save to save the group.
- 5 The new group appears in the Groups list.



Create Group - Group Settings dialog

### To activate or deactivate a group:

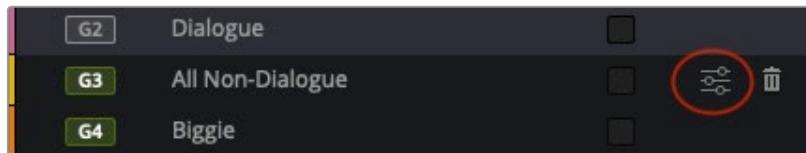
- Select or deselect the group in the Groups list. Selecting a group highlights it, indicating it is active.

### To rename a group:

- Double-click the group name in the Groups list.
- Type the new name you want for the group.

### To edit a group:

- Hover over the group you want to edit and click on the Settings icon to open the Modify Groups (Group Settings) dialog.
- Make any changes you wish, then choose Save.

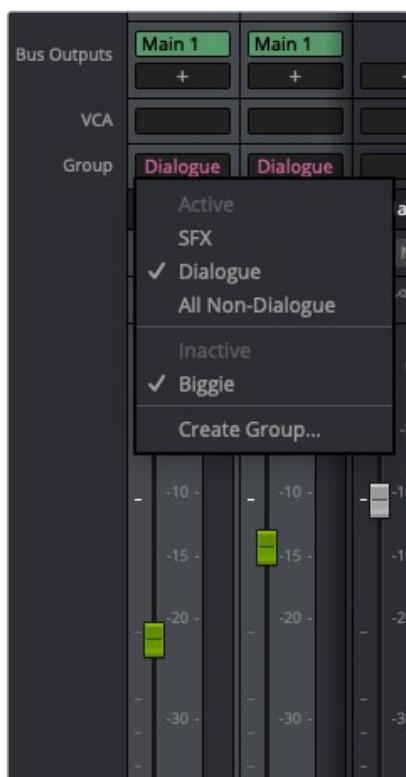


Tools icon to launch Modify Groups dialog

### To delete a track group:

- 1 Open the Tracks Index.
- 2 In the Groups list, hover over the group you want to remove, click the Trash Can icon on the right, and then click the Delete button in the confirmation dialog.

## The Mixer and Track Groups



Group menu on a Mixer channel strip

### Temporary Override ("Clutch")

When working on the Mixer, holding down Command-Shift (Mac) or Control-Shift (Windows) and moving a fader or faders within a group allows them to be manipulated independently of other group members (i.e., this is like suspending the group for just the faders that are "clutched").

### Group Management via Mixer Channel Strips

You can also manage group assignment and creation by clicking the Group name section of any channel strip, which opens a menu with the following information and the option to create a new group:

- Active and inactive channel groups
- A checkmark next to the group name the channel strip belongs to, if applicable.

# Audio Effects

DaVinci Resolve includes Fairlight FX audio plugins and support for compatible third-party VST and Audio Unit plugins for use in the Edit and Fairlight pages, which let you add effects such as echo, reverb, noise reduction, and aural enhancement to audio clips, tracks, and buses.

This chapter covers different methods of using these effects on clips and tracks.

## Contents

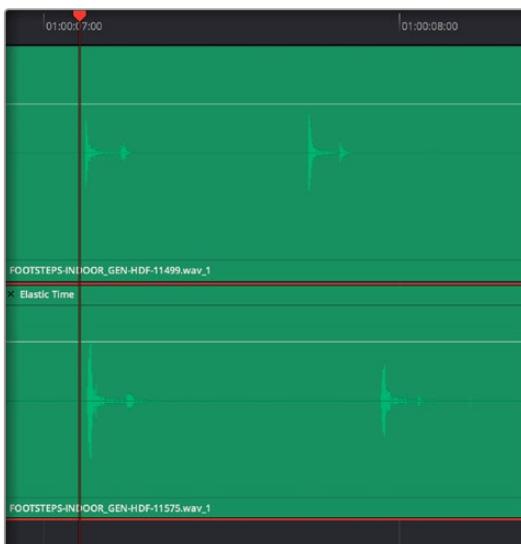
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# Elastic Wave Audio Retiming

Elastic Wave retiming is a fast and easy keyframe-based way of dynamically retiming audio, squishing and stretching different parts of a waveform to subtly retime audio playback for a variety of reasons, all while maintaining constant pitch. For example, if you're using the audio from another take to replace that of the current take, but the performer's timing is just a little bit different, you can use Elastic Audio to make small adjustments to retime the second performance to match the first.

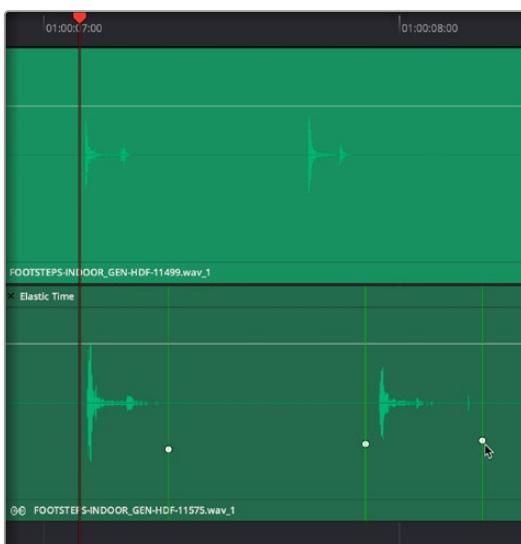
## To use Elastic Wave retiming on an audio clip:

- 1 In this example, two tracks of foley effects have been recorded, and the bottom one needs to be retimed to match the top one.
- 2 Right-click an audio clip and choose Elastic Wave retiming from the contextual menu to reveal the Elastic Wave retiming controls.



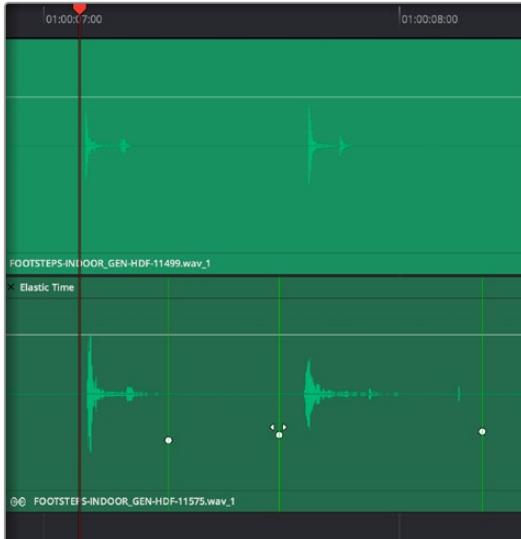
Enabling Elastic Wave

- 3 Command-click anywhere on the clip to add speed keyframes to parts of the waveform you want to retime by stretching or squishing. You can also place speed keyframes to lock parts of a waveform you don't want to retime.



Adding a speed keyframe with  
Elastic Wave retiming enabled

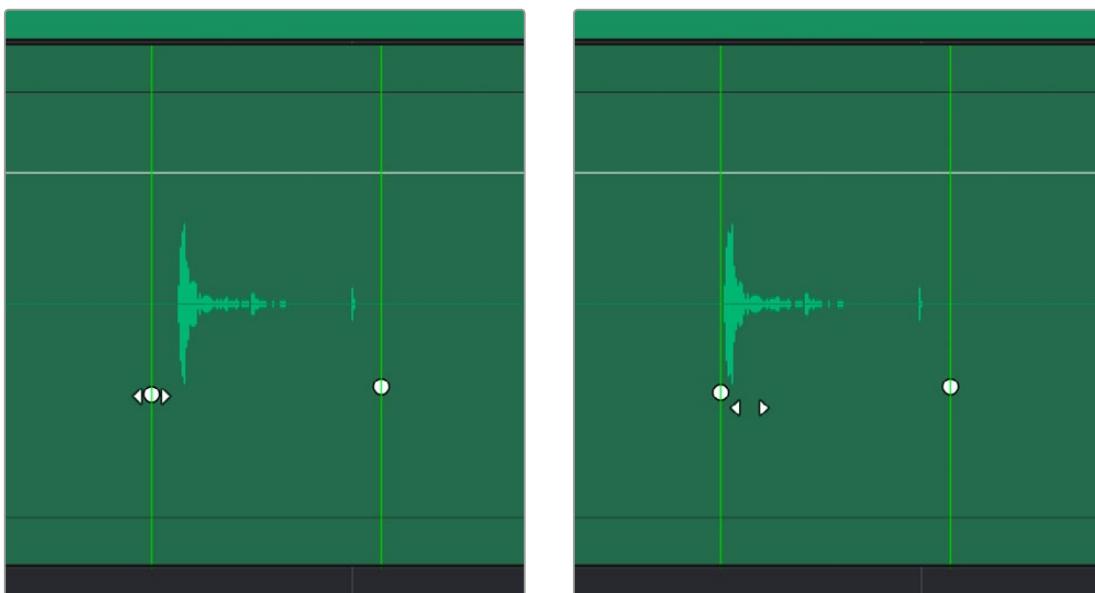
- 4 Dragging the speed keyframe to the left or right speeds up the audio on one side of the keyframe and slows down the audio on the other side of the keyframe, from that keyframe to the neighboring keyframes applied to that clip. Using an audio clip's waveform as your guide, you can use multiple speed keyframes to match the waveform of one performance to the waveform of another, in order to make the timing match. Or, you can adjust speed keyframes freeform to manipulate performances or sounds for creative effect.



Adjusting a series of speed keyframes to retime one performance to match another

You can also drag the beginning or end of an audio clip to retime that portion of the clip going forwards or back to the next speed keyframe that's been added.

- 5 If you've made some speed keyframe adjustments, but you find yourself wishing a speed keyframe you created had been placed at a different position relative to the audio waveform being adjusted, you can hold the Command key down and drag any speed keyframe to move it closer to or farther away from a part of the waveform you want it to retime. This fine-tunes the audio retiming adjustment occurring at that point in the clip.



(Left) Before Command-dragging a speed keyframe to be closer to the original beginning of the sound being retimed, (Right) After

- 6** When you're done, you can click the close button at the upper-left-hand corner to hide the Elastic Wave retiming controls.

#### To remove Elastic Wave retiming keyframes, do one of the following:

- **To remove a single speed keyframe:** Right-click on a speed keyframe and choose Remove Speed Keyframe from the contextual menu.
- **To remove all speed keyframes and eliminate the Elastic Wave retiming effect:** Right-click a clip and choose Reset Speed Curve.

**NOTE:** All Elastic Wave retiming adjustments you make in the Fairlight page appear in the Edit page as variable speed effects, accessible using the Retime controls. Be aware that while all Elastic Wave retiming effects can appear as Edit page retime effects, not all Edit page retime effects can appear as Elastic Wave retiming effects on the Fairlight page.

## Elastic Wave Options

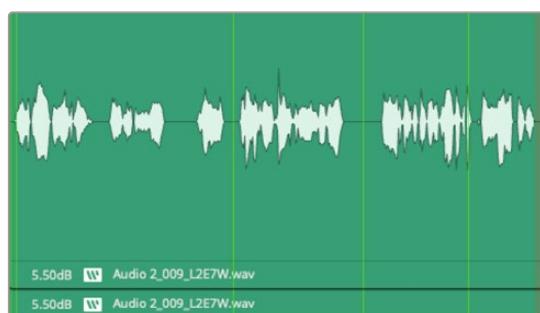
The Elastic Wave context menu has three options for processing:

- **Off:** Elastic Wave is not enabled for the clip (Default).
- **Voice:** Focused on human speech or singing. Note that this is not a good option for other material.
- **General Purpose:** Ideal for music and effects.

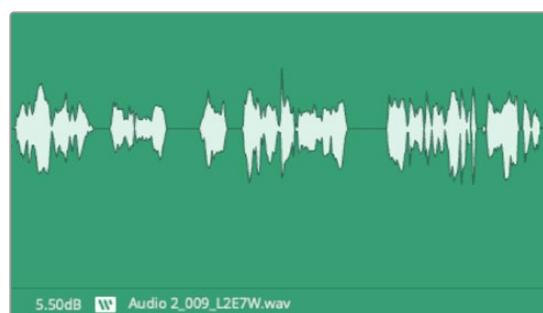
## Elastic View

Elastic view shows Elastic Wave “time points,” which are similar, but not the same as, Resolve keyframes. Keyframes represent a point in time plus a value, and Elastic Wave time points represent only a point in time.

When Elastic View is enabled, time points are visible on the selected clip.



Elastic Wave time points



Elastic Wave disabled

When disabled, the time points are not visible, but the info lane still shows that Elastic Wave is enabled with the Elastic Wave icon.

## Clearing Timing Points

“Timing points” are the moveable Elastic Wave control points that stretch or compress a given area of a clip. If you choose “Clear Timing Points,” all selected points within a clip are cleared (deleted).

Elastic Wave can operate in the Edit window where video editors may want to re-time spoken word performances so that when the audio is re-timed, the video follows the retiming to match. However, when working in the Fairlight page, re-timing of video is disabled so that you can have separate control of the audio file.

## About Audio Plugins

There is no limit to the number of single or multiple plugins when in FlexBus mode that can be applied to clips and to tracks. However there is a limit of 480 when using Fixed Bus Legacy. Plugins are accessed via each track’s control strip, or via the Inspector which provides access to both clip and track plugins.

## Fairlight FX

Fairlight FX are proprietary DaVinci Resolve-specific plugins that run natively on macOS, Windows, and Linux, providing high-quality audio effects with professional features to all DaVinci Resolve users on all platforms.

Most Fairlight FX plugins, including Channel Dynamics and EQ, and dynamics processors like the Multiband Compressor, Limiter, Reverb, and Ambisonics Meter, are Ambisonics native and offer multichannel processing.

## VST and VSTi

VST (Virtual Studio Technology) is an audio plugin standard created by Steinberg. The VST standard allows third-party developers to create plugins for use within VST host applications or create VST host applications.

The Fairlight page supports VST effects from Mono to 7.1 and beyond. These effects can be inserted on mono channels or Link Groups, and compatible VST Ambisonic effects can be used on Ambisonic tracks or busses.

If a stereo VST effect is inserted on an LCR, LCRS, or 5.1 Link Group, the left and right channels will automatically be allocated to the left and right Link Group channels.

DaVinci Resolve supports VST3. VST effects are available on macOS and Windows workstations, but not on Linux.

## VST Effects versus VST Instruments (VSTi)

A VST effect is a type of VST plugin that is used to process audio. A VST effect might be a Reverb, Compressor, or EQ. VST Instruments are typically used to synthesize sound or play back sampled audio. VSTs have rapidly replaced hardware synthesizers and dedicated samplers due to their flexibility, repeatability, and low cost.

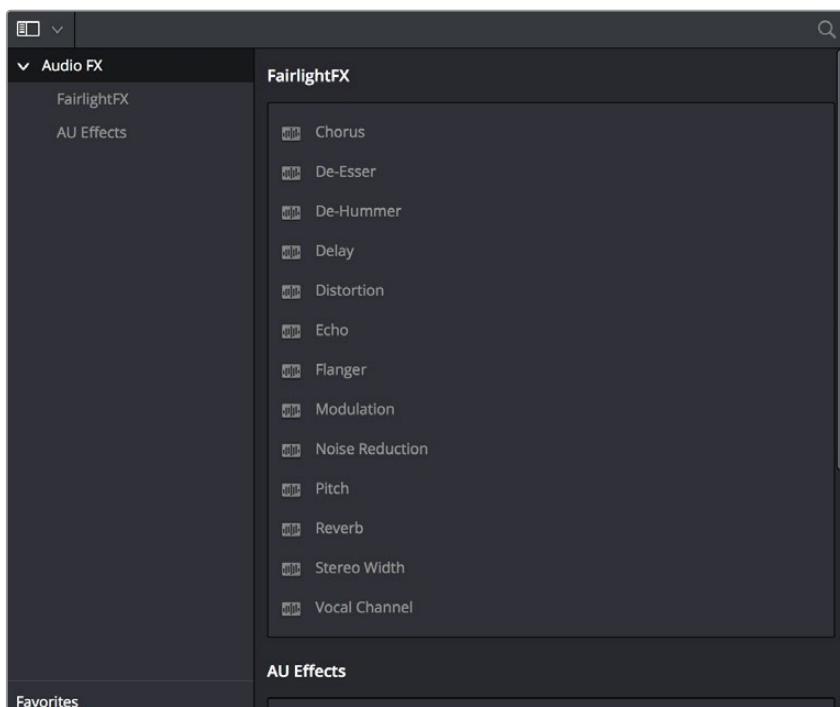
## Audio Units

Audio Units is an audio plugin API created by Apple for use on macOS workstations. Like VST, Audio Units (AU) can either process audio or work as instruments.

Compatible AU Ambisonic effects are used on Ambisonic tracks or busses.

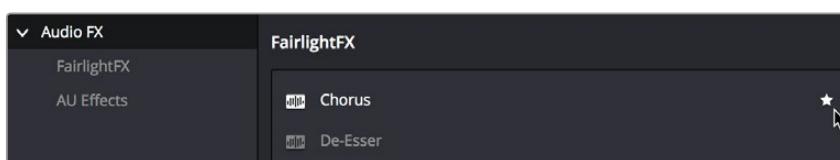
# Using Audio Plugins

Fairlight FX are pre-installed with all DaVinci Resolve installations. If you install additional VST or Audio Unit effects on your workstation, they appear in the Audio FX panel of the Effects Library, organized in separate categories.



Audio plugins in the Effects Library

You can click on the far right of any effect to flag it with a star as a favorite effect. When you do so, the favorited effects appear in a separate Favorites area at the bottom of the Effects Library Bin list, and it also appears at the top of the Effects button's menu on the Mixer when you click the "plus" button.



Stars indicate a flagged favorite effect; all favorites are currently filtered

Audio plugins let you apply effects to individual audio clips or entire tracks worth of audio, to add creative qualities such as echo or reverb, or to take care of mastering issues using noise reduction, compression, or EQ.

# Applying Plugins

## Methods of applying audio plugins to clips on the Fairlight page:

- **To apply an audio effect to a clip:** Drag any effect from the Audio FX panel of the Effects Library onto the clip in the Timeline you want to apply it to.
- **To apply an audio effect to multiple clips:** Select all of the clips you want to apply an audio effect to, then drag any effect from the Audio FX panel of the Effects Library onto any of the selected clips.

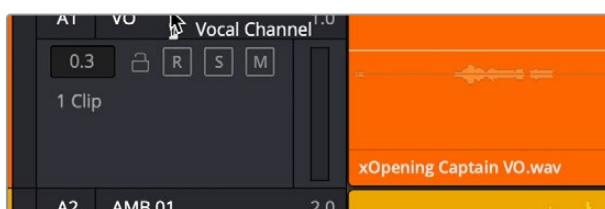
When you apply an audio plugin to a clip, a badge appears to the left of that clip's name bar in the Timeline to let you know there's an effect applied to it.



Timeline clips with audio plugins applied appear with a badge.

## Methods of applying audio plugins to tracks on the Fairlight page:

- **To apply an audio effect to an entire track in the Timeline:** Drag any effect from the Effects Library onto the track header.



Applying an audio effect to a whole track via the Timeline

- **To apply an audio effect to a track or bus in the Mixer:** Drag any effect from the Audio FX panel of the Effects Library onto the clip in the Timeline you want to apply it to.



Applying an audio effect to a whole track via drag and drop to the Mixer

- **To apply an audio effect to a track or bus using the Mixer controls:** Click the plus button in the channel strip of the track you want to apply an effect to, and then choose an effect from the drop-down menu that appears. All filters appear within categories to make them easier to find. If you've clicked the star button of any filters in the Effects Library to favorite them, these favorite filters appear at the top of the plus button's drop-down list.

- **To copy audio filters from one mixer channel to another:** Hold the Option key and click and drag the effect to the desired channel and slot to copy.
- **To reorder audio filters in the mixer:** Click and drag the audio effect to move to the desired slot position.



Applying an audio effect to a whole track via the Mixer's own controls

**TIP:** The categories that VST and Audio Units effects are organized into in the Mixer can be edited in the Audio Plugins panel of the DaVinci Resolve System Preferences window. All plugins on a workstation are shown in the Available Plugins list, and clicking within the Category column lets you use a drop-down menu with which to change categories.

**NOTE:** This does not apply to Fairlight FX plugins.

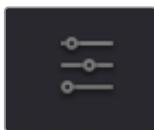
## Editing Plugin Parameters

### To edit a clip's audio plugins:

- Select that clip and open the Inspector. All audio plugins applied to that clip appear in the Effects tab, with that effect's controls appearing directly in the Inspector.

### To edit a track's audio plugins, do one of the following:

- Click in the background of the Timeline header to select that track, and then open the Inspector. Click the custom UI button for that effect to open its controls.



The custom UI button for audio plugins in the Inspector

- Move the pointer over the plugin's name in the Effects area of the Mixer, and click on the custom UI button to open its controls.



The custom UI button for audio plugins in the Mixer

Nearly all Fairlight FX, VST, and Audio Unit audio plugins have a custom user interface that makes it much easier to manipulate that effect's controls. These can be opened from within DaVinci Resolve.



The custom audio effect interface for iZotope RX Voice De-noise

## Working with Plugins in the Inspector

### Methods of working with audio plugins in the Inspector:

- **To rearrange the order of multiple audio effects applied to a clip:** Click the move up or move down buttons in any effect's title bar, to the left of each effect's Trash Can button.
- **To disable or re-enable an effect:** Click the toggle button at the far left of each effect's title bar.
- **To remove an effect:** Click the Trash Can button.
- **To reset any effect parameter:** Click the Reset button at the far right of the parameter you want to reset.
- **To open or collapse an effect's parameters:** Double-click the title bar.
- **To open or collapse the parameters of all effects:** Hold the Option key down and double-click any effect's title bar.

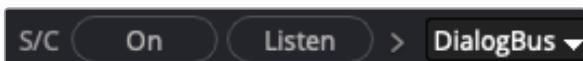
Once applied to a clip or track, audio plugins can also be keyframed or automated just like volume and pan settings, to create dynamic audio effects that change over time.

# Sidechaining

DaVinci Resolve supports the sidechaining of compatible Fairlight FX, AU, and VST plugins, which lets you temporarily lower the level of a target track or bus using the audible signal from a source track or bus.

This process, also known as “ducking,” is helpful when multiple tracks compete for space in a mix because they share some or all the same frequencies, such as a track or bus with dialogue and a bus with a crowd cheering at a sports event.

In the example above, the dialogue is fed to the sidechain input of a compatible dynamics plugin (i.e., a compressor or limiter) on the Mixer channel for the crowd noise. When the controls on the dynamics are set correctly, the voices on the Dialogue channel will subtly and slightly lower or attenuate the level of the crowd noise, allowing the voices to be heard more prominently in the mix. When the dialogue stops, the cheering returns to its original level.



Sidechain controls

## To use sidechaining

- Open the compressor or limiter on the Mixer channel with the crowd noise.
- Select the Dialogue channel in the source drop-down at the top of the plugin, to the right of the Listen button.

This is the audio you’re using to attenuate the level of the cheering crowd.

Using a bus as the ducking source lets you use multiple sources to trigger changes in your target track.

- Click the On button, which turns red, indicating that the Sidechain (S/C) function is active.
- Adjust the controls to taste during playback of your mix, while ensuring the effect sounds natural.

You can experiment with this procedure using the Compressor section of the Channel Dynamics plugin or the Fairlight FX Limiter.

For more information on sidechaining with the Channel Dynamics plugin, see *Chapter 174, “Mixing in the Fairlight Page.”*

For more information on sidechaining with the Fairlight FX Limiter, see *Chapter 178, “Fairlight FX.”*

- Clicking the Listen button lets you hear the incoming signal if you need to confirm that the correct input signal is coming into the Limiter. This button turns yellow when active.

# Applying Audio Plugins to Busses

You can apply audio plugins to Main and Sub buses just like any other track, with which to apply any audio mastering effects operations you require to individual submixes, or even to an entire main.

**TIP:** You can quickly assign plugins for a selected group of channel strips, or to all channel strips, by holding down the Option key (Mac) or the Alt key (Windows) for all selected tracks or Command-Option (Mac) or Control-Alt (Windows) for all mixer channel strips prior to performing the operation. These shortcuts can save a lot of time in your workflow.

## Dealing With Processor Intensive Plugins

As you apply more and more plugins directly to clips in complicated mixes, you may discover you lack the processing power to play all audio tracks and effects in real time. When this happens, there are two ways you can ease the burden that audio clip effects are placing on your workstation.

### Caching Audio Clips With Plugins

One quick fix is to manually enable the caching of one or more selected audio clips with audio effects applied to them to improve your project's performance. Once an audio clip is cached, all plugin effects are "baked in" and that clip's audio waveform updates to reflect the altered audio. Cached clips appear with a small badge to the right of the FX badge in the name bar of the clip.



A cache badge lets you know this audio clip has cached effects

This is a non-destructive operation that has no lasting effect on the source media of cached clips. You can still alter a cached clip's plugin parameters whenever you want. Opening the graphical controls of a cached clip temporarily suspends audio caching, and when you're finished, the clip is automatically re-cached and its waveform is updated to reflect the change so long as Cache Audio Effects remains enabled.

**To cache audio effects for one or more selected clips:**

- Right-click an audio clip with a plugin applied and choose Cache Audio Effects to enable audio effect caching for that clip. If you right-click one of multiple selected clips, you'll enable Cache Audio Effects for all selected clips at once. Once enabled, that clip will continue to be cached (and re-cached if you change the plugin's parameters) until you manually disable audio caching.

**To disable audio caching for one or more selected clips:**

- Right-click an audio clip that's been cached and choose Cache Audio Effects to disable audio effect caching for that clip.

## Exporting Audio Clips With Plugins

Another way of easing the burden of audio clip effects on your system is to export the effected clip to another layer. This creates a new piece of audio media with the effect "baked in," which is written to the directory location specified by the "Save clips to" field of the Capture and Playback panel of the Project Settings.

**To bounce one or more selected audio clips with effects to another layer:**

- Right-click an audio clip with a plugin applied and choose Export Audio Files. If you right-click one of multiple selected clips, you'll have options for what you would like exported for each selected clip all at once.

Exported clips no longer have editable effects, but you can always choose View > Show Audio Track Layers to see the original underlying clip that still has the original plugin effect applied, and you can unmute it, move it back up to the top, edit the effect, and export another version of the clip, which appears as the topmost layer.

For more information on exporting clips to files, see *Chapter 172, "Editing Basics in the Fairlight Page."*

## Chapter 178

# Fairlight FX

Fairlight FX are DaVinci Resolve-specific audio plugins that run natively on macOS, Windows, and Linux and provide high-quality audio effects with professional features to all DaVinci Resolve users.

These plugins are available on the Edit and the Fairlight pages and offer various options for repairing faulty audio, creating effects, and simulating spaces.

On the Fairlight page, they're categorized as either Track FX or Audio Effects based on their position in the Fairlight Mixer's signal path.

For more information on using the Presets Library, in "Fairlight Mixer Signal Path" section, see Chapter 174, "Mixing in the Fairlight Page."

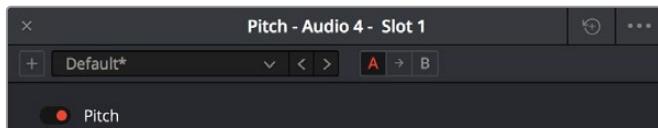
This chapter explains what they do and how to use them.

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# Common Controls For All Fairlight FX

Before going into the specific controls of each Fairlight FX plugin, there are some common controls that all plugins share, found at the top of the custom GUI window for each plugin.



Common controls for all Fairlight FX

— **Presets:** A cluster of controls that let you recall and save presets specific to each plugin.

**Add Preset button:** Click this button to save the current settings of the Fairlight FX you're using. A dialog box lets you enter a Preset name and click OK.

**Preset drop-down menu:** All presets for the currently open plugin appear in this menu.

**Previous/Next preset buttons:** These buttons let you browse presets one by one, going up and down the list as you evaluate their effects.

— **A/B Comparison:** A set of buttons that lets you compare two differently adjusted versions of the same plugin. The A and B buttons let you create two sets of adjustments for that plugin, and toggle back and forth to hear which one you like better. The arrow button lets you copy the adjustments from one of these buttons to the other, to save the version you like best while experimenting further.

— **Reset:** A single reset control brings all parameters in the current plugin to their default settings.

When the Automation is turned on, an automation button appears at the top right of each of the plugins. Automatable parameters for that effect are available in the Plugin drop-down menu for that track.



Automation activated and available to the Fairlight FX

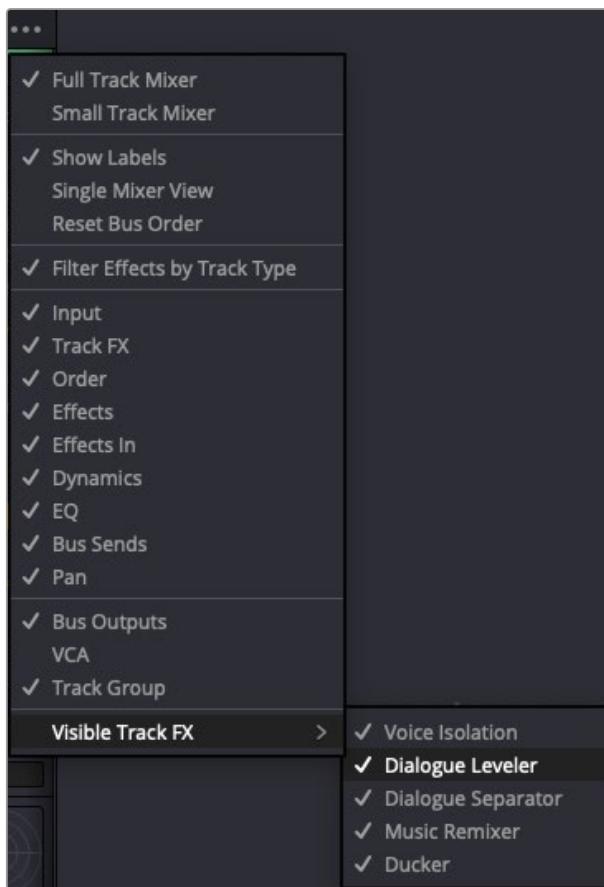
**NOTE:** Although Default is the preset when initially opened, many of the plugins, have presets already created. Reverb, for instance, has Cathedral, Concert Hall, and Studio presets built in. These can be excellent starting points to change, rename, and save for your specific needs. These new presets will also be available in the Preset drop-down menu.

# Track FX

These built-in Fairlight FX plugins are accessed via the Track FX section of Audio Track channel strips or in the Inspector. If the Track FX section doesn't appear in the Mixer, click the three dots in the upper-right corner of the Mixer and select Track FX.

The available plugins in this category are: Voice Isolation, Dialogue Leveller, Dialogue Separator, Music Remixer, and Ducker.

Each plugin occupies a fixed, dedicated insert point in the Track FX section, with the Voice Isolation and Dialogue Leveller visible by default. To reveal the other Track FX plugins, click the three dots in the upper-right corner of the Mixer and select each plugin from the "Visible Track FX" submenu at the bottom.



The Mixer menu

## Dialogue Leveller

The Dialogue Leveller analyzes source material to detect dialogue and then "rides down" louder areas, "lifts up" softer areas, and lowers background sounds that are not dialogue.

It works without the typical "pumping" or other unwanted side effects of dynamics processors (compression/limiting) to produce results like those achieved through detailed, manual clip gain adjustments or "riding" the track with fader automation.

The Dialogue Leveler can often “fix and mix” a recording made with a single boom mic, where one character is closer than another or turns away from the mic and levels it out so that the original relative dynamics are preserved while increasing intelligibility and average level.



The Dialogue Leveler plugin

Although Dialogue Leveler can be used on an audio track in real time, it cannot be used on live audio input. It can be used on any mono, stereo, or dual-mono audio track, but it isn't supported on tracks with more than two channels.

### Dialogue Leveler controls:

- **Dialogue Leveler:** Enables or disables the plugin.
- **Waveform Processing display:** This shows a scrolling waveform and a gray line indicating Dialogue Leveler processing. However, this display is not available when using the Dialogue Leveler found in the Inspector to process audio clips on the timeline.
- **Preset Menu:** This menu provides the following options:
  - Allow wider dynamics:** This is the default and is best for audio with a wider-ranging dynamic from loud-to-soft, and where the clip levels are medium to high.
  - More lift for low levels:** Select this option if the source has more low-level dialogue that you want to boost.
  - Lift soft whispery sources:** Select this option if the source has whispered dialogue and background noise.
  - Optimize moderate levels:** Select this option if the source is at medium levels throughout.
- **Reduce Loud Dialogue:** When enabled, louder dialogue is ridden downward when it peaks, acting like a “perfect limiter” where you don’t have to adjust the threshold or time parameters. Due to the “near real-time” functionality, analysis occurs prior to audible playback for optimal results.
- **Lift Soft Dialogue:** This setting finds and lifts low-level dialogue, evening-out material that is quieter while more variable in level. Because the process is dialogue-focused, it doesn’t tend to raise background sounds unless they’re audible at the same time as the dialogue.

The Lift Soft Dialogue option is often the most useful of the three options, as it makes quieter lines of dialogue louder and naturally smooth without boosting background noise.

- **Background Reduction:** This option gently removes background noise based on the internal preset selected in the Preset menu.
- **Output Gain:** You can use this control to adjust the output level by clicking and dragging it or entering a value in the numeric field. The range of the Output Gain control of 0.0 to +6.0 dB.

**TIP:** Before using the Dialogue Leveler on a track, it can be useful to set an optimum baseline level for use with the default “Allow wider dynamics” preset by normalizing the audio.

For more information on normalizing audio, see *Chapter 172, “Editing Basics in the Fairlight Page.”*

## Dialogue Separator (Studio Version Only)

Dialogue Separator uses DaVinci Neural Engine AI to give you individual control over the level of dialogue, background sounds, and the reverberant field or ambient room sound (“ambience”).



The Dialogue Separator plugin

The Dialogue Separator is useful when, for example, a source file has a great roomy sound, but there's music or crowd noise in the background. In this instance, you can rebalance the audio to reduce the background sounds or adjust the room sound to make the dialogue more intelligible.

Another use case would be when someone moves toward the camera in a roomy environment while speaking. You could use automation to rebalance the audio so that the ambient room sound gradually becomes “drier” as they get closer, without affecting the background.

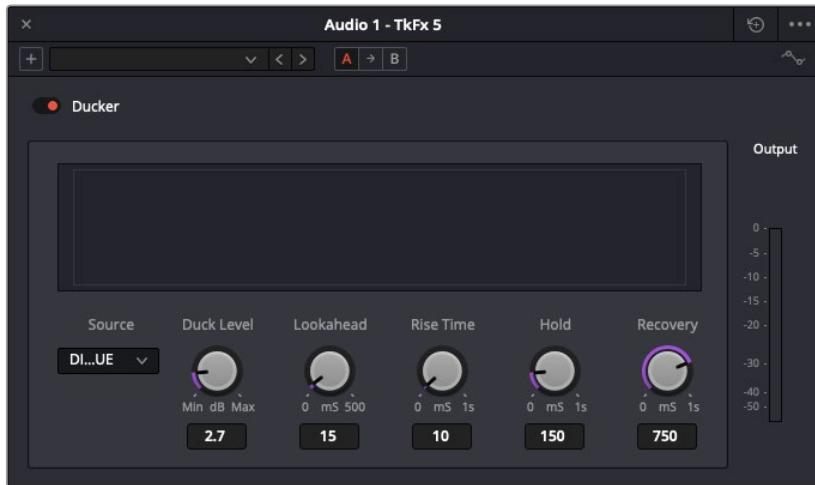
Dialogue Separator is currently a mono-only plugin. If your source is stereo, you'll need to split it into dual-mono and process both mono tracks separately.

## Ducker

This plugin lets you use the audible signal from a track to lower the level of another.

Although it can be used in many creative ways, a common use of “ducking” is automatically lowering a music or sound effects bed so that dialogue or a VO track can be heard more prominently in a mix.

In this example, the Ducker uses level changes of the incoming dialogue or VO track to decrease the volume of the music or sound effects bed. This is achieved without compressing the incoming signal. When set up correctly, your audio tracks can practically “mix themselves.”



The Ducker plugin

### To use the Ducker

- Choose the target track that you want to affect (the “destination” track), and open the Ducker.
- Choose the Duck Source track or bus in the drop-down menu.
- This is the sound source you want to use to duck the level of the target track.
- Play a bit of your sequence, and adjust the duck level and other controls to taste.

### Ducker Controls

- **Duck Amount:** This control determines level attenuation on the target track in dB with a default value of 2.7 dB. Most of the time, a value between 2.0 dB and 5.0 dB works the best.
- **Lookahead:** Adjusts the amount of lookahead time in milliseconds, with a default value of 15ms. Lookahead allows the Ducker to start attenuating the destination track before the source track is audible.  
The larger the value, the more the Ducker will “pre-anticipate” the source track. If you want the Ducker to start lowering the sound before a line of dialogue or VO begins, you can experiment with higher values, but the default will usually produce good results.
- **Rise Time:** This determines how many milliseconds it takes for the Ducker to reach the amount of reduction specified by the Duck Amount. The default value is 10 milliseconds, which should work for most situations. Longer Rise Times may be useful with higher Duck Amount values and longer gaps in the source track.
- **Hold:** This parameter determines how long the target signal will be attenuated. The default is 150ms.
- **Recovery Time:** This value indicates how quickly the target signal will return to its previous level after attenuation. The default time value is 750ms, but setting the correct Recovery time is crucial to a natural-sounding ducking process, so you should try different values to find the best results.

## Ducker Graph Display

This area shows a gray line representing the incoming signal against the action of the Ducker, shown in yellow. Dips in the yellow line signify attenuation of the target track based on the Duck Amount in combination with the other parameters.

## Music Remixer (Studio Version Only)

This DaVinci Neural Engine AI-based plugin splits music into individual stems: Vocals, Drums, Bass, Guitar, and "Other" ("everything else"), letting you creatively rebalance or remix the track.

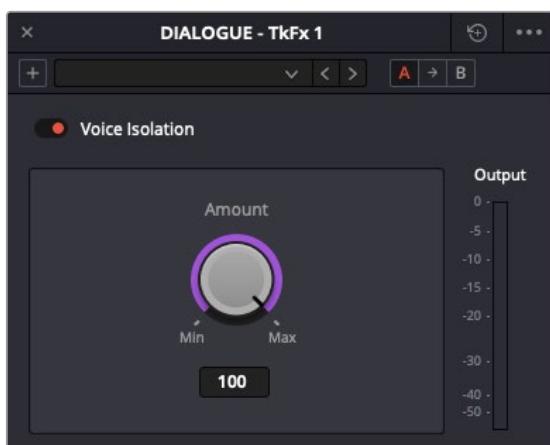
You can use the level controls to adjust the volume of each stem and the Mute buttons to remove or bring them back into your mix. For example, you may want to remove or lower a vocal because it clashes with a featured piece of dialogue.



The Music Remixer plugin

## Voice Isolation (Studio Version Only)

Voice Isolation uses an AI model trained for any type of human voice, male or female, young or old, which lets you completely remove loud, undesirable sounds from existing voice recordings with incredible results.



The Voice Isolation plugin

You can get rid of all kinds of background noise, from air conditioners or fans to jackhammers, restaurant background noise, music playing during a featured piece of dialogue, and more.

The Amount control adjusts the mix between the original source and the isolated voice. When set to 50, the mix is roughly equal. Values between 70 and 80 work well for natural results while strongly isolating the source.

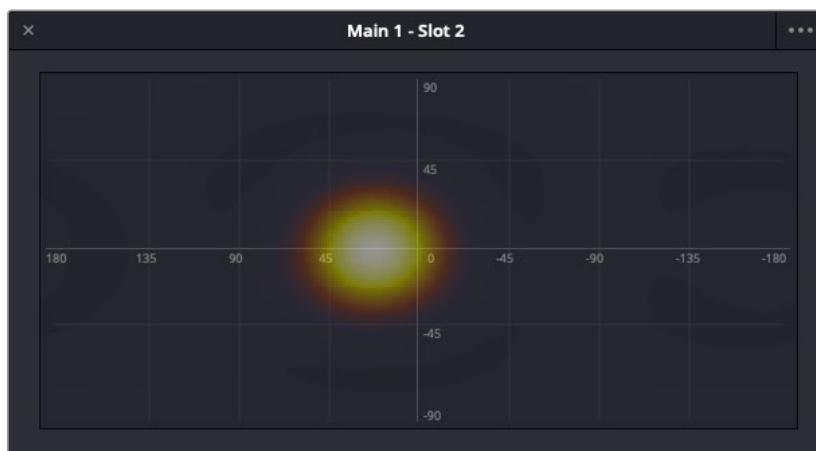
Although Voice Isolation can be used on an audio track in real time, it cannot be used on live audio input. It can be used on any mono, stereo, or dual-mono audio track, but it isn't supported on tracks with more than two channels.

## Insert Effects

### Ambisonics Meter

This Fairlight FX plugin can be inserted on an Ambisonics track or bus to present a graphic display of your Ambisonic sound field. Clicking the three dots in the upper right opens an options menu where you can choose either "power" (Power Map), or "Sonar" style map as the metering method.

Both meters convey the intensity of the sound and its current location in the Viewer.



Ambisonics meter - Power Map view



Ambisonics meter - Sonar view

## Chorus

An effects plugin. A classic Chorus effect, used to layer voices or sounds against modulated versions of themselves to add harmonic interest in different ways.

An animated graph shows the results of adjusting the Modulation parameters of this plugin, giving you a visualization of the kind of warble or tremolo that will be added to the signal as you make adjustments.



The Chorus Fairlight FX

Chorus has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Input Format:** (Only visible when Chorus is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the Chorus. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Delay:** The amount of delay between the original sound and the Chorus effect.
- **Delay Time:** Length of the Chorus delay lines.
- **Separation:** Time separation of the delay voices.
- **Expansion:** Sets L/R length differences, phase offset of modulators.

— **Modulation:** These controls adjust the low frequency oscillator (LFO) that drives the tremolo of the chorus effect in different ways.

**Waveform:** Specifies the shape of the LFO that modulates the rate of the Chorus, affecting the timing of the oscillations. There are six options for the oscillator for you to choose from:



**Sine** (Smooth oscillations)



**Triangle** (Sudden oscillations)



**Saw1** (Jerky oscillations)



**Saw2** (Jerky oscillations)



**Square** (Hard stops between oscillations)



**Random** (Randomly variable oscillations)

**Frequency:** Rate of LFO controlling the Chorus. Lower values generate a warble, higher values create a tremolo.

**Pitch:** Amount of frequency modulation, which affects the pitch of the Chorus.

**Level:** Depth of level modulation. Affects the “length” of the segment of Chorus that’s added to the sound. Low values add only the very beginning of the Chorus effect, high values add more fully developed Chorus warble or tremolo.

— **Feedback:**

**Amount (%):** The percentage of signal fed back to the Chorus Delay Line. Values can be positive or negative, the default is 0 (no effect). Increasing this parameter adds more of the Chorus effect to the signal, lowering this parameter adds more of the inverted Chorus effect to the signal. At values closer to 0, only a faint bit of Chorus can be heard in the audio, but at values farther away from 0 (maxing at +/- 99), a gradually pronounced Chorus becomes audible.

**Blend (%):** Amount of feedback which bleeds into the opposite channel (Stereo mode only).

— **Output:** Controls for adjusting the final output from this plugin.

**Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

**Output Level (dB):** Adjusts the overall output level of the affected sound.

## De-Esser

A repair plugin specific to dialog. The De-Esser is a specialized filter that's designed to reduce excessive sibilance, such as hissing "s" sounds or sharp "ts" sounds, in dialogue or vocals.

A graph shows you which part of the signal the controls are set up to adjust, while reduction and output meters let you see which part of the signal is affected and what level is being output.



The De-Esser Fairlight FX

The De-Esser has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Listen to Ess Only:** This checkbox at the top right lets you listen only to the ess that is being removed. This is very useful to determine if too much signal is being removed or if more ess attenuation can be applied.
- **Frequency Range:** Two controls let you target the frequency of the "s" sound for a particular speaker.
  - Target Frequency:** A knob that lets you target the frequency of the offending sibilance. Sibilant sounds are usually found in the range of 5 - 8kHz.
  - Range:** switches the operational mode of the De-Esser. Three choices (from top to bottom) let you switch among Narrow Band, Wide Band, and All High Frequency which processes all audio above the source frequency.
- **Amount:** Adjusts the amount de-essing that's applied.
- **Reaction Time:** Adjusts how suddenly de-essing is applied. There are three choices.
  - Slow:** Equivalent to a slow attack.
  - Medium:** Equivalent to a medium attack.
  - Fast:** Equivalent to a fast attack.

## De-Hummer

A repair plugin with general applications to any recording. Eliminates hum noise that often stems from electrical interference with audio equipment due to improper cabling or grounding. Typically 50 or 60 cycle hum is a harmonic noise, consisting of a fundamental frequency and subsequent partial harmonics starting at twice this fundamental frequency.

A graph lets you see the frequency and harmonics being targeted as you adjust this plugin's controls.



The De-Hummer Fairlight FX

De-Hummer has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Listen to Hum only:** This checkbox at the top right lets you listen only to the hum that is being removed. This is very useful to determine if too much signal is being removed or if more hum attenuation can be applied.
- **Frequency:** Target source fundamental frequency. A knob lets you make a variable frequency selection, while radio buttons let you select common frequencies that correspond to 50Hz/60Hz electrical mains that are the typical culprits for causing hum.
- **Amount:** Adjusts how much De-Hum extraction you want to apply.
- **Slope:** Adjusts the ratio of fundamental frequency to partial harmonics, the adjustment of which lets makes it possible for various kinds of hum to be targeted. For example, a value of 0 biases hum extraction towards the fundamental frequency, while a value of 0.5 gives equal extraction of all harmonics (up to 4), and finally a value of 1.0 targets the higher frequency partials.

# Delay

An effects plugin. A general purpose stereo delay effect, suitable for tasks varying from track doubling, to early reflection generation, through simple harmonic enhancement. Processes in stereo or mono, depending on the track it's applied to.

A graph shows the timing and intensity of the echoes generated by this plugin on each channel, and an Output meter displays the output level of the resulting signal.



The Delay Fairlight FX

Delay has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Input Format:** (Only visible when Delay is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the delay. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Filters:** Alters the proportion of frequencies that are included in the delay effect. When the Delay plugin is inserted on a Mono Channel, the Left and Right sections are replaced with a single "Delay" section.
  - Low Cut (Hz):** A global High Pass filter.
  - High Cut (Hz):** A global Low Pass filter.
- **Delay:** Adjusts the timing of the delay.
  - Left/Right Delay (ms):** Delay time of each channel.
  - Left/Right Feedback (%):** Feedback % of the Left or Right channel back to itself. A negative value equates to % of feedback with a phase reverse from the original signal.

— **Feedback:** Controls for adjusting the amount of bleed between channels.

**High Ratio:** Adjusts the frequency of a damping filter for the feedback signal.

**Stereo Blend:** Adjusts the proportion of signal from Left and Right channel feedback which feeds into the opposite channel. When the Delay plugin is inserted on a Mono channel, Stereo Blend control does not appear.

— **Output:** Controls for adjusting the final output from this plugin.

**Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

**Output Level (dB):** Adjusts the overall output level of the affected sound.

## Dialogue Processor

The Dialogue Processor chains together six different common audio processing operations inside of a single plugin, each tuned to the specific needs of adjustments to improve recorded dialog. The specialized De-Rumble, De-Pop, De-Ess, Comp(ressor), Expander, and Excite controls each have a streamlined set of controls tailored to the specific types of common adjustments that may be required for a great sounding dialogue track.



The Dialogue Processor plugin

— **De-Rumble:** The de-rumble filter is a high pass filter that allows you to remove subsonic rumble (subharmonic low frequencies) in your vocal microphone signal. A safe value to use for most condenser microphones is 40 or 50Hz. Using higher values can start to remove lower frequencies in the source signal, which can be a useful creative effect at times.

**Frequency:** Sets the high-pass filter to frequencies between 40Hz to 235Hz.

— **De-Pop:** Controls the center frequency for a specialized filter for removal of vocal “popping” sounds, or plosives, that can occur when someone speaks close to a microphone capsule on-axis.

**Frequency:** Sets the filter to frequencies between 50Hz to 200Hz.

**Amount:** Sets the amount of the filter effect on the signal with lower values effecting less and higher values effecting more. A meter next to the amount knob shows how the signal is being effected.

- **De-Ess:** Sets the center point of a specialized bandpass filter for removal of vocal “Esses,” which can be overly present due to sibilance. De-essing allows you to raise average level and brighten a vocal source without it sounding harsh, as our ears are very sensitive to overly present sibilance. The best frequency range for male and female voices tends to be between 6 and 7 kHz.
  - Frequency:** Sets the filter to frequencies between 700Hz to 9000Hz.
  - Amount:** Sets the amount of the filter effect on the signal with lower values effecting less and higher values effecting more. A meter next to the amount knob shows how the signal is being effected.
- **Compressor:** Used to compress a signal’s dynamic range by reducing differences in level between the loudest and quietest parts of the input signal. Compression can be used to raise the signal’s overall level, boosting it without clipping and thus increasing perceived loudness. Compression is often used to give voices more presence within a mix and to smooth out changes in the levels of tracks that may have too much dynamic range for its context.
  - Threshold (dB):** Sets the level at which the signal will start to be effected from -40dB to -8dB.
  - Amount:** Sets the amount of the compression on the signal with lower values effecting less and higher values effecting more. A meter next to the amount knob shows how the signal is being effected.
  - **Fast/Slow:** Determines the speed at which the effect is applied, fast or slow.
- **Expander:** Emphasizes differences in volume by lowering the level of soft parts of the signal relative to the level of louder parts and can be used to minimize noise while increasing the dynamic range of a signal.
  - Threshold (dB):** Sets the level at which the signal will start to be effected from -40dB to -8dB.
  - Range:** Amount of decrease in signal level in dB, as expansion lowers the softer parts of the signal.
  - Fast/Slow:** Determines the speed at which the effect is applied, fast or slow.
- **Excite:** Synthesizes additional high frequency content in a source signal, using various techniques. Used subtly, it can add more presence to sounds that may be overly dull without having to use EQ.
  - Amount:** Sets the amount of the exciter on the signal with lower values effecting less and higher values effecting more. A meter next to the amount knob shows how the signal is being effected.
  - Female/Male:** Tailors the exciter’s response to be optimized for a male or female voice.

## Dialogue Leveler

The Dialogue Leveler analyzes source material to detect dialogue, and then “ride down” louder areas, “lift up” softer areas, and lower background sounds that are not dialogue. It works without typical dynamics processor “pumping” (compression/limiting) or other obvious side effects, and produces results similar to detailed manual clip gain adjustments or by carefully “riding” the track with fader automation. Dialogue Leveler can often “fix and mix” a recording with a single boom mic where one character is closer than another or turns away from the mic at times, and level it out so that the original relative dynamics are preserved while increasing intelligibility and average level.



The Dialogue Leveler plugin

Dialogue Leveler can be used on track audio in real time but not on live audio input. Dialogue Leveler can be used on any mono or stereo (or multi-mono) audio track, but it is not supported on greater-than-stereo tracks.

Dialogue Leveler has the following controls:

- **Dialogue Leveler:** Enables or disables Dialogue Leveler processing.
- **Waveform Processing display:** Shows a scrolling waveform display and indicates Dialogue Leveler processing with a gray line. However, note that the display does not appear in the version of Dialogue Leveler for clip-based processing.
- **Preset Menu:** The preset menu provides the following options:
  - Allow wider dynamics:** This is the default, and is best for sources with wider ranging dynamic levels from loud-to-soft, and where the clip levels are medium to high.
  - More lift for low levels:** Select this option if the source has more low level dialogue that you want to boost.
  - Lift soft whispery sources:** Select this option if the source has whispered dialogue and background noise.
  - Optimize moderate levels:** Select this option if the source is at medium levels throughout.
- **Reduce Loud Dialogue:** When enabled, louder dialogue is ridden downward on peaks and acts somewhat like a “perfect limiter” where you don’t have to adjust threshold or time constants. Due to the “near real time” aspect, analysis occurs prior to audible playback for optimal results.
- **Lift Soft Dialogue:** When enabled, finds low level dialogue and lifts and evens out material that is more variable in level and softer, but because the process is dialogue focused, it doesn’t tend to raise background sounds (unless they are happening at the same time as the dialogue itself). More often than not, the Lift Soft Dialogue option is the most useful of the three options, as it makes less audible lines of dialogue more audible and naturally smooth, while not boosting background noise.
- **Background Reduction:** When enabled, reduces background sounds by focusing on dialogue and gently removing them based on the internal presets (Preset menu).
- **Output Gain:** Adjust the Output Gain by clicking and dragging on the Output Gain control or by entering a value in the numeric field (Output Gain control in dB with 0 to +6 dB range with .1dB resolution).

## Distortion

An effects plugin. Creates audio distortion that's useful for sound design and effects, ranging from simple harmonic distortion simulating an audio signal going through primitive or faulty electronics (such as bad speakers, old telephones, or obsolete recording technologies), all the way to mimicking an overdriven signal experiencing different intensities of hard clipping (think someone yelling through a cheap bullhorn, megaphone, or PA system). This plugin includes soft tube emulation in the output stage.

An animated graph shows the results of adjusting the Distortion parameters of this plugin, giving you a visualization of the kind of harmonic distortion, waveshaping, and clipping that will be modifying the signal as you make adjustments. Input and Output meters let you see how the levels are being affected.



The Distortion Fairlight FX

Distortion has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Filters:** Two filters let you simulate devices reproducing limited frequency ranges.
  - LF Cut:** Low frequency distortion shaping.
  - HF Cut:** High frequency distortion shaping.
- **Distortion:** Three sets of controls let you create the type and intensity of distortion you want.
  - Mode buttons:** Switch the operational mode of distortion. The one to the left, Distortion, creates harmonic distortion. The button to the right, Destroy, is a more extreme polynomial waveshaper.
  - Distortion:** Adjusts the amount of distortion that's applied to the signal. Higher values distort more.
  - Ceiling:** Adjusts the level of input signal that triggers clipping.

- **Output:** Controls for adjusting the final output from this plugin.

**Dry/Wet (%)**: A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

**Output Level (dB)**: Adjusts the overall output level of the affected sound.

**Auto Level button**: Applies automatic compensation for gain added to the signal due to the distortion being applied. Having this button turned on prevents the signal from becoming dramatically and unexpectedly increased, while turning it off frees you to do what you want, if what you want is to hear a lot of distortion.

## Echo

An effects plugin. A classic Echo effect, simulating the reflection of sounds that occur with a delay after the direct sound is heard. Processes in stereo or mono, depending on the track it’s applied to.

A graph shows the timing and intensity of the echoes generated by this plugin on each channel, and an Output meter displays the output level of the resulting signal.



The stereo Echo Fairlight FX

Echo has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Input Format:** (Only visible when Echo is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the echo. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Filter:** Alters the proportion of frequencies that are included in the delay effect. When the Delay plugin is inserted on a Mono Channel, the Left and Right sections are replaced with a single “Delay” section.

**Low Cut (Hz)**: A global High Pass filter.

**High Cut (Hz)**: A global Low Pass filter.

**Feedback**: Adjusts the frequency of a damping filter for the feedback signal.

— **Left Channel:** Parameters that independently affect delay on the Left Channel. When the Echo plugin is inserted on a Mono Channel, the Left Channel and Right Channel sections are replaced with a single “Echo” section with only the Delay Time, Feedback Delay, and Feedback controls.

**Delay Time:** Global Delay time for the Left Channel.

**Feedback Delay:** Echo Delay time for the Left Channel.

**Feedback:** Feedback percentage of the Left channel back to itself.

**L > R Feedback:** Percentage of Left feedback signal which feeds back to Right Channel.

— **Right Channel:** Parameters that independently affect delay on the Right Channel.

**Delay Time:** Global Delay time for the Right Channel.

**Feedback Delay:** Echo Delay time for the Right Channel.

**Feedback:** Feedback percentage of the Right channel back to itself.

**R > L Feedback:** Percentage of Right feedback signal which feeds back to Left Channel.

— **Output:** Controls for adjusting the final output from this plugin.

**Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

**Output Level (dB):** Adjusts the overall output level of the affected sound.

## Flanger

An effect plugin, giving that unmistakable Flanger sound dating from the days of dual tape machines with a slight delay added to one in periodic intervals causing flanging as they got back in sync with one another. Typically used to add a sort of warbling harmonic interest to a signal, in a wide variety of ways.

An animated graph shows the results of adjusting the Modulation parameters of this plugin, giving you a visualization of the kind of warble that will be added to the signal as you make adjustments.



The Flanger Fairlight FX

The Flanger has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Input mode:** (Only visible when the Flanger is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the Flanger. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Modulation:** A low frequency oscillator (LFO) used to drive the Flanger effect.
- Waveform (Hz):** Specifies the shape of the LFO that modulates the rate of the Flanger. The three choices are Sine (a smooth change in rate), Triangle (a jerky change in rate), and Sawtooth (an abrupt change in rate). Affects the timing of the warble that is added to the sound.
- Rate:** Speed of the LFO, affects the speed of the warble that is added to the sound. Low rate values create a slow warble, while high rate values create more of a buzz.
- Depth:** Affects the “length” of the warble that is added to the sound. Low values add only the very beginning of a warble, high values add more fully developed warble.
- **Width:** Consists of a single parameter, Expansion, which sets Left/Right channel length differences, along with the phase offset of modulators.
- **Feedback:** These controls determine, in large part, how extreme the Flanging effect will be.
  - Amount (%):** The percentage of signal fed back to the Delay Line. Values can be positive or negative, the default is 0 (no effect). Increasing this parameter adds more of the Flange effect to the signal, lowering this parameter adds more of the inverted Flange effect to the signal. At values closer to 0, only a faint phase shift can be heard in the audio, but at values farther away from 0 (maxing at +/- 99), a gradually increasing warble becomes audible. The type of warble depends on the Modulation controls.
  - High Ratio:** Determines the attenuation of the echo over time.
- **Output:** Controls for adjusting the final output from this plugin.
  - Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
  - Output Level (dB):** Adjusts the overall output level of the affected sound.

## Foley Sampler

The Foley Sampler is a built-in sampler that makes it easy to add sound effects that you want to play using a keyboard, pad, or other MIDI performance device connected to your computer, to add timed sound effects to sync with onscreen visuals. This plugin has been designed to simplify the process of recording performed audio cues on the current track to which the sampler has been added.

### Setting Up the Foley Sampler

Using the Foley Sampler to record samples played with a MIDI controller is easy.

- 1 Create an audio track for your sound effects or instrument recording.
- 2 Drag the Foley Sampler onto the track header to assign it to that track. The Foley Sampler window automatically appears. The Fairlight page knows this is an instrument with no inputs to the plugin, so this effect is automatically patched to that track’s input, ready for recording.

- 3** If you have a MIDI controller of some kind connected to your computer and properly configured, it will appear in the MIDI drop-down menu at the upper-right corner of the Foley Sampler window (next to the Keyboard button). Choose your device from this menu, and the Keyboard button will highlight to show it's enabled.

At this point, the Foley Sampler is ready to be used, but by default it has no samples loaded to play. The next step is to add sound effects.

## Adding Sound Effects

You can add prerecorded sound effects or instruments to the Foley Sampler in the following ways:

- Drag and drop an audio file in a supported format from the file system onto the Foley Sampler window
- Drag and drop a sound effect from the Sound Library onto the Foley Sampler window
- Click the Foley Sampler window's Option menu and input sounds from your attached drives.

Once you've loaded a sound effect of some kind, it's automatically mapped to the top four keys of your instrument, starting at C2. Pressing a key or pad of your controller will play that sound.

To see the sound's waveform, click the Sample button at the top of the Sound panel. In this example, there are a series of continuous footsteps recorded in a row that we can use.



A footsteps recording loaded into the Foley Sampler

## Splitting Sound Effects

It's common to use pre-recorded library sound effects that consist of a series of recorded footsteps, cloth rustles, punches, or other "foleyed" sound recordings, in order to play variations of a specific kind of repetitive sound effect in sync to action that's happening on screen. The Foley Sampler lets you do this easily.

- 1 After you've loaded a sound effect, click the Foley Sampler window's Option menu and choose Split Sample to automatically split the current sample into slices based on an analysis of its noise floor, and assign each slice to a set of keys or pads on your selected MIDI device. Continuing with the previous example, each footstep has been split and assigned to a different key.
- 2 To adjust the timing of each slice of the sound effect that's been split apart, you can click on the assignment text above the keyboard at the bottom of the window to see that slice in the Sample view.
- 3 You can adjust the Range Start and Range End parameters to encompass as much or as little of that slice as you want to play back.
- 4 If you want a sample to loop if a note is held down, you can enable the Loop button, and then adjust the Loop Start and Loop End parameters to choose how much of each slice will loop.
- 5 To delete slices that aren't useful, you can select a slice you don't like and press Shift-Delete to clear that slice from the virtual keyboard.



A single slice of the footsteps recording after being split in the Foley Sampler, with the range of the effect adjusted

## Assigning Sound Effects Manually

When you first load sound effects into the Foley Sampler, they're automatically assigned to a series of notes. Each additional sound effect that you load is automatically assigned to the next series of notes to the right. Once all notes are occupied, additional sound effects will shuffle all previous assignments to the left.

You also have the option of manually assigning sound effects that you load. This is useful when you want to manually load a variety of different sound effects all at once (such as a combination of punch sounds, human grunts, and cloth rustles to use in a fight scene), and assign them to particular notes of your choosing.

- 1 Load a sound effect you want to map.
- 2 Click the Mapping button to remap the range of notes it corresponds to.
- 3 Use the Low and High parameters to select a range of notes for the selected sound.
- 4 You also have the option of tuning the pitch of specific sound effects, if necessary.



The Mapping controls used to assign a sound to a particular set of notes

## Adjusting Sound Effects

If you want to customize a sample or slice further, you can select it above the virtual keyboard and use the controls on the Level panel to control the dynamics of audio playback, or you can use the controls on the Filter panel to EQ the sound.

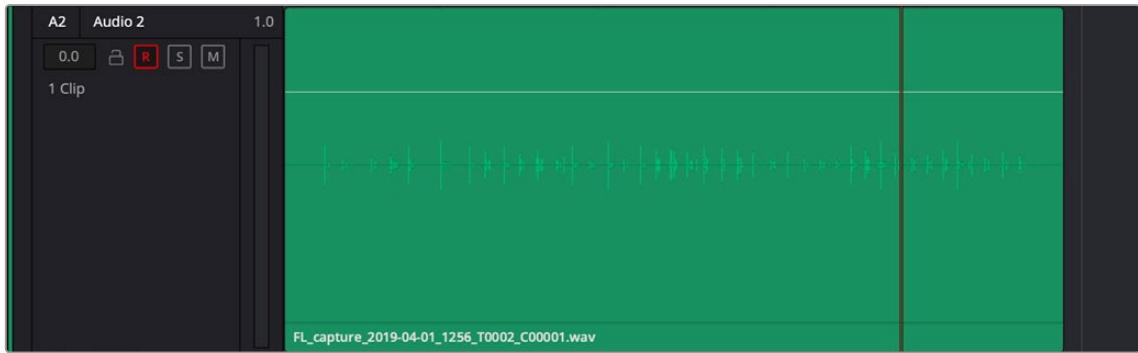
**TIP:** If a sample or slice is set to loop, you can press the Control key and click a key on the virtual keyboard to initiate looping, so you can hear these adjustments as you're making them.

## Playing and Recording Sound Effects

Once you've set up the Foley Sampler with sound effects you can play from a MIDI controller, recording those sound effects is simple.

- 1 Make sure that the "Save clips to" field in the Capture and Playback panel of the Project Settings is correctly set up to record to the desired storage volume, using the Browse button, if necessary.
- 2 Click the R button in the track header of the audio track to which you applied the Foley Sampler, to put that track into Record Enable mode.
- 3 Click the Record button in the Fairlight toolbar.
- 4 While Fairlight records, use the keys or buttons of your MIDI controller to play sounds in sync to the picture on your display. When you're done, click the Stop button.

You should now have a recorded clip containing the sound effects you played, in sync to the picture. If they're a bit out of sync, you can always use the Elastic Wave audio retiming controls to tighten the sync without re-recording everything.



A new clip of audio created by recording sounds played via the Foley Sampler

## Frequency Analyzer

The Frequency Analyzer provides visual information about your clips or tracks as either a Spectrum or Waterfall graph to identify possible sonic issues so you can further sculpt your audio.

Options in the Mode menu in the upper right let you examine either the Full frequency range of the signal (default) or close-up views of the Low, Midrange, or High frequencies.



Frequency Analyzer Spectrum view



Frequency Analyzer plugin Waterfall view

## LFE Filter

A low-pass filter that you can apply to a FlexBus or Main that's in a surround sound format, to feed low-frequency sound to an LFE channel as part of a surround sound mix. The filter will exclude any sounds above your chosen frequency setting to the audio that is sent to a sub-woofer in the LFE channel. It helps keep unwanted and unnecessary audio from being sent to the sub-woofer and increases playback clarity.

A Frequency control lets you choose which low frequency range you want to include, and a Trim control lets you set the level of the resulting LFE channel. If it is multi-channel but has no LFE channel available, such as a 5.0 format, then this plugin does nothing.



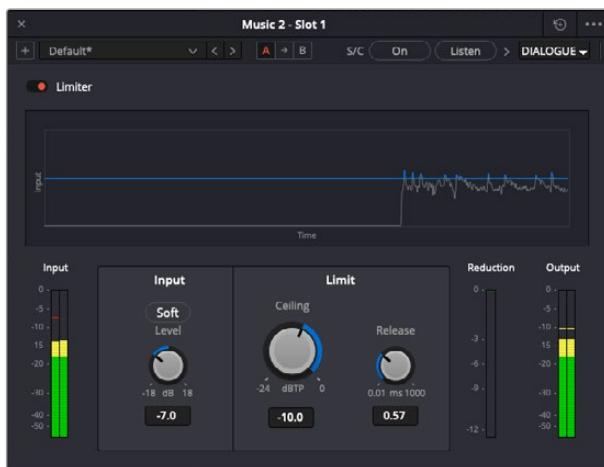
The LFE plugin

## Limiter

The Limiter detects and reduces peaks in an audio signal, so the overall level can be boosted without clipping while reducing the dynamic range in a similar manner to a compressor.

This is a true peak limiter that can look 64 samples ahead of the input signal, allowing an extremely smooth limiting response.

The Input control lets you adjust the incoming signal level, while the Threshold and Release control when limiting occurs and for how long. The graph indicates which parts of the signal are being affected.



The Limiter plugin

## Limiter controls

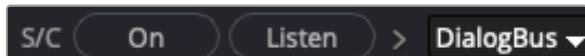
- **Bypass:** Toggles this plugin on and off.
- **Input Meter:** Shows the level of the incoming signal.
- **Input Level:** This control lets you adjust the incoming signal level within a range of -18 dB to +18 dB. Activating the Soft button causes the limiter to use a gentler attack.
- **Ceiling:** This determines the threshold (level) at which the Limiter starts reducing the input signal. When set to -24 dB, any signal above that level is limited. When set to 0 dB, no limiting occurs.
- **Release:** This determines how long the limiting (signal reduction) takes place. Setting this control to 0.01 milliseconds results in a very fast release time, while the longer release time of 1000 milliseconds is the slowest.
- **Reduction Meter:** This shows the amount of level (gain) reduction applied to the input signal.
- **Output Meter:** Shows the output level after the limit.

## Limiter Sidechaining

The Fairlight FX Limiter supports sidechaining, which lets you temporarily lower the level of a target track or bus using the audible signal from a source track or bus.

This is very helpful when multiple tracks are “fighting” for space in a mix because they share some or all the same frequency range. For example, a track or bus with dialogue and a bus or track with traffic and crowd noise.

Essentially, this is another form of “ducking” where, in the example above, the dialogue attenuates the traffic and crowd noise until the dialogue stops. This allows the voices to be heard more prominently in the mix.



Sidechain controls

## Using the Limiter Sidechain

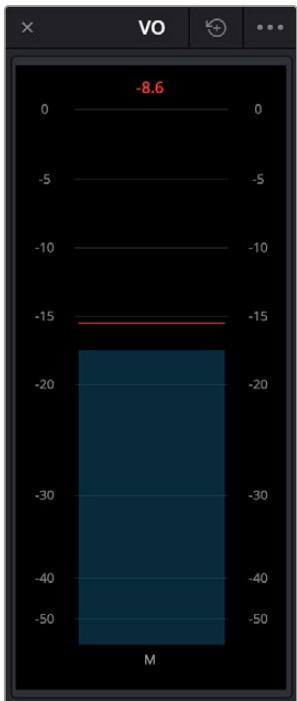
Carrying on with the example mentioned above:

- 1 Open the Limiter on the destination track or bus with the traffic and crowd noise.
- 2 Select the Dialogue track or bus in the source drop-down to the right of the Listen button.
  - This is the audio you’re using to attenuate the level of the target track.
  - Using a bus as the source lets you use multiple sources to trigger changes in your target track.

Clicking the Listen button lets you hear the incoming signal if you need to confirm that the correct input signal is coming into the Limiter. This button turns yellow when active.

## Meter

A sample peak processing meter that's useful for temporarily adding a meter to a specific track or FlexBus. These meters are useful for instances where you want a large meter that focuses on a specific bus or track while you're working.



The Meter Fairlight FX

These meters are presented very simply, with a gray bar indicating level and a red peak line that holds for two seconds, which indicates the highest peak. A numeric reading at the top of the meter gives the exact level, in dB. This number continues to hold, indicating the loudest level measured for any given stretch of playback.

Meter can be resized by pulling from the bottom right and has the following controls located in the option menu:

- **Reset Peak on Play:** When enabled, the numeric peak level is reset every time playback stops and starts again. When disabled, the numeric peak level persists until changed by a higher peak.
- **Reset:** Resets the numeric peak level.

## Modulation

An effect plugin. General purpose modulation plugin for sound effects or sound design. Four effects combine an LFO, FM adjustment, AM adjustment, Sweep and Gain filters to allow simultaneous frequency, amplitude and space modulation. In conjunction with the Rotation controls, simple Tremelo and Vibrato effects can be combined with auto-filter and auto-Pan tools in order to provide texture and movement to a sound.

An animated graph shows the results of adjusting the Modulator, Frequency, and Amplitude parameters of this plugin, giving you a visualization of the kind of modulations that will be applied to the signal as you make adjustments. Output meters let you see what level is being output.



The Modulation Fairlight FX

Modulation has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Modulator:** A low frequency oscillator (LFO), shown in blue in the animated graph.
  - Shape:** Specifies the shape of the LFO waveform that modulates the audio. Six options include Sine, Triangle, Saw1, Saw2, Square, Random.
  - Rate (Hz):** Adjust the speed of the modulating LFO. Lower settings result in warbling audio, while extremely high settings result in buzzing audio the timbre of which is dictated by the shape you've selected.
- **Frequency:** Frequency modulation (FM) of a secondary oscillator, shown as green in the animated graph.
  - Level (%):** Acts as a Dry/Wet knob controlling the amount of Frequency Modulation that's applied, intensifying or easing off the effect.
  - Phase:** Since each of the four primary effects within this plugin can be applied together, along with the fact that modulation with level components (Tremolo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).
- **Filter:** Sweep and gain filters.
  - Filter (%):** Acts as a Dry/Wet knob controlling the amount of filter sweep and gain to additionally use to modify the signal. The amount you've selected is previewed in a 1D graph to the side.
  - Tone:** Adjusts the center frequency of sweep.
  - Phase:** Since each of the four primary effects within this plugin can be applied together, along with the fact that modulation with level components (Tremolo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).

— **Amplitude:** Amplitude modulation (AM) of a secondary oscillator, shown as green in the animated graph.

**Level (%):** Acts as a Dry/Wet knob controlling the amount of Amplitude modulation applied.  
(Disabled in Ring Modulation Mode.)

**Phase:** Since each of the four primary effects within this plugin can be applied together, along with the fact that modulation with level components (Tremolo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).

**Ring Modulation Mode:** Enables a Ring Modulation effect (where the signal is multiplied by the modulator, rather than modulated by it).

— **Rotation:** These controls are only available when applied to a multi-channel track.

**Rotate:** Amount of Rotation applied.

**Offset:** Start offset of rotation in order to further place the signal in space.

**Phase:** Since each of the four primary effects within this plugin can be applied together, along with the fact that modulation with level components (Tremolo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).

— **Output:** Controls for adjusting the final output from this plugin.

**Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

**Output Level (dB):** Adjusts the overall output level of the affected sound.

## Multiband Compressor

A dynamics processor that compresses in highly definable frequency bands. The graph displays frequencies in Hertz horizontally and gain in decibels vertically. This allows for precise compression specific to defined frequency bands and is useful for taming only one or several parts of a signal.



The default setting of the Multiband Compressor

Each band has dynamics control in the determined frequency ranges of Low, Med, and High and are adjustable by pushing the intersection mark on the graph per band or by typing in a frequency.

#### Bands 1 – 4: Controls for each band.

- **Threshold:** Sets the maximum allowable output level. The default is -25dB. The range is from -50 to 0dB.
- **Gain:** Can add or attenuate up to 12 dB of gain.
- **Ratio:** Adjusts the compression ratio. This sets the gain reduction ratio (input to output) applied to signals that rise above the threshold level. The default is 1.5:1. The range is 1.0:1 to 7:1.
- **Limit:** Limits the output amount by up to 15 dB. The default is 4.5 dB.
- **Attack:** Adjusts the attack rate time constant of the sidechain detector. The default is 1.4 mS. The range is 0.1 to 100 mS.
- **Hold:** Keeps dynamics from being triggered again until a certain amount of time has passed, in mS (milliseconds). Defaults to 0mS. The range is from 0 to 4000 mS.
- **Release:** Adjusts how quickly the sidechain detector stops applying dynamics when a signal goes back below the threshold. The default is 150 mS. The range is 50 mS to 4.0 S.

#### Master: Controls for adjusting the final output from this plugin.

- **Gain (dB):** Adjusts the overall output level of the affected sound by adding or reducing 18 dB of gain.
- **Q:** Adjusts the width of affected frequencies. Lower values include a wider range of frequencies, higher values include a narrower range of frequencies.

## Noise Reduction

A repair plugin designed to reduce a wide variety of noise in all kinds of recordings. A graph shows a spectral analysis of the audio being targeted, along with a purple overlay that shows what noise is being targeted. Two audio meters let you evaluate the input level (to the left) versus the output level (to the right), to compare how much signal is being lost to noise reduction. There are three default presets: De-Hiss, De-Rumble, and De-Rumble and Hiss.



The Noise Reduction Fairlight FX in action

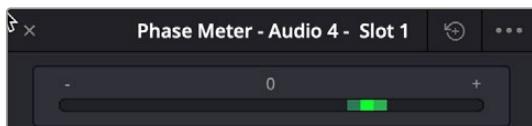
Noise Reduction has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Listen to Noise Only:** This checkbox at the top right lets you listen only to the noise that is being removed. This is very useful to determine if too much signal is being removed or if more noise attenuation can be applied.
- **Threshold (in dB):** Relates to the signal-to-noise ratio (SNR) in the source recording. Recordings with a poor signal-to-noise ratio will require a higher threshold value, resulting in more noise reduction being applied.
- **Attack (in ms):** Primarily useful in Auto Speech mode, this controls the duration over which the noise profile is detected. Ideally, the attack time should match the variability of the unwanted noise. A low value corresponds to a faster update rate of the noise profile and is useful for quickly varying noise; a high value corresponds to a slower update rate and can be used for noise that's more consistent.
- **Sensitivity:** Higher sensitivity values exaggerate the detected noise profile; the result is that more noise will be removed, but more of the dialogue you want to keep may be affected.
- **Ratio:** Controls the attack time of the signal profile relative to the attack time of the noise profile. A faster ratio detects and preserves transients in speech more easily, but the resulting speech profile is less accurate.
- **Frequency Smoothing:** Smooths the resulting signal in the frequency domain to compensate for harmonic ringing in the signal after the noise has been extracted.
- **Time Smoothing:** A toggle button enables smoothing of the resulting signal in the time domain as well.
- **Dry/Wet:** A percentage control of the output mix of "dry" or original signal to "wet" or processed signal. 0 is completely dry, 100% is completely wet.
- **Level:** To let you compensate for level that may be lost due to the noise reduction operation you're applying, this applies a pre-gain in, from -6dB to +18dB, just before the dry/processed mix.

## Phase Meter

Phase cancellation is a phenomena where the waveforms of a stereo recording (for example a stereo recording of a music performance) go slightly out of sync with one another for whatever reason, and begin to cancel one another out in unpredictable ways, resulting in the audio sounding strange. This results in poor quality audio and can cause problems when you're trying to compress a mix to a distribution format such as AAF or MP3.

The Phase Meter plugin is a visual meter that lets you evaluate whether or not a signal is in phase and is meant to be applied to a bus so you may evaluate the phase of a mix and correct whatever problems may be occurring. The position of a green dot within a horizontal meter indicates the phase of the signal. When there's no signal or a signal on only one half of a stereo bus, the dot appears in the center (0). When the signal is out of phase, the dot appears all the way to the left (-). When the signal is in phase, the dot appears all the way to the right (+).



The Phase Meter plugin

## Pitch

An effects plugin that shifts audio pitch without altering clip speed.



The Pitch Fairlight FX

Pitch has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Semitones:** A “coarse” adjustment that can shift audio pitch up to +/- 12 semitones.
- **Cents:** A “fine” adjustment that can tune audio pitch in +/-100th of a semitone.
- **Dry/Wet:** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

## Reverb

A spatial simulation plugin, capable of recreating multichannel reverberation corresponding to rooms of different sizes, adjustable via a graphical 3D cube control. This plugin lets you take a “dry” recording and make it sound as if it’s within a grand cathedral, an empty room, a tiled bathroom, or other spaces.

To understand this plugin’s controls, it helps to know that the signal follows three paths which are combined to create the final effect:

- A direct path.
- An early reflection path (ER) simulating early reflection rays obtained from the first multiple reflections on the walls, traveling from the virtual source to the virtual listener.
- A late reverberation path (Reverb) simulating the behavior of an acoustic model of the room.

A graph shows an approximate visualization of the reverb’s effect on the frequencies of the audio signal.



The Reverb Fairlight FX

Reverb has the following controls:

- **Bypass:** Toggles this plugin on and off.
- **Room Dimensions:** By controlling the size of the virtual room a sound is to inhabit, these parameters simultaneously control the configuration of Early Reflection and Late Reverberation processing. The acoustic modes from this simulated room are computed and fed to Late Reverberation processing. The shape, gain, and delay of the first reflections are computed and then fed to Early Reflection processing.
- Height, Length, Width:** Defines the dimensions of the reverberant space, in meters.
- Room Size:** The calculated Room Width x Length, in meters.
- **Reverb:** Additional controls that further customize the configuration of Early Reflection and Late Reverberation processing.
- Pre Delay:** Increase or negate the propagation time from the virtual source to the virtual listener. As a result, it modifies the initial delay time between the source signal and the first reflection.
- Reverb Time:** Decay time of the Reverb tail. It controls the overall decay time of the acoustic modes from late reverberation processing.
- Distance:** Modifies the distance between the virtual source and the virtual listener. It modifies only the configuration of early reflections processing.
- Brightness:** Modulate the shape of the decay time over frequency. At maximum brightness, decay time is identical at any frequency. At minimum brightness, higher frequencies result in shorter decay time and therefore duller sound.
- Modulation:** Adds random low-frequency phase modulation from the tapping point of ER processing. At 0%, modulation is not used.
- **Early Reflection Tone:** Four post equalization controls modify the tone of early reflections to suit a particular room's characteristics.
- Low Gain:** Amount of gain added to the low frequency.

**Low Frequency:** Frequency range of 150 Hz to 500 Hz.

**High Gain:** Amount of gain added to the high frequency.

**High Frequency:** Frequency range of 1k Hz to 16k Hz.

- **Reverb Tone:** Four post equalization controls modify the tone of the reverb tail to suit a particular room's characteristics.

**Reverb Tail Low Gain:** Amount of gain added to the low frequency.

**Reverb Tail Low Frequency:** Frequency range of 150 Hz to 500 Hz.

**Reverb Tail High Gain:** Amount of gain added to the high frequency.

**Reverb Tail High Frequency:** Frequency range of 1k Hz to 16k Hz.

- **Output:** These controls recombine the three audio processing paths into a single output signal.

**Dry/Wet:** A percentage control of the output mix of "dry" or original signal to "wet" or processed signal. 0 is completely dry, 100% is completely wet.

**Direct Level:** The amount of the direct level to mix into the final signal.

**Early Reflection Level:** The amount of early reflection to mix into the final signal.

**Reverb Level:** The amount of reverb to mix into the final signal.

## Soft Clipper

The Soft Clipper is a limiting processor that reduces the output level above a defined threshold in a rounded manner so that peaks are more cleanly attenuated. The Soft Clipper plugin will impart saturation effects when pushed hard above the threshold, allowing for the introduction of warmth and subtle distortion to the sound. A graph shows the shape of the curve adjustment this plugin makes to the audio.

A soft clipper is often combined with a standard limiter in order to increase perceptual loudness of material without imparting harshness.



The Soft Clipper Fairlight FX

- **Threshold:** Introduces input gain to the signal prior to hitting the clipper, forcing audio peaks over the threshold by that amount. As such, it will drive the saturation and distortion.
- **Shape:** The shape of the clipper can be varied to change the character of the soft clipper from full soft-clipping (all the way right, where the peaks are rounded) to full hard-clipping (all the way left, where the peaks are squared off).
- **Output Level:** Lets you adjust the output gain to compensate for signal lost during soft clipping, if necessary.

## Stereo Fixer

A simple plugin designed to fix stereo source material in cases where only one side of a stereo signal was recorded, where one side of a stereo recording is a different level to the other, or where the stereo channels have been incorrectly Left/Right swapped.

This plugin can also be used as a “Mid/Side” decoder, for recordings that were made using this microphone technique.

This plugin is for stereo clips only.



The Stereo Fixer Fairlight FX

- **Format:** The input processing mode you want to use to fix the stereo output.
  - Stereo:** (Default) No format conversion is performed.
  - Reverse Stereo:** Swaps the Left and Right side.
  - Mono:** The output from the plugin is a mono mix of the two inputs.
  - Left Only:** The left input is sent to both left and right outputs.
  - Right Only:** The right input is sent to both left and right outputs.
  - M/S:** The left output is the left (Mid) input minus the right input (Side). The right output is the left (Mid) input plus right input (Side).
- **Left/Right Gain:** Lets you apply independent gain on the left or right outputs. This gain is applied after (post) the input processing mode.

**TIP:** For a comprehensive M/S decoder solution, simply chain two Stereo Fixer plugins together. Use the first unit to control the Side signal level, thus controlling the width of the second unit (set to M/S).

## Stereo Width

An enhancement plugin that increases or reduces the spread of a stereo signal in order to widen or reduce the separation between channels. If this plugin is added to a Mono channel, it will be disabled, as there is no stereo width to either distribute or control.

A graph shows the currently selected width of stereo distribution as a purple arc, while inside of that graph a stereo meter shows the Left and Right distribution of the audio signal. Two audio meters measure levels, an Input meter to the left, and an Output meter to the right.



The Stereo Width Fairlight FX in action

Stereo Width has the following controls:

- **Width:** Lets you control the spread of the stereo output. Settings range from 0 (Mono) to 1 (Stereo) to 2 (extra wide stereo).
- **Diffusion:** Adds more complexity to the output.
- **Sparkle:** Adds more high frequencies to the spread.

## Surround Analyzer

The Surround Analyzer is a graphical meter that shows a spatial image of the audio being measured, rather than a typical bar graph meter. Due to its changing shape because of the signal being played, sometimes it is referred to as the “jellyfish meter.”

This type of metering is very useful; rather than relying on bars to indicate the directions in which audio is radiating, you can clearly see the relationship of all of the channels to one another.



The signal here is radiating more to the right, indicating the panning of the audio.

## Vocal Channel

An enhancement plugin for general purpose vocal processing consisting of High Pass filtering, EQ, and Compressor controls.

Side by side EQ and Dynamics graphs are presented above the controls. An output audio meter lets you monitor the final signal being produced by this plugin.



The Vocal Channel Fairlight FX

Vocal Channel has the following controls:

- **High Pass:** Enabled by a toggle, off by default. Has a single frequency knob that sets the threshold below which frequencies are attenuated to reduce boominess or rumble.
- **EQ:** A three-band EQ for fine tuning the various frequencies of speech, enabled by a toggle, including Low, Mid, and High Mode, Frequency, and Gain controls
  - Low/Mid/Hi Mode:** Lets you choose from different filtering options to use for isolating a range of frequencies to adjust. Different bands present different options.
  - Low/Mid/Hi Freq (Hz):** Lets you choose the center frequency to adjust.
  - Low/Mid/Hi Gain (dB):** Lets you boost or attenuate the selected frequencies.
- **Compressor:**
  - Threshold (dB):** Sets the signal level below which compression occurs. Defaults to -25dB. The range is from -40 to 0dB.
  - Reaction:** Adjusts how quickly compression is applied when a signal exceeds the threshold. The default is 0.10.
  - Ratio:** Adjusts the compression ratio. This sets the gain reduction ratio (input to output) applied to signals which rise above the threshold level. The default is 1.5:1. The range is 1.1 to 7.0.
  - Gain (dB):** Lets you adjust the output gain to compensate for signal lost during compression, if necessary.

# Audio Meters and Audio Monitoring

The Meters panel at the top of the Fairlight page provides a visual reference of the track levels in your mix, specialized meters showing the busses, meters for monitoring mix and loudness, and a video Viewer for seeing the current project as you work.

This chapter describes the use of these meters, and provides information about the different options that are available.

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# The Monitoring Panel

Turning on the meters in the UI toolbar displays the Monitoring panel that runs along the top of the Fairlight page, which shows all of the audio meters that correspond to the tracks in the Timeline, as well as the Bus meters that correspond to the Mains, Subs, and Aux busses of your mix, the Control Room meters, and a video viewer.



The Monitoring panel

With the increased track counts necessary for immersive audio, DaVinci Resolve gives you options for extra metering so you can see more tracks in real time.

Right-clicking anywhere on the meters opens a menu that lets you choose between viewing them as a single-row or double-height Track display. This menu also allows you to choose between narrow or wide meters. When using the wide meter view, double-clicking anywhere on the Tracks meters panel switches between single-row and double-height view.

Hovering a mouse below the Tracks panel reveals a cursor that lets you change the height of the Monitoring panel.

The Compound meters and the Bus Output meters can also be resized by hovering on the right side of the Loudness meter and dragging to the desired dimensions.

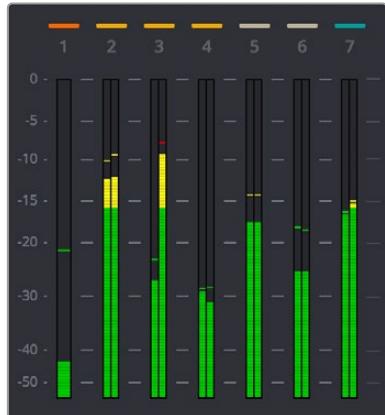


The double-height Monitoring panel

## Track Meters and Monitoring Controls

At left, a row of audio meters corresponds to the channel strips of the Mixer, one meter for every audio track in the timeline. Each track displays the number of meters that corresponds to that track's audio mapping, with mono tracks having a single audio meter, stereo tracks having two, 5.1 tracks having six, and so on.

Each track and bus meter (with the exception of the Loudness meters) display RMS (root mean square) levels against a dB scale. A single line indicating the maximum value at any given moment in time is held briefly just above the current RMS levels, which appear as a solid bar extending from the bottom of the meter. RMS meters display a weighted “average” representation of the audio level that’s closer to the way audio is actually perceived, although not as accurate in measuring perceived loudness as the loudness meters discussed later in this section.



Track audio meters with different numbers of meters depending on that track's audio mapping



The peak meter at top

Each meter bar is color coded to indicate three different sound level “zones,” from low to medium (green) to moderately high (yellow) to very high (red).

Each meter is identified by the track number it represents (track names are not shown over track meters) as well as the color of that track.

## Bus Meters

To the right of the track meters are the bus meters, in which all user-created mains and busses appear, separated by type, and each displaying the number of meters that corresponds to that track's audio mapping. These meters allow you to monitor the sum of all tracks that have been routed to a particular bus, as you can on bus channel strips.

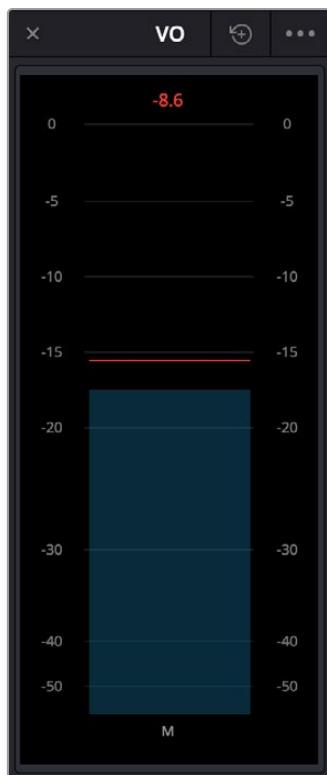


Bus meters for the Mains, Subs, and Aux busses

# Meter Plugin

There is a Meter plugin available for temporarily adding a meter to a specific track, FlexBus, or when using fixed busing to Sub, Aux, or Main. These are sample peak processing meters that are useful for instances where you want a large meter that focuses on a specific bus while you're working.

These meters are presented very simply, with a gray bar indicating level and a red peak line that holds for two seconds, which indicates the highest peak. A numeric reading at the top of the meter gives the exact level, in dB. This number continues to hold, indicating the loudest level measured for any given stretch of playback. The option menu in this meter's floating window presents different settings you can choose. For more information, see *Chapter 178, "Fairlight FX."*



The Meter Fairlight FX



The signal here is radiating more to the right, indicating the panning of the audio.

## Surround Analyzer

The Surround Analyzer is a graphical meter that shows a spatial image of the audio being measured, rather than a typical bar graph meter. Due to its changing shape because of the signal being played, sometimes it is referred to as the "jellyfish meter."

This type of metering is very useful; rather than relying on bars to indicate the directions in which audio is radiating, you can clearly see the relationship of all of the channels to one another.

# Compound Meters and Output Bus Selection Menu

The compound meters, to the right of the bus meters, consist of Control Room meters and Loudness meters, shown side-by-side to provide a comprehensive analysis of your overall audio mix. Below, drop-down menus let you choose which bus you want to monitor, as well as which set of speakers you want to use to do the monitoring.

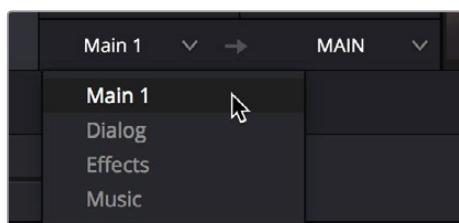


The Control Room  
meters (at left)  
and Loudness  
meters (at right)

## Monitoring Menus

### Bus Monitoring Menu

The bus monitoring drop-down menu determines which bus is monitored by your audio output (speakers or headphones), and thus which gets analyzed by the compound meters, letting you choose which bus you want to monitor as you work. You can choose one of your mains or any other bus (or track) you've set up that you want to focus on for more detailed work.



The monitoring menu  
lets you choose which  
bus you want to monitor  
while working.

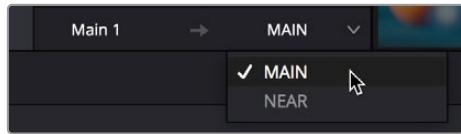
### Speaker Set Monitoring Menu

To the right of the Monitoring menu, the output is set to "Auto" by default (if you have Automatic speaker configuration checked on in Preferences > Video and Audio I/O > Audio I/O). This means that your basic speaker set up is routed to the stereo or surround output your hardware supports automatically and can't be altered.

### Monitoring with Multiple Speaker Sets

If you want to manually configure multiple speaker sets, unchecking the automatic speaker configuration preference will display a drop-down to the right and lets you choose one of the available sets of speakers once they have been configured in the Video and Audio I/O panel of the System Preferences. This gives you the flexibility to quickly compare your mix on a variety of speakers and

configurations to see how it holds up in different situations. For more information on configuring different speaker setups, see *Chapter 4, "System and User Preferences."*



The monitoring menu lets you choose which bus you want to monitor while working.

## Control Room Meters

The mustard-colored Control Room audio meters show the sum of all audio channels that are routed to the currently selected bus being monitored (as selected in the drop-down menu below). These are peak meters measured in dBFS.

A true peak audio measurement is displayed at the top of the Control Room meter.

## Loudness Meters

The set of meters all the way to the right are the Loudness meters, which consist of a set of two graphical meters and a numerical readout. This lets you keep track of the “integrated loudness” of the overall mix, which is the standard that all contemporary mixing specifications refer to when specifying client deliverables. Unlike the RMS audio meters found in the Timeline or Mixer, which measure audio in dB, Loudness meters do a different kind of analysis, measured in LUFS (loudness units relative to full scale).

### What Is LUFS?

LUFS measurements evaluate sound levels that are averaged over time referenced to full scale. Full scale is the loudest level a digital audio system can handle before overloading (“clipping”). LUFS allows totally different types of program material to be matched in perceived level by human ears and has become the standard way that mixes are measured for final delivery of your program material. LUFS are shown as negative numbers, such as -23, -14, etc., because the level is referenced to full scale (digital 0).

## Loudness Meter Options

Two options in the General Options of the Project Settings let you customize the Loudness meters.

- **Target Loudness level:** Lets you set the LUFS value that’s used as a reference level for loudness metering. Defaults to -23 LUFS, which conveniently makes the display of these meters scale similarly to traditional audio meters that you’re already used to.
- **Loudness Scale:** Lets you choose which scale you want to use with which to measure the meters. Options currently include the default of EBU +9 Scale (-18 to +9), and EBU +18 Scale (-36 to +18).

## Support for Multiple Loudness Standards

The Loudness Meter can be switched among a variety of international industry-standard loudness monitoring standards. The standard you choose uses the integrated loudness value (along with a specified tolerance defined by each selected standard) to indicate whether or not the current mix level

is of acceptable loudness via color coding of the Integrated Loudness value, and in the Integrated Loudness graph described below. Blue values indicate loudness levels that are below tolerance, yellow indicates loudness values that are within tolerance, and red indicates loudness values that are above tolerance.

The built-in standards you can switch among include the following:

- **BS.1770-1:** An older loudness standard used by DaVinci Resolve version 15 and before.
- **BS.1770-4:** The most up-to-date loudness standard as of DaVinci Resolve 16; the algorithms specified by this standard govern the other standards that are listed below in this drop-down menu.
- **ATSC A/85:** The American standard for acceptable loudness in broadcast.
- **EBU R128:** The European standard for acceptable loudness in broadcast.
- **OP-59:** The New Zealand and Australian standard for acceptable loudness in broadcast.
- **TR-B32:** The Japanese standard for acceptable loudness in broadcast.
- **AGCOM 219:** The Italian standard for acceptable loudness in broadcast.
- **NETFLIX:** The Netflix standard for acceptable loudness in broadcast.
- **YouTube:** The YouTube standard for acceptable loudness in broadcast.
- **Disney 2.0:** The Disney 2.0 standard for acceptable loudness in broadcast.
- **Disney 5.1:** The Disney 5.1 standard for acceptable loudness in broadcast.

All of these loudness standards are available for off-line readings as well, using the Loudness Analyzer described in the next section.

**NOTE:** The target peak meter now uses the BS.1770-4 standard for measuring maximum “true peak,” which means that this meter is capable of measuring “inter-sample peaks,” rather than only the peaks at each sample of a waveform.

## Graphical Loudness Meters

Two separate meters give you a dynamic graphical measurement of the loudness of the selected bus being monitored according to the loudness standard you've selected, which determines how to analyze the subjective loudness of a given audio mix for purposes of compliance with required broadcast quality control (QC) standards.

- A steel-blue meter labeled M (for momentary) has as many channels as the selected bus you're monitoring, excluding the LFE channel(s) of surround formats, which aren't factored into loudness metering. This meter measures LEQ (equivalent sound level), within a 400ms window following the playhead as measured every 100ms. This lets you evaluate the LUFS (Loudness Units Full Scale) level of the mix at the current frame as you play. This discrete-channel analysis is used to calculate all other values of the loudness metering system.
- A second steel-blue mono meter to the right displays the sum of all channels in the M meter, displayed in LU (loudness units). The number value displayed at the top of this meter is the maximum LU value that's been analyzed during any stretch of timeline playback. This value is held until it's reset, either by stopping and initiating playback a second time while Link to Playhead is enabled, or when you click the Reset button at the bottom of the loudness meter area.

## Numeric Loudness Meters

A set of values to the right of the meters give running reports on the audio level of your mix. While the graphical meters are useful for analyzing your mix as you work, these numeric readouts are particularly valuable for providing the strict information you need to adhere to written QC standards. Their meaning is as follows:

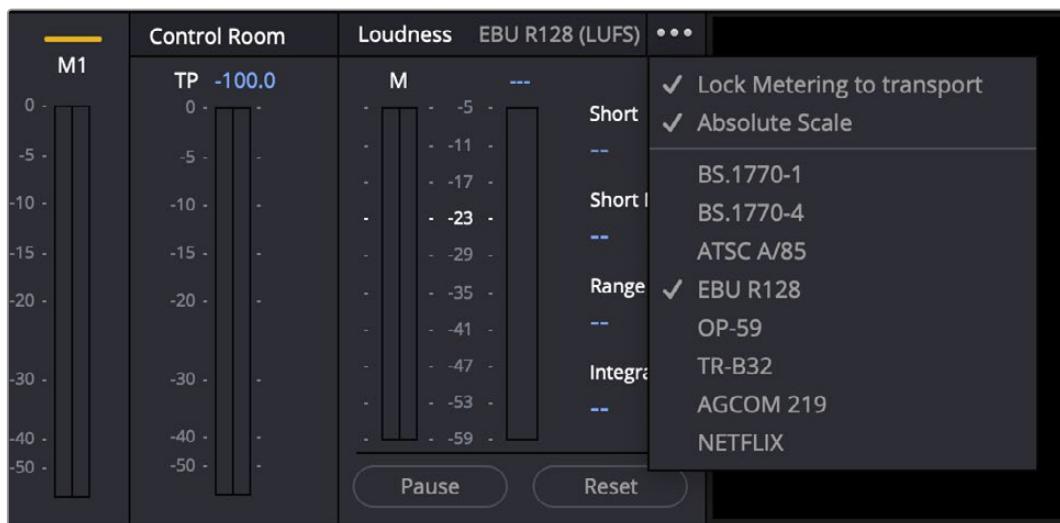
- **Short:** Measures the average LU level over a 30-second window following the playhead.
- **Short Max:** Shows the maximum level over the same 30-second window. This analysis is required by EBU R128.
- **Range:** Measures the dynamic range of the Loudness of your mix (in LU, or loudness units), which is the difference between the average soft and average loud parts of your mix. Analyzes the overall loudness over a played range of the mix, discounts the lowest 10% and highest 5%, and then gives a standardized expression of the difference between the remaining soft and loud levels that were analyzed. The window of analysis is as long as you've been playing. This analysis is required by most QC specifications.
- **Integrated:** Measures the LUFS value of the portion of the range of the mix you've played through. As you play, this integrated value accumulates. This analysis is required by most QC specifications.

## Absolute Scales and Dialog

While some users prefer to measure their levels to correspond to a relative scale of "0," similar to a VU meter where the needle rides above the "0," others want to see the absolute measure of the amplitude in LUFS and true peak. By default, the Loudness meter is set to relative scale, but you now have the option to choose between relative scale and absolute scale in the Loudness meter.

Relative scale in the Loudness menu is relative to the selected scale, so a loudness unit of 0 corresponds to the target of the chosen measure type. For instance, if EBU R128 is selected, whose target measure is -23dB LUFS, the "0" LU (Loudness Unit) is -23dB. If ATSC A/85 is chosen, whose target is -24dB, then that becomes the corresponding equivalent of the relative LU of 0.

When using the absolute scale, the Loudness meter displays the increments to reflect the chosen measure type. In absolute scale the EBU R128 meter will display -23 instead of the relative scale's 0.



The option in the Loudness panel reveals the various measure types as well as the option for absolute scale.

## Using the Loudness Meters

When using the Loudness meters to do a structured analysis of your mix to determine QC adherence, a group of controls let you determine when analysis begins and ends.

- **Lock Metering to Transport:** This setting is found in the compound meter option menu. When enabled, all loudness metering analysis is automatically reset whenever you move the playhead to another location in the Timeline. This is useful when you're spot-checking different parts of your mix, or working on a particular scene. Uncheck this option if you want the measurement of playback to that point in the Timeline to remain.
- **Absolute Scale:** An absolute measure of the selected scale type.
- **Pause and Reset buttons:** When you're doing a formal analysis of your mix, the Reset button lets you reset all currently accumulated analyses, and the Start button initiates loudness value accumulation. If you need to stop playback briefly to do something else, you can click Pause, and then click Resume when you're ready to continue the analysis.

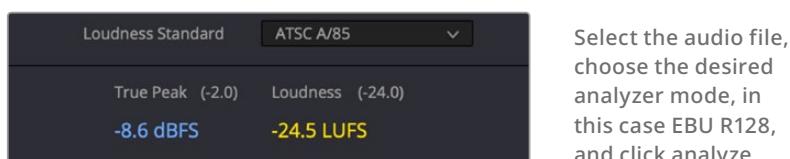
## Offline Loudness Analyzer

Users also have the ability to analyze an audio file's loudness offline. This is a fast way to measure loudness in imported audio files or bounced mixes.

### To initiate offline loudness analysis:

- Right-click the file in the Timeline, and choose Analyze Audio Level from the contextual menu. A dialog box displays the available options for measurement.

All of the measurements available in the real-time loudness meter are accessible in the drop-down menu inside the Analyze Audio Level panel. When the analyzer mode is chosen, the target measurements for that mode will display next to the reading in parenthesis. Once you have clicked the analyze button, the results will display in the panel next to the chosen mode's target measurement values.



## Visualizing Loudness Monitoring

When you show the track of a Main bus in the Timeline, as long as the track is high enough (ahem, tall enough), you can show or hide a series of "Loudness History" curves to visualize the loudness analysis of the mix on that bus over the duration of the mix.

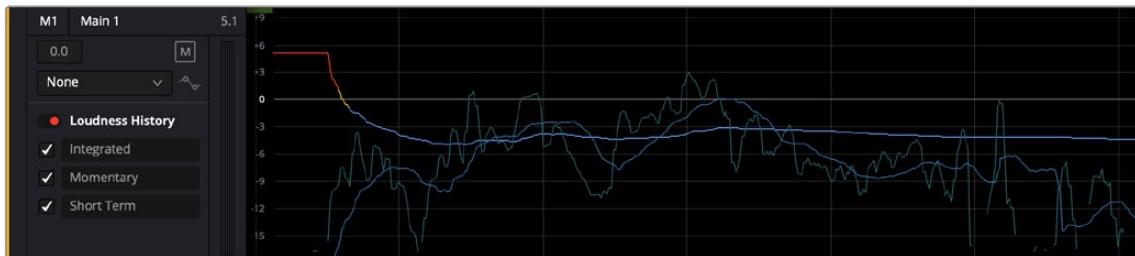
The available curves are:

- **Integrated:** A thick curve shows the averaged "integrated" loudness analysis of the current mix, which is a measurement that's taken from the beginning to the end of playback. This graph is the primary gauge of whether or not measured loudness is acceptable. The color of each segment of this curve indicates whether that part of the mix is "to spec." Blue indicate loudness levels that are below tolerance, yellow indicates loudness values that are within tolerance, and red indicates loudness values that are above tolerance. By evaluating the colors of the curve, you can easily spot which parts of your mix might need adjustment to meet the necessary specification.

- **Momentary:** A measurement of the loudness measured in the past 400ms, shown by a thin green-blue curve, which provides an analysis of transient level changes.
- **Short Term:** A measurement of the loudness of the past 3 seconds, shown by a thin blue line, which provides a more averaged analysis than the Momentary curve, yet still indicates the dynamics of the mix.

### To show the loudness history for Main 1:

- 1 Open the Automation controls by clicking the automation button on the Fairlight toolbar.
- 2 Open the Index, and click the eye button for the Main you want to see in the Timeline. Loudness History appears as an option in the track header controls as long as the track is tall enough to show the controls. These controls will be hidden on short tracks.
- 3 Turn on the Loudness History toggle, and check the curves you want to see. The Integrated, Momentary, and Short Term loudness analyses can be individually displayed or hidden, to expose overlapping graphs in that track in which you can see your program's loudness over time.



Viewing the loudness graph of the mix going out of a Main

**NOTE:** Currently, loudness history is only supported for Main 1.

## Metering Options

DaVinci Resolve has a variety of metering options that allow you to tailor metering to your workflow. The settings appear in Project Preferences > Fairlight on the Audio Metering pane, but they affect mixer, Fairlight effects, or master metering on the Cut and Edit pages.

### Level Metering Options

You can choose the response characteristic of the level meters for channel strips and Fairlight FX.

The Meter Type drop-down allows you to choose between IEC 60268-18, Digital VU, and Custom response characteristics. Both meter types have separate "hold and fall" metering, allowing you to see the highest peak that is reached.

- **IEC 60268-18:** A digital PPM-type meter with reference standard of -18 dBFS, a fast response to peaks, and a slower release characteristic. This is the default in DaVinci Resolve and is used in all Blackmagic Design software and hardware products.

- **Digital VU:** A dual-value meter, showing the peak level as a single segment with fast ballistics, and the RMS (volume unit) as a bar graph. It has a far faster quasi linear decay characteristic, making it easy to monitor average levels while allowing sounds with quick transients and decays to be more easily tracked. This option can be best for audio editing and mixing.
- **Custom:** Allows each aspect of the meter response to be chosen, including level detector, scale, peak, deck and peak indication.

## Pre-fader Metering

By default, “Pre fader metering on tracks” is unchecked (disabled), setting the metering on channel strips to be post (after) the fader level and mute button. For example, if the source audio file has peaks that are hitting -2 dBFS, and the channel fader is lowered from 0 to -10, then the peaks that show on the meter will now be at -12.

When pre-fader metering is on, the metering point is set to be before the fader, and is not affected by the fader’s position. However, the meter is affected by clip gain settings or key framing as these level changes occur before the clip’s signal enters the mixer’s signal path.

With pre-fader metering, you could lower the fader to be fully off (minus infinity) and the meter will still read the level of the source signal. This allows you to always be aware of the source signal and what it is doing before being altered by mixer’s controls or processing.

Many video editors prefer to work with post-fader metering, but most audio mixers prefer to work with pre fader in order to be aware of what the actual source level is at any time.

## Solo and Pre-fader Metering

When pre-fader metering is enabled, soloing one or more tracks will show a lighter “ghost” version of meter activity on non-soloed tracks, allowing you to always see audio levels on tracks that are muted by the soloing process. This makes it easy to focus on tracks that are actually audible while still seeing activity on those that are not.

If pre-fader metering is off (the default), when one or more tracks are soloed, no metering occurs on tracks unsoloed tracks.



Pre-fader metering with light shaded meters on non-soloed tracks

## Target Loudness Level

Allows the target loudness level in LUFS for the master Loudness meters to be set to your desired output target level. For example, DaVinci Resolve's default loudness standard target is -23 LUFS, but the YouTube target LUFS specification is -14 LUFS. If -14 LUFS is set, the "0" mark on the loudness meter scale moves to this level, allowing you to focus your master mix levels towards that loudness standard.

## Viewer

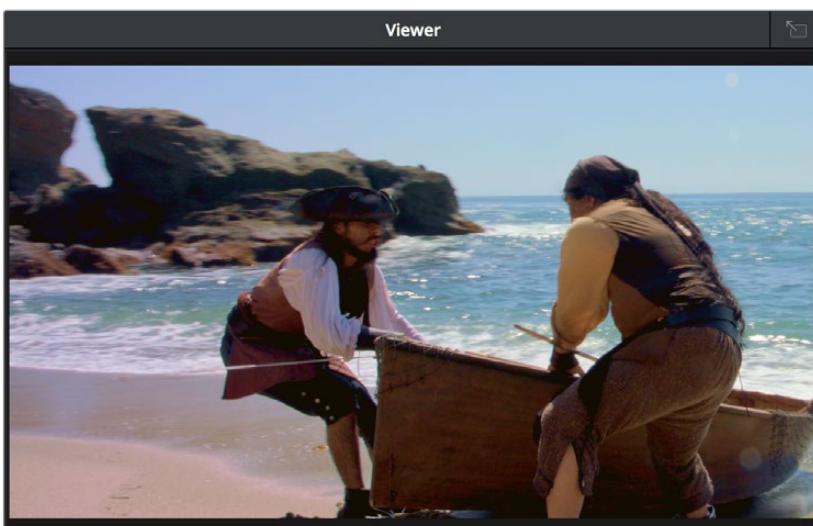
A small viewer to the right of the Monitoring panel shows the frame of video at the position of the playhead. This is the same image that's output to the external broadcast display of your workstation if you have one connected.



The Viewer lets you see the picture you're mixing to.

Clicking the Expand Viewer button at the bottom right-hand corner lets you open the Viewer into a floating window, which you can then position anywhere you want.

To close the floating Viewer, click the Dock Viewer button at the upper right-hand corner of the floating viewer window.



Click the button at the upper right-hand corner to dock the Viewer again.

## Cinema Viewer on Fairlight Page

Sometimes when you need to verify lip sync, sound effects sync, or simply review a new section of a mix you've been working on, it helps to watch the visuals of the program full screen as you listen to your mix. You can now set the Fairlight page Viewer to Cinema Mode by choosing Workspace > Viewer Mode > Cinema Mode (Command-F).

# Signal Flow Diagrams

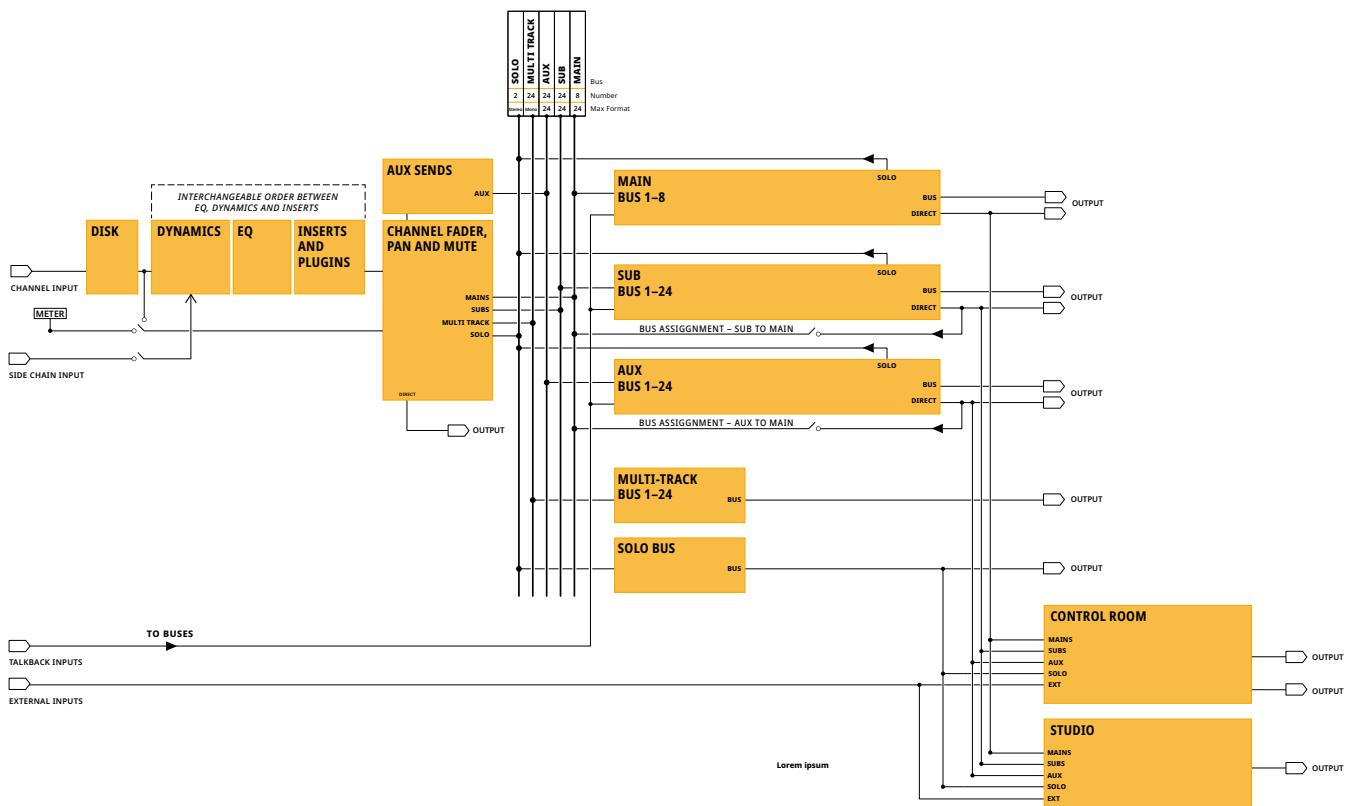
The diagrams in this chapter describe the Fairlight audio processing signal flow in DaVinci Resolve. They're intended for people who want an in-depth understanding of how audio is processed.

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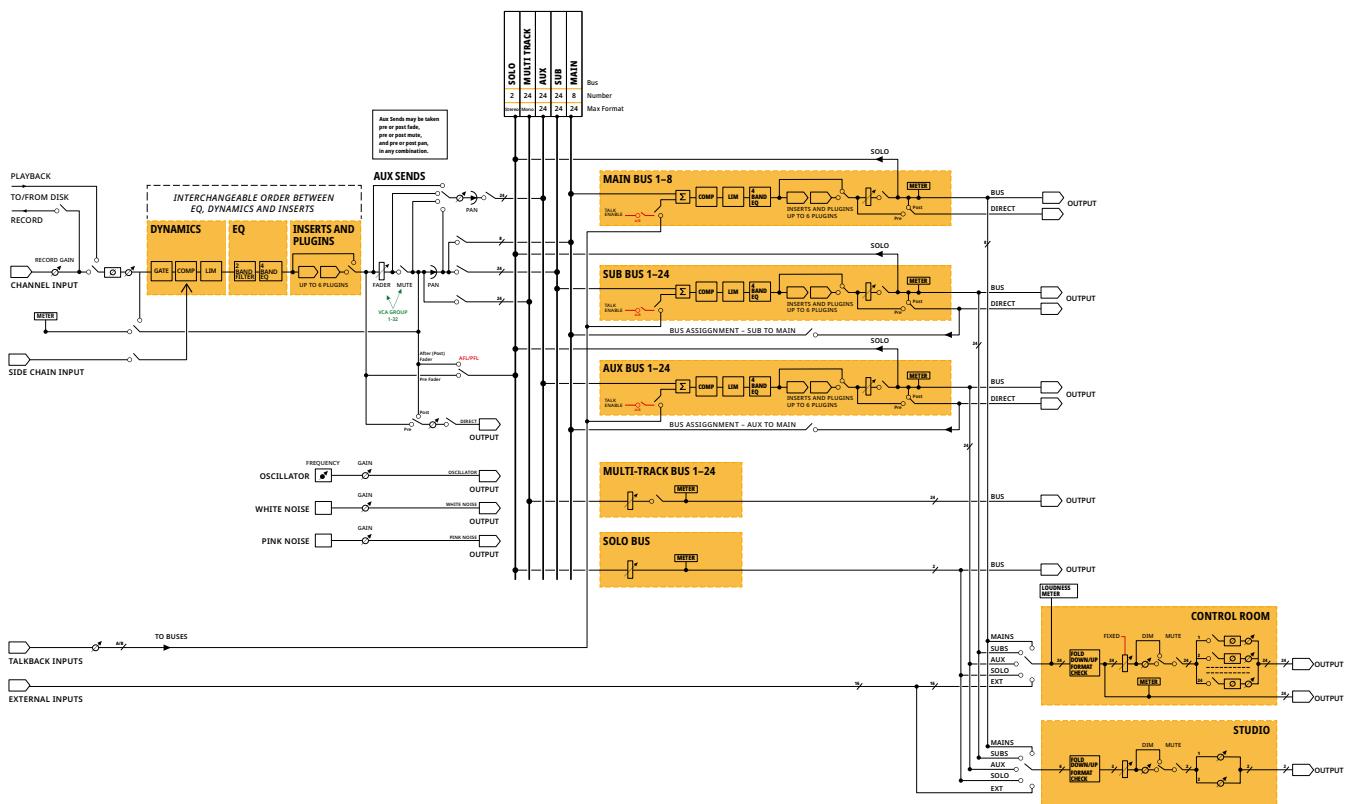
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# Signal Flow Overview

The following simplified flow diagram describes Fairlight audio processing overall.



## Audio Processing Path



## Chapter 181

# Immersive Audio Workflows

DaVinci Resolve offers substantial support for object and channel-based surround or immersive audio formats.

This chapter describes how to set up and mix with these formats when mixing in the Fairlight page.

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# About Immersive Audio Formats

Surround audio formats use multiple audio channels to position sound sources around the listener to add a creative dimension to sound design. Their simplest formats, such as 5.1 and 7.1 surround, allow the mixer to send varying amounts of any track to a combination of speakers, placing the audio in various positions around an auditorium or living room, as centered in front, ambient from the rear, or weighted towards the left or right of the listener.

More sophisticated immersive formats such as Dolby Atmos™ or Ambisonics define a virtual soundstage where you can mix the resulting audio to match the speaker configuration or listening setup.

## Dolby Atmos

The traditional surround sound experience outputs a specific set of monitoring channels that requires a specific number of monitor speakers placed in particular areas of a room, which can position sound approximately within a ring around the listener. Dolby Atmos improves upon this by being an object-based sound system operating within a 3D immersive space that can accommodate a wider variety of different speaker configurations using more speakers positioned around the listener. This increases dimensionality with more precise sound placement, adding height channels to produce sound that comes specifically from above. DaVinci Resolve supports Dolby Atmos output render formats 5.1.4 to 9.1.6.

A practical example of this difference can be heard when panning in a 7.1 mix; since you're sending signals to specific points in a speaker array, those points are fixed. Although the physical size of rooms can be larger or smaller, the mix is always sent to those assigned point speakers, so the experience from room to room may be inconsistent. By comparison, Dolby Atmos gives re-recording mixers a way to mix to an idealized space instead of fixed speaker positions. This means a Dolby Atmos mix, when played in a Dolby Atmos room, takes into account the actual dimensions of the space, as well as the number of speakers that are used, to recalculate audio playback to suit that exact space and playback equipment, giving a more faithful recreation of the mix with much more specific sound placement, when necessary.

To give a clear example of the benefits of Dolby Atmos, think of a small theatre that has standard left, center, and right front-screen speakers. It then has four left surround and four right surround, four overhead left, and four overhead right. For this example, let's say you have sent a sound to the surround left in Atmos, positioned at about one-half of the distance from the screen.

Now move the Atmos mix to a much larger room with twice as many monitor speakers. The new theatre has eight left surrounds, eight right surrounds, eight overhead left, and eight overhead right. Playing in this new configuration, Atmos automatically calculates the ratio of the room and the new speaker array. In this example, when that sound is reproduced at one-half of the distance from the screen, Dolby Atmos calculates the ratio of the sound in relation to the new playback setup, so the listener hears exactly what the re-recording mixer intends.

For this example, let's say to have that audio playing back at one-half of the distance from the screen in the small room, the audio is played on the second surround speaker on the left. When this same audio is played in the larger room, Atmos determines that the fourth surround speaker is one-half the distance from the screen. The importance is not what speaker the sounds are assigned to but rather where in space the sound should be heard. Atmos calculates the ratio of the playback spaces and monitor speakers to faithfully reproduce a mix, rather than assign sounds to a fixed speaker position.

## Dolby Atmos Speaker Configurations

It is important to understand that the term Dolby Atmos isn't restricted to describing any particular speaker layout. Dolby Atmos is a complex metadata-driven system that interprets the audio from a configured Atmos mix, determines the playback system of the end user, and calculates the mix to fit each particular space and system. Assuming the possession of a Dolby Atmos compatible system, if a 7.1.4 Atmos mix is played by someone with only a two channel playback system, then it will intelligently down mix the 7.1.4 Atmos to stereo. If a user has a standard 5.1 monitor system, then the 7.1.4 Atmos soundtrack will down mix to five channel surround with a subwoofer.

The naming of the channel configurations in the Dolby Atmos format includes the height channels in the nomenclature. Channel configurations are presented as three digits separated by periods, such as 7.1.4, which is a typical speaker configuration. The first digit describes the number of main, or ear-height monitoring channels that surround the listener. The second digit describes the number of subwoofer channels. The third digit describes the number of height channels, which are speakers positioned on, or in the case of a soundbar, pointed at the ceiling.

### An example of a 7.1.4 Atmos monitor speaker configuration:

- Seven surround channels
  - Left
  - Center
  - Right
  - Left Surround
  - Right Surround
  - Left Back Surround
  - Left Right Surround
- One Subwoofer
- Four height channels

## Enabling Dolby Atmos

Atmos must be enabled by going into Preferences > Video and Audio I/O > Immersive Audio panel and turning on Enable Dolby Atmos. When enabled, the Change Track Type contextual menu when right-clicking on a track will then include the additional Atmos track types.

## The Components of a Dolby Atmos Mix

Mixes created in Atmos have several specifically identified components. These work together to create an immersive mix, but each element allows the Dolby Atmos system to fit the sound specifically to the space and speaker configuration during playback.

These consist of:

- **The Bed track:** Contains the bulk of mixed audio, including dialog, ambient sound effects, and music. These sorts of sounds will contain panning information, but the panning will be general. Wind, traffic in the distance, room tones, and sync dialog would all most likely fall within the bounds of a standard bed track of 7.1.2 or 5.1.
- **Object tracks:** Pinpoint the placement of sounds moving specifically across the immersive space. Users can use these specific tracks to create panning anywhere in the room. Sounds can fly through space, around a room from height channels, to side and back channels, mimicking the motion of objects on the screen. Object tracks use the Atmos metadata to do the calculations discussed in the last example. ADM files are Atmos exports used with the IMF file type as master deliverables, which are in the broadcast wave file format.

It's up to users to define which tracks are Bed tracks, and which are Object tracks; these track designations, are descriptions of what the tracks you create are going to be used for. Ultimately, it's up to the mixer which audio is organized on Bed tracks, and which is organized on Object tracks. Theoretically, users can create a mix consisting entirely of Object tracks if desired, but typically the mix would be split into beds consisting of generally panned sounds, and Object tracks for sounds requiring specific room placement.

Object tracks and height channels open up possibilities that were never possible prior to Atmos. Imagine a scene where a man is hiding from Police while a helicopter circles overhead, or a scene where kids are in a basement and are startled to hear loud footsteps above them. With Atmos, the audience can now experience these immersive sounds along with the characters.

These are real-world examples, but sound in animation, science fiction, and fantasy can explore space in ways that are only limited by the creator's imagination. Flying fairies or creatures can move about the space front to back, high and low. Perhaps there's a scene with a ship moving full speed ahead underwater, breaking up and out into the sky, flying and dodging weapons coming from all sides. Object tracks are ideal to pinpoint sound effects requiring spatial specificity, but more importantly, Atmos assures the re-recording mixer that the final choices made in the mix will be faithfully recreated from theatre to theatre, and from room to room.

**NOTE:** Buses feeding the Atmos master become beds, and Tracks feeding the Atmos master become objects.

## Predetermined Dolby Atmos Master Rules

The first ten tracks in every Dolby Atmos Master are assigned as a bed by default. From there the default bed is a 7.1.2 bed, however, it can be designated to a 2.0 up to the 7.1.2 bed. There is no option to add objects to these first ten tracks. Starting at track eleven, the tracks that follow can then be made into various beds or objects as needed.

A simple way to think of this is that buses routed to the Atmos Master are treated as beds, carrying predefined multiple sources. An Atmos bed is a fixed surround format that can contain height channels. Objects, are generally mono but can send any format track that DaVinci Resolve supports and follow the metadata as a single object element. Objects routed to the Atmos Master are treated as tracks, carrying dynamic audio content and positional metadata. LFE will need to be sent to a bed, since objects are positional metadata. If the object is 5.1 for example, the LFE channel will need to be routed to a Bed bus in order to be rendered in the Atmos master.

The Dolby Renderer will render the file if it is dragged from the Media Pool into a track in the Timeline. In this case it will render the media with the embedded metadata to the master's output format. This is a simple way to monitor pre-mastered content and to perform simple actions, such as trimming or syncing for new packaging and deliverables.

When importing a Dolby Master file from the Fairlight menu, Fairlight > Immersive Audio > Import Master File, the resulting import will extract all of the audio and metadata for further content creation. This type of importing into Fairlight maps all of the metadata, tracks, beds, and objects from the master file into the Timeline, allowing you to adjust, process, and manipulate further, to rewrite panning, punch-in and add new media, and create a new Atmos Master.

Dolby Atmos files are a package of items. Simply linking files will not create an Atmos Master file. It is not possible, for instance, to take a rendered set of twelve tracks, link them, and then configure their outputs to a 7.1.4 Atmos bed. Note that 7.1.4 is not a Atmos bed type. Although this is the way typical PCM audio is linked and routed, it is not the case for Atmos content, which is far more than just a collection of tracks.

The renderer takes the 128 channels consisting of the beds and objects and renders it. Those channels are either internal sources or contained within the master file. A simple linked file will not play back through the Renderer. It must be played back as all linked files in Fairlight do, through the native monitor. The Dolby Atmos Renderer plays, renders, and extracts Atmos Master files. Fairlight allows for .atmos, ADM, and IMF file types to be imported and played through the Renderer.

**NOTE:** As mentioned above, the LFE can only be rendered in an Atmos master when routed as part of a bed due to the Dolby Atmos specification.

## Dolby Atmos Integration

There is native Mac M1, Windows, and Linux support for the internal Dolby Atmos workflow including:

- Input
- Content creation
- Internal renderer
- Export of Dolby Atmos Master Files

There is a dedicated Dolby Atmos Master bus format which provides a master fader in the Mixer for the Dolby Atmos Renderer and is indicated by the Dolby logo in its header. It also provides a loudness history graph in its Timeline view with integrated, momentary, and short term loudness measures. In the Bus Format window you will see that there are no outputs from this track; it is a control for the Dolby Atmos Renderer.

Only a single master bus can be created, and it will always mirror the format and metering of the internal renderer. When there are no patches to the Dolby Atmos Sends, all sources routed to a Dolby Atmos Master bus will target the master, as with a traditional bus workflow. In this send workflow, buses become beds and tracks become objects.

For Mac and Windows machines, the integration of the external Dolby Atmos Renderer has been updated, providing a much closer integration when running an external workflow. This has unified the tools available within the internal renderer workflows with the external renderer. This includes:

- External Renderer discovery within the preferences.
- UI enable to switch between the internal and external workflow.
- Tally of the master connection state and master file status.
- Storage and recall of the program metadata within the DaVinci Resolve Timeline, including all input configuration, trims, down-mix, and binaural settings.
- Direct control of the metadata from the renderer and binaural controls within DaVinci Resolve and bi-directional control of that program metadata from the server.
- Tally of the input configuration within the Patch page.
- Multi-client workflow support, allowing multiple instances of DaVinci Resolve to run attached to the same server for larger workflows.
- Tally of the active bed and object assignments on the Dolby Atmos Sends within the Patch page.  
When assigning a bed or track to the Atmos Master on the Patch page, beds are indicated with a purple marking and objects are indicated with a green marking.

## Binaural Audio Monitoring

You can monitor your Dolby Atmos Master in Binaural by choosing Binaural in the monitor section.

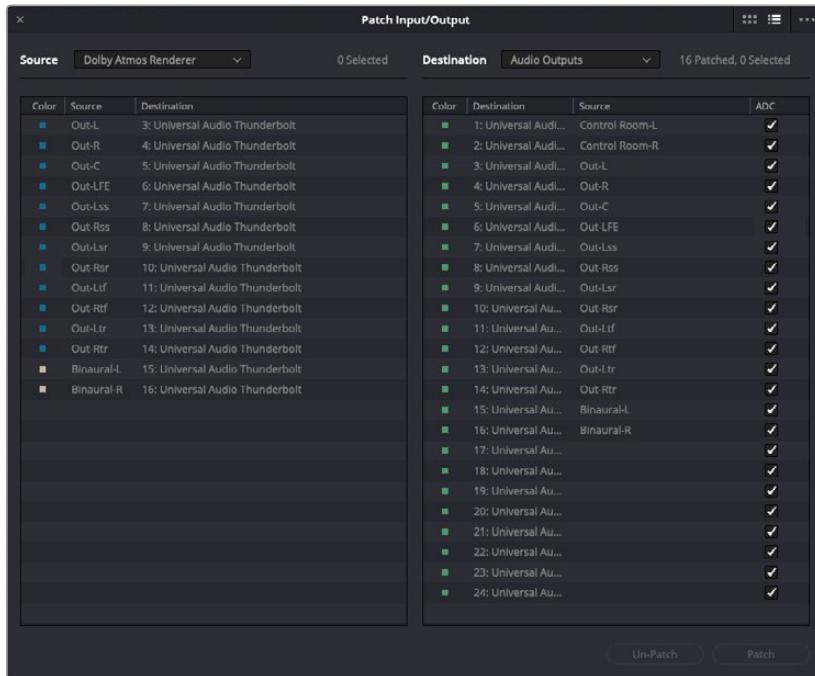


The Binaural monitoring option

Depending on your monitoring system, you can also create a parallel speaker monitoring set up with Binaural. For instance, you can create a 5.1. external monitor mix along with a binaural headphone mix.

In Preferences > Video and Audio I/O, you can set Binaural to the headphone outs in the Audio I/O panel, and a 5.1 monitor in the Monitor Speaker configuration. Then, in the Patch Input/Output panel,

you can route to the appropriate positional channels specific to your system and settings and also assign available channels for the headphones.



Using the Patch Input/Output to assign parallel binaural monitoring

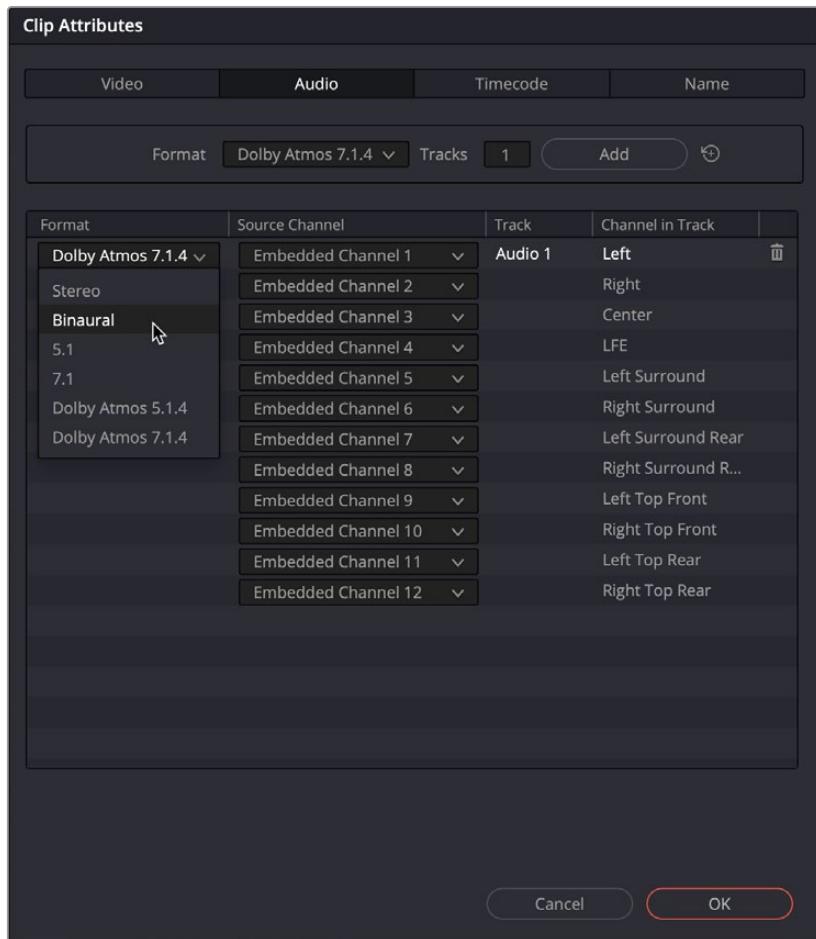
## Binaural Render Options

Binaural rendering is a simulation of the distance between the sound source and the listener. In the Index there are options on how you can choose to render the binaural objects. The default option is Mid, but you can also choose Off, Near, or Far, depending on the desired rendering for binaural. These choices will all be stored in the Dolby Atmos file.

Edit Index								Tracks	Markers
Tracklist									
#	Name	Track Controls			Format	ADC	Group	Binaural	
V1	Video 1								
A1	Composite Bed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Comp B...		
A2	Dialog Object 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A3	Dialog Object 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A4	Dialog Object 3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A5	Dialog Object 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A6	Dialog Object 5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A7	Dialog Object 6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dialog	<input checked="" type="checkbox"/>	Near
A8	Music Object 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A9	Music Object 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A10	Music Object 3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A11	Music Object 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A12	Music Object 5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Far
A13	Music Object 6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Far
A14	Music Object 7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Far
A15	Music Object 8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Far
A16	Music Object 9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A17	Music Object 10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid
A18	Music Object 11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Music	<input checked="" type="checkbox"/>	Mid

Binaural choices in the Tracks Index for assigning perceived distance

You can use Clip Attributes to render a Dolby Atmos Master in Binaural. Simply right click the file to open Clip Attributes, select Binaural, and then right-click to create a new Timeline with the file. In the example below, a 7.1.4 file will be rendered to a Binaural audio file.



Using Clip Attributes to render to a Binaural file

## Ambisonics

Ambisonics is a full-sphere multi-channel immersive “adaptive” audio format that lets you position sounds in the horizontal and vertical planes.

Compared to other surround formats, Ambisonics transmission channels aren’t speaker-specific and represent a complete sound field captured by a specialized microphone for an accurate positional depiction of “sound in space,” or generated from channel-based sources via sophisticated encoders.

The flexibility of this audio format makes Ambisonics compatible with various speaker configurations, such as 5.1 and 7.1.4, headphones, and large arrays in multiple applications, including theme parks, art installations, video games, and virtual reality.

You can even work and mix between channel-based and Ambisonics formats, without the need for third-party audio plugins.

DaVinci Resolve Fairlight's full Ambisonics support includes spherical panning, Ambisonic bussing, Fairlight, AU, and VST Ambisonics effect plugins, accuracy up to fifth order High Order Ambisonics (HOA), and channel and binaural decoding to headphones.

## Ambisonic Orders

Ambisonics "orders" define the mathematical precision and number of discreet channels to represent the sound field, ranging from the first to the seventh order. First order uses four discreet audio channels, while higher orders use more channels, requiring greater processing power.

Although DaVinci Resolve Fairlight supports up to fifth order Ambisonics, requiring 36 channels, you can get great results using third order and 16 channels.

## Ambisonic File Support

DaVinci Resolve supports Ambisonic files in WAV, BWAV, or .caf (including 1OA AMB and AmbiX) formats.

Adding a Media Pool clip to the timeline or creating a new timeline that refers to a clip creates a track of the appropriate type, matching the file's Ambisonic order and channels.

## Enabling Ambisonics

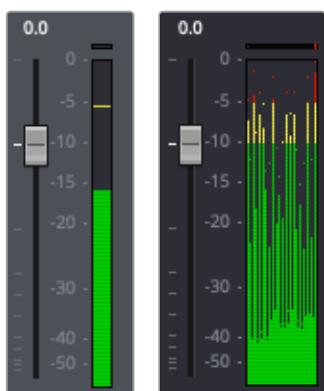
Ambisonics is enabled by going to Preferences > Video and Audio I/O and clicking the Enable Ambisonics checkbox in the Immersive Audio section.

## Ambisonic Metering Options

### Mixer and Track Header Meters

Fairlight Ambisonic metering utilizes a single, composite bar-graph meter in the Mixer, Track header, and Meter panel. Unlike other audio formats, they don't correlate to specific speaker positions or levels we would track visually to determine what is happening with the signal.

Alternatively, you may want to use bar-graph meters that display Ambisonic signals as discrete, separate bus streams by choosing Fairlight > Immersive Audio > Ambisonics Channel Metering.



Default Ambisonics metering (left)  
and Discrete Channel metering (right)

## Ambisonics Metering

This Fairlight FX audio plugin offers two different visual metering options for analyzing your audio. The Ambisonics meter can be added to an audio track or bus via the channel strip's Effects section.

For more information about the Ambisonics Meter, see *Chapter 178, "Fairlight FX."*

## Video Viewer Overlay

The Fairlight page also offers Ambisonic metering options as overlays on the Video viewer, allowing you to analyze the sound intensity against the picture.

### To enable the Ambisonics Meter overlay:

- Activate 360 Viewer Mapping in the Video Viewer tools menu.
- Go into the Ambisonics Meter submenu, click On, and select one of the metering modes.



Enabling the Ambisonics Meter overlay

## Ambisonic Effects

While most Fairlight FX plugins, such as the Multiband Compressor, Limiter, Reverb, and Channel Dynamics and EQ, are Ambisonic-native, DaVinci Resolve also supports compatible Ambisonic-native third-party AU and VST effects.

- For more information on the Channel Dynamics and EQ plugins, see *Chapter 174, "Mixing in the Fairlight Page."*
- For more information on Audio Effects plugins and how they can be used in DaVinci Resolve, see *Chapter 177, "Audio Effects."*
- For more information on individual Fairlight FX plugins, see *Chapter 178, "Fairlight FX."*

## Setting Up an Ambisonic Mix

### To organize and set up your Ambisonic mix:

- The first thing you need to do is determine which Ambisonic order you want to work in. A higher order such as third order (16 channels) is best for precise positioning.
- Create Ambisonic busses and assign your source tracks or other busses to them.

You can assign Ambisonic busses to other Ambisonic busses, even with differing orders.

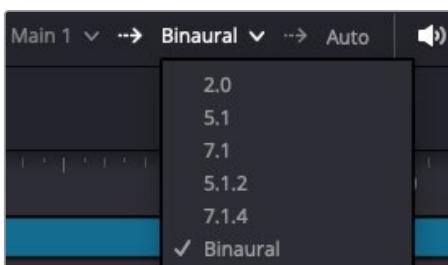
The Fairlight engine and FlexBus will automatically handle any required up- or down-mixing.

- Use the 2D or 3D Spherical Panners on each channel to position your sources in the Ambisonic space. You can use any channel-based format from mono to stereo to, for example, 7.1.2, and position them freely in the spherical sound field. For more information on the 2D and 3D Panners, see *Chapter 174, "Mixing in the Fairlight Page."*
- Click the Bus Monitoring menu to the far right of the Transport control, and select the source you want to monitor.



Monitoring Source selection

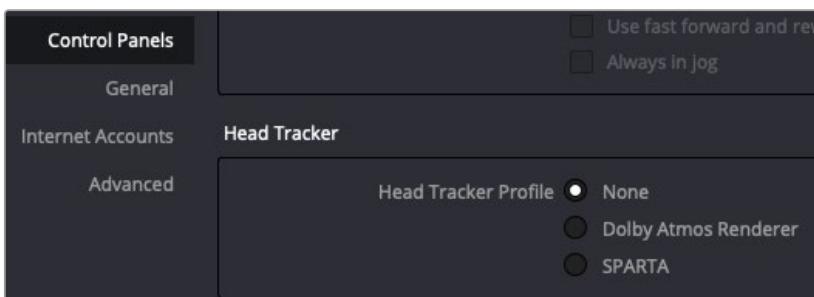
- Choose your output format in the Monitor section drop-down next to the speaker output level control. You'll notice various options, including Binaural for monitoring on headphones. Once you've selected a format, the corresponding decoder is automatically placed in the monitoring path, and the audio is routed to your Audio I/O and sent out to your speaker system.



Output Format selection

## Binaural Monitoring with Head Tracking

If you've selected the Binaural option as your output format, you can also monitor your Ambisonics mix on headphones with support for Head Tracking for an enhanced monitoring experience.



Head Tracker preferences

### Enabling Head Tracking

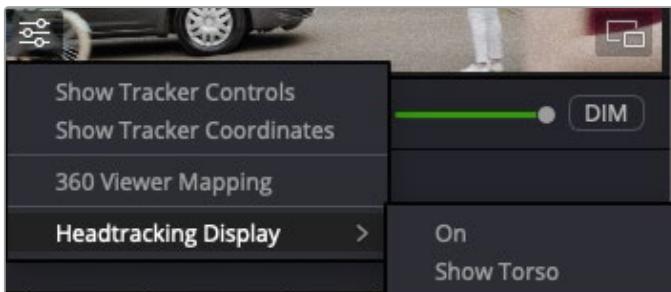
Head tracking functionality can be activated by going to Preferences > Control Panels > Head Tracker. This adds two buttons to the left of the Monitor Bus Source drop-down immediately below the docked Video Monitor panel:

- **HT:** Switches Head Tracking on and off.
- **CAL:** Calibrates the current tracker direction as the "Front" or point of origin.

## Head Tracking Video Viewer Overlay

Binaural Head Tracking also lets you add an overlay to the video viewer for analyzing your mix against the picture, by clicking Headtracking Display > On, which adds an onscreen crosshair, indicating the current head (headphone) orientation.

This submenu also includes a Show Torso option which adds a head and torso to the video viewer, that rotates as the head tracking angles and positions change.



Head Tracking Video Viewer overlay

## Parallel Ambisonic and Channel-based Workflows

You can create Ambisonic and channel-based mixes in the same timeline and simultaneously render multiple outputs in different formats.

Because of the common panning data, it's also possible to set up a parallel mix in an Ambisonic timeline by converting an existing production of a differing surround format (e.g., Dolby Atmos) to Ambisonics format and importing that into your production.

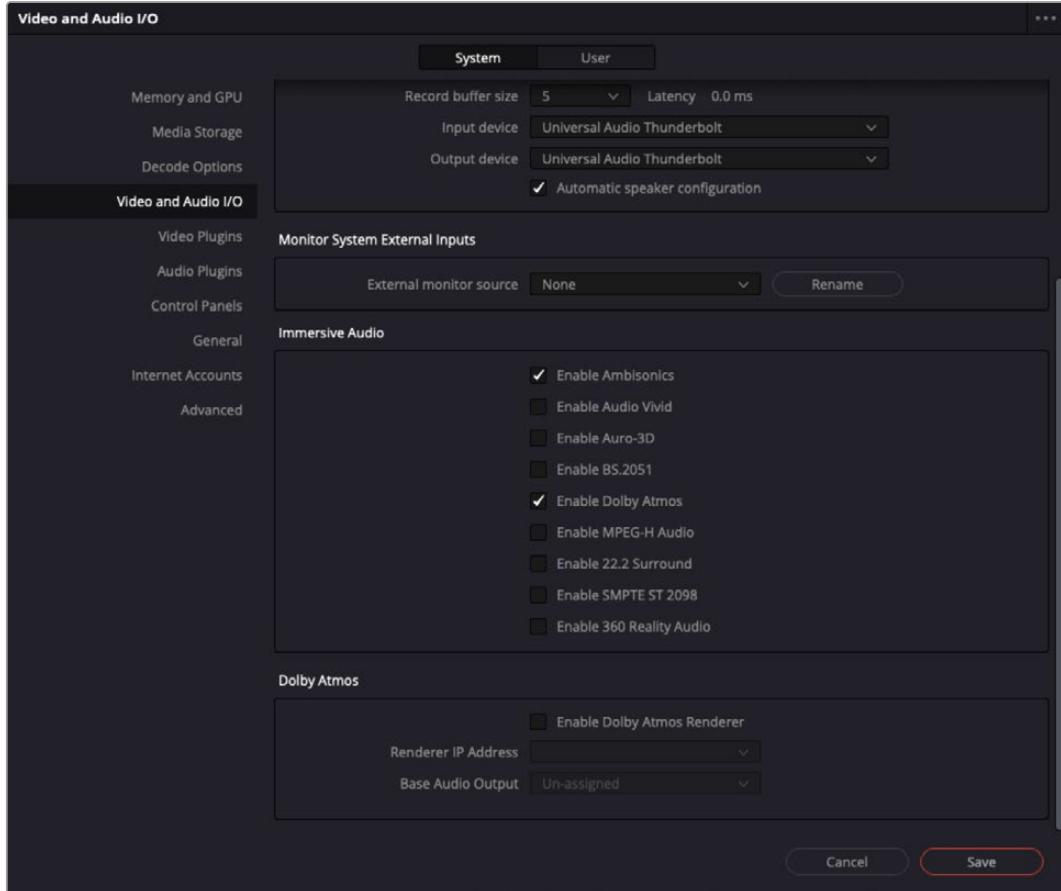
## Ambisonic Rendering

Ambisonic mixes can be rendered on the Deliver page as either a multichannel adaptive file with the number of streams determined based on the Ambisonic order of the mix (e.g., 1OA, 2OA, etc.) or downmixed to the format of your choice, such as 7.1.4.

## Immersive Format Configuration

In Preferences > Video and Audio I/O > Immersive Audio, you can enable the various Immersive options that are available. These are Ambisonics, Audio Vivid, Auro 3D, BS.2051, Dolby Atmos, MPEG-H Audio, 22.2 Surround, SMPTE ST 2098, and 360 Reality Audio.

In Preferences > Video and Audio I/O > Dolby Atmos, you can configure the use of an external Dolby Atmos Renderer for Dolby Atmos monitoring and mastering. You can manually enter the IP address of the server, or select a discovered server using the drop-down menu. You should also choose the base audio output of the audio outputs, which will be used to send the audio to the external renderer.

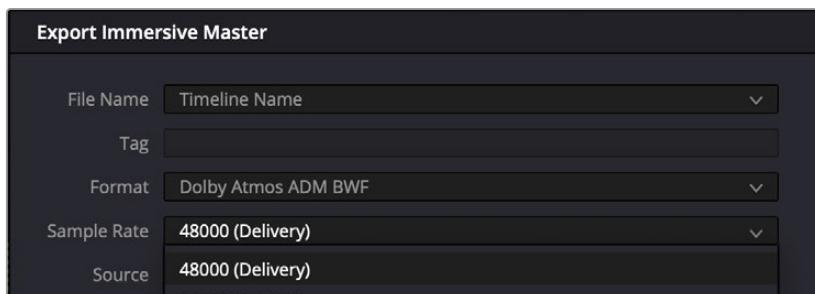


Controls for enabling immersive audio formats in the Video and Audio I/O preferences

## Exporting ADM BWF

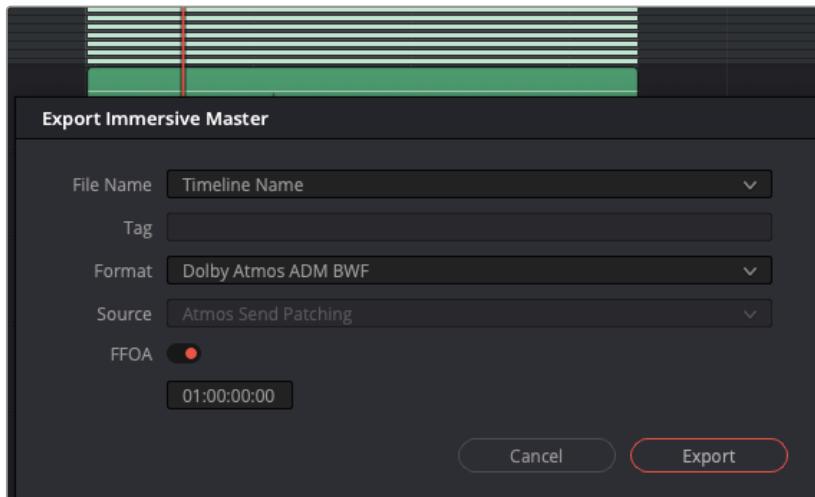
You can export a Dolby Atmos master file as an audio-only ADM BWF, right from the Fairlight timeline. These same options are also available in the Deliver page. Exporting a Dolby Atmos master file from the Fairlight timeline uses the Timeline name as the filename. Be sure to change the Timeline name to the desired filename.

- In the Media Pool, locate the current Timeline.
- Change the Timeline name to your desired export filename.
- As with all other bouncing and delivery methods, you will need to mark a range in the Timeline to export.
- Press R for the Range Selection tool. Double-click any of the Timeline clips to set a range for the entire clip.
- Choose Fairlight > Immersive Audio > Export Master File.



Export Immersive Master options

- In the Export Immersive Master dialog, set the File Name to Timeline Name and the Format to Dolby Atmos ADM BWF. You can select either 48000 (delivery) or 96000 (delivery) for the Sample Rate of the exported file. The Source is automatically set to the Atmos Send Patching. This patching passes the signal through the sends to the internal Dolby Atmos Renderer for processing and to generate a new Dolby Atmos master file.
- Click Export.
- In the Export Immersive Master finder window, navigate to the folder you want to file to save to. Click Save.

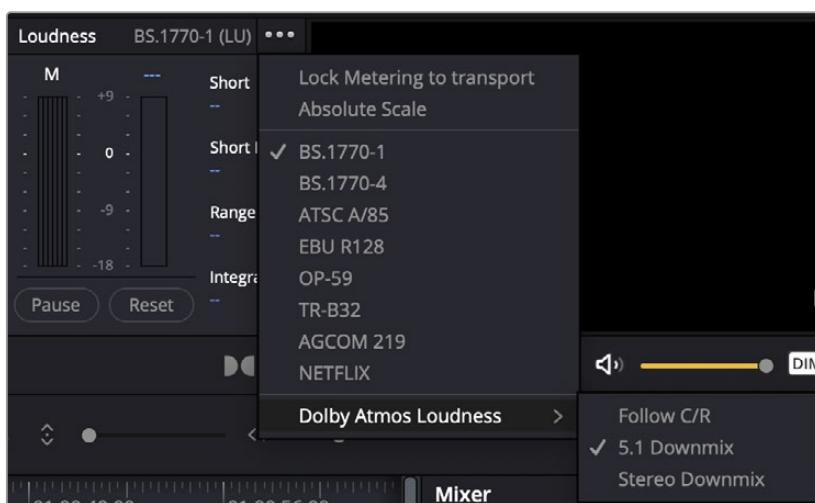


The Export Immersive Master dialog shows the source and format for the new ADM export.

The Export allows for several types of file types: Dolby Atmos ADM BWF, Dolby Atmos IMF IAB, Fraunhofer MPEG-H Production, and Fraunhofer MPEG-H Production XML.

## Parallel Loudness Measurement

A parallel 5.1 down-mix can be performed during the render as a source for a 5.1 loudness measurement. Certain delivery specifications (such as for Netflix) require that the loudness measurement of Atmos Masters be performed at 5.1. You can enable this parallel 5.1 (or stereo) render for the loudness measurement and monitor in the room's native format.



Selecting a Downmix option

## Low-latency Rendering

Previous versions of the Dolby Atmos Renderer were able to run at a specific latency of 10.67 ms. This restriction has been removed, allowing selection of lower latency engine processing block sizes, and thus lower monitoring latency through the Dolby Atmos renderer. However, the larger block size is enforced by the renderer during certain operations, such as Binaural renderer, or when a parallel loudness down-mix is enabled.

## Surround Buses in Fairlight (Studio Version Only)

The FlexBus structure in Fairlight enables user-definable buses. Atmos mixes call for several bus formats that are available in DaVinci Resolve 17 and later.

- 9.1.6
- 22.2

## Object-Based Format Support (Studio Version Only)

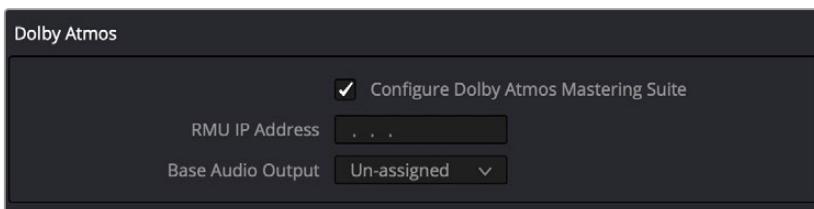
- Dolby Atmos with support for 7.1.2 and 7.1.4
- MPEG-H with support for 5.1.4, 7.1.4, and 7.2.3
- SMPTE ST.2098 with support for 9.1 OH, 9.1 HT, 11.1 HT, 13.1 HT, and 15.1 HT

## Auro-3D Support (Studio Version Only)

Auro-3D with support for 9.1, 10.1, 11.1 (7+4), 13.1

## Dolby Atmos Configuration Controls

The Video and Audio I/O panel of the Resolve System Preferences lets you enable and configure the use of a Dolby RMU for doing Dolby Atmos mixing. You can enter the IP address of the RMU, and choose the base audio output.



Configuring Dolby Atmos in the Resolve System Preferences

## Atmos Re-Renders

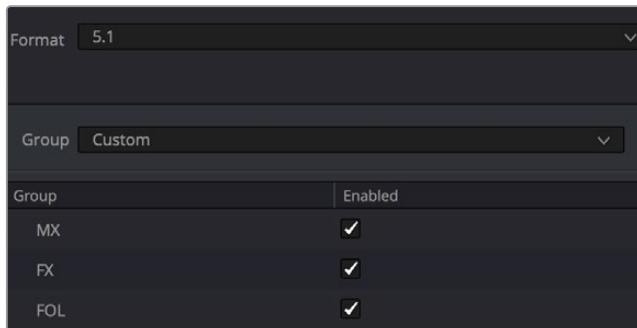
In order to provide parity with the external renderer, you can create presets that let you define a PCM output format and a set of sources using the bed, object, and group definitions (such as 5.1).

Bounce Mix to Track accommodate these re-render presets in Dolby Atmos timelines, allowing you to generate multiple deliverables in a single pass. These render presets are stored and recalled as part of the timeline.

Bounce Mix to Track				
Bus	User Name	Format	Destination Track	
Bus 2	BED	Dolby Atmos 7.1.2	Do not Bounce	...
Atmos Render	Stereo	Stereo	Do not Bounce	...
Atmos Render	5.1	5.1	Do not Bounce	...
Atmos Render	5.1 M&E	5.1	New Track	...

Bounce Mix to Track Dolby Atmos re-render options

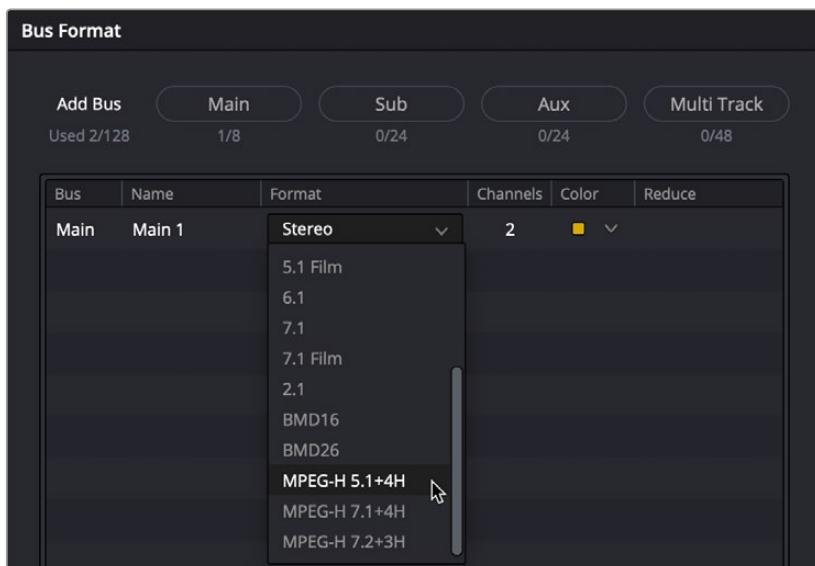
In addition to render format, you can select the source from a combination of beds, objects, or defined VCA groups.



Dolby Atmos Render Preset options

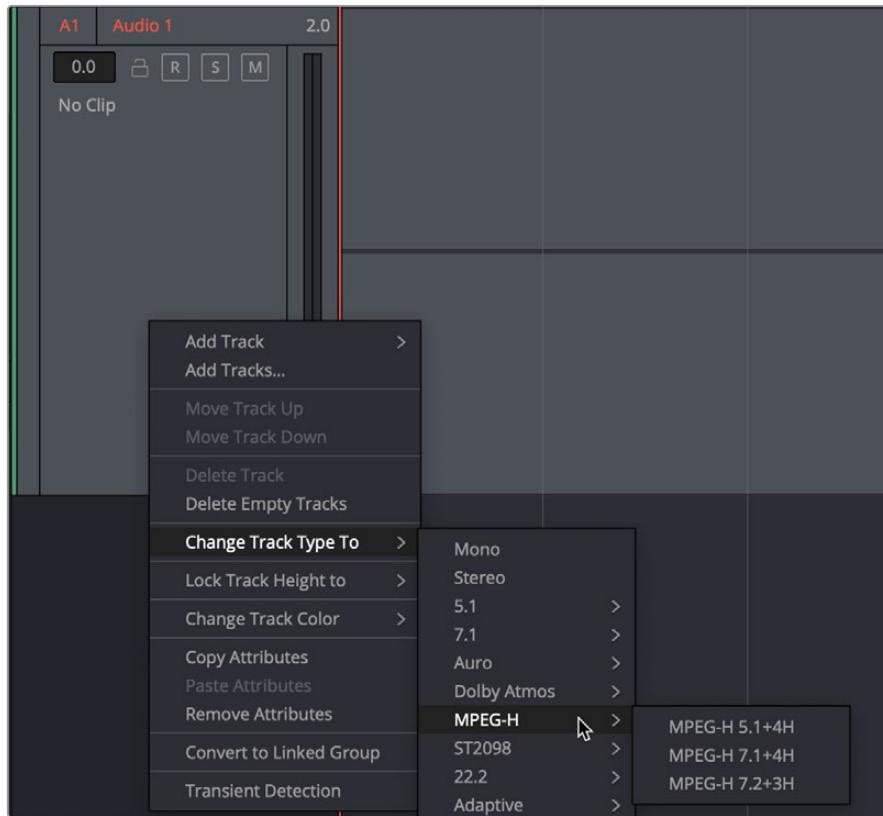
## MPEG-H Authoring

DaVinci Resolve enables MPEG-H authoring. This includes Native MPEG-H track and bus formats and monitoring, including the ability to define basic track-level meta-data for export into an MPEG-H scene, and export of a MPEG-H Master file. Once enabled, the formats become available for selection as a bus, track, or monitoring format, in the Bus Format window.



The MPEG-H format options in the Bus Format window

These formats also become available for multi-channel track assignment.



The MPEG-H format options in the Track Format submenu

The MPEG-H format options in the Bus Format window

Tracks are mixed natively in a similar manner to most immersive content, with the creation of a bed mix consisting of a set of immersive object tracks that use dynamic panning. These are combined onto the main bus to form the immersive mix.

## Track Configuration

In addition to this process, once the format is enabled, a set of MPEG-H meta-data columns become enabled in the DaVinci Resolve Track index, including Track Type, Kind, Language, SW Group, and Preset. For more information about these columns and how to configure them, see *Chapter 167, "Using the Fairlight Page."*

Edit Index											Tracks	Markers
Tracklist												
#	Name	Track Controls	Format	Group	Type	Kind	Language	SW Group	Presets			
• A1	VO	□ R S M	1.0	0	Static	Undefined	Unknown	None	Default			
• A2	AMB 01	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			
• A3	AMB 02	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			
• A4	AMB 03	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			
• A5	SFX 01	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			
• A6	SFX 02	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			
• A7	Music	□ R S M	2.0	0	Static	Undefined	Unknown	None	Default			

When MPEG-H is enabled in the Project Settings, the Tracks panel shows additional columns of information for defining each track in the Timeline

# Export

Once everything is configured, and your project is mixed, you export a master file. In order to do this, you must select a range In and Out point on the Timeline to define an export range. Additionally, you must define whichever busses are designated for rendering by defining their Kind, and you can select tracks you want to export additionally.



Selecting tracks and busses to export

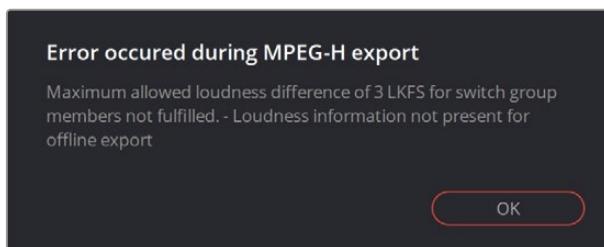
**NOTE:** An MPEG-H master file can only contain a maximum of fifteen channels total. If the selected track and bus stems exceeds this, then the export will fail, issuing a warning. The same will occur if a range is not selected.

## To export an MPEG-H mix:

- 1 Choose Fairlight > Immersive Audio > Generate MPEG-H Audio File.
- 2 Choose a save location and name, and click Save.

At this point, all defined buses are rendered. Then, track loudness is measured for compliance. Lastly, the source audio is exported and the metadata embedded into the deliverable MPEG-H wav file.

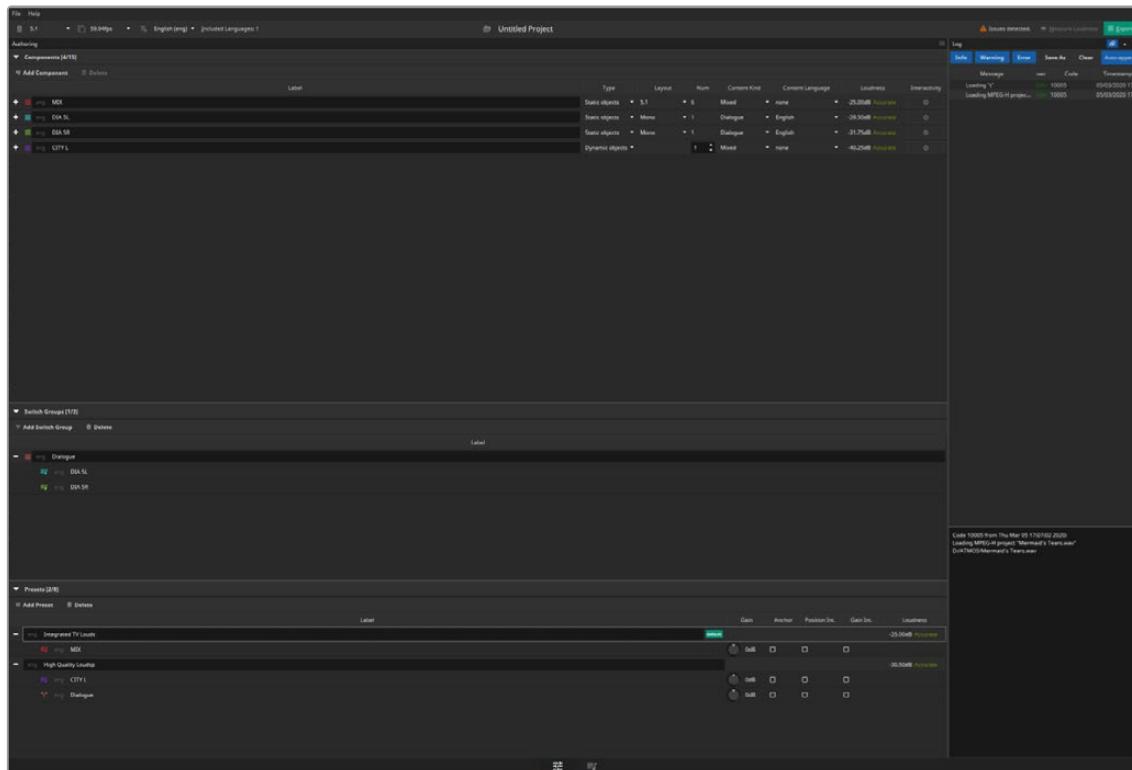
There are several error conditions, which are deleted during the export process, that will all cause the export to fail. For example, all tracks must contain audio. Audio within switch groups must be within a specific loudness tolerance of one another. If any of these conditions occur, a dialog will appear.



Warning dialog during MPEG-H export

## Quality Control

You can do a quality control check of the final audio export using a Fraunhofer MHAPI tool which can open up the exported content. This includes compliancy tests, and visualization of the contained metadata. It can also render and monitor the content, but this aspect of the tool is basic, and only works with external audio that's linked to the metadata. In other words, you must manually link the components back to the source audio files.



Quality control using the Fraunhofer MHAPI tool

## B-Chain Support for Audio Monitoring (Studio Version Only)

Choosing Fairlight > Immersive Audio > B-Chain Control opens the B-Chain Control window. Using traditional cinema audio postproduction terminology, the "A-Chain" is all of the busing and signal processing that happens within the mix (in our case using the Fairlight page) and the "B-Chain" is the signal processing, amplification and speaker system that takes the sound from your workstation's output and gets it "into your ears." This typically includes all necessary signal decoding or pre-processing hardware, amplification systems, and speaker setups for most professional and commercial listening environments, especially for immersive audio or surround sound formats. These options are complex and have many variables in terms of speaker configuration, selection, and placement, output channel timing, attenuation, and phase, and a host of other considerations.

In DaVinci Resolve, these B-Chain controls affect how the channels of audio being output by the Main you're mixing is mapped to the actual audio signals being output from your workstation into the amplification and speaker system of the current viewing environment. The extensive level of control

the B-Chain presets offer is most useful in situations such as surround-sound configured grading and mixing theaters, to define how the immersive audio standard you're mixing is mapped to the speaker setup of your particular application, and to fine-tune the channels being output to each speaker specifically for your environment. In simpler monitoring situations, the B-Chain controls can be useful for configuring the standard you're mixing with to play out of a non-standard speaker setup in your room.

Ultimately, the B-Chain controls are designed and intended for users who need to create custom, fine-tuned settings for their specific monitoring situation. For this reason, pretty much every real-world use of these B-Chain controls will require custom configuration for your unique environment.

## Overview of Setting Up a B-Chain Configuration

Setting up a B-Chain configuration takes some doing, but once set up, you have a preset that's easy to reopen at any time. In the following example, a B-Chain preset will be configured to convert a 5.1 surround output to a 3-channel left-center-right room speaker setup.

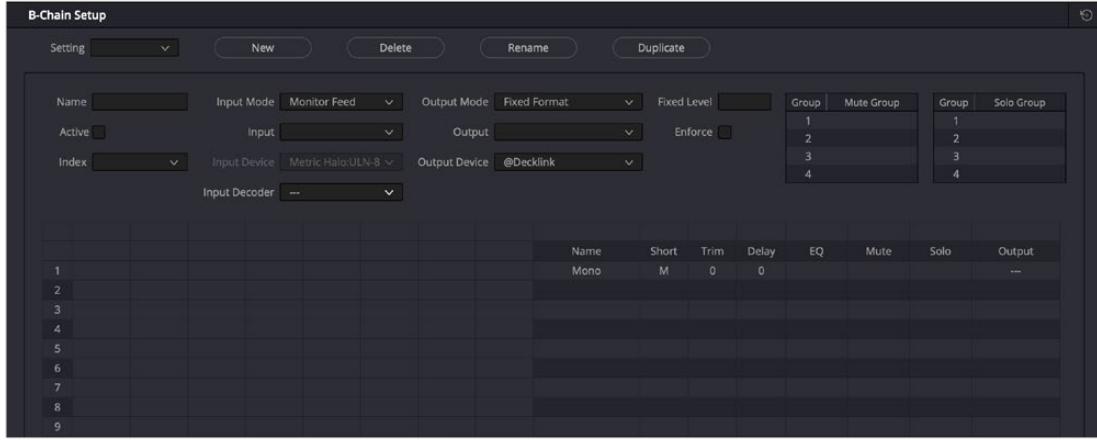
### To set up a B-Chain:

- 1 Choose Fairlight > Immersive Audio > B-Chain Control to open the B-Chain Control dialog. This exposes the monitoring controls but not the configuration controls.
- 2 Click the Option menu in this window and choose Setup B-Chain Presets. The B-Chain Setup window appears.
- 3 Click the New button to create a new B-Chain preset, then enter a name in the dialog and click OK. In this example we'll use the name "5.1 to LCR." The Name you enter here is the name of the saved setting data.  
Additional buttons let you Delete, Rename, or Duplicate presets that you've already created once you choose them from the Setting pop-up.
- 4 Enter a label in the Name field (this is the name that appears in the preset menu). The name you enter here is the name that appears in whatever pop-up menus you select these options from.
- 5 Choose Input Mode > Fixed Format, and Input > 5.1 from the pop-up menus. These define the signal coming out of your mix. (Input Mode > Monitor Feed sets the B-Chain to listen to the selected monitor source, while Input Mode > Custom Format lets you choose an arbitrary number of channels.)
- 6 Choose an Output Mode > Fixed Format, and Output > LCR from the next set of pop-up menus. These define the speaker setup you'll be playing the mix out of. In this example, we've chosen LCR, which stands for Left, Center, Right.

At this point, you can see that once you've defined the Input and Output channels, the "Inputs/Outputs" table of cells becomes populated:

- At the left of this table, each channel of your selected Input occupies a vertical column. In this example, the Input columns are labeled L, R, C, LFE, Ls, Rs, corresponding to the 5.1 channels you've selected to be output. It's possible to specify setups with many more channels, in which case the left half of the table becomes scrollable.
- At the right of this table, each channel of your selected Output occupies a horizontal row that intersects the Input columns. In this example, the rows are labeled Left, Center, Right.

In this way, every Input column intersects with each Output row, making it possible for you to assign how much of each Input is fed to each Output by entering values into each intersecting cell.



The Inputs/Outputs table of the B-Chain preset window

- 7 To assign Input channels to Output channels, double-click the field where the desired Input intersects the desired Output, and type a value to set how much level from the Input to assign to the Output. Typing 0 assigns Input to Output at “unity” gain (0dB). Numbers you type here specify tenths of a dB. Typing -3 assigns half of the level from Input to Output. Typing -100 mutes that Input to that Output completely. Blank cells with no value make no assignment. In this example, we’re typing:
  - a) 0 into cell L-1 to assign all of the Left source to the Left output
  - b) 0 into R-3 to assign all of the Right source to the Right output
  - c) 0 into C-2 to assign all of the Center source to the Center output
  - d) -6 into Ls-1 to assign a fraction of Left surround to the Left output
  - e) -6 into Rs-3 to assign a fraction of Right surround to the Right output
  - f) -8 into LFE-1 to assign a smaller fraction of LFE to the Left output (LFE is not directional)
  - g) 8 into LFE-3 to assign a smaller fraction of LFE to the Right output as well (LFE is not directional)

At this point, we’ve fully defined how much of which Input channels go to which Output channels. In the process, you can see that this table interface makes it possible to assign the full levels of Input channels to Output channels, to assign partial levels of Input channels to Output channels, and to assign fractions of Input channels to multiple Output channels.

	L	R	C	LFE	Ls	Rs		Name	Short	Trim	Delay	EQ	Mute	Solo	Output
—	Main 1	---	Left	L	0	0	---	---	---	---					
1	0			-8	-6		---	Centre	C	0	0	---	---	---	---
2		0					---	Right	R	0	0	---	---	---	---
3		0		-8	-6		---					---	---	---	---
—	—	—	—	—	—	—	—					---	---	---	---

The Inputs/Outputs table of the B-Chain preset window fully populated to assign inputs to outputs

- 8 At this point, you should notice there are additional columns to the right of the Output channels that provide various options that let you fine-tune each channel’s output in order to optimize the acoustics and layout of your room:
  - Trim each channel (in tenths of a dB)
  - Add a Delay (in milliseconds)
  - Add specific EQ (None, LFE Only, Surr Mode)
  - Mute or Solo groups.

- 9 The last thing you need to do is to right-click each Output channel row's right-most Output column, and choose the hardware output of your audio or video+audio interface that you want that channel to go to. See one of the following I/O Setup procedure for how to rename these options to make this easier.

Name	Short	Trim	Delay	EQ	Mute	Solo	Output
Left	L	0	0	---	---	---	1: Decklink
Centre	C	0	0	---	---	---	2: Decklink
Right	R	0	0	---	---	---	3: Decklink
---	---	---	---	---	---	---	---

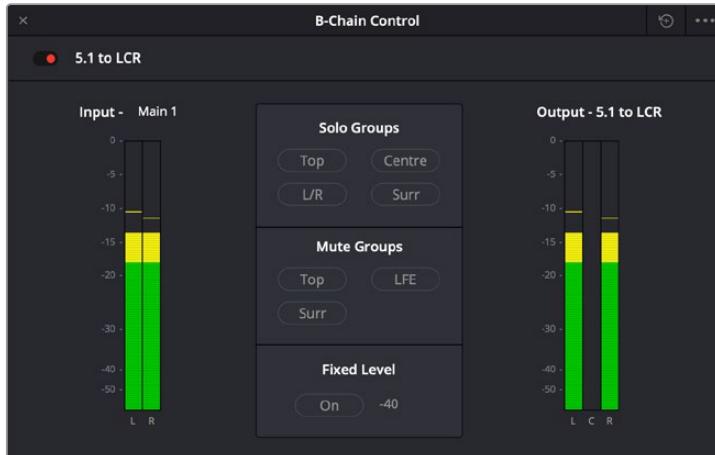
Assigning I/O channels to output to

Once you've finished setting up your B-Chain preset, click OK, and that preset will be saved and available for use.

#### To choose a B-Chain preset to use and enable B-Chain:

- 1 Choose Fairlight > Immersive Audio > B-Chain Control to open the B-Chain Control dialog.
- 2 Turn on the toggle at the upper left-hand corner of the window to enable B-Chain, and choose a preset from the pop-up menu.
- 3 Choose the Input you want to assign that B-Chain preset to.
- 4 A set of Solo and Mute buttons lets you selectively choose sets of channels you want to listen to in isolation, or mute from the whole, in order to better evaluate selected portions of your mix.
- 5 A Fixed Level button lets you fix the output level in the DaVinci Resolve UI to a single value. With this enabled, you cannot drag the level slider to change the monitoring volume.
- 6 When you're finished using B-Chain for monitoring, turn off the toggle at the upper left-hand corner.

**NOTE:** While the B-Chain is enabled, the Speaker Setup controls in the Video and Audio I/O panel of the Resolve System Preferences is disabled.



The B-Chain Control Window where you can choose and enable a B-Chain preset to affect the output

**To name the various outputs of your system's channels for easy assignment:**

- 1 Choose Fairlight > Immersive Audio > B-Chain Control to open the B-Chain Control dialog.
- 2 Click the Option menu in this window and choose Setup I/O Names. The I/O setup window appears, showing every single audio input and output on every audio interface that's connected to and recognized by your system.

The I/O Setup window lets you rename the Inputs and Outputs associated with your workstation setup, to make it easier to configure Fairlight when you're managing hundreds of channels.

The names you choose here are shown everywhere in DaVinci Resolve where channels are selectable and/or exposed.

- 3 To rename a channel, double-click that channel's field in the Name column, type a new name, and press Return.
- 4 To protect a channel, click the checkbox in the Protect column. Protected channels are prevented from being patched to. This is intended for potentially high-volume speaker outputs, to which it would be hazardous to accidentally connect the wrong input. Protected channels can be seen everywhere patches can be made, but they're grayed out. Protected channels can only be used in the Speaker Setup controls in the Video and Audio I/O panel of the Resolve System Preferences, and in the B-Chain Setup window.
- 5 When you're finished, close the window. The names and protected status of channels are a system-wide setup.

I/O	Number	Name	Protect
Input	1	1: Scarlett 2i2 USB	
Input	2	2: Scarlett 2i2 USB	
Input	3	1: LG UltraFine Display Audio	
Input	4	1: MacBook Pro Microphone	
Output	1	1: Decklink	<input type="checkbox"/>
Output	2	2: Decklink	<input type="checkbox"/>
Output	3	3: Decklink	<input type="checkbox"/>
Output	4	4: Decklink	<input type="checkbox"/>
Output	5	5: Decklink	<input type="checkbox"/>
Output	6	6: Decklink	<input type="checkbox"/>
Output	7	7: Decklink	<input type="checkbox"/>
Output	8	8: Decklink	<input type="checkbox"/>
Output	9	9: Decklink	<input type="checkbox"/>
Output	10	10: Decklink	<input type="checkbox"/>
Output	11	11: Decklink	<input type="checkbox"/>

The I/O Setup window where you can rename your system's audio outputs and protect channels going to amplified speakers

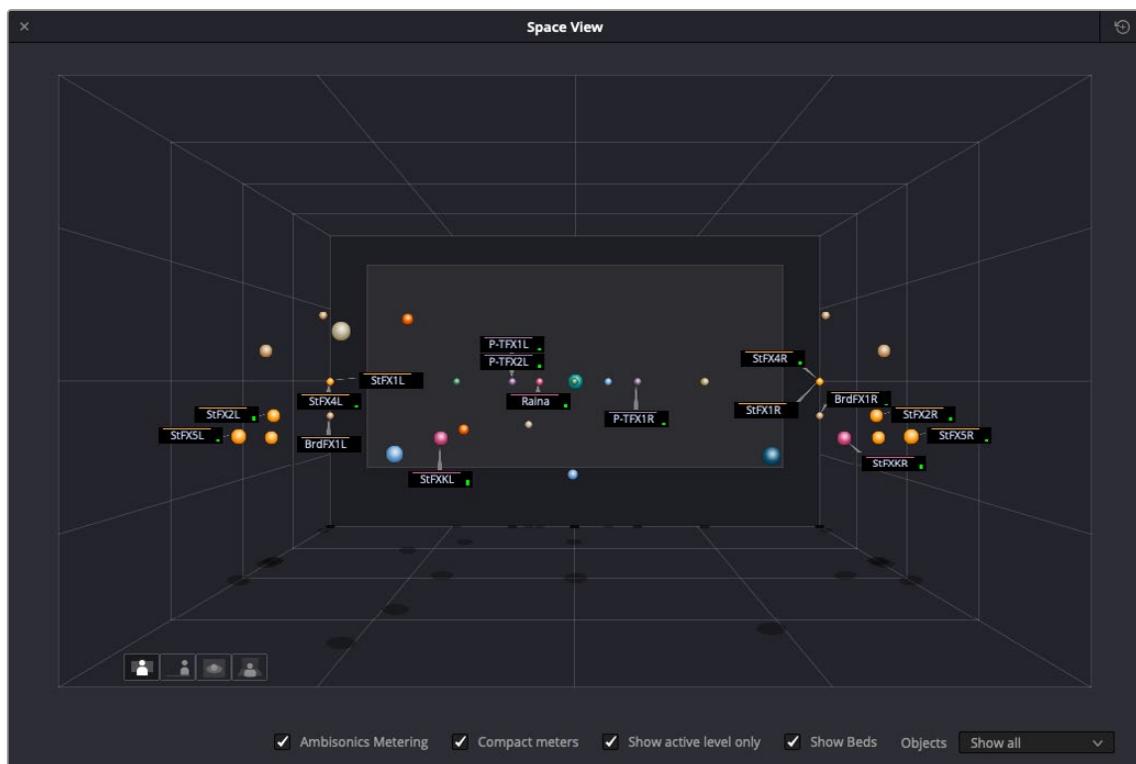
# Space View

Space View is a 3D interactive workspace that lets you view your unmuted sound sources' real-time positions and automated movements.

You can freely reposition sources in the 3D sound field according to your mouse movements (Left/Right and Forward/Backward). Holding down Command while moving your mouse forward and backward moves the sound source up and down in the sound field. All your changes can be automated (Touch and Pan) and saved.

Space View can be opened by going to Fairlight > Immersive and selecting Space View.

**NOTE:** Only unmuted sources with a fader level greater than -70dB will be visible.



Space View of an Immersive mix

## Space View Controls

The Space View offers the following control options, which, when used in conjunction with the track mute and solo buttons offer very flexible options that let you focus on individual sources or groups of sources.

In the lower right corner of the workspace, you'll find four buttons that let you view your sound sources from different angles or perspectives.

You can freely rotate the workspace by holding down Command-Option-Shift while dragging it. If you want to get back to a default view, click one of the perspective buttons.

Along the lower edge of the window, you'll find the following checkboxes:

- **Ambisonics Metering:** This checkbox activates Ambisonics sonar-type metering when working on Ambisonic mixes.
- **Compact Meters:** This option replaces the larger halo-style meters with smaller bar-graphs.
- **Show Active Level Only:** Clicking this option hides the names of silent sound sources.
- **Show Beds:** This option reveals the labels and meters for sound sources that are part of sound beds instead of just the signals feeding your master Dolby Atmos bus.

The options in the drop-down menu to the right of the checkboxes determine which objects appear in the virtual space:

- **Show Only Selected:** Shows sources based on tracks you've selected in the Mixer or timeline.
- **Show Visible:** Shows only the active audio sources for tracks that are not hidden.
- **Show All:** All sound sources are visible and labeled.



# Deliver

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## Chapter 182

# Delivery Effects Processing

This chapter discusses how different video effects will be handled when you use the controls of the Deliver page.

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# Delivery Effects Processing

For your final output, how effects are rendered depends on whether you're rendering in Single Clip or Individual Clips mode.

## When Rendering a Single Clip or When Outputting to Tape

Whether you're rendering a QuickTime or MXF master of your project as a single clip, rendering a DPX image sequence for film output, or outputting directly to tape, all supported compositing, speed, and transform effects are rendered by DaVinci Resolve and "baked" into the output media. Unsupported effects are completely ignored, cannot be seen, and have no effect on media that's rendered and output.

## When Rendering Individual Source Clips for Round-Trip Workflows

In workflows where you're rendering individual media files to send a project back to an NLE or finishing application for final finishing (adding titles and other effects before final delivery), DaVinci Resolve handles different types of effects in different ways.

Unsupported effects do not appear in DaVinci Resolve. However, this effects data is internally preserved, and when you export an XML or AAF file to send back to your NLE of choice, these effects reappear, applied to the color corrected media that you rendered out of DaVinci Resolve and sent back.

Effects that DaVinci Resolve does support such as composite modes, opacity settings, speed effects, and transitions are handled differently. Even though these effects are visible in DaVinci Resolve while you work, they're not "baked" into the final media that you render in preparation for sending back to your NLE or finishing application. Instead, the portion of each media clip that's used in your project is rendered as an individual file, and the XML file that you export from DaVinci Resolve contains all of the effects information necessary to reassemble the rendered media into a timeline that uses Final Cut Pro effects applied to DaVinci Resolve-graded media.

	EDL	FCP 7	FCP X	Premiere Pro	Media Composer*
Color Corrections	N/A	N/A	Rendered	N/A	N/A
Composite Modes	N/A	Sent Back	Sent Back	Sent Back	Rendered
Alpha Channels	N/A	Optionally Rendered	Optionally Rendered	Optionally Rendered	Optionally Rendered
Transitions	Sent Back	Sent Back	Sent Back	Sent Back	Sent Back
Opacity Settings	N/A	Sent Back	Sent Back	Sent Back	Sent Back
Position, Scale, Rotation	N/A	Conditional	Conditional	Conditional	Conditional
Linear Speed Effects	Sent Back	Sent Back	Sent Back	Sent Back	Sent Back

	<b>EDL</b>	<b>FCP 7</b>	<b>FCP X</b>	<b>Premiere Pro</b>	<b>Media Composer*</b>
Variable Speed Effects	N/A	Sent Back	Sent Back	Sent Back	Sent Back
Long Duration Still Images	N/A	N/A	N/A	N/A	N/A
Freeze Frames	N/A	N/A	N/A	N/A	Rendered

\* These effects are only sent back in AAF round trips when you're updating an existing AAF file, rather than generating a new AAF file.

The chart shows which effects are rendered by DaVinci Resolve, and which effects are passed back in different round trip workflows.

After you've reimported your project back into your NLE or finishing application, you're free to readjust these effects while completing your program, without the need to re-render individual clips in DaVinci Resolve.

**IMPORTANT:** One exception to the preservation of media and effects in round-trip workflows is that nested sequences from Final Cut Pro 7 and Media Composer are not compatible with DaVinci Resolve; XML and AAF files containing nested sequences cannot be imported. On the other hand, Final Cut Pro X projects containing compound clips can be imported.

## More About Rendering Speed Effects

If you're rendering a project with speed effects, you should be aware that DaVinci Resolve can optionally render speed effects using Optical Flow processing, resulting in high-quality slow motion and fast motion effects delivered straight out of DaVinci Resolve. If you're satisfied with Optical Flow processing in DaVinci Resolve, there may be no need for you to do a round-trip export if the main reason you were doing so was to send the processing of slow motion clips to another application for rendering, and rendering the Timeline in Single clip mode will "bake" the speed effects in using whatever settings you've selected for the project, or for each clip if you've selected individual Retime Process settings for different clips.

However, if you want to send unrendered speed effects to another application, rendering your project in Individual source clips mode guarantees that the full range of each original clip of media will be rendered, with the speed effect itself exported within the XML, AAF, or EDL file that's exported.

**NOTE:** DaVinci Resolve adds three frame handles to clips with speed changes applied to them, and to rendered clips that don't match the project's frame rate. This is done to facilitate reconform in NLEs that require handles beyond the actual length of each of these clips.

## Determining the Rendered Output Resolution of Clips in Mixed Timelines

Ordinarily, rendering individual source clips results in each clip being rendered at either the project resolution or the Resolution drop-down in the Render Settings (which overrides the project resolution), with clips that don't match the project resolution being resized or not according to the settings you've chosen in the Image Scaling panel of the Project Settings.

However, if you're rendering dailies for projects containing clips with mixed resolutions, you can choose to render each clip at its original resolution by turning on the "Render at source resolution" checkbox in the Video group of controls.

## Rendering Edit and Input Sizing Adjustments

Whether or not sizing is rendered into your final media depends on the "Disable sizing and blanking" checkbox in the Advanced Settings options of the Render Settings panel. You can disable sizing and blanking either when rendering the current Timeline as a single clip, or when rendering individual clips.

- **If "Disable sizing and blanking output" is turned off:** Output Blanking, Cut and Edit page sizing adjustments, Color page Input and Output Sizing adjustments, and Image Stabilization are rendered into the final rendered media using the optical-quality sizing algorithms available to DaVinci Resolve. This is best if your sizing adjustments are approved and final, and you want to "bake" sizing adjustments into the final media you're delivering.
- **If "Disable sizing and blanking output" is turned on:** Output Blanking, Cut and Edit page sizing adjustments, Color page Input and Output Sizing adjustments, and Image Stabilization are not rendered, and each clip will be rendered either at the source resolution if "Render at source resolution" is enabled in individual clips mode, or to the currently specified resolution of the Timeline or project. However, the sizing adjustments you've made will be exported as part of the XML or AAF file that you're exporting. This is best for workflows where the editor wants to continue adjusting sizing after you've handed off the graded project relative to the original size of the clips.

Keep in mind that if you want to render Input Sizing adjustments into the media you're outputting, the "Force sizing to highest quality" checkbox guarantees that DaVinci Resolve will use the highest-quality sizing setting, even if you've temporarily chosen a faster-processing option for a slower computer.

**NOTE:** "Disable sizing and blanking output" does not disable any transform operations that happen within the Fusion page, nor does it disable transforms happening as a result of an Open FX or Resolve FX plugin applied to one or more clips in the Cut, Edit, or Color pages. All of these effects will continue to be rendered into the final output.

## Rendering Mixed Frame Rate Timelines

Mixed frame rates are supported by DaVinci Resolve when any option other than none is selected in the "Mixed Frame Rate format" drop-down menu, either in the Conform Options section of the General Options panel of the Project Settings, or in the Import AAF or XML dialog. When you choose the appropriate option that corresponds to the application you're exchanging projects with

(or DaVinci Resolve if you're working entirely within DaVinci Resolve), then DaVinci Resolve conforms and processes all clips in the Timeline to play at whichever frame rate is selected in the "Timeline frame rate" drop-down menu. For example, 23.98, 29.97, 30, 50, 59.94, and 60 fps clips will all play at 24 fps if that's what "Timeline frame rate" is set to in the Master Settings panel of the Project Settings.

How clips in mixed frame rate timelines are rendered out depends on whether the Render Settings are set to render Individual source clips or a Single clip.

- **Individual source clips:** All clips are rendered individually at their original frame rate.
- **Single clip:** All clips are converted to the "Timecode calculated at" frame rate and rendered as a single media file. Clips are converted using whatever method is selected in the Retime process drop-down of the Master Settings panel of the Project Settings, or in the individual Retime process setting found in the Video inspector of each clip that overrides the project-wide setting. You can choose Optical Flow processing for the highest quality conversion that's available in DaVinci Resolve.

## Export Alpha Channels in Individual Clips Mode

This option only appears if you're rendering to a media format that supports alpha channels. If your media contains an Alpha channel, you have the option to turn on the Export Alpha checkbox in the Video panel of the render settings whenever you render individual source clips. When you do so, DaVinci Resolve renders clips with alpha channels in either of two cases:

- Whenever there is an Alpha channel embedded in the source media for that clip, the embedded Alpha channel will be copied to the rendered version of that clip.
- Whenever a clip's grade has a key connected to an Alpha output, the Alpha output will be rendered as an alpha channel for that clip.

In either case, you may only render Alpha channels out when you render individual source clips to an RGBA format such as TIFF, OpenEXR, ProRes 4444, ProRes 4444 XQ, or DNxHR 444.

## Export Alpha Channels in Single Clip Mode

DaVinci Resolve allows rendering Alpha channels in Single Clip mode if the selected codec supports an Alpha channel (i.e., ProRes 4444, DNxHR 444, etc.). This lets you apply a single Alpha channel to an entire timeline for export, rather than just at the individual clip level.

### To Render an Alpha Channel in Single Clip Mode:

- 1 Select "Single Clip" mode in the Render Settings.
- 2 Select a codec that supports an Alpha channel in the Video tab's Codec and Type selection boxes.
- 3 Select the checkbox "Export Alpha" that appears under the Frame rate selector.
- 4 If supported by the codec, you can chose the Alpha Mode type. Premultiplied is the default.

If the codec you have selected does not support an Alpha channel, the "Export Alpha" box will not appear as an option.

# Using the Deliver Page

Once you've finished grading your project, you need to either render it, or output it to tape to deliver it to your client. This is where the Quick Export window and Deliver page comes in.

This chapter describes how to use Quick Export, how to use the overall interface of the Deliver page, and provides some general information about how effects are output from DaVinci Resolve in different situations.

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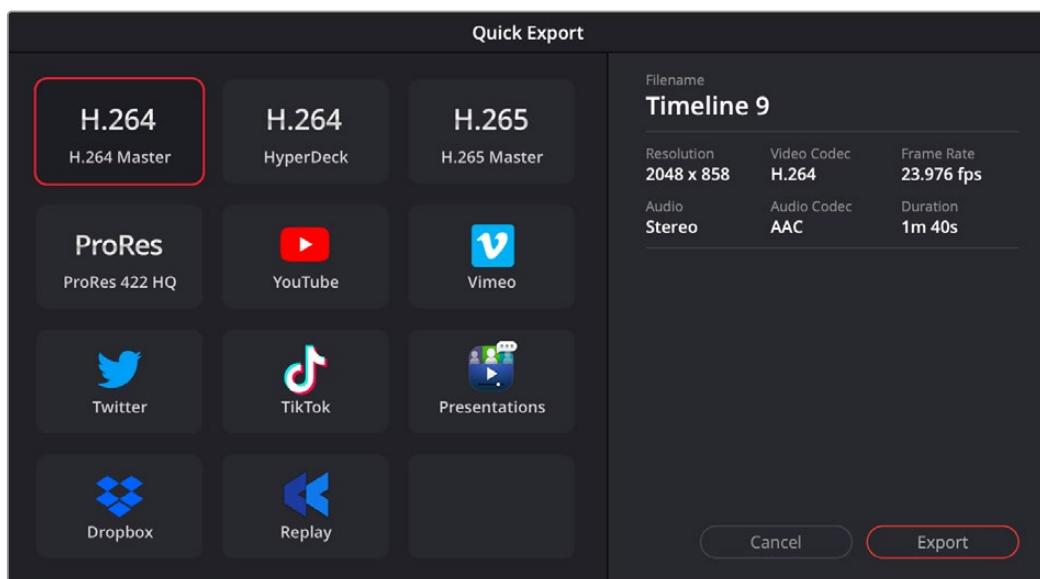
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# Using Quick Export

Not every situation requires a complicated delivery setup. When you just need to quickly export a project, and the full power of the Deliver page is unneeded, you can choose File > Quick Export to use one of a variety of export presets to export your program from any page of DaVinci Resolve. You can even use Quick Export to export and upload your program to one of the supported video sharing services, including YouTube, Vimeo, and Frame.io. You can also add your own presets to the Quick Export window.

## To use Quick Export:

- 1 (Optional) In the Cut, Edit, Fusion, or Color page, set In and Out points in the Timeline to choose a range of the current program to export. If no timeline In or Out points have been set, the entire timeline will be exported.
  - 2 Choose File > Quick Export.
  - 3 Select a preset to use from the top row of icons in the Quick Export dialog, and click Export.
  - 4 Choose a directory location and enter a file name using the export dialog, then click Save.
- A progress bar dialog appears to let you know how long the export will take.



The Quick Export dialog

# The Deliver Page

The Deliver page is divided into five areas of functionality, each of which lets you set up a different part of a render or output to tape.



Deliver page

## The Interface Toolbar

At the very top of the Deliver page is a toolbar with buttons that let you show and hide different parts of the user interface. These buttons are as follows, from left to right:



The Interface toolbar



**Delivery full/half height button:** Lets you set the Render Settings panel to take up the full height of your display, if you need more area for browsing the various render settings, at the expense of a narrower Timeline.



**Render Settings:** This panel lists all of the render settings that are available for configuring rendering jobs in DaVinci Resolve. By default, you're presented with a short list, but more options are available by clicking "Advanced Settings."



**Tape:** Puts the Deliver page into Tape Output mode.



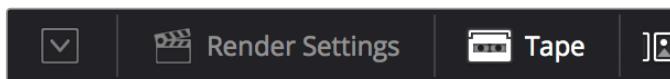
**Clips:** Hides or shows the Thumbnail timeline above the Deliver page timeline



- **Render Queue:** A list of all jobs that you've set up to render in the current project. Previously rendered jobs remain in the queue, for your reference or for you to reuse to re-render those jobs, unless you manually delete them from the queue.
- **Render Queue full/half height button:** Lets you set the Render Queue to take up the full height of your display, if you need more area for listing render jobs at the expense of a narrower Timeline.

## Rendering Files vs. Outputting to Tape

Because the Deliver page does double duty, you control whether you're rendering files or outputting to tape using the Tape button in the Interface toolbar. Doing so replaces the controls in the Viewer with tape controls.



Render or Edit to Tape modes

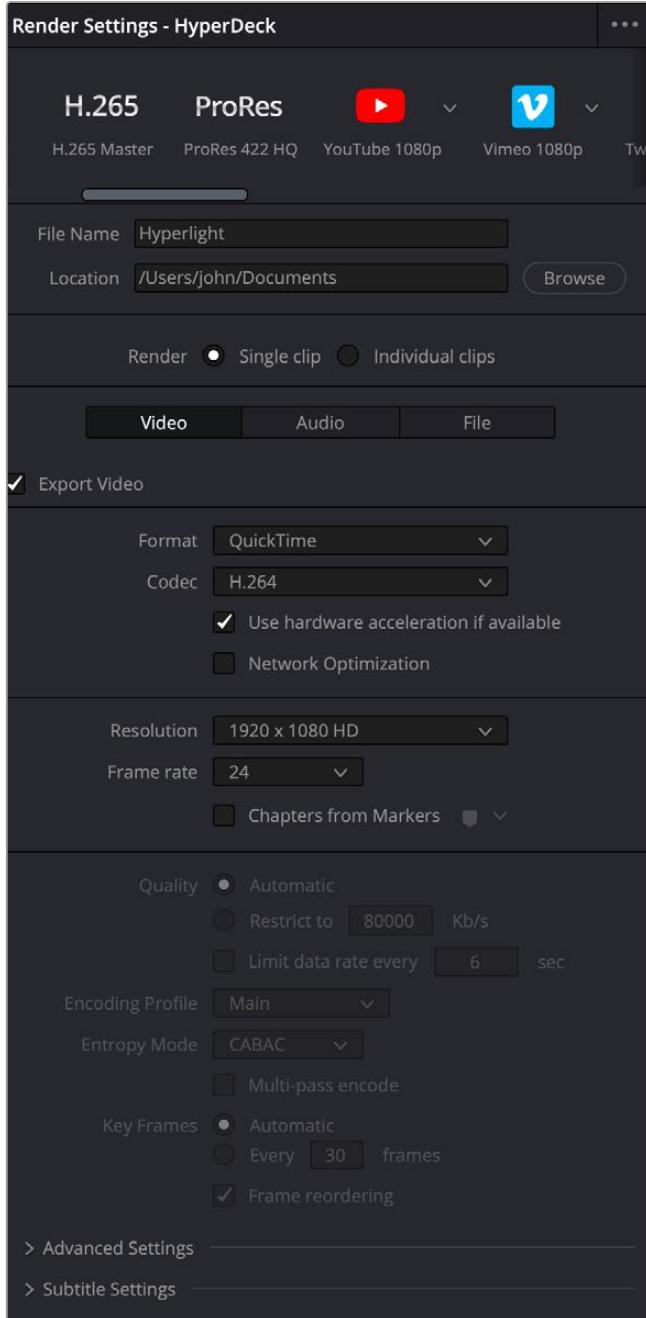
## The Render Settings

The Render Settings contains the customizable settings that determine how media is rendered out of DaVinci Resolve. If you're using the Tape option, these settings are disabled.

The Render Settings are divided into four general sections:

- **Render Presets:** At the very top, a scrollable row of icons lets you choose one of a series of presets to quickly set up the type of render you want. The Custom option exposes all render settings so you can set up a render manually.
- **Render Location:** A Browse button opens a dialog that lets you choose a volume and directory to render to.
- **Render:** Two options let you either render the entire selected area of the Timeline as a single clip suitable for reviewing or mastering, or as a series of individual clips more suited to round-trip workflows. The option you choose here changes which render settings are available below.
- **Video, Audio, and File Render Settings Panels:** All other render settings are divided among three panels. Checkboxes at the top of the Video and Audio panels let you selectively disable video export (if you want to export the audio only) or disable audio export (if you want to export video only).

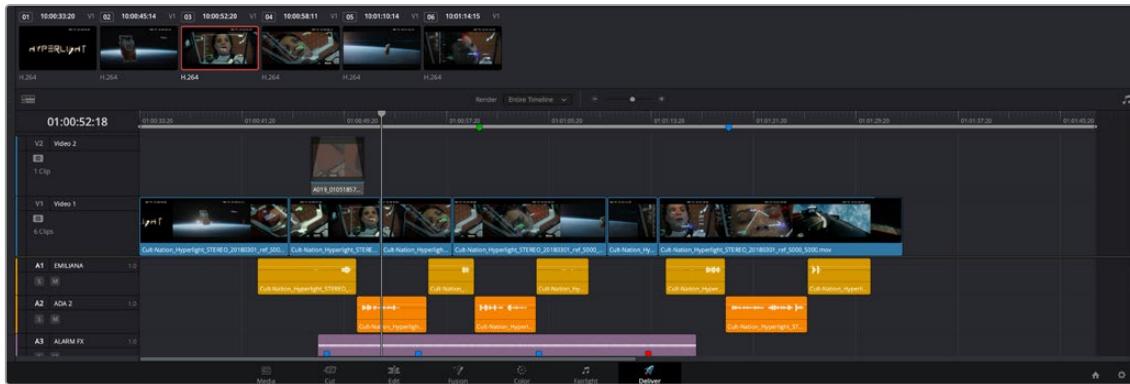
For more information on all of these settings, see *Chapter 184, "Rendering Media."*



Render Settings

## The Deliver Page Timeline

You'll use the Timeline in the Deliver page to define the range of clips you want to render or output to tape, and to choose which versions for each clip you want to output. The Deliver page Timeline consists of a Thumbnail timeline at top (that can be shown or hidden via the Clips button) that makes it easy to select individual clips or ranges of clips that you need to render, and a more ordinary timeline below that you can use to set In and Out points for rendering arbitrary regions of your program. A Timeline toolbar lets you choose the render range of the Timeline, and has controls for customizing the look of the Timeline, and for zooming in and out.

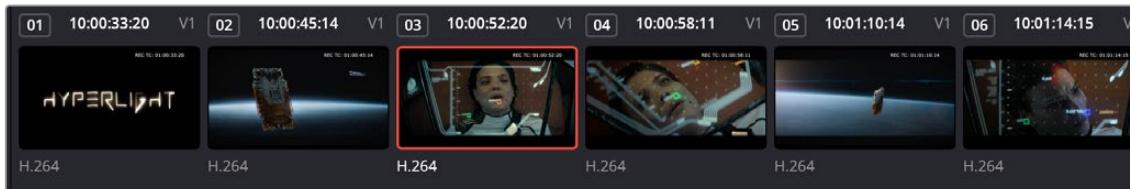


The Deliver page's Timeline and Thumbnail timeline

**TIP:** Press Shift-Z to fit the entire program into the available width of the Timeline.

## Filtering the Thumbnail Timeline

The Deliver page Thumbnail timeline also has the Timeline Filter drop-down, available to the right of the Clips button in the Interface toolbar.



The Deliver page's Thumbnail timeline matches the Color page

Using this drop-down to filter the contents of the Timeline lets you restrict the range of media you want to output in different ways. For example, if you've already rendered a timeline, but you've since made some changes, you can use one of the "Modified Clips" options to display only the clips that have changed within a particular timeframe. Another commonly used option is to choose "Unrendered Clips" to isolate all clips that have not yet been rendered in workflows where you're only rendering a part of the Timeline at a time.

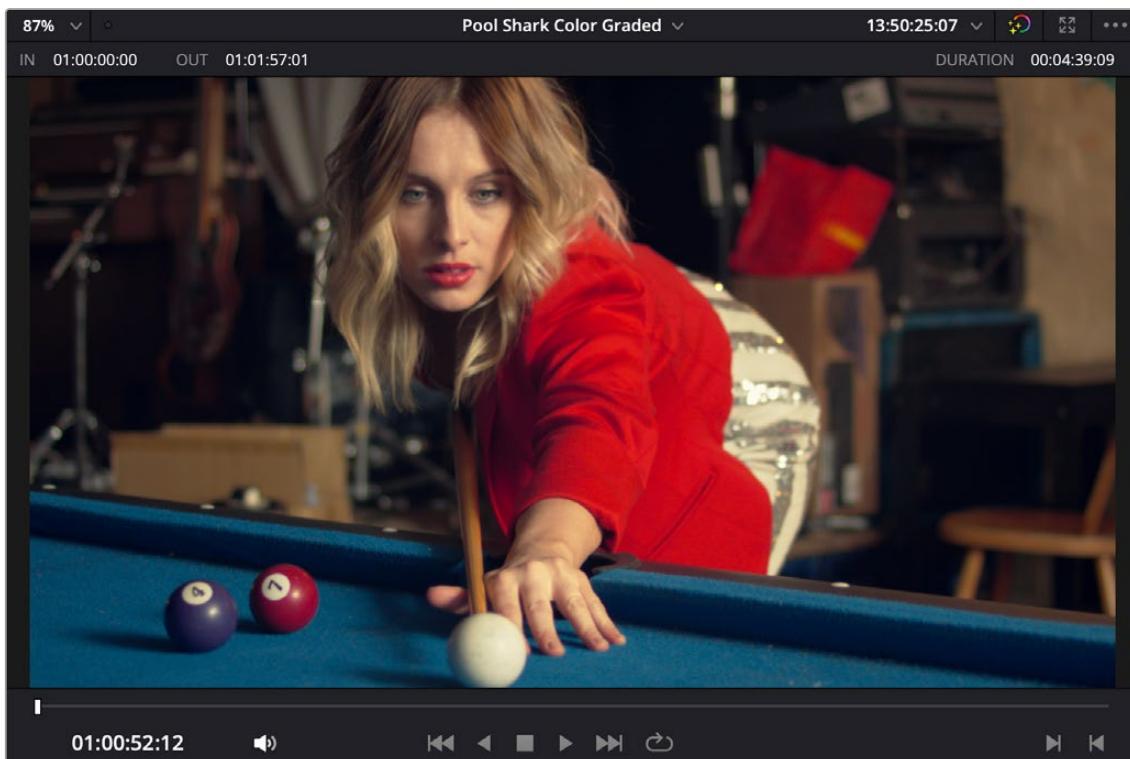
When you filter the Thumbnail timeline, you can only set up jobs to render in Individual Clips mode. You can tell if Thumbnail filtering is enabled by an orange underline under the Clips button in the UI toolbar.



An orange line under the Clips button shows that filtering is enabled

# The Viewer

When rendering file-based media, the Viewer shows you exactly how the media being output will look using the current settings, and the transport controls move the playhead throughout the current Timeline. Audio playback can be turned on or off by clicking on the speaker icon, or adjust the level by right-clicking on the speaker icon and dragging the slider.



[Deliver page Viewer](#)

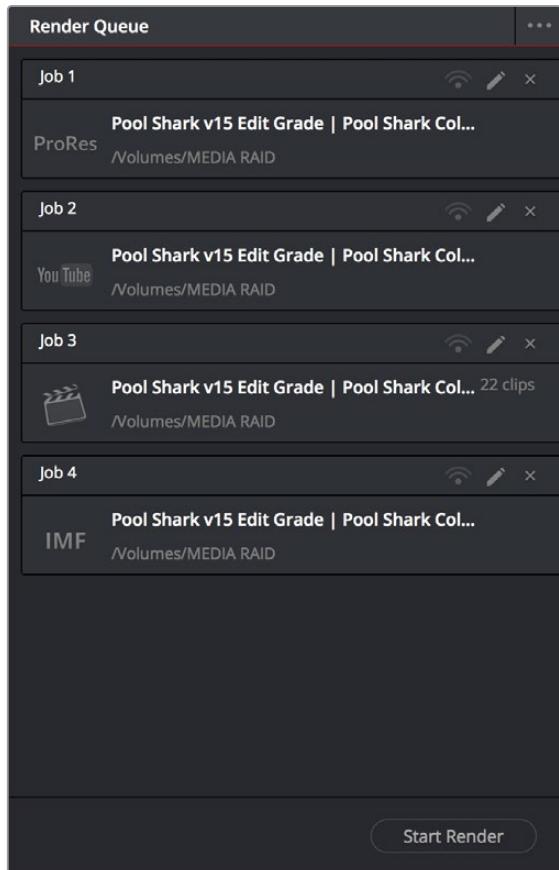
When outputting to tape, the Viewer shows you the tape output so you can set up insert or assembly edit points, and the transport controls move the tape in the deck if device control is enabled. You can also put the Viewer into Cinema Viewer mode by choosing Workspace > Viewer Mode > Cinema Viewer (P), so that it fills the entire screen. This command toggles Cinema Viewer mode on and off.

## Disabling Viewer Updates While Rendering

An **Updates During Renders** submenu in the Render page **Viewer** option menu lets you choose to disable, minimize, or enable Viewer updates while a program is being rendered. Disabled or minimized Viewer updates will speed rendering, especially on slower workstations.

# The Render Queue

The Render Queue is a list of all the jobs you've queued up for delivery. Each job can have an individualized range of clips and render settings, which you can use to render multiple sections or clips of a timeline, the same timeline output to multiple formats, or multiple timelines.



The Render Queue displays all jobs

The Render Queue also has the option to show either just the jobs within the current project, or jobs queued up and saved within all projects in the currently open SQL network project library (for the current user) or local project library (at the currently selected disk location). This can be exceptionally useful in situations where you've broken a program into multiple reels, with each reel being a different project. This can be turned on and off via the "Show All Projects" option of the Render Queue Option menu.

Jobs in the Render Queue can be edited (by clicking the pencil button), they can be assigned to remote rendering workstations, and they can be deleted. Jobs that have already been rendered can be kept in the Render Queue and re-rendered at a later time.

**TIP:** There is an option to show the Render Settings of each item in the Render Queue, by selecting "Show Job Details" in the Render Queue Option menu. This provides specific details of each job's dimensions, frame rate, codec etc. This is a great help in managing a complex render queue at a glance.

# Rendering Media

This section describes the options that are available for file-based delivery.

The workflow is simple; you define the format and other settings that dictate how the media is to be rendered, define a range of clips in the currently selected session, and then add a job containing these settings to the Render Queue.

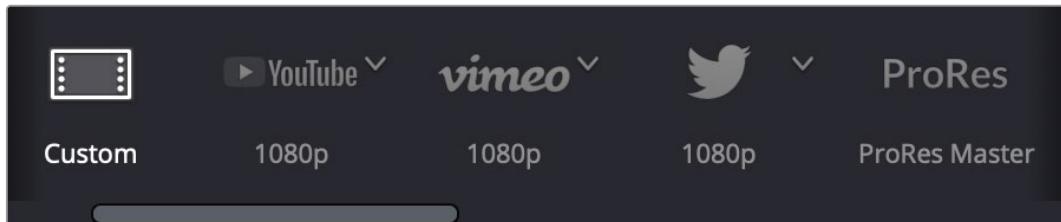
You can queue up as many different render jobs as you like, each with different formats, output options, and ranges of clips, depending on what you're trying to accomplish. When you're ready to render, simply click the Start Render button.

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# Using Presets for Fast Rendering

The very top of the Render Settings list has a set of presets for many of the most common rendering workflows you'll need to accomplish. If you want to create your very own settings, then choose custom. Each preset automatically sets up what you need and locks you out of settings that are not necessary for rendering that type of media.



Render presets selection

## Custom

When custom is selected, nothing is automatically set, and all conventional media rendering options are available, except for those that are specifically associated with particular presets. You must manually choose the settings and options you need. All Render settings are saved on a per-project basis.

## Social Media Presets

These presets let you render media specifically for video sharing services, with the option to upload the rendered files automatically.

### YouTube 720p/1080p/1440p/2160p

A drop-down menu lets you choose four different resolutions to render to and selects the appropriate settings for exporting your program as a file suitable for uploading to YouTube and many other video file sharing services. The preset renders a single clip at the timeline's frame rate and sets the following parameters:

- **Format:** MP4
- **Video Codec:** H.264
- **Encoding Profile:** High
- **Audio:** Bus 1
- **Audio Codec:** AAC
- **Data burn-in:** Same as Project
- **Use Proxy Media:** Lets your final render use the proxy media instead of the original source camera files. Useful if speed is more important than quality.
- **Upload directly to YouTube:** When this box is checked, the resulting render will automatically upload to your YouTube account, and the following parameters will become available. If you have multiple YouTube Channels on your account, you can select which channel to upload to.
  - Title:** Enter the title of your video.
  - Description:** Enter a description of your video.

**Chapters from Markers:** Checking this box embeds chapter points in the YouTube video corresponding to the selected marker color and the marker's position on the Timeline.

**Upload Thumbnail:** Checking this box will open a file browser, allowing you to select a still image that will become the thumbnail image for your video on YouTube.

**Visibility:** You can change how your video will be accessible on YouTube.

**Category:** You can select your video's YouTube category.

## Vimeo 720p/1080p/2160p

A drop-down menu lets you choose three different resolutions to render to and selects the appropriate settings for exporting your program as a file suitable for uploading to Vimeo and many other video file sharing services. The preset renders a single clip at the timeline's frame rate and sets the following parameters:

- **Format:** MP4
- **Video Codec:** H.264
- **Encoding Profile:** Auto
- **Audio:** Bus 1
- **Audio Codec:** AAC
- **Data burn-in:** Same as Project
- **Use Proxy Media:** Lets your final render use the proxy media instead of the original source camera files. Useful if speed is more important than quality.
- **Upload directly to Vimeo:** When this box is checked, the resulting render will automatically upload to your Vimeo account, and the following parameters will become available.
  - Title:** Enter the title of your video.
  - Description:** Enter a description of your video.
  - Visible To:** You can change how your video will be accessible on Vimeo, including password protection.

## Twitter 720p/1080p

A drop-down menu lets you choose three different resolutions to render to and selects the appropriate settings for exporting your program as a file suitable for uploading to Twitter and many other video file sharing services. The preset renders a single clip at the timeline's frame rate and sets the following parameters:

- **Format:** MP4
- **Video Codec:** H.264
- **Encoding Profile:** Auto
- **Audio:** Bus 1
- **Audio Codec:** AAC
- **Data burn-in:** Same as Project
- **Use Proxy Media:** Lets your final render use the proxy media instead of the original source camera files. Useful if speed is more important than quality.
- **Upload directly to Twitter:** When this box is checked, the resulting render will automatically upload to your Twitter feed, and the following parameter will become available.
  - Description:** Enter text to be added to your video.

## TikTok Deliver Page Preset

A drop-down menu lets you choose two different resolutions to render to and selects the appropriate settings for exporting your program as a file suitable for uploading to TikTok and many other video file sharing services. The preset renders a single clip and sets the following parameters:

- **Resolution:** 1920x1080 HD
- **Use Vertical Resolution:** Unchecked. Check this box if you want to deliver your video in portrait mode for proper display on phones. This should be on for TikTok.
- **Frame rate:** The chosen frame rate of your timeline. You can also override this and set another frame rate manually.
- **Format:** MP4
- **Video Codec:** H.264
- **Encoding Profile:** Auto
- **Audio:** Bus 1
- **Audio Codec:** AAC
- **Data burn-in:** Same as Project
- **Use Proxy Media:** Lets your final render use the proxy media instead of the original source camera files. Useful if speed is more important than quality.
- **Upload directly to TikTok:** When this box is checked, the resulting render will automatically upload to your TikTok account, and the following parameters will become available.
  - Title:** Enter the title of your video.
  - Visible To:** Lets you choose who will be able to view this video. The options are Private, Public, and Friends.
  - Allow comments:** Checking this box allows commenting on your TikTok video. Un-checking this box forbids comments on your video.
  - Allow Duet:** Checking this box will allow your video to be used side-by-side with a video from another creator in TikTok using the Duet function.
  - Allow Stitch:** Checking this box will allow your video to be edited and combined with a video from another creator in TikTok using the Stitch function.

## Presentations Preset

This setting lets you flag and format timelines to be used with Presentations in Blackmagic Cloud. Unlike other presets, there are no codec settings to choose from. This setting simply adds the metadata necessary for Presentations to share your timeline. You must have already created a Presentation in Blackmagic Cloud before you can use this setting.

- **File Name:** Choose the name of the timeline to be uploaded to Presentations.
- **Upload To:** Choose the name of the existing Blackmagic Cloud Presentation to upload to.
- **Use Proxy Media:** Use the Proxy Media as the source for the compression and upload to Blackmagic Cloud rather than the original media.

## Dropbox or Dropbox Replay 720p/1080p/2160p

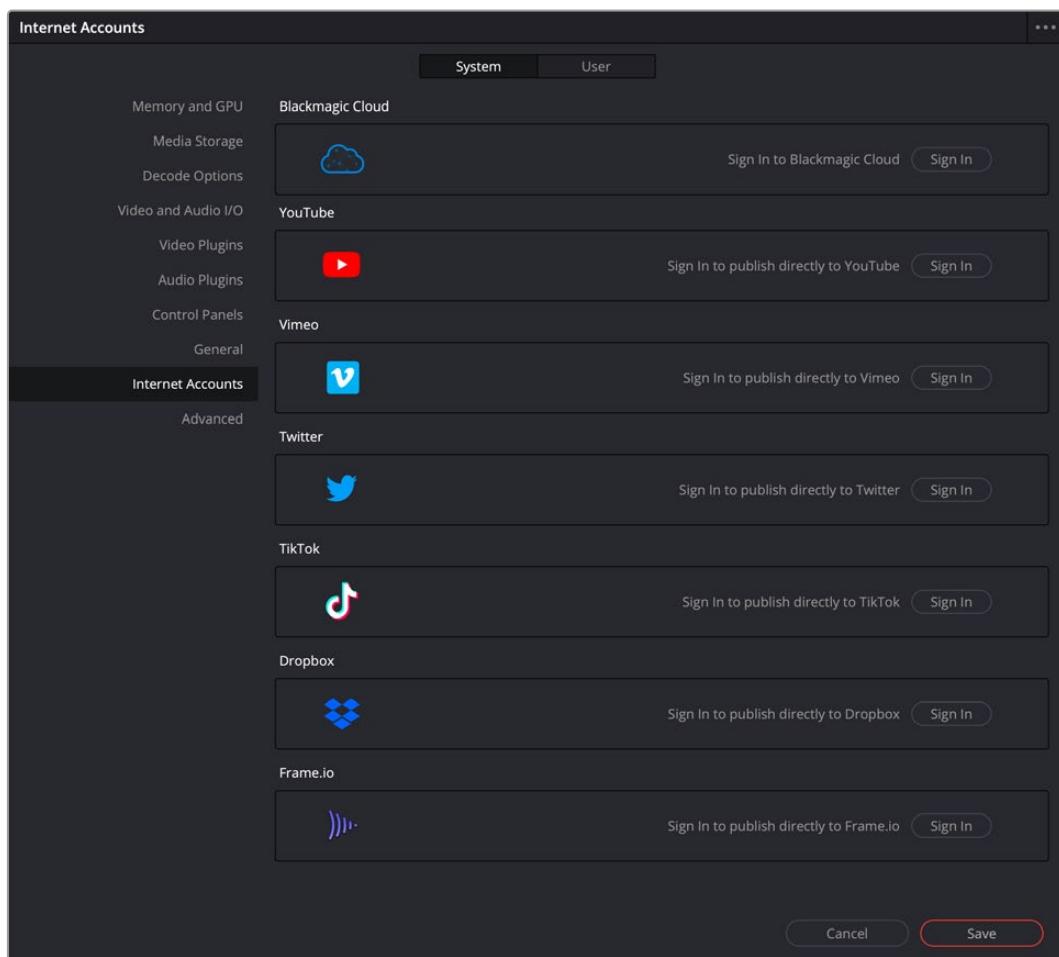
A drop-down menu lets you choose three different resolutions to render to and selects the appropriate settings for exporting your program as a file suitable for uploading to Dropbox and many other video file sharing services.

The preset renders a single clip at the timeline's frame rate and sets the following parameters:

- **Format:** MP4
- **Video Codec:** H.264
- **Encoding Profile:** Auto
- **Audio:** Bus 1
- **Audio Codec:** AAC
- **Data burn-in:** Same as Project
- **Use Proxy Media:** Lets your final render use the proxy media instead of the original source camera files. Useful if speed is more important than quality.
- **Upload directly to Dropbox:** When this box is checked, the resulting render will automatically upload to your Dropbox account.

## Setting Up Video Sharing Uploads

DaVinci Resolve has account integration with YouTube, Vimeo, Twitter, TikTok, Dropbox, and Frame.io that allows you to render and upload directly to each service. An Internet Accounts panel in the System tab of the DaVinci Resolve Preferences lets you sign into your YouTube, Vimeo, Twitter, Dropbox, and Frame.io accounts, as well as specify a local cache location for media being synced with Frame.io.



The Internet Accounts panel of the System tab of the DaVinci Resolve Preferences window

For each service you sign into, a floating window presents the interface in which you'll need to enter your login name and password to enable integration, followed by whatever two-factor identification and other required steps are necessary. Once entered, DaVinci Resolve will sign in to each of these services automatically when DaVinci Resolve opens.

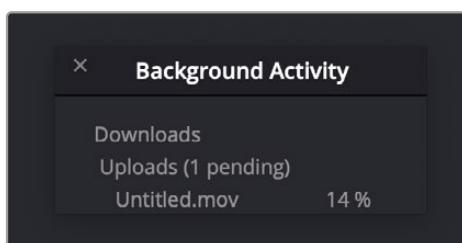
For each service you sign into, the service's upload parameters will also be available in the Custom Export Video settings in the Deliver page. This allows you to create your own custom file settings that can supersede the normal formats allowed by the service presets, while allowing you the convenience of the all-in-one uploading and description entry of the preset.

**NOTE:** For Frame.io, the local cache location is used to store clips you import into a DaVinci Resolve project from the Frame.io volume in the Media Storage panel of the Media page.

## Deliver and Upload to Social Media

When you've configured YouTube, Vimeo, Twitter, TikTok or Dropbox access in the Internet Accounts panel of the System Preferences, the YouTube, Vimeo, Twitter, and Dropbox presets expose an "Upload directly to YouTube/Vimeo/Twitter/TikTok/Dropbox" checkbox, which lets you choose whether or not to automatically upload the rendered result..

Choose the desired export options, then click the Add to Render Queue button to add this job to the Render Queue as you would with any other export. When that job is rendered, it automatically proceeds to upload to the selected video sharing service, and an upload percentage indicator appears in the job listing to show how far along this upload is. This upload is done in the background, so you can continue working on other things in DaVinci Resolve while the file uploads. If you want to see how long the upload will take on any other page, you can choose Workspace > Background Activity to see the Background Activity window.



Waiting for your movie to upload

Once the upload is finished, you can view the file directly on the social media site in a web browser by right-clicking on the job in the Render Queue and selecting Reveal in Browser.

## Review Before Upload

For an extra level of quality control before you send your video out live on the internet, you can select Review Before Upload from the Render Queue option menu. This option will pause the automatic upload process after the file has been rendered with a message, "Waiting for Upload." You can then right-click on the job in the Render Queue, and select Reveal in Finder to open and review your video. Once you've made your decision, from that same menu, you can select either Upload to (service name) to let your video go, or Cancel Upload if you've had second thoughts.

## ProRes Master

For quickly outputting ProRes Master files of a whole program. When selected, defaults to rendering in single clip mode, with the Format set to QuickTime, the Codec set to Apple ProRes, and the Type set to Apple ProRes 422 HQ. Audio defaults to the Codec being Linear PCM and the Bit Depth being 16.

## H.264 Master

For outputting H.264 files of a whole program. When selected, defaults to rendering in single clip mode, with the Format set to QuickTime, and the Codec set to H.264. Quality, Encoding Profile, and Entropy Mode are set to Auto, Passes defaults to Single, and Key Frames default to Automatic with Frame Reordering turned on. Audio defaults to the Codec being AAC with the Data Rate set to 320 Kb/s and the Bit Depth set to 16.

## H.265 Master

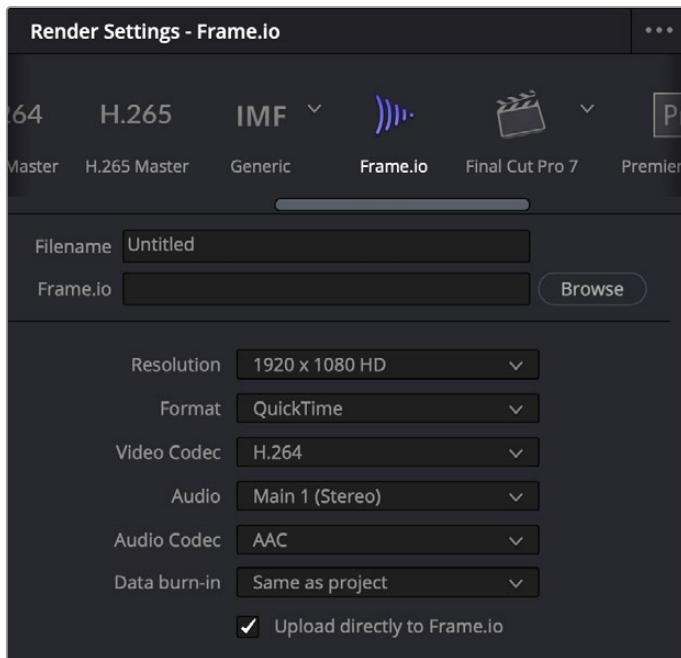
For outputting H.265 files of a whole program. When selected, defaults to rendering in single clip mode, with the Format set to QuickTime, and the Codec set to H.265. Quality is set to Automatic, Encoding Profile is set to Main, Passes defaults to Single, and Key Frames default to Automatic with Frame Reordering turned on. Audio defaults to the Codec being AAC with the Data Rate set to 320 Kb/s and the Bit Depth set to 16.

## IMF (Studio Version Only)

A drop-down menu to the right of this preset provides options for Generic, 20th Century Fox, and Netflix-qualified presets. This preset is for facilities that deliver IMF files as digital-only deliverables. A Preset Type drop-down lets you choose the appropriate settings to populate the various locked IMF-specific parameters that appear.

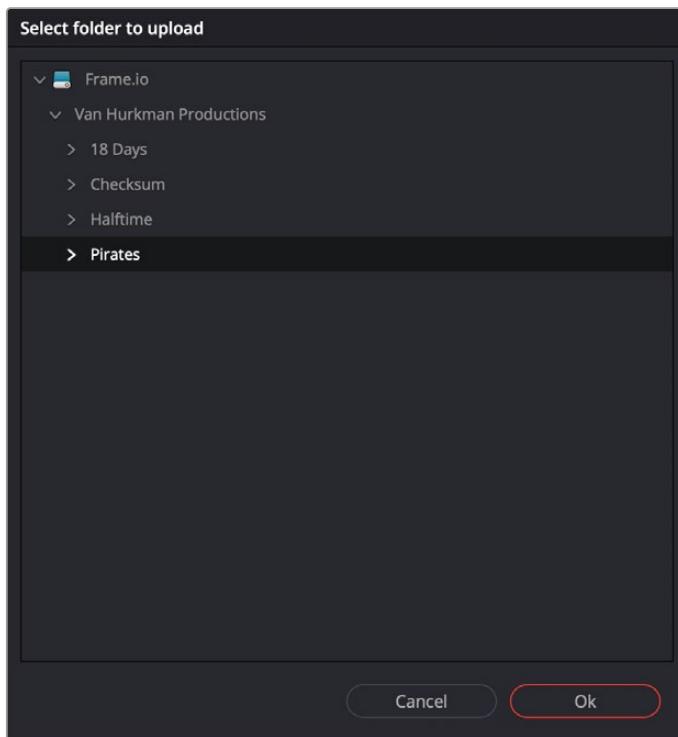
## Frame.io

A Frame.io preset at the top of the Deliver page's Render Settings panel lets you render and upload a program for review. All options in the Render Settings panel update to present suitable controls for this process. At the bottom of the Render Settings list, an "Upload directly to Frame.io" checkbox lets you choose whether or not to upload the rendered result. A Description field lets you add a description to be uploaded along with the rendered media.



Choosing the Frame.io preset

When you choose the Frame.io preset, the Location field turns into a Frame.io field, and the Browse button lets you choose a project and folder path to which to upload the exported result.



Choosing a Frame.io account to deliver a program to

When you export to Frame.io, the available choices in the Resolution, Format, Video Codec, and Type drop-down menus are limited to those that are most suitable for Frame.io file sharing. Choose the desired export options, then click the Add to Render Queue button to add this job to the Render Queue as you would with any other export. When that job is rendered, it automatically proceeds to upload to Frame.io, and an upload percentage indicator appears in the job listing to show how far along this upload is. This upload is done in the background, so you can continue

working on other things in DaVinci Resolve while the file uploads. If you want to see how long the upload will take on any other page, you can choose Workspace > Background Activity to see the Background Activity window.

For more information about Frame.io integration, see *Chapter 13, “Frame.io and Dropbox Replay Integration.”*

## Final Cut Pro 7 or X XML

A drop-down menu attached to this preset lets you choose from two different XML formats to be exported along with the media you’re rendering:

- Selects the appropriate settings for projects that were sent from Final Cut Pro 7 to DaVinci Resolve using XML. This is meant for situations when you’re rendering media intended for a return trip to Final Cut Pro (by exporting an XML file from the Edit page). Renders Individual Clips, the “Codec” setting on macOS, defaults to Apple ProRes 422 (HQ), Output Size defaults to the current Timeline Resolution (as set in the Master Settings panel of the Project Settings), and Use Unique Filenames is turned on.

When you choose this preset, an XML of the timeline is automatically exported along with the media, with path names that reflect the rendered clips.

- Selects the appropriate settings for projects that were sent from Final Cut Pro X to DaVinci Resolve using XML. This is meant for situations when you’re rendering media intended for a return trip to Final Cut Pro X (by exporting an FCPXML file from the Edit page). Renders Individual Clips, the “Codec” setting on macOS, defaults to Apple ProRes 422 (HQ), Output Size defaults to the current Timeline Resolution (as set in the Master Settings panel of the Project Settings), and Use Unique Filenames is turned on.

When you choose this preset, an XML of the timeline is automatically exported along with the media, with path names that reflect the rendered clips.

## Premiere XML

Selects the appropriate settings for projects that were sent from Premiere Pro to DaVinci Resolve using XML. This is meant for situations when you’re rendering media intended for a return trip to Premiere Pro. Renders Individual Clips, the “Codec” setting on macOS defaults to Apple ProRes 422 (HQ), Output Size defaults to the current Timeline Resolution (as set in the Master Settings panel of the Project Settings), and Use Unique Filenames is turned on.

When you choose this preset, an XML of the rendered timeline is automatically exported along with the media, with path names that reflect the rendered clips.

## Avid AAF

Selects the appropriate settings for projects that were sent from Avid Media Composer or Symphony to DaVinci Resolve using AAF. This setting is NOT for exporting to Pro Tools. This is meant for situations when you’re rendering media intended for a return trip to Media Composer (by exporting an AAF file from the Edit page). The “Codec” setting defaults to DNxHR 444 12 bit, Output Size defaults to the current Timeline Resolution (as set in the Master Settings panel of the Project Settings), and Render Clip with Unique Filename is turned on.

When you choose this preset, an AAF of the timeline is automatically exported along with the media, with path names that reflect the rendered clips.

## Pro Tools

As of DaVinci Resolve version 16, Pro Tools export has been dramatically improved. This preset presents the appropriate options for exporting a specifically formatted AAF project file, linked audio files, and a linked reference video file to Pro Tools, or any application capable of importing a Pro Tools formatted AAF file.

When exporting using the Pro Tools preset, you must use the AAF file that's automatically created and written to the target location, because it's formatted specially for Pro Tools and it contains path names reflecting the rendered clips. Do not export an AAF using the File > Export AAF/XML command, as this will not provide the correct exchange file for Pro Tools, and it won't work correctly.

When you use the Pro Tools preset, DaVinci Resolve outputs the following:

- 1 What you choose in the Codec drop-down menu of the Audio panel dictates whether you export the audio from the Timeline as a collection of files that link to a separate AAF, or an AAF with audio file embedded within as a single deliverable.
  - Choose Linear PCM to export individual files linked to a separate AAF interchange file
  - Choose Embedded in AAF to export an AAF with embedded Broadcast WAV audio files within it as a single deliverable

Whether you export separate files or a single embedded AAF deliverable, each of the audio clips in the current Timeline can be exported as individual mono or multichannel audio files. The standard mono round trip export from DaVinci Resolve to Pro Tools is the default setting, with the "Render one track per channel" box checked in the Audio tab of the Pro Tools Render Setting. With this option, a 5.1 polyphonic .wav file would be exported as six individual mono .wav files.

If the "Render one track per channel" box is unchecked, DaVinci Resolve will output multichannel polyphonic .wav files instead. If you do this, it's important to check in advance that Pro Tools supports the particular multi-channel formats you want to export before committing to this workflow.

Each exported file contains every audio channel from the source media, regardless of channels that have been muted in the audio panel of Clip Attributes. This means no matter how the video editor organized the channels of audio in the Timeline, you'll always deliver every channel of each audio clip to whomever is doing your audio postproduction.

- 2 You can also choose to include handles using the "Add X frame handles" option in the Advanced Settings of the Video panel to add extra frames to the beginning and end of each exported audio clip. This will provide needed editing flexibility to whomever is refining your audio.
- 3 The type of audio file that's exported is determined by your choice of video format in the Video panel:
  - If you choose the MXF OP-Atom video format, then MXF audio files will be exported.
  - If you choose the QuickTime format, then Broadcast Wave files will be exported.
- 4 All video in your timeline will be rendered and output as a single reference movie, in the format that's selected in the Video panel, with all effects and titles baked in. Subtitles can also be burned into the reference movie or exported as a file. If you want to provide a window burn, you can enable visible metadata using the Workspace > Data Burn-In window. If you do not wish to export a reference movie, you can uncheck the Export Video box in the Video panel.

When you output using the Pro Tools preset, an AAF of the audio tracks of the current Timeline is exported that's formatted for import into Pro Tools, or any other digital audio workstation (DAW) software that's compatible with the Pro Tools style of AAF import.

- Exported audio files have the file name and timecode of the source media they were extracted from, to enable relinking to the source media in Pro Tools, if necessary. In the case of Video+Audio files that have been synced in DaVinci Resolve, exported audio files are given the timecode and name of the synced audio source file, not that of the video clip.
- Each audio track exports whatever custom name you may have given it, for use by Pro Tools.
- All track and clip volume automation is exported, with all keyframes.
- iXML metadata is also exported, including channel names when available.

**IMPORTANT:** When you export to Pro Tools in the Deliver page, audio effects are neither exported nor baked in, which means that FairlightFX, EQ, Compression, Pitch, and Elastic Wave effects will be ignored. If you are experiencing problems with imported AAF files, check to see if there are audio effects or audio compound clips in the Timeline, and replace any you find with duplicates of the same audio clips that have no effects.

## Audio Only

This preset is specifically for rendering an audio-only media file from the Timeline. Video rendering is disabled, and this preset defaults to rendering the Main 1 bus as a single clip, rendering one track per channel using the MXF OP-Atom format set to the Linear PCM codec, at 16-bits. However, the QuickTime, MP4, and WAV formats are also available, and you can also render 24- or 32-bit output. Additionally, you have the option to render other Mains or Submixes, or to choose a specific Timeline Track to render. Finally, you can choose to render the current program as Individual Clips.

## Creating and Using Your Own Presets

If there is a particular group of settings that you find yourself using repeatedly, you can turn it into a custom Easy Setup, for easy recall.

### To create a new Easy Setup:

- 1 If you want to start from scratch, make sure to choose Custom from the preset panel to unlock every setting in the Render Settings pane.
- 2 Choose the particular settings you require in the Video, Audio, and File panels for your new preset.
- 3 Open the Render Settings Options menu, and choose Save as New Preset.
- 4 Type a name into the “Render Preset” dialog, and click Save. The new preset now appears in the Preset panel.

### To load a preset:

- Click any preset. Every setting in the Render Settings pane updates to reflect the preset you selected.

### To change a custom preset that you've created

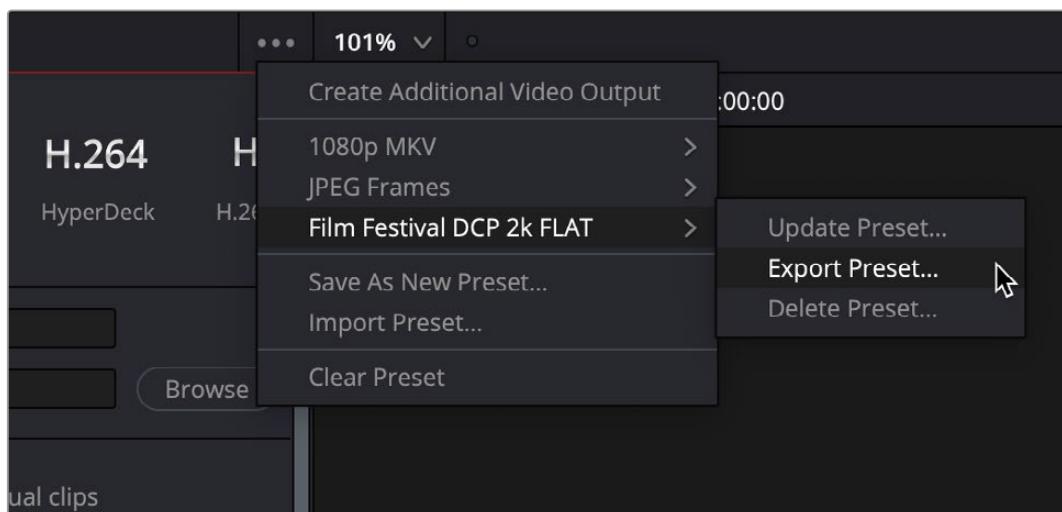
- Click a preset you want to change, make whatever changes you need to in the Video, Audio, and File panels, then click the Render Settings Option menu, and choose Update Current Preset.

### To delete a custom preset that you've created:

- Click a preset you want to delete, then click the Render Settings Option menu, and choose Delete Current Preset.

## Import and Export Custom Presets

Custom render presets that you create can be imported and exported from the Deliver page. Presets are saved in .xml files that can be easily sent to other users or workstations to ensure the exact same delivery methods are used between machines. In addition, any newly created export presets are available in the “Add to Render Queue Using” menu when you right-click a timeline.



Render presets can now be imported and exported from the Deliver page.

### To save a custom render preset:

- 1 In the Deliver page, adjust the Video, Audio, and File options in the Render Settings to your needs.
- 2 In the Render Settings Option (3-dot) menu, select Save as New Preset.
- 3 Enter a name for the new preset, and press OK.

The new preset will be available in the Render Settings Option menu, as well as an option in the Custom Preset Settings icon in the Render Presets row at the top of the Render Settings.

### To export a custom render preset:

- 1 In the Deliver page, click on the Render Settings Option (3-dot) menu.
- 2 Select the name of the saved preset you wish to export.
- 3 Select Export Preset from the drop-down menu.
- 4 Use the file browser to name and set the save location of the preset.

The new preset will be available as an .xml file.

### To import a custom render preset:

- 1 In the Deliver page, click on the Render Settings Option (3-dot) menu.
- 2 Select Import Preset from the drop-down menu.
- 3 Select the Render Setting .xml file in your file browser.
- 4 Press Open.

The imported preset will be available in the Render Settings Option menu, as well as an option in the Custom Preset Settings icon in the Render Presets row at the top of the Render Settings.

### To update a custom render preset with new settings:

- 1 Make any changes you wish to the Video, Audio or File Render Settings.
- 2 In the Deliver page, click on the Render Settings Option (3-dot) menu.
- 3 Select the name of the saved preset you wish to update.
- 4 Select Update Preset from the drop-down menu.
- 5 Press the Update Button from the warning dialog. This action can not be undone.

The selected preset will be updated with the new settings you selected.

### To delete a custom render preset:

- 1 In the Deliver page, click on the Render Settings Option (3-dot) menu.
- 2 Select the name of the saved preset you wish to delete.
- 3 Select Delete Preset from the dropdown menu.
- 4 Press the Delete Button from the warning dialog. This action can not be undone.

The selected preset will be permanently deleted from the Render Presets list.

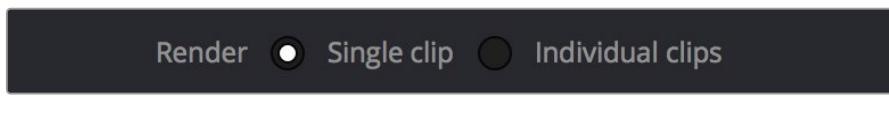
## Choosing a Location to Render

The first decision you have to make when rendering your output is where it's going to be rendered. Accordingly, this is the first set of controls appearing at the top of the Render Settings parameters.

- **Filename:** A preview of what the file name will be based on the settings found in the File panel described later. The Custom/Timeline name and File suffix fields, as well as the "Use x digits in the filename" settings all determine what name appears here. The editable portions of this filename preview can also be edited here.
- **Location:** Click the Browse button to choose a directory in which to write the media being output by DaVinci Resolve. After you've selected a directory, the path name appears in the "Render job to" field.

# Single Clip vs. Individual Clips

While there are numerous options available in the Render Settings of the Deliver page, there are basically two overarching ways you can render your project, depending on which of the “Render” radio buttons you click in the Output group.



## Single Clip

When you select the Single clip option, you’re setting up a render wherein all clips in the session are output together, as a single media file in whatever format you choose. This means you’ll be rendering the selected range of the session to a single MXF or QuickTime file, or as a single collection of image sequences.

- **Timecode:** The timecode that’s written out is dictated by the “Start timeline timecode at” setting of the timeline being rendered. Media files contain a continuous timecode track, while image sequences have timecode written into each frame’s data header, and integrated into the file name (as a frame count).
- **Frame Rate:** If you’re rendering a project that uses mixed frame rates, rendering to a single clip converts every clip in the entire session to the project frame rate, using either the project-wide or clip specific “Retime process” setting.
- **Effects:** Most effects are “baked into” the rendered output when you render a single clip.

**IMPORTANT:** Whenever clip filtering is enabled (via the drop-down menu to the right of the Clips button), Single Clip rendering cannot be selected. You can see if clip filtering is enabled by an orange line underneath the Clips button in the UI toolbar.

## Individual Clips

Selecting the Individual clips option sets up a render where each clip is rendered as an individual media file in whichever format you choose. The result will be a collection of as many media files as there are clips in the range you’ve selected to render.

- **Timecode:** The timecode written to each clip is cloned from the original source media, making it easy to reformat media for projects being passed between DaVinci Resolve and NLEs.
- **Frame Rate:** If you’re rendering a project that uses mixed frame rates, rendering to source renders each clip at its own individual frame rate, to accommodate round-trip workflows.
- **Effects:** You can choose whether any timeline-based effects are either ignored or “baked into” the individual clips by checking/unchecking the Render Timeline Effects box.
- **Resolution:** You can choose whether the individual clips are rendered at the timeline size or their original source resolution by checking/unchecking the Render at Source Resolution box.

# All Other Render Settings for Output

This section covers the different render settings that are available for customizing your output. Depending on which Render Setting mode you chose, some of these may be hidden, but this section covers the full list found in the Advanced panel of controls.

If you choose one of the Easy Setups, then some of these settings will be locked, and others will be editable, depending on the requirements of that setup. If none of the Easy Setups is suitable for the task at hand, you can leave the Easy Setup drop-down menu set to none, and manually choose the necessary settings for the task at hand.

## Video Panel

This panel contains all video-oriented parameters.

### Format and Codec Controls

These top-level parameters let you choose whether or not to render video, and which format to render it to. Depending on which Format, Codec, and Type you choose, other options may or may not appear.

- **Export Video:** Turn this checkbox on to render the source video. Turn this checkbox off if you want to render the source audio all by itself; this disables all video controls, and shows an Audio Format drop-down menu in the audio section of settings.
- **Format:** A drop-down menu that gives access to the container formats that are currently available on your system. The available options depend on whether you have Final Cut Pro and QuickTime installed, and on the operating system you’re using. This list is constantly growing, as new file formats are added over time, so be sure to check each new version for the latest supported formats.
- AVI:** A now-deprecated file-based media format that, despite its age, remains popular with Windows applications. Supports delivery using the Cineform, Grass Valley HQ and HQX, and Uncompressed RGB and YUV codecs.
- Cineon:** An older uncompressed image sequence format developed by Kodak, designed for film scanning and digital mastering, which delivers RGB 10-bit.
- DCP:** Native DCP encoding and decoding for creating unencoded DCP files only. If you have a license for Fraunhofer’s EasyDCP, a setting in the Configuration panel of the System Preferences enables you to choose whether to use EasyDCP (for creating encrypted DCP output), or the native DaVinci Resolve encoding.
- DPX:** An uncompressed image sequence format favored by the film industry for mastering and delivery for DCDM mastering, which can be delivered as RGB 10-, 12-, 16-bit integer and half float, or RGBA 8-bit.
- easyDCP:** (when installed) An option that allows you to master a DCP or IMF directly from DaVinci Resolve in conjunction when you have an installed license of Fraunhofer’s EasyDCP software.

**EXR:** The OpenEXR format is a high-dynamic-range image sequence format developed by ILM for applications requiring high quality and multiple channels. Used for outputting ACES and HDR deliverables. You can deliver to a variety of RGB Half and RGB Float settings. When choosing the RGB half (DWAA) or (DWAB) compression codecs, an additional "Compression level" setting appears that lets you choose how much compression to apply.

**IMF:** A native IMF encoding option that lets you export to the SMPTE ST.2067 Interoperable Master Format (IMF) for tapeless deliverables to networks and distributors, with support for encoding of JPEG2000 using a library licensed from Kakadu software. No additional licenses or plugins are required to output to IMF. The IMF format supports multiple tracks of video, multiple tracks of audio, and multiple subtitle and closed caption tracks, all of which are meant to accommodate multiple output formats and languages from a single deliverable. This is done by wrapping a timeline's different video and audio tracks (media essences) and subtitle tracks (data essences) into a "composition" within the Material eXchange Format (MXF).

**JPEG 2000:** DaVinci Resolve 15 introduced support for the encoding and decoding of JPEG2000 using a library licensed from Kakadu software. This includes a complete implementation of the JPEG2000 Part 1 standard, as well as much of Parts 2 and 3. JPEG2000 is commonly used for IMF and DCP workflows.

**MJ2:** The Motion JPEG 2000 format. DaVinci Resolve 15 introduced support for the encoding and decoding of JPEG2000 using a library licensed from Kakadu software. This includes a complete implementation of the JPEG2000 Part 1 standard, as well as much of Parts 2 and 3. JPEG2000 is commonly used for IMF and DCP workflows.

**MP4:** Dedicated MP4 encoding lets you export H.264-encoded movies.

**MXF OP-Atom:** A simple standard for the Material eXchange Format, a file-based media format, that's often used when delivering DNxHD. This version conforms to the SMPTE 390M standard, and can deliver using the DNxHD, DNxHR, Kakadu JPEG 2000, NTSC and PAL Avid, RGB Avid 10-bit, and XDCAM MPEG2 codec options.

**MXF OP1A:** A version of the Material eXchange Format that conforms to the SMPTE 378M standard, and can deliver using the 1080i Avid 8-bit, DNxHD, DNxHR, Kakadu JPEG 2000, NTSC and PAL Avid, RGB Avid 10-bit, Sony MPEG4 422 and 444, and Sony XAVC Intra CBG and VBR, and XDCAM MPEG2 codec options.

**QuickTime:** Apple's file-based media format, used when delivering Apple ProRes, DNxHD or DNxHR wrapped in QuickTime, GoPro Cineform RGB 16-bit and YUV 10-bit, Grass Valley HQ and HQX, Kakadu JPEG 2000, H.264, HEVC, H.265 (single or multi-pass), Photo JPEG, Kakadu JPEG 2000, Uncompressed 8- and 10-bit formats with ARGB/BGRA/RGB/YUV channel orders, and VP9 at 8-, 10-, and 12-bits.

**TIFF:** "Tagged Image File Format," an image sequence format compatible with many desktop video applications on many platforms and is also used when delivering for DCDM mastering.

- **Codec:** A drop-down menu that lets you choose from a selection of codecs that are available to the format you've selected above.
- **Type:** Different codec options may also present different bit depth and color space combinations, as well, which are available from this menu.
- **Maximum Bit Rate:** (Does not appear for all codecs) Codecs such as Kakadu JPEG 2000 let you specify a maximum bit rate, in Mbits per second, with which to encode the delivered video.

- **Field rendering:** If you're processing interlaced source material, this checkbox sets DaVinci Resolve to render each field individually before reintegrating them back into a single frame, in order to process clips most accurately with filtering operations that would otherwise violate field boundaries and cause problems. If you're not rendering interlaced media, you should leave this checkbox turned off, as it is more processing intensive.
  - **Export HDR10 Metadata:** (Available in Single clip mode if HDR10+ is enabled in Project Settings) Exports HDR10 metadata to the rendered file when you're doing an HDR workflow.
  - **Embed HDR10 Metadata:** (Available in Single clip mode if HDR10+ is enabled in Project Settings) Exports HDR10 metadata to the rendered file when you're doing an HDR workflow. Embeds HDR10 metadata within the exported media of selected formats.
  - **Embed HDR Vivid Metadata:** Exports HDR Vivid metadata to the rendered file when you're doing an HDR workflow. Embeds HDR Vivid metadata within the exported media of selected formats.
  - **Render at Source Resolution:** (When rendering Individual Clips) This checkbox lets you render each clip at the same resolution as its source media file, letting you preserve mixed frame sizes for final delivery.
  - **Resolution:** The output resolution for rendering. This setting defaults to the current resolution of the project as set in the Master Settings panel of the Project Settings, modified by whatever transforms are applied in the Sizing palette in Output mode. However you can change the resolution here if you need to output at a different resolution. Using this setting, you can queue up different render jobs at different resolutions, in order to output both HD and SD resolution media in the same render session, for example. Some file formats require specific resolutions, in which case the Output Size settings will be automatically set to the necessary resolution.
  - **Frame rate:** (When rendering Single Clip) This setting is typically identical to the "Timecode calculated at" frame rate in the Master Settings panel of the Project Settings. However, you may wish to set this to a variation of the current conformed rate, for example choosing from between 23.98 or 24 fps. Doing so will adjust the metadata written within the file, which is used to aid playback for the range of systems available worldwide.
- 3:2 Pulldown Insertion Options:** Starting with DaVinci Resolve Studio 12.5, you have the option of outputting either 29.97 or 30 fps media with 3:2 pulldown insertion if your project's playback frame rate is either 23.98 or 24 fps. To output 29.97 media, the project must be 23.98 fps; simply choose (23.976 3:2) from the Frame rate drop-down. Projects with 24 fps frame rates can only be output at 30 fps.
- **Chapters from Markers:** (QuickTime or MP4 only) Embeds chapter points in the rendered file corresponding to the marker's position on the Timeline of the selected marker color.
  - **Export Alpha:** (When rendering Individual Clips) Turning this checkbox on results in alpha channels found in each clip's source media file being output to each delivered clip, as well as alpha information that you're creating in DaVinci Resolve and inserting into that clip via the Alpha output of the Color page Node Editor being output to each delivered clip.
  - **Alpha Mode:** (When rendering Individual Clips) Lets you choose how to export alpha channels when Export Alpha is enabled. You can choose Straight or Premultiplied.

- **Render Stereoscopic 3D:** (Only appears if there are stereo clips in a timeline) Three options let you choose how to render stereoscopic timelines, rendering just one eye's worth of media at a time, or rendering a single set of stereo media in one of four ways, depending on the option you choose from the "Both eyes as" drop-down menu.

**Left eye:** Lets you render only the left-eye media from a stereo timeline.

**Right eye:** Lets you render only the right-eye media from a stereo timeline.

**Both eyes as:** Lets you select from four ways of rendering the left and right eyes of stereo media as a single set of media files. "Separate files" lets you output both the left-eye and right-eye media as individual media files, all at once. Side-by-side, Line-by-Line, and Top-Bottom let you output frame-compatible media that can be output to stereo-capable displays. Anaglyph lets you output a traditional anaglyph red/cyan stereo image for viewing on any display using red/cyan glasses.

- **Use Constant Bit Rate:** If the Format and Codec you've specified allows you to switch between variable and constant bit rate output, this checkbox lets you force video to render at a constant bit rate.

## Optional MP4, H.264, H.265, VP9, or HEVC Controls

If you choose MP4 as the format, or QuickTime with H.264, H.265, or VP9 as the codec, additional options appear, described below. Workstations using NVIDIA GPUs that offer NVENC will present alternative accelerated options, while other workstations offering QuickSync hardware encoding instead will be able to use that option.

- **Use hardware acceleration if available:** DaVinci Resolve supports QuickSync hardware encoding of H.264 and HEVC, if available on your workstation.
- **Quality:** If the currently selected option in the Render to drop-down menu has options for changing the compression quality, this drop-down menu lets you choose the quality you want to use. Otherwise, it's disabled.
- **Restrict to X Kb/s:** You can choose Automatic, or select a maximum data rate with which to export.
- **Encoding Profile:** A drop-down that lets you choose among different encoding profiles, each of which has been optimized for different purposes. The tradeoff is between quality and computational intensity for encoding and playback. The available options are:

**Auto:** Automatically selects an encoding profile.

**Base:** For H.264, intended for video conferencing and mobile phone use; highly compressed.

**Main:** For H.264, intended for SD analog transmission. For H.265, intended for the compression of 4:2:0 video at up to 4K 60fps with a bit depth of 8-bits per channel.

**Main10:** (H.265 only) Intended for the compression of 4:2:0 video at up to 4K 60fps with a bit depth of 10-bits per channel.

**Main 4:2:2 10:** (H.265 only) Intended for the compression of 4:2:2 video at up to 4K 60fps with a bit depth of 10-bits per channel.

**High:** For H.264, intended for Blu-Ray and HD transmission.

- **Entropy Mode:** (called Entropy Coding Mode for compatible Nvidia GPUs) A drop-down that lets you choose which algorithm the encoder should use for compression. The choices are:

**CALVC (context-adaptive variable-length encoding):** A lower-quality algorithm that's less computationally intensive to process and play.

**CABAC (context-based adaptive binary arithmetic coding):** A higher-quality algorithm that yields better visual quality at lower bandwidth, at the cost of being more computationally expensive to process and play.

- **Multi-pass encode:** (Available for QuickTime H.264 and H.265) You can choose between Single and Multi-pass encoding. Single pass is faster, but multi-pass yields superior results when quality is important. When you enable Multi-pass, the number of passes performed is automatic.
- **Key Frames:** (Available for QuickTime H.264 and H.265) You can choose Automatic, or select a duration for manual keyframe insertion.
- **Frame Reordering:** (Available for QuickTime H.264 and H.265) On by default, Frame Reordering enables the encoding of B frames to improve the quality of the resulting compressed movie file. Turning off Frame Reordering will speed encoding performance at the expense of visual quality.
- **Rate Control:** (Available for compatible NVIDIA GPUs) Provides six options for controlling Encoding Profile and Entropy Mode.
- **Lookahead:** (Available for compatible NVIDIA GPUs) Lets you specify how many frames for the encoder to examine in advance of compression.

## Optional DCP and IMF Controls

If you choose DCP or IMF as the Format, additional options appear, described below.

- **Use interop packaging:** (DCP only, located under Type parameter) Lets you create an Interop DCP package, based on an earlier standard of DCP delivery that is not forward compatible with SMPTE DCP packages.
- **Package Type:** (IMF) Defaults to App2 Extended (App2e), for encoding JPEG 2000 up to 4K.
- **Bit Depth:** (IMF) The bit depth of the encoded IMF video.
- **Encoding Profile:** (IMF) A drop-down that lets you choose among Auto, IMF, and Broadcast.
- **Encoding Level:** (IMF) Provides different choices based on what is selected in Encoding Profile.
- **Maximum bit rate:** (DCP, IMF) Lets you choose how much to compress the result.
- **Lossless Compression:** (IMF) Lets you choose to encode using lossless compression.
- **Slope-Rate Control:** (DCP, IMF) A checkbox lets you specify lossless compression.
- **QStep:** (DCP, IMF) Lets you choose either automatic or manually specified DCP quantization levels at which to compress the video signal when using the Kakadu JPEG 2000 encoder.

## Advanced Controls

An advanced settings disclosure button hides the following additional controls, by default.

- **Pixel aspect ratio:** Lets you override the Project Settings and change the PAR of the rendered output to either Square or Cinemascope.
- **Data levels:** Defaults to “Auto,” which simply renders all clips with the data level appropriate to the currently selected codec in the “Render to” drop-down menu, which is usually the preferred behavior. Choosing one of the other options (“Video” or “Full”) outputs all clips using the selected data range. For more information, see *Chapter 9, “Data Levels, Color Management, and ACES.”*
- Retain sub-black and super-white data:** Turning this checkbox on lets you choose to output media files that preserve overshoots and undershoots, data that’s above the maximum and minimum data levels of the data level you’ve selected, assuming this is supported by the video format and codec you’re exporting to. Otherwise, DaVinci Resolve clips these “out-of-bounds” parts of the signal in an effort to keep your deliverables from violating whatever QC standards you’re adhering to in your grade.

- **Color Space Tag:** A drop-down menu that lets you choose a color space to embed as metadata in the rendered file. This setting defaults to Same as Project if your project's color science is set to DaVinci YRGB Color Managed, or the ACES Output Device Transform if your color science is set to ACEScc or ACEScct. You can override this option manually from the choices on the drop-down menu.
- **Gamma Tag:** A drop-down menu that lets you choose the gamma to embed as metadata in the rendered file. This setting defaults to Same as Project if your project's color science is set to DaVinci YRGB Color Managed, or you can override this option manually from the choices on the drop-down menu.
- **Data burn-in:** A drop-down menu that defaults to "Same as Project," which leaves the current Data Burn In palette settings enabled while rendering, inserting a window burn into the media being output. Choosing "None" disables window burns while rendering. Note that when rendering as Individual Source Clips, individual clip burn in presets can be assigned if they've been created in the Data Burn In palette.
- **Bypass re-encode when possible:** Turning this checkbox on makes it possible to do a direct copy of the video essence of video items in the Timeline, directly from the source media to the file being output, when the selected Format, Codec, and Type matches the source. This also preserves Alpha channel data for compatible formats.

Bypass re-encode eliminates the need to re-encode video media, preserves quality, and speeds up the output process dramatically, but it only works for clips in the Timeline to which no additional effects have been added. Doing any grading, adding a Resolve FX plugin, adding any overlapping effects or compositing to clips in the Timeline, resizing or stabilizing clips or altering the output sizing of the Timeline, and adding Fusion effects will all necessitate re-encoding the entire clip in order to process these effects. Transitions will require processing but only for the duration of each transition.

There are many situations where this is valuable:

**Fast output of simple edits:** You've edited a simple cuts-only promo using footage cut from a previously rendered program using QuickTime ProResHQ 422 media, and you're exporting to the exact same format. You can output all of the media very quickly using Bypass re-encode when possible.

**Fast output of previously output timelines with small changes:** You need to replace a few shots in an effects-intensive program that's already been output. You can import the media file that was output into a new timeline, replace only the required shots with new media. DaVinci Resolve will do a direct copy of all previously rendered media, while re-encoding only the new clips with whatever effects and grading they contain. This lets you quickly re-output a high-quality master file, while preventing you from needing to re-render the entire program.

**Fast output of previously output timelines with new audio mixes:** You've placed a previously rendered Video+Audio clip onto a timeline and edited a new audio mix clip to replace the old audio mix. In this situation, a new Video+Audio file will be quickly written with the new audio, but the video component of that file won't be re-encoded, again resulting in a fast export at the highest quality.

**TIP:** For a list of which video formats are compatible with Bypass Re-encode on macOS, Windows, and Linux, as well as which formats are compatible with Alpha channels, see the "Supported Codec List" at the DaVinci Resolve Support page located at:  
<https://www.blackmagicdesign.com/support/family/davinci-resolve-and-fusion>.

- **Use optimized media:** When this checkbox is turned on, DaVinci Resolve will use optimized media, when available, to do the final render, to save time. If your media has been optimized to the same format as the one you’re outputting to (or better), this is convenient. However, if you’ve optimized to a lower quality format than what you’re outputting to, you should turn this checkbox off to force DaVinci Resolve to process all clips using the original media, guaranteeing the best quality available.
- **Use proxy media:** When this checkbox is turned on, DaVinci Resolve will use the generated proxy media, when available, to do the final render, to save time. However, if your proxies are a lower-quality format than what you’re outputting to, you should turn this checkbox off to force DaVinci Resolve to process all clips using the original media, guaranteeing the best quality available.
- **Use render cached images:** When this checkbox is turned on, DaVinci Resolve will write media from the cache to the files being output to save time. If you’re caching using the same media format you’re outputting to (or better), this can be convenient. However, if you’re caching in a lower-quality format than the one you’re outputting to, you’ll want to turn this checkbox off to force DaVinci Resolve to process all media as it’s being rendered, writing at the maximum quality you’re outputting to.
- **Force sizing to highest quality:** If you’ve been working with the “When resizing and scaling:” option set to Bilinear to improve performance when working on slower workstations, turning this checkbox on automatically renders all clips using the “Uses Sharper filter” setting of the Image Scaling panel in the Project Settings. For more information, see *Chapter 4, “System and User Preferences.”*
- **Force debayer res to highest quality:** When rendering camera raw media formats that allow variable quality debayering, it’s common to lower the debayering quality to improve real time performance while grading. Turning this checkbox on guarantees that media will always be rendered at the highest available quality, saving you from forgetting to manually change the debayer setting back when setting up a render at 3am.
- **Render All Video Tracks:** (When rendering Single Clips) You can un-check Render All Video Tracks and select specific tracks in the Disable drop-down menu to exclude those tracks from the final output on a per render job basis.
- **Enable flat pass:** Three options let you choose whether or not to render each clip with its grade applied.
  - Off:** DaVinci Resolve always applies each clip’s grade when rendering.
  - With clip settings:** For each version of a clip, the system will check that version’s pass flat flag. If it’s turned on, the system disables color correction for that version of the clip. Otherwise, that version will be rendered with its grade intact. Versions can be individually flagged by right-clicking a clip’s thumbnail in the Timeline, choosing the submenu of the version you want to flag, and choosing Enable Flat Pass.
  - Always On:** When checked, DaVinci Resolve disables the grade of every clip being rendered.
- **Disable sizing and blanking output:** When turned off, Output Blanking to create letterboxing or pillarboxing is “baked” into the output, as are all sizing adjustments made on the Cut, Edit, and Color pages, including Image stabilization.

When turned on, Output Blanking, Cut and Edit page sizing adjustments, Color page Input and Output Sizing, and Image Stabilization are disabled. Rendered media is rendered either at the source resolution if “Render at source resolution” is enabled in individual clips mode, or to the currently specified resolution of the Timeline or project. If you’re outputting via Final Cut Pro or Premiere Pro XML, or Avid AAF, sizing adjustments are output to the XML or AAF files that are created for purposes of round-tripping these adjustments as editable metadata back to an NLE.

Be aware that “Disable sizing and blanking output” does not disable any transform operations that happen within the Fusion page, nor does it disable transforms happening as a result of an OpenFX

or ResolveFX plugin applied to one or more clips in the Cut, Edit, or Color pages. All of these effects will continue to be rendered into the final output.

- **Trigger script at:** You now have the option of triggering a script to execute before or after rendering a timeline, by checking the “Trigger script at” box.
  - Start:** Executes the script before the render job.
  - End:** Executes the script after the render job.
- Script:** Chooses the specific script to run. You can select the specific script to execute using the corresponding drop-down menu. Scripts must be written for the Resolve scripting framework in either Python or Lua, and placed in the following directory:
  - MacOS:** /Library/Application Support/Blackmagic Design/DaVinci Resolve/Fusion/Scripts/Deliver
  - Windows:** C:\ProgramData\Blackmagic Design\DaVinci Resolve\Fusion\Scripts\Deliver
  - Linux:** /opt/resolve/Fusion/Scripts/Deliver
- **Render full extents:** (When rendering Individual Clips) When this box is checked, the entire original media clip is rendered out completely, instead of just the portion delineated by the In and Out points of the timeline clip.
- **Add X frame handles:** (When rendering Individual Clips) Lets you specify front and rear handles to be output in frames. This is particularly useful in round trips, when the finishing editor might want additional handles with which to roll edit points or add transitions while fine-tuning the graded edit.
- **Tone Mapping:** (Available in Single clip mode if Dolby Vision or HDR10+ is enabled in Project Settings) When set to None, the timeline is output using the current color management settings. When set to either Dolby Vision or HDR10+, you can choose to output the timeline at a specific peak nit level, color space, gamma, and Data Level using either the Dolby Vision or HDR10+ metadata available to guide the tone mapping operation you’ve selected. This makes it easy to set up multiple jobs to output HDR outputs at varying levels, as necessary.

## DCP and IMF Composition Settings

If you’ve selected either DCP or IMF from the Format, a Composition Settings group appears with the following parameters when you click the disclosure control, which let you populate generic DCP and IMF composition metadata, as well as various studio specific settings:

- **Composition name:** The name of the exported composition.
- **Issuer:** The organization providing the composition.
- **Use current date:** A checkbox that lets the current date be used as the Issue date automatically.
- **Issue date:** The date the composition is issued.
- **Content kind:** A drop-down provides a list of acceptable choices for defining the content.
- **Content originator:** A text field to add who is responsible for this content.
- **Include volume index and output profile list:** Check this box to include these xml files in the package.
- **Content version label:** Meant to identify the version of the content being provided.
- **Annotate xml using composition name:** Auto-populates Asset Map, Composition Playlist, and Packing List with data from the project. Otherwise these three fields are manually editable.
- **Annotate reel index as suffix (DCP only):** Auto-populates Reel Annotation with data from the project. Otherwise this is manually editable.
- **Annotate media using filename:** Auto-populates Main Video Track and Audio Track 1 with data from the project. Otherwise these three fields are manually editable.

## Subtitle Controls

The Subtitle Settings group exposes controls governing how to export subtitles in your program:

- **Export Subtitle checkbox:** Lets you enable or disable subtitle/closed caption output.
- **Format pop-up:** Provides four options for outputting subtitles/closed captions.
  - As a separate file:** Outputs each subtitle track you select as a separate file using the format specified by the Export As pop-up. A set of checkboxes lets you choose which subtitle tracks you want to output.
  - Burn into video:** Renders all video with the currently selected subtitle track burned into the video.
  - As embedded captions:** Outputs the currently selected subtitle track as an embedded metadata layer within supported media formats. There is currently support for CEA-608 closed captions within MXF OP1A and QuickTime files. You can choose the subtitle format from the Codec pop-up that appears.
- **Export As:** (Only available when Format is set to "As a separate file.") Lets you choose the subtitle/closed captioning format to output to. Options include: IMSC1, DFXP, SRT, and WebVTT.
- **Include the following subtitle tracks in the export:** (Only available when Format is set to "As a separate file.") A series of checkboxes lets you turn on which subtitle tracks to output.
- **Codec:** (Only available when Format is set to "As embedded captions.") Lets you choose how to format embedded closed captions; choices include: Text and CEA-608.

**NOTE:** Neither analog (Line 21) nor digital (CEA-708) closed caption output via Decklink or UltraStudio is supported at this time.

## Audio Panel

This panel contains all audio-oriented parameters.

- **Export audio:** Turn this checkbox on to render the source audio, or audio that you've synchronized in DaVinci Resolve, along with the media being output by DaVinci Resolve.
- **Format:** You can choose which format of audio you want to render. Depending on which format you choose, different audio codec options will appear below.
  - MXF OP1A(IMF):** Generates media files that conform to the OP1a (Operational Pattern 1a) SMPTE 378M format of MXF media for file exchange.
  - MXF OP-Atom:** Generates media files that conform to the SMPTE 390M format of MXF media for file exchange.
  - QuickTime:** Exposes all available formats of audio compatible with QuickTime.
  - MP4:** Generates media in the MPEG-4 file format.
  - WAVE:** Generates media in the WAVE file format.
  - MP3:** Generates media in the MPEG-3 file format.
  - FLAC:** Generates media in the FLAC file format.
- **Codec:** Lets you choose between Linear PCM (the default), AAC audio, IEEE Float, or MP3. AAC audio encoding is only available on macOS.
- **Sample Rate:** Lets you set the sample rate, in Hz, of the output of the audio.

- **Bit Rate Strategy:** (Available for AAC encoding) You can choose among Constant Bit Rate, Average Bit Rate, Variable Bit Rate Constrained, and Variable Bit Rate.
- **Quality:** (Available for AAC encoding when Bit Rate Strategy is set to Variable Bit Rate) Five settings you trade between speed and quality when encoding AAC audio.
- **Data Rate:** (Available for AAC encoding when Bit Rate Strategy is set to Constant, Variable, or Variable Constrained) Lets you choose the maximum data rate for AAC encoding.
- **Bit Depth:** Lets you specify the bit depth at which to output the source audio.
- **Render one track per channel checkbox:** This checkbox lets you specify whether you want to export each channel as an individual track in the structure of the exported file. Multi-channel formats can be specified (2.0, 5.1, etc.), or can be output as flat multi-mono files.
- **Render as discrete audio tracks checkbox:** This checkbox is similar to the above, in that it still outputs one channel per track. However, discrete tracks have no positioning info, nor do they group as multi-channel clips (2.0, 5.1, etc.). For example, a mono file exported with Render one track per channel, comes in front and centered. The same file exported as a discrete audio track has no built in position information.
- **Output Track #:** This drop-down menu lets you choose which Main or Submix bus you want to output. A Plus button to the right lets you add additional tracks you want to export in this job, so if you want to export multiple Mains or multiple Subs, you can add more Track pop-ups.  
 When you choose a track with multiple channels of audio, a field appears showing how many channels will be output; you have the option of using a virtual slider to change how many channels are output. In Single Clip Mode, when you choose "All Timeline Tracks, each audio track in the current timeline will be rendered as an individual track in the rendered media file you're outputting. Multi-channel tracks containing multi-channel clips will output audio tracks containing the same number of channels in the output media, which means you can output mixed combinations of mono, stereo, 5.1 or 7.1, and adaptive audio tracks, and each separately rendered audio track will reflect identical channel mappings.
- **Language:** (Only available when outputting to the IMF format) This drop-down menu lets you choose the language of a particular output track when you're outputting to IMF. Since IMF files can accommodate multiple audio tracks containing different mixes for different regions, it's important to identify each output track you're outputting by language.
- **Content:** (Only available when outputting to the IMF format) This drop-down menu lets you choose the content of a particular output track when you're outputting to IMF. Since IMF files can accommodate multiple audio tracks containing different mixes and content, it's important to identify each output track you're outputting by content.
- **Audio Normalization:** You can select loudness standard presets from the Audio tab in the Render settings on the Delivery page to automatically have the deliverable normalized accordingly. These controls let you control the audio normalization on a per output basis. Unchecking this box bypasses audio normalization and optimization.
  - Normalize to Standard:** Check this box to normalize loudness or peak (scaling whichever first exceeds thresholds) to a standard.
  - Optimize to Standard:** Check this box to optimize loudness and peak (ensuring that loudness meets the desired range and peaks remain lower than threshold) to a standard.
  - Standard:** Choose the normalization standard you want to apply.
  - Target Level:** Set the normalization level in dBFS.
  - Output Track #:** Check the box to apply the normalization to these outputs.

## File

This panel contains all other parameters.

- **Filename Uses:** Three options let you automatically name the media file(s) that are output automatically.
  - Use Custom Filename:** Lets you enter your own name in the Custom name/File prefix field.
  - Use Timeline Name:** (When rendering a Single Clip) When this option is selected, the name of the Timeline is used.
  - Use Source Filename:** (When rendering Individual Clips) When this option is selected, the filename of each clip's corresponding source media file is cloned, and used as the filename of media being output by DaVinci Resolve. This is preferred when you're generating offline media for use by an editor that you later want to reformat to the originating DaVinci Resolve project. When this checkbox is turned off, you can customize filenames using the other options in this section of settings.
- **Custom name:** Lets you use custom text to name all rendered files. If you're not using the source filename, and not rendering to a file format that uses timecode, you can enter a filename here. When editing the Custom Name or File Prefix (or File Suffix), you can use "metadata variables" that you can add as graphical tags that let you display clip metadata. This is especially useful when rendering Individual Source Clips. For example, you could add the corresponding metadata variable tags %scene\_%shot\_%take and the File Prefix would be written as "12\_A\_3" if "scene 12," "shot A," "take 3" were in the source clip's metadata. For more information on the use of variables, as well as a list of all variables that are available in DaVinci Resolve, see *Chapter 16, "Using Variables and Keywords."*
- **File suffix:** Lets you add custom text and/or metadata variables (described previously) to the end of all rendered files.
- **Use unique filenames:** (When rendering Individual Clips, and only when Filename uses is set to Custom name) When enabled, additional characters are added to every rendered media file to guarantee that each rendered media file has a completely independent name. This prevents multiple rendered clips from the same source media file from overwriting one another when saved to the same directory. "Uniquely" named clips append the clip name with the track and clip number identifying a clip's position in the currently selected session. For example, a clip that's linked to a media file named "DropThatThingCU.mov," and edited as the twenty-fifth clip on track V2, will be named "DropThatThingCU\_V2-0025.mov" when rendered. When enabled, two other options are revealed.
  - Use unique filename prefix/Use unique filename suffix:** (When Use Unique Filenames is on) Radio buttons let you choose whether to add the unique identifier at the beginning or end of a clip. Choosing Prefix would result in "V2-0025\_DropThatThingCU.mov," whereas choosing Suffix would result in "DropThatThingCU\_V2-0025.mov" when rendered.
- **Add source frame count to filename:** (When rendering Individual Clips, and only when Filename uses is set to Custom name) When enabled, the source frame number of each clip is appended to the end of the rendered file name. This is another way to make sure that multiple rendered clips with custom names don't overwrite one another.
- **Use filename digits:** Lets you specify how many digits to use when rendering an image sequence, although the specified digits will also be used for any media format. This is particularly useful if you're outputting media to be used by an application that has strict requirements for image sequence numbering. Defaults to eight digits.

- **Each clips starts at frame:** (When rendering Individual Clips) This permits timecode to be written to the header, and frame count to be written to the filename of the image sequences, which is ideal for VFX workflows.
- **Start timeline timecode at:** (When rendering Single Clip) This option is only available when rendering clips in Single clip order. Specifies the timecode that will be written to the media being output by DaVinci Resolve. For DPX files, timecode is written into the header data, and is simultaneously converted to a frame count that's inserted into the filename of each frame file, which provides a logical count of the frame numbers. For other media formats, timecode is written to the appropriate metadata container. You may find it useful to use custom start times, for example starting each reel of a project at a particular value, depending on the standards employed at your shop.
- **Place clips in separate folders:** (When rendering Individual Clips) Useful if you need to preserve the filenames of files you're outputting when the filenames of clips coming from the same source media file may cause them to overwrite one another. This option is also commonly used when rendering VFX shots for additional post-production work, allowing the VFX department to identify clips quickly and distribute the work accordingly.
- **Preserve Source directory levels:** (When rendering Individual Clips) Retains a user-specified depth of the original directory structure used by a clip's corresponding source media file, recreating it when rendering new files for output. The number you select determines how many levels of subdirectories DaVinci Resolve will automatically create within the currently specified "Render job to" directory to match the path used by the source files. Defaults to 0, which creates no matching subdirectories.

**After Head/From Tail:** When setting how many directory levels of each clip's file path to preserve (using the "Preserve x levels" parameter), click one of these buttons to specify whether that number of path levels is defined relative to the head or the tail of each media file path.

**Preserved Path:** Shows you a preview of the preserved path you've set up so you know you've gotten it right.

- **File Subfolder:** (Only appears in Additional Output panels) Lets you specify a subdirectory into which to render the media files being output. If the specified subdirectory doesn't exist, a new one with that name will be created within the currently specified "Render job to" directory.
- **Use commercial workflow:** (When rendering Individual Clips) Automatically renders every version that's applied to each clip in the session, except for versions that have been flagged using the "Render Disabled" flag, found in the Version submenu for each clip in the Timeline. This option is typically used when you've graded multiple versions of a clip to be used for VFX work, and you want to deliver each grade as a separate media file. This is also used when rendering programs for commercial broadcast where you have two or more versions of a grade for each scene. When using this option, alternate methods of outputting each rendered media file are used, and four additional settings are revealed.

**Alternative pass offset:** Lets you separate the timecode values written into each version of a clip with an offset. For example, if the default version timecode is 01:00:20:00, and you select a 10 minute offset in the Alternative Pass Offset timecode entry, then the second graded version of that clip will start at 01:10:20:00, the third version will start at 01:20:20:00, and so on until every version is rendered. You can offset the clips by whatever value you like, but the idea is to make it easy for editors and VFX artists to find the versions of each grade. If the clips are shared with a finishing artist, and they know that each alternate pass is 10 minutes apart, then it's easy for the finisher to change the clip version just by adding 10 minutes to the referenced timecode. To simplify the workflow further, you can put separate source reels in separate folders using the next three options.

**Place reels in separate folders:** Automatically places all media that's output using a particular reel name into corresponding folders.

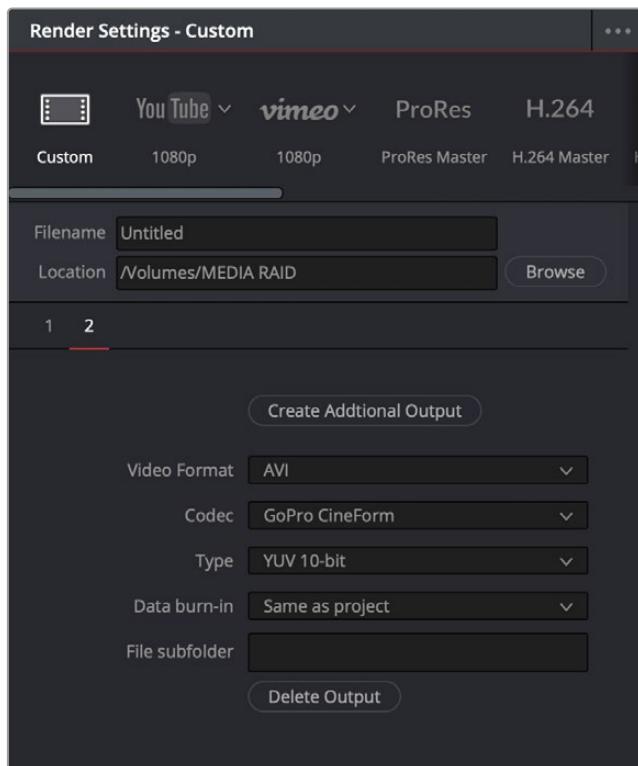
**Place clips in separate folders:** Automatically places alternate grades of clips into separate folders.

**Use version name for folders:** Labels each folder with the name of the version when using the Commercial Workflow option.

- **Render speed:** A drop-down menu lets you throttle the speed at which media is rendered. Ordinarily you'll leave this set to the default of Maximum. However, some storage systems that are shared by multiple rooms in a facility use storage area networks (SANs) with insufficient bandwidth for multiple real-time image streams. DaVinci Resolve's incredibly fast rendering speeds can cause playback problems with other users accessing the SAN if available bandwidth is insufficient. In this case, you can throttle the render speed to limit SAN bandwidth usage to between 1 to 50 percent of full rendering speed.
- **Disk space currently used:** Shows the amount of disk space available on the target volume.
- **Disk space used after render:** Shows the new disk usage based on the specified range of the current session that you're rendering.

## Additional Outputs

Each job you create in the Render Settings defaults to a single output. However, you can create multiple outputs when you need to deliver multiple versions of media, with individual video formats and codecs and different data burn-in settings, to be rendered into individually named subfolders (optional).



The menu command for creating an additional output, shown next to an existing additional output in panel 2

This can be useful for setting up multiple rendered passes when your client requires two sets of media, for example QuickTime ProRes 422 (HQ) media along with MXF DNxHD media. This is also useful when you need to output two sets of media where one has window burns, and the other is clean.

#### **To add additional outputs in the Render Settings:**

- Choose Create Additional Output from the Render Settings Option menu. A row of numbers below the Filename and Location controls let you open each output you create and adjust its settings. You can have as many outputs as you require.

#### **To remove an additional output:**

- Open the additional output panel you want to remove, and click the Delete button at the bottom.

## **How to Avoid Overwriting Clips When Rendering Output Media**

Three of the options described previously, “Use unique filenames,” “Place clips in separate folders,” and “Use commercial workflow,” are all ways of organizing your rendered media to avoid overwriting rendered clips that happen to share the same file name. These options are necessary because each clip has one logical range of timecode, and because multiple clips often refer to a single source media file with one name.

When rendering a clip, DaVinci Resolve automatically overwrites any other media files that have the same name. So, in instances where you’re trying to preserve the previous filename of the source media file, or where you’re rendering out multiple versions of the same clip, it’s entirely likely that the clips you’re trying to output will overwrite one another, leaving you with the last clip you rendered. The three options mentioned previously prevent this in different ways.

## **Defining a Range of Clips and Versions to Render**

Once you’ve defined the Render Settings, now you need to decide how much of the Timeline you need to render. A Mini-Timeline and Thumbnail timeline are available to help you navigate your project’s clips in order to choose which ones you want to render. Track controls let you enable and disable whole tracks from being output; for example if you need to render a textless version of a timeline in which all the title clips are on track V4, you can disable track V4. Furthermore, you can also use these controls to choose which clip versions you want to render.

#### **To render the entire Timeline:**

- Choose Entire Timeline from the Render drop-down in the Deliver page timeline. This option only appears if clips are not filtered.

## To disable a video or audio track to exclude those clips from being rendered:

- Click the Video or Audio Disable Track button for the tracks you want to exclude.

## To render a filtered subset of clips in the Timeline:

- 1 Open the Color timeline, if it's not already shown, and choose an option from the Timeline Filter drop-down to the right of the Clips button in the Interface toolbar.  
The contents of the Thumbnail timeline are restricted to show only the clips matching the selected criteria. For example, if you've already rendered a session, but you've since made some changes, you can use one of the "Show Modified Clips" options to display only the clips that have changed within a particular timeframe. Another possibility is to choose the "Show Unrendered Clips" option to show all clips that have not yet been rendered.
- 2 Choose "All Filtered Clips" from the Render drop-down in the Timeline toolbar.

## To clear clip filtering:

Choose All Clips from the Timeline Filter drop-down to the right of the Clips button in the Interface toolbar.

## To define a continuous range of clips to render:

- 1 To define the first clip in the range you want to render, do one of the following:
  - Right-click a clip thumbnail in the Thumbnail timeline and choose Mark In.
  - Position the playhead in the Timeline or the Viewer, and press the I key, or right-click the Timeline ruler and choose Mark In.
- 2 To define the last clip in the range you want to render, do one of the following:
  - Right-click a clip thumbnail (in the Color timeline) or a clip (in the Edit timeline) in the Thumbnail timeline and choose Mark Out.
  - Position the playhead in the Timeline or the Viewer, and press the O key, or right-click the Timeline ruler and choose Mark Out.

In and Out points appear within the Timeline ruler, and an orange bar shows the range you've selected to render. The In and Out fields update with the first and last frame numbers, in timecode and frame count, and the Duration field updates with the total number of frames you'll be rendering.

**IMPORTANT:** If you're in Individual Clips mode, In and Out points automatically snap to the nearest clip In or Out point in the Timeline. You cannot render partial clips in Individual Clips mode, but you may do so in Single Clip mode.

## To render a single clip:

- Open the Thumbnail timeline if it's not open already, Right-click any clip thumbnail, and choose Render This Clip.
- An orange bar in the Timeline ruler shows that clip is selected for rendering. If you need to render several clips individually, you can select each clip one at a time to add as individual jobs to the Render Queue.

## Choosing Which Versions to Render for Each Clip

By default, the currently selected version that was set in the Color page is rendered for each clip. If you want to render a different version, the easiest thing to do is to make sure they're selected on the Color page Timeline before you open the Deliver page.

However, a Versions submenu, within the Thumbnail timeline's contextual menu for each thumbnail, also provides options to manage grade versions. These commands are duplicates of options that are available from the Thumbnail timeline of the Color page.

### To choose which version to render:

- Right-click any clip thumbnail in the Thumbnail timeline, and choose a version from the Versions submenu.

**TIP:** You can right-click a clip in the Thumbnail timeline of the Color or Render screen and rename any version of a grade. This can assist a facility's workflow when sharing material between suites and applications.

## Using the Render Queue

Once you've defined the settings necessary to render the type of media you require, and the range of the current session you want to render, you need to add all that information as a job to the Render Queue. You can add as many jobs to the Render Queue as you need, depending on what files you need to output.

Each job can have individually specified ranges of clips and individual clip settings, which can include different render directories, different formats, resolutions, data levels, burn-in settings, and so on. As a result, you can use the Render Queue to queue up the render of multiple sections of the current session, or multiple versions of the same media. Furthermore, you can queue up multiple sessions, if you have several differently graded sessions.

### To add a job to the Render Queue:

- 1 Select a timeline.
- 2 Choose the settings you require in the Render Settings, using one of the Presets, or by choosing your own custom settings.
- 3 Choose a range of clips to render using the Deliver page Timeline using the procedures described in the previous section.
- 4 Click the Add to Render Queue button at the bottom of the Render Settings.
- 5 If you haven't chosen a location for the render yet, you'll be prompted to do so now via a File Destination dialog, so choose a location and click Ok. If there's already media in the render location you've specified, you may also see a dialog telling you "This render may overwrite existing clips in this folder." If you want to continue, click Yes, otherwise click No.

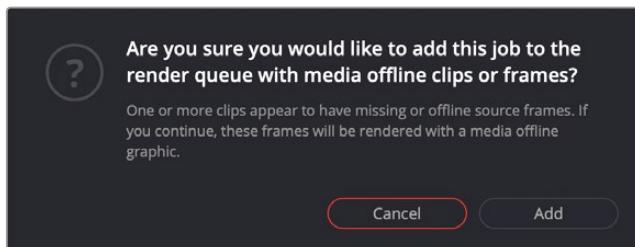
That render setup is now added as a job to the Render Queue, showing the project and timeline name, and location path where the render will be written to.



A selected job in the Render Queue

### Media Offline Warning in Render Queue

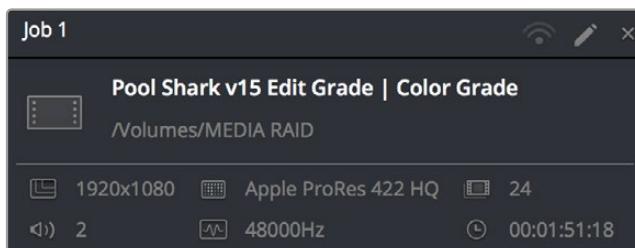
When you attempt to add a job to the Render Queue with a timeline that contains any offline material, DaVinci Resolve automatically gives you a warning. You may choose to either cancel adding the job, or to add it anyway, knowing you're about to render one or more offline clips.



Media Offline warning box that appears if your timeline contains offline clips or frames and is added to the Render Queue

### To show more details about jobs in the Render Queue:

Click the Render Queue Option menu (at the upper right-hand corner) and choose Show Job Details. Each job now lists the frame size, format, frame rate, audio channels and sample rate, and duration below the name and location path.



A selected job in the Render Queue with job details shown

### To rename a job:

- Jobs can be given custom names simply by clicking on the default job name (Job 1, Job 2, and so on) and typing a new name of your own. This can be useful for setting up jobs that you may be re-rendering over and over as you work on a project.

## To start rendering:

- 1 If you want to restrict rendering to only selected jobs in the Render Queue, then select one or more jobs by clicking on one, and then Command-clicking on others to choose discontinuous jobs, or Shift-clicking on another to select an entire range of jobs. When you select one or more jobs, only the selected jobs will be rendered. If no jobs are selected, then all jobs in the queue will be rendered.
- 2 Click the Start Render button, underneath the Viewer to the right of the interface.
- 3 If there are jobs in the Render Queue that have already been rendered, a dialog will appear asking "Selected items contain already rendered items. Do you want to re-render them?" Clicking Yes will re-render all jobs in the Render Queue. Clicking No only renders the jobs that have not yet been rendered. Clicking Cancel cancels the entire rendering operation.

Rendering begins, starting with the highest job in the list. The Overall Progress bar starts to fill up, from right to left, indicating how much of what's been queued up has been rendered so far. While rendering is in progress, the Start Render button changes to the Stop Render button, which can be clicked at any time to halt rendering.

**TIP:** While rendering is in progress, a small progress bar will appear on the DaVinci Resolve icon in the dock of Mac OS X, or on the taskbar of Windows.

## To remove jobs from the Render Queue, do one of the following:

- **To clear a specific job:** Click the X at the upper right-hand corner of a job's entry in the Render Queue.
- **To clear all previously rendered jobs:** Click the Render Queue Option menu (at the upper right-hand corner) and choose Clear Rendered.
- **To clear all jobs:** Click the Render Queue Option menu (at the upper right-hand corner) and choose Clear All.

## To change a job that has been rendered to appear unrendered again:

- Right-click any rendered job, and choose Clear Render Status. You can also select multiple jobs to change their rendered status all at once. This makes it easy to re-render the exact same job.

## To edit a job that has or has not been rendered:

- 1 Click the Pencil button in the Render Queue to select it.



Clicking the pencil icon to edit a job in the Render Queue

The selected Render Queue's settings repopulate the Render Settings list, and resets the selected range of the Timeline corresponding to that job.

- 2 Change whichever settings you need to.

- 3** When you're finished editing the job, click the Update Job button that appears at the bottom of the Render Settings, or you can click Add New Job to create a new job with the changes you've made, leaving the previous job untouched.

**NOTE:** If you click the Pencil button again without clicking Update Job, you'll be prompted to Save, Cancel, or Don't Save.

#### To review clips that correspond to rendered jobs:

- **To show a rendered clip in the Media Storage browser:** Right-click any rendered job, and choose Reveal in Media Storage.
- **To show a rendered clip in your computer's file system (Mac OS only):** Right-click any rendered job, and choose Reveal in Finder.

## Rendering Jobs from Multiple Projects at Once

You can also add multiple projects from the currently open PostgreSQL or local project library to the render queue all at once. This can be exceptionally useful in situations where you've broken a program into multiple reels, with each reel being a different project.

#### To render output from multiple projects at once:

- 1** Open each project, set up whatever jobs you want to render in the Render Queue, and save that project without rendering.
- 2** When you've set up the last project, click the Render Queue Option menu (at the upper right-hand corner) and choose Show All Projects.

All queued items in projects belonging to the currently selected user (if using a network project library) or in the currently specified disk location (if using a local project library) now appear in the Render Queue.

- 3** Click Start Render to begin rendering every job from every project in the queue.
- 4** When you're finished, turn Show All Projects off to go back to displaying only the current project's render queue items.

## Remote Rendering

If you have multiple DaVinci Resolve workstations on the same network, you can send a job in the Render Queue from the workstation you're using (referred to as the "artist workstation") to one of the "remote workstations" on the network using remote rendering. This lets you use any one of your currently unused secondary workstations to render your jobs, while you continue working on your main workstation.

In order to use remote rendering, you must adhere to the following three criteria:

- Both the artist workstation and the remote workstation must have DaVinci Resolve Studio installed.  
Remote rendering does not work with the free version of DaVinci Resolve.
- Both the artist workstation and the remote workstation can use the same shared network project library, or any other Postgres project library that is connected to either one of the machines, or to a dedicated Remote Project Library Server. For more information on setting up and using shared project libraries, see *Chapter 192, “Managing Project Libraries and Project Servers.”*
- Both the artist workstation and the remote workstation must have access to the same media files on either the same storage volumes, or identically named storage volumes.

## Using Multiple Project Libraries in Remote Rendering

You can set up remote renders for projects in all connected Davinci Resolve project libraries, not just the currently active one. To activate this feature, check the “Automatically scan other project libraries for Remote Rendering jobs” box in the General settings of the System tab, of the DaVinci Resolve Preferences.

## Sharing Storage

It's important that both the artist and remote workstations have access to the same media on the same named storage volume for remote rendering to work properly. This can be done via some manner of shared storage, such as a SAN. However, it can also be done by mounting the same volume over your network. This will be slower, but it will work.

If you're mixing Mac OS X, Windows, and Linux workstations for remote rendering, you'll need to use the Mapped Mount column of the Media Storage Locations list in the Media Storage panel of the System Preferences to add each volume's path as it's understood on the workstation it's attached to. For example, on a Windows workstation that's accessing volumes from a Linux workstation, type in the Linux-style file paths in the Mapped Mount column for each scratch disk that's listed.

## Setting Up and Using Remote Rendering

Using remote rendering is easy, but it does require a bit of preparation.

- 1 Make sure the storage volume containing the media being referenced by the project you want to render is mounted on both the artist and remote workstations.
- 2 Open DaVinci Resolve on the remote workstation, and do one of the following:
  - When the Project Browser opens, right-click anywhere and choose Remote Rendering.
  - If you've already opened a project in DaVinci Resolve, you can also choose Workspace > Remote Rendering.

DaVinci Resolve will automatically open to the Deliver page, awaiting jobs to be assigned for automatic rendering.

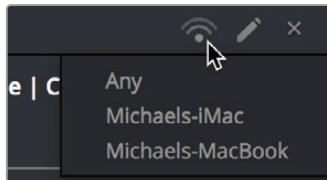
- 3 On the artist workstation, add a job to the render queue as you normally would.
- 4 Click the Remote Rendering button for that job in the Render Queue and one of the options from the list that appears:

**Any:** Automatically assigns that job to the next workstation that isn't currently rendering anything.

If all remote rendering workstations are rendering, assigns it as the next job in line.

**YourComputer.local:** The artist workstation with the name "YourComputer." Choose this if you want to render the job locally, and not remotely.

**Other Workstations on Network:** All other remote rendering workstations are listed below, so you can choose which specific workstation you want to assign a job to.



Clicking the Remote Render button to remotely render a job

- 5 Click Start Render. The job is sent to the remote workstation you selected and is rendered, while you're free to continue working on your artist workstation.

## When You're Finished Remote Rendering

Once you're done using a particular DaVinci Resolve workstation in Remote Rendering mode and you want to go back to using it as an artist workstation, choose Workspace > Remote Rendering to exit remote rendering and return to the Project Manager.

## Setting Up a “Headless” Remote Rendering Workstation

DaVinci Resolve allows remote rendering clients to operate in a so-called “headless” mode, with no GUI. This can be accomplished from the command line, by opening the directory where the app is located and then running DaVinci Resolve in Remote Rendering (-rr) mode using the correct command line syntax for your operating system. Once run in this way, DaVinci Resolve silently and invisibly waits on that system for remote rendering jobs to be sent to that workstation.

### On macOS

- Open Terminal.
- Change the directory to:

```
cd /Applications//DaVinci\ Resolve/DaVinci\ Resolve.app/
Contents/MacOS/
```

- Run the following command:

```
./Resolve -rr
```

## On Windows

- Open the Command Prompt.
- Change the directory to:  
`C:\Program Files\Blackmagic Design\DaVinci Resolve\`
- Run the following command:  
`Resolve.exe -rr`

## On a Linux CentOS 6.8 system

- Open Terminal.
- Change the directory to:  
`cd /home/resolve/Cyclone/`
- Run the following command:  
`./script.start -rr`

## On a Linux CentOS 7.x system

- Open Terminal.
- Change the directory to:  
`cd /opt/resolve/bin`
- Run the following command:  
`./resolve -rr`

## Chapter 185

# Delivering DCP and IMF

For projects requiring Digital Cinema Package (DCP) or Interoperable Master Format (IMF) mastering for digital cinema or broadcast distribution, DaVinci Resolve allows native DCP and IMF encoding and decoding for the creation and playback of unencrypted DCP and IMF deliverables, or it can be integrated with Fraunhofer's easyDCP application in order to master fully encrypted DCP files, play them back for testing, and generate Key Delivery Messages (KDMs) for theatrical distribution, all directly within DaVinci Resolve.

This means you can encode a DCP or IMF master straight from your program's source media, all within the 32-bit floating point image processing pipeline of DaVinci Resolve, for the highest possible quality result.

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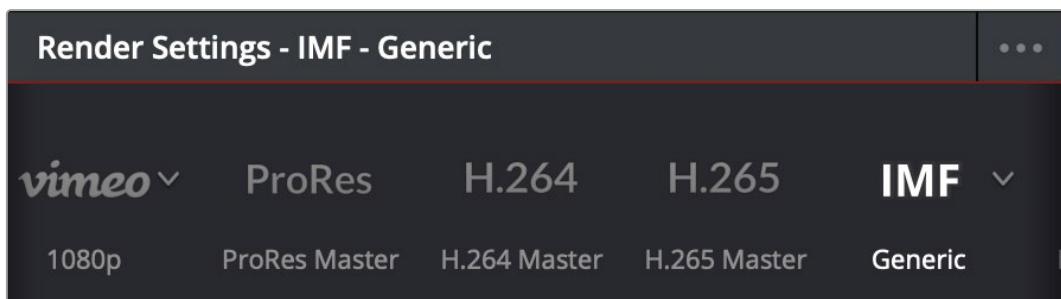
# Native IMF Encoding and Decoding

## (Studio Version Only)

The Format drop-down in the Video panel of the Render Settings now has a native IMF option that lets you export to the SMPTE ST.2067 Interoperable Master Format (IMF) for tapeless deliverables to networks and distributors. No additional licenses or plugins are required to output to IMF.

The IMF format supports multiple tracks of video, multiple tracks of audio, and multiple subtitle and closed caption tracks, all of which are meant to accommodate multiple output formats and languages from a single deliverable. As of DaVinci Resolve 16, IMF export also supports exporting IMF packages that use ST.2098 and Dolby immersive audio via selected Main busses. All of this is done by wrapping a timeline's different video and audio tracks (media essences) and subtitle tracks (data essences) into a "composition" within the Material eXchange Format (MXF).

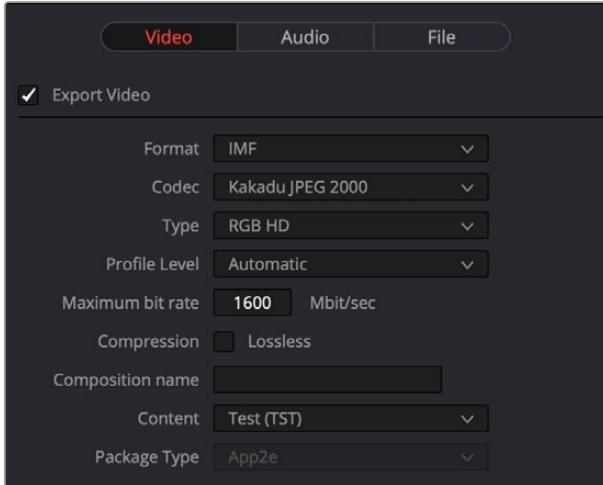
Additionally, a drop-down menu to the right of this preset provides options for Generic, 20th Century Fox, and Netflix versions of this preset.



The IMF Generic preset in the Render Settings has options for different resolutions of output

When IMF is selected from the Format drop-down, the Codec drop-down menu presents options for Kakadu or EasyDCP encoding, with Kakadu being the method that's included with DaVinci Resolve Studio. A Type drop-down lets you choose what kind of JPEG2000 output you want, with options including RGB, YUV, and Dolby Vision. Additional parameters include:

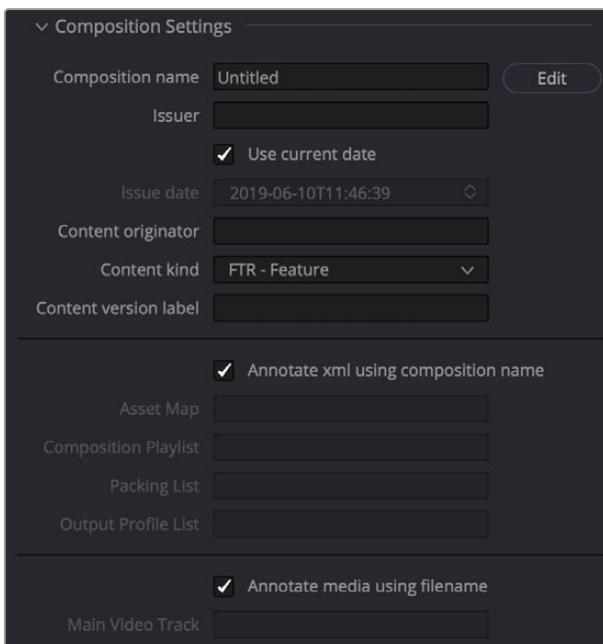
- **Package Type:** Defaults to App2 Extended (App2e), for encoding JPEG 2000 up to 4K.
- **Bit Depth:** The bit depth of the encoded IMF video.
- **Encoding Profile:** A drop-down that lets you choose among Auto, IMF, and Broadcast.
- **Encoding Level:** Provides different choices based on what is selected in Encoding Profile.
- **Maximum bit rate:** Lets you choose how much to compress the result.
- **Lossless Compression:** Lets you choose to encode using lossless compression.
- **Slope-Rate Control:** A checkbox lets you specify lossless compression.
- **QStep:** (DCP, IMF) Lets you choose either automatic or manually specified DCP quantization levels at which to compress the video signal when using the Kakadu JPEG 2000 encoder.



Render settings in the Export Video section for the IMF format

A separate group of parameters named Composition Settings, underneath the Advanced Settings, lets you add metadata to your IMF package, including:

- **Composition name:** The name of the exported composition.
- **Issuer:** The organization providing the composition.
- **Use current date:** A checkbox that lets the current date be used as the Issue date automatically.
- **Issue date:** The date the composition is issued.
- **Content kind:** A drop-down provides a list of acceptable choices for defining the content.
- **Content version label:** Meant to identify the version of the content being provided.
- **Annotate xml using composition name:** Auto-populates Asset Map, Composition Playlist, and Packing List with data from the project. Otherwise these three fields are manually editable.
- **Annotate media using filename:** Auto-populates Main Video Track and Audio Track 1 with data from the project. Otherwise these three fields are manually editable.



Parameters for adding composition metadata

# Native Unencrypted DCP Encoding and Decoding

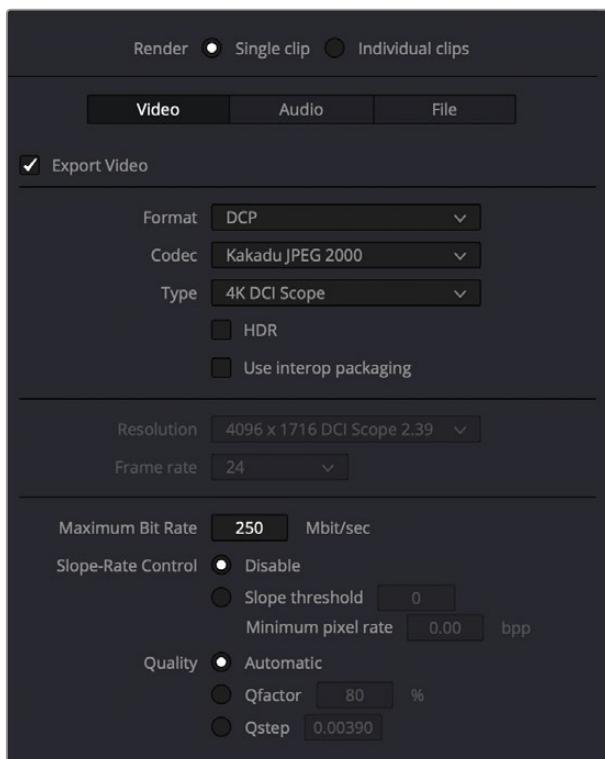
## (Studio Version Only)

DaVinci Resolve also has native DCP encoding and decoding support built-in, for unencrypted DCP files only. That means that you can output and import (for test playback) unencrypted DCP files without needing to purchase a license of EasyDCP. If you have a license, a setting in the Configuration panel of the System Preferences enables you to choose whether to use EasyDCP (for creating encrypted DCP output), or the native DaVinci Resolve encoding.

### Native DCP Encoding Parameters

When you choose DCP from the Format drop-down menu, the following additional parameters are exposed:

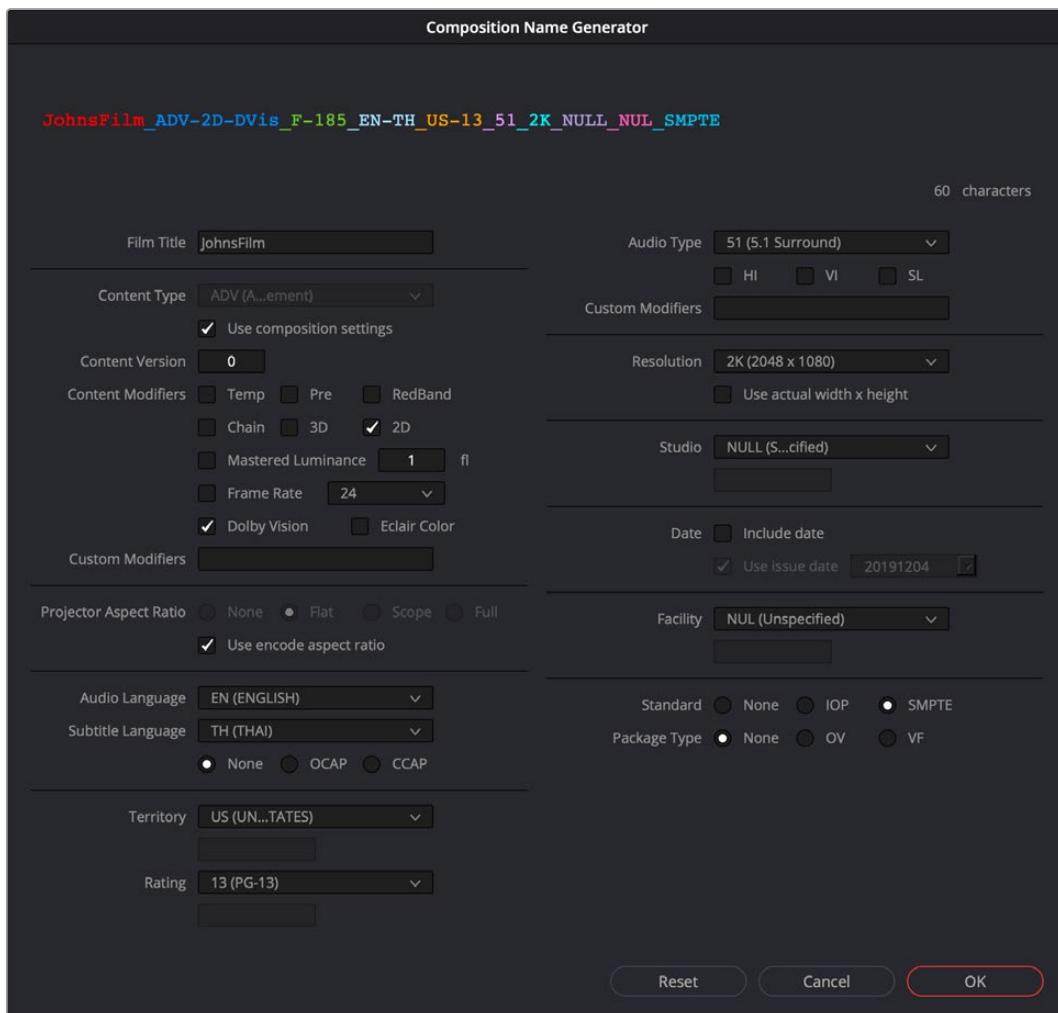
- **HDR:** (DCP, IMF) Specifies the package as having HDR content.
- **Use interop packaging:** (DCP only, located under Type parameter) Lets you create an Interop DCP package, based on an earlier standard of DCP delivery that is not forward compatible with SMPTE DCP packages.
- **Maximum bit rate:** (DCP, IMF) Lets you choose how much to compress the result.
- **Lossless Compression:** (IMF) Lets you choose to encode using lossless compression.
- **Slope-Rate Control:** (DCP, IMF) A checkbox lets you specify lossless compression.
- **Quality:** (DCP, IMF) Lets you choose either automatic or manually specified DCP quantization levels at which to compress the video signal when using the Kakadu JPEG 2000 encoder.



Native DCP settings in DaVinci Resolve

If you've selected DCP from the Format drop-down menu, a Composition Settings group appears with the following parameters when you click the disclosure control, which let you populate standard DCP composition metadata:

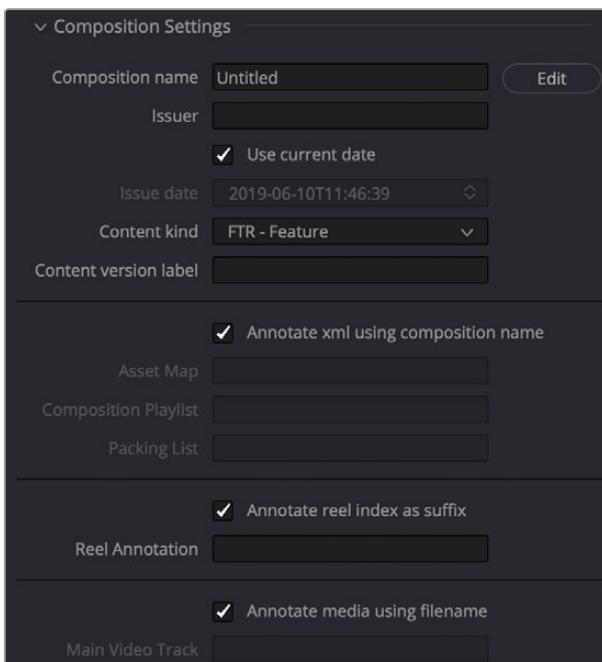
- **Composition name:** The name of the exported composition. DCPs use specific naming conventions for the composition name that include metadata about the file itself for DCP projectors and playback equipment. DaVinci Resolve has a tool called the Composition Name Generator to generate these names properly for you; it is accessed by pressing the "Edit" button next to this field. Simply fill out the fields and press OK, and DaVinci Resolve will rename your composition in line with these standards.



The Composition Name Generator will pass a standards compliant name for you to the Composition Name field.

- **Issuer:** The organization providing the composition.
- **Use current date:** A checkbox that lets the current date be used as the Issue date automatically.
- **Issue date:** The date the composition is issued.
- **Content kind:** A drop-down provides a list of acceptable choices for defining the content.
- **Content version label:** Meant to identify the version of the content being provided.
- **Annotate xml using composition name:** Auto-populates Asset Map, Composition Playlist, and Packing List with data from the project. Otherwise these three fields are manually editable.

- **Annotate reel index as suffix:** Auto-populates Reel Annotation with data from the project. Otherwise this is manually editable.
- **Annotate media using filename:** Auto-populates Main Video Track and Audio Track 1 with data from the project. Otherwise these three fields are manually editable.



Parameters for adding composition metadata

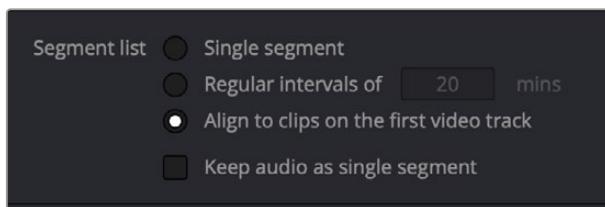
## Rendering IMF Segments and DCP Reels

DaVinci Resolve supports splitting IMF and DCP projects into separate segments and reels, in addition to rendering media as a single file. This can be useful for breaking up your timeline to fit within allowed file sizes on legacy file systems, separating marketing and studio assets from the final film, or just being able to replace certain sections of the film without having to re-encode the entire file.

### To Render an IMF Segment or DCP Reel:

- 1 Choose IMF or DCP from the format settings in the Video tab of the Render Settings panel.
- 2 Navigate to the “Segment list” or “Reel list” section of the composition settings.
- 3 Choose from the following options:
  - Single segment/reel:** Encodes the Timeline into a single file (default setting).
  - Regular intervals of:** Encodes the Timeline into multiple segments/reels, each one the duration of the value set in the “mins” field.
  - Align to clips on the first video track:** Encodes the Timeline into multiple segments/reels; each individual clip on the V1 track of the Timeline becomes its own separate file.
  - Keep audio as single segment (IMF only):** Select this checkbox to keep the audio portion of the IMF as a single file, regardless of the segment options selected above.

- 4 Press the Add to Render Queue button.



IMF Segment options

## Creating DCP/IMF Supplemental Packages

Once created, DaVinci Resolve has the ability to reimport a DCP or IMF so that you can overwrite parts that need to be updated with new media, in order to export a "Supplemental Package," which is effectively a new version of the program that combines the new overwritten parts of the program with the old version, such that you can deliver just the changes.

**NOTE:** Supplemental packages are only supported using the Kakadu encoder and decoder; this is not compatible with DCP or IMF packages created using EasyDCP. To avoid issues, disable "Use easyDCP decoder" in the Decode Options panel of the DaVinci Resolve System Preferences.

## Importing a DCP or IMF Into a Timeline

- 1 Using the Media Storage browser in the Media page, find and select the DCP or IMF, and check the header of the Metadata Editor to verify that your media is suitable for creating a supplemental package. Supported IMF profiles will be displayed in the Metadata Viewer.

Metadata	Media Storage	...	⋮
mer_shrt_2398_pqp3d65...0_dovi_imf_20170913_1	00:12:02:17		
/Users/jackh/Public/MediaPool/IMF			
IMF Dolby Vision M6S3	23.976 fps	3840 x 2160	
Linear PCM	48000 Hz	8 Ch	

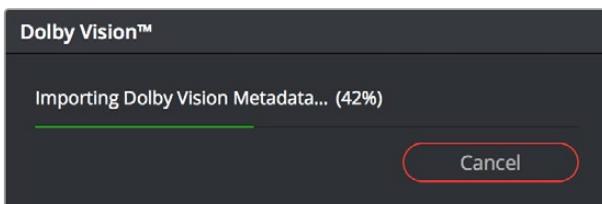
The header in the Metadata Editor showing an IMF that's compatible with the creation of a supplemental package

- 2 Create a new project and add the DCP/IMF package you need to modify to the Media Pool. If a dialog appears asking if you want to change your timeline frame rate to match the incoming media, click Change to make your project match the media.
- 3 Create a timeline from the composition playlist (XML) within the imported DCP or IMF by right clicking the imported package in the media pool and choosing "Create New Timeline Using Composition Playlist" from the contextual menu.

Create New Timeline Using Selected Clips...  
Create New Timeline Using Composition Playlist...  
Create New Multicam Clip Using Selected Clips...

Right-clicking an imported IMF or DCP clip in the Media Pool reveals a command to make a new timeline using the composition playlist in the contextual menu

- 4 The New Timeline dialog has an “Import Dolby Vision Project Settings” checkbox. When it’s turned on, clicking Create will do the following:
  - a) Dolby Vision will be enabled in the Color Management panel of the Project Settings, and the Mastering Display menu will be set to match that of the IMF package.
  - b) If Resolve Color Management (RCM) is not active, the Timeline Color Space will be set to match the Dolby Vision metadata. However, if RCM is already enabled, the user must manually set this by turning on “Use Separate Color Space and Gamma,” and changing the Timeline settings to P3-D65” and “ST.2084” respectively.
- 5 Creating the Timeline will import Dolby Vision metadata (if applicable). This will allow a Tone Mapping preview to be seen on the Color page that uses the original metadata.



Dolby Vision metadata will be imported if present when importing an IMF

Once import is complete, all video and audio clips from the DCP or IMF appear within a new bin with the name of the package. The resulting timeline will be identified via its icon as a DCP/IMF timeline.

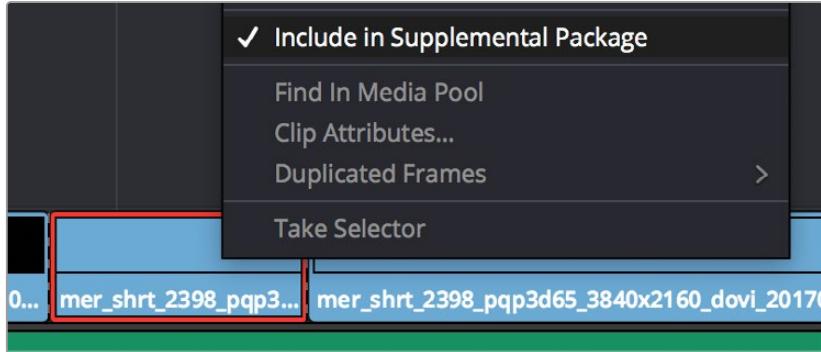
Clip Name
mer_shrt_2398_pqp3d...
Timeline 1
mer_shrt_2398_pqp3d...

The imported media and timeline when you import an IMF

## Editing the Resulting Timeline

At this point, you can edit the program in the Timeline as necessary.

- You can overwrite sections of the Timeline with new clips. All modifications will be automatically included into the supplemental package.
- You can use the Blade tool or Insert Edit command to cut sections of the existing program to which you want to add Fusion effects, audio grading, or color correction. When you do this, you must right click that section and choose “Include in Supplemental Package” to make sure it exports correctly.



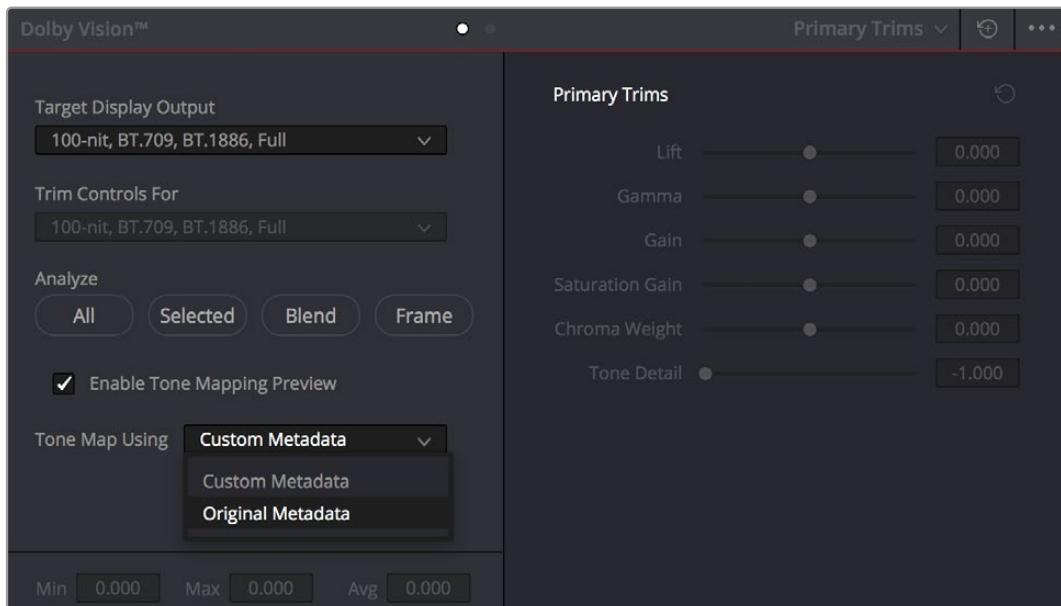
Right-clicking a section of the program and choosing Include In Supplemental Package

For IMF Dolby Vision packages, please ensure all modifications are on the first video track (V1).

**NOTE:** If RCM is being used, please ensure the input color space and gamma of the inserts are correct.

## Dolby Vision Metadata

The Dolby Vision metadata from the imported DCP/IMF file can be reused by selecting “Original Metadata” from the Tone Map Using drop-down menu of the Dolby Vision palette in the Color Page



Setting a clip to Original Metadata in the Color Page

Alternatively, this metadata can be imported separately from an existing XML via the “Import Metadata from XML” command in the option menu of the Dolby Vision palette in the Color page. When successful, “Imported Metadata” will be enabled.

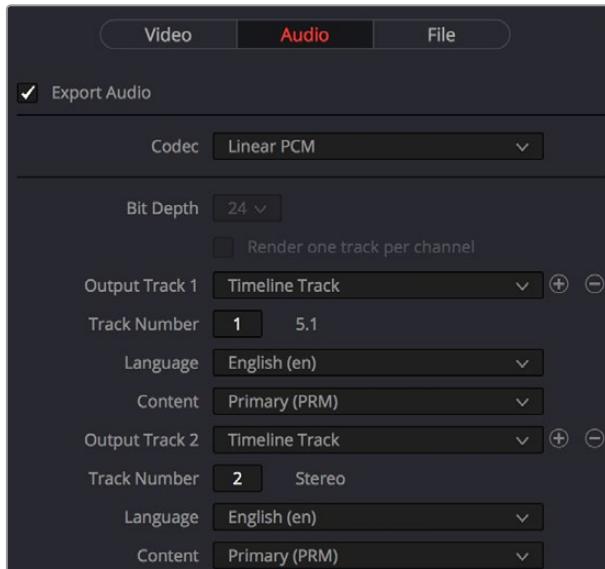
# Exporting

You can export a supplemental package by turning on “Supplemental Package” in the the video panel of the Deliver page Render Settings list.



Setting an export to be a  
Supplemental Package

The codec type and profile will be automatically selected to match the original version of the DCP/IMF package, and the audio tracks are set to match the Timeline tracks. Please ensure the rest of these audio settings are matched to the original version, since they start out set to the default values.



Setting the audio settings of a  
Supplemental Package export

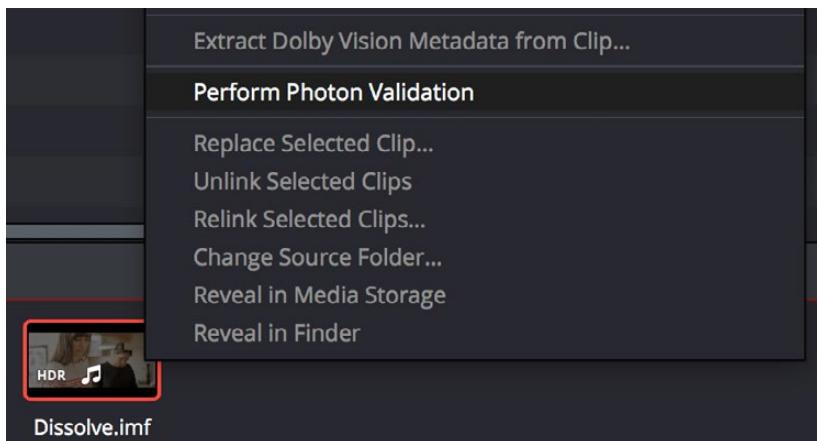
# Photon Validation of IMF Packages

Photon is Netflix's validation software for IMF App2/App2e packages. The option for using Photon validation will only be shown on Resolve Studio with JDK/JRE version 1.8 and above installed, which is available at <https://github.com/Netflix/photon>.

**NOTE:** Please disable "Use easyDCP decoder" from "Preference" as there can be issues decoding IMF packages without an easyDCP license.

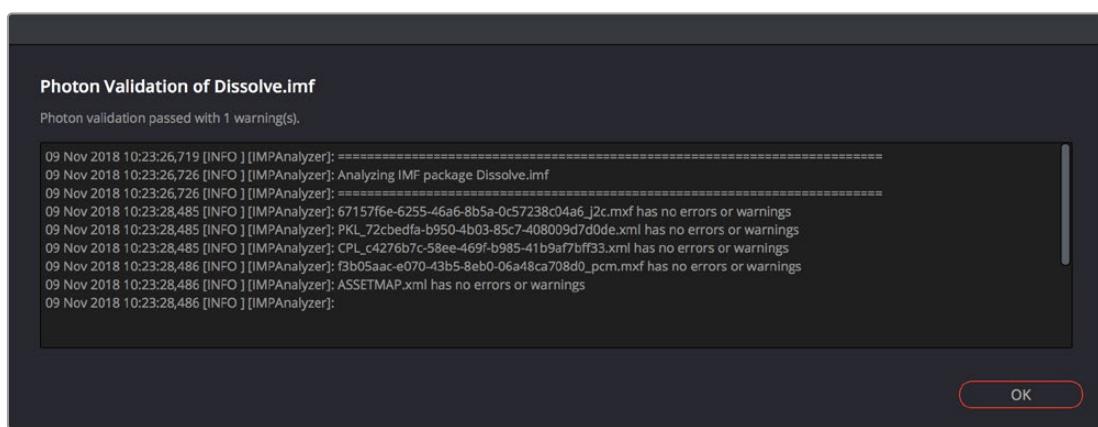
## Validating in the Media Pool

An existing IMF package can be validated with Photon by importing it into the Media Pool, then right-clicking it and choosing "Perform Photon Validation" from the context menu.



Validating an IMF in the Media Pool

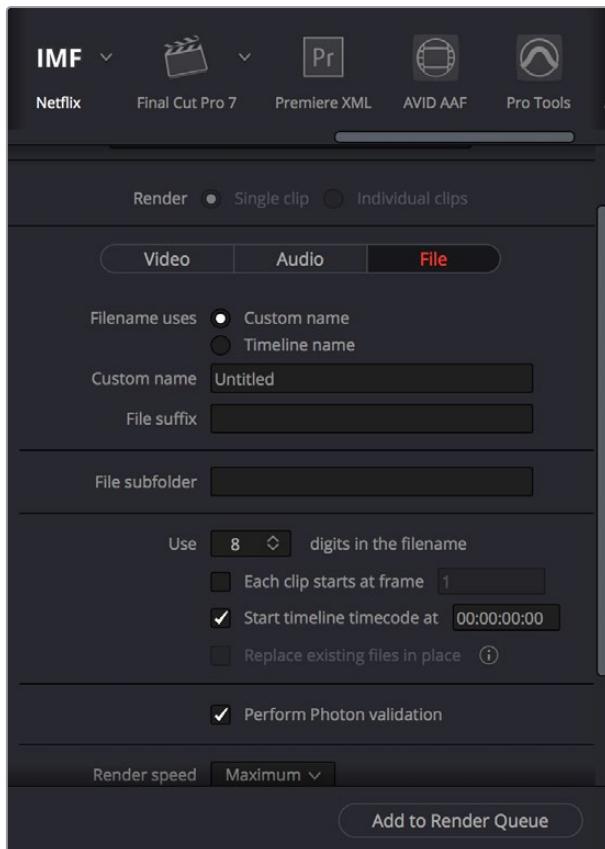
A report dialog will be shown when the validation is completed.



A validation report

## Validating on Export

Photon validation can be enabled in the File panel of the Deliver page Render Settings; choosing the “IMF Netflix” preset will also enable this option. When enabled, DaVinci Resolve will perform Photon validation after the IMF package is exported. The validation report will be saved to a text file in the IMF package folder, and a report dialog will be shown if there is any error.



Enabling Photon validation on export

## Using and Licensing EasyDCP

Both DaVinci Resolve and DaVinci Resolve Studio include a demo version of easyDCP. Details of operation and restrictions of the demo version can be found later in this chapter. The fully functional version of easyDCP operates via licensing modules purchased from <http://www.easyDCP.com> (info@easyDCP.com) and every new DaVinci Resolve system (server) needs its own license and specific certificates for DCP and KDM generation and for playback of DCPs.

## Requesting Your Server Certificate Set

For your DaVinci Resolve system to generate DCPs and KDMs you need to request a specific set of configuration files called the Server Certificate Set. To begin, first purchase your encoding, encryption, decoding, and decryption modules from easyDCP. They will provide a password to access your easyDCP account.

Then, from the DaVinci Resolve File menu, select easyDCP > Request Server Certificate Set. Fill in the detail listed on the request form and save the form to your desktop or somewhere it can be easily found. This html file can be emailed to info@easyDCP.com. After sending the html, a customized Server Certificate Set for your installation will be generated and made available for download in your easyDCP Website User Account.

The Server Certificate Set generated for your DaVinci Resolve will contain files based on your purchased modules and your specific DaVinci Resolve server hardware. The table below shows the modules and the licenses and certificates generated, followed by a brief description of each item.

	<b>License</b>	<b>Server Certificate</b>	<b>Signer Certificate</b>
DCP Encoder	X		X
DCP Encoder with Encryption	X	X	X
DCP Player	X		
DCP Player with Encryption	X	X	

- **License:** The License is used to activate the purchased modules on a specific hardware server.
- **Server Certificate:** Each DCP render (referred in the industry as an “Instance”) using encryption or decryption has an individual server certificate. This certificate is required to be able to receive Key Delivery Messages (KDMs), which unlock encrypted DCPs.
- **Signer Certificate:** A Signer Certificate is used to sign certain files within a DCP package and/or Key Delivery Message (KDM) to verify which authority generated the DCP instance.

## Importing Your Server Certificate Set

Once generated and downloaded to your DaVinci Resolve server, the Server Certificate Set needs to be imported into DaVinci Resolve.

### To import your server certificate:

- 1 Choose File > easyDCP > Import License and Certificates.
- 2 Use the Import Server Certificate dialog to select the file, enter your Certificate Set password, then click Import.
- 3 To verify your easyDCP license and the Server Certificates, choose easyDCP > About easyDCP.

From this point onward, you can use the controls from within the Settings window, the Deliver page, and the File menu to master and play DCPs.

### Limitations of the Demo Version of easyDCP

The demo version of the DCP encoder embeds visible DaVinci Resolve and easyDCP logo watermarks in the rendered Digital Cinema Package (DCP) images. The demo version does not include encryption so these DCPs can be used for screening in a digital equipped cinema. The demo version of the DCP playback module will play 15 seconds in full quality. After that playback quality reduces drastically. Furthermore, audio won't be rendered after 15 seconds of playback.

# Switching Between Native DCP and EasyDCP Encoding

A checkbox in the Configuration panel of the System Preferences, “Use EasyDCP Encoder,” lets you choose whether to use the native DCP/IMF encoding in DaVinci Resolve, or your licensed EasyDCP software. In either case, all set up happens from within the Deliver page of DaVinci Resolve.

## EasyDCP Color Management

The Color Management panel of the Project Settings has a Timeline Colorspace drop-down menu that is enabled for EasyDCP encoding regardless of whether or not DaVinci Resolve Color Management is used for the current project (the same setting is used for both color management tasks). You should set this to the color space used by your current DaVinci Resolve timeline. If, for example, you are grading using a Rec. 709 monitor for television deliverables but also wish to make a DCP, select Rec. 709 Gamma 2.4 and DaVinci Resolve will render the DCP with the correct Rec. 709 to XYZ matrix.

## EasyDCP Output in the Deliver Page

To master to a DCP in the Deliver page, use the following procedure, which walks you through all of the easyDCP settings that are available in the Render Settings list.

### To master a DCP or IMF:

- 1 Set “Render timeline as” to Single clip.
- 2 Choose easyDCP from the Video Format drop-down.
- 3 Choose the appropriate option from the Codec drop-down that corresponds to the type (DCP or IMF) resolution (2K or 4K), and aspect ratio (native, scope, or flat) of your intended output.
- 4 Set the Composition Name. This field is intended to hold a standardized name for the DCP being encoded. You can either type a name into this field directly, or you can press the “...” button to open the easyDCP Composition Name Generator window. An editable Film Title field appears, along with a number of drop-down menus that let you select various DCP attributes such as content type, aspect ratio, language of audio and subtitles, and so forth. As you populate each attribute, the name being generated appears at the top of the window, and clicking OK copies the resulting Composition Name into the Composition Name field of the Render Settings.
- 5 If necessary, set the desired “Maximum DCP bit rate” by either typing or dragging within the field (the range is 50 to 250 Mbit/sec). If you’re not sure what data rate to use, consult the client or distributor to whom you’re delivering the DCP.
- 6 There are two DCP package types you can output, determined by the “Use Interop packaging” checkbox:
  - The standard package conforms to the “Interop” specifications for DCPs, which is turned on by default. With “Use Interop packaging” turned on, however, the frame rate of your output is limited to either 24fps or 48fps, so you need to make sure that your timeline conforms to these frame rates.

— If you want to generate DCP packages with other frame rates to match your timeline, you need to turn “Use Interop packaging” off to generate a SMPTE-standard DCP. This supports additional frame rates including 25, 30, 50, and 60 fps. However, SMPTE-Standard-DCPs are not supported on all JPEG2000-based playback systems so it’s generally recommended to use the Interop standard unless you know the player supports the SMPTE-Standard DCPs.

- 7 Turn on the “Encrypt package” checkbox to encode an encrypted DCP. This sets the encoder to generate a Digest containing the keys used during encryption. This Digest will allow you to play the resulting DCP on your system, and to generate KDMs to allow that DCP to be played on other servers.

**NOTE:** If you do not encrypt the DCP it can be played on any DCP player/decoder without restriction.

- 8 Set the Subtitles Path. If you have a properly formatted subtitle file, click the Browse button to link to it.
- 9 If you’re including an audio mix in the DCP, go to the Audio section, turn on the Render audio checkbox, and choose the number of channels in the “Render channels of audio” drop-down menu that corresponds to the number of Audio Mixer output channels defined in the Edit page.
- 10 Click the Browse button under the “Render to” field, and choose a location for the resulting DCP. Make sure you pick a drive with enough room for the estimated size of the final DCP.
- 11 Choose all necessary options from the Output Options to ensure the quality you need.
- 12 Click the Add Job to Render Queue button, and then click Start Render to create your DCP. A DCP will be created and placed at the location you chose, ready for playback or delivery.

## KDM Generation and Management

Key Delivery Messages (KDMs) are required to allow an encrypted DCP play on a designated projector at a particular theater at a specified time. DaVinci Resolve is capable of creating KDMs, which is convenient for exporting KDMs for select screenings, but commercial distributors may require thousands of KDMs. Fortunately, easyDCP allows you to use external Distribution KDM (DKDM) utilities to generate KDMs for your clients, so you don’t have to tie up your DaVinci Resolve workstation with this task.

## Publishing Your Encrypted Digital Cinema Package

While you can play your encrypted DCP on the same DaVinci Resolve system that generated it, if you wish to publish the DCP so other players can decode and play you need to generate a KDM to send to the player. The user of the other player, or players, will need to generate a Server Certificate for each of their players and send this to you so when you generate the KDM it will be just for those players.

Select the DCP in the Media page Library. Right-click and select Generate KDMs. From the drop-down select the location of the Server Certificate file if the KDM is for one player, or folder for multiple players. Set the start and end dates that the KDM will be valid for, an output folder to place the KDM, and then select Generate.

You can now send your DCP and the KDMs to the player you authorized. The user there will import the KDM and the DCP will play between the start and end dates.

## Playing Your Digital Cinema Package

To play a DCP you've output from DaVinci Resolve, use the Media page to add it to the Media Pool and edit it into a timeline like any other clip.

Decoding the JPEG2000 images embedded within the DCP in real time is computationally intensive. If your system is underpowered you can reduce the decoded resolution of the files by selecting Half or Quarter Resolution Decode from the File > easyDCP menu. A smaller, less bandwidth-intensive version of the JPEG2000 files will be decoded by discarding some levels of the wavelet stage inside the decoder, which will directly increase the playback performance.

## Playing Third-Party Digital Cinema Packages

To play a non-encrypted DCP simply select the DCP in the Media page like any other clip. To play an encrypted DCP from a third party you first must publish your Server Certificate. They use the certificate to generate KDMs for their DCP to play on your DaVinci Resolve system. From the File menu choose easyDCP > Export Server Certificate, and on the drop-down menu choose a location to save the file. Send this to the third party for KDM generation.

When you receive a KDM or a Digest for an encrypted DCP you must first import the file into your DaVinci Resolve system. Choose File > easyDCP menu > Import KDM/Digest, and then select the file. Then simply select the encrypted DCP in the Media Page Library to play.

# Delivering to Tape

This section covers how to use the Deliver page to output a timeline, either in whole or in part, to a device-controllable VTR connected to a compatible Blackmagic Design video interface.

For whichever output interface you use, you need to make sure that the RS-422 interface is connected to that of the VTR, and that device control has been established.

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# The Tape Output Interface

Tape output is accomplished on the Deliver page, which has to be placed in the Tape mode before you can proceed.

## To switch to tape output in the Deliver page:

- Click the Tape button, which is the third button from the left on the Interface toolbar at the top of DaVinci Resolve. The Deliver page updates to reflect the relevant controls for editing to tape.

While in Edit to Tape mode, the Deliver page is used to control the VTR, in order to establish In and Out points for insert or assemble editing of the selected portion of the current Timeline to tape.

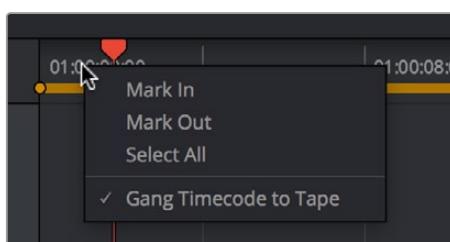
- **Capture and Playout:** The Render Settings panel turns into the Capture and Playout panel, with controls and settings governing how DaVinci Resolve will output your program to tape.
- **Edit to Tape Queue:** The Render Queue turns into the Edit to Tape Queue, which lets you set up a batch of either previously rendered media files, or In and Out point-defined segments of the current Timeline for simultaneous output to tape.
- **Transport controls:** The transport controls, while similar in appearance to those used while in Render mode, now control the VTR.
- **Shuttle control:** A shuttle control appears in what was formerly the jog or scrubber bar, which lets you shuttle through the range of reverse and forward speeds compatible with that deck.
- **In and Out controls:** In Edit to Tape mode, the In and Out buttons to the right of the transport controls define a range of the tape to Insert or Assemble edit to, within the current Timeline. While in Edit to Tape mode, you can still define In and Out points to define a specific range of the Timeline by right-clicking a clip in the Thumbnail or Mini-Timeline, and choosing Mark In or Mark Out. You can only add In or Out points to the beginning and end of clips.
- **Cue In and Cue Out controls:** Buttons next to the timecode In and Out fields cue the tape to those frames on tape.



Edit to Tape controls

## Gang Timecode to Tape

When the Deliver page is in Tape mode, you can right-click the ruler running along the top of the Timeline and choose “Gang Timecode to Tape,” which puts DaVinci Resolve into a mode where every time you set an In point on the Deliver page Timeline, a corresponding In point is automatically set on the tape deck. Setting both In and Out points on the Deliver page Timeline results in the In and Out points on the tape deck being set at the same timecode, making it easy to set up insert edits to tape on top of a previously output program.



The Gang Timecode to Tape option

## Insert/Assemble Drop-down Menu

A drop-down menu under the In and Out buttons lets you choose how to edit the selected part of the Timeline to tape. There are two options:

- **Insert:** Performs an insert edit to tape, in which selected tape tracks are seamlessly and frame-accurately overwritten without interrupting the timecode or control track. You must be outputting to either a blacked tape, or a prerecorded tape to make an insert edit.
- **Assemble:** Performs an assemble edit, in which every track of tape is overwritten, including the video, audio, timecode, and control tracks.
- **Crash:** (Only appears if “Output Source Timecode” has been enabled in the Playout section of the Capture and Playback panel of the Project Settings) Similar to an assemble edit, except there is no pre-roll period to let the VTR get up to speed. A crash edit also overwrites every track of the tape, including the video, audio, timecode, and control tracks, and may result in a more visible jump at the resulting edit point. However, in some instances crash edits may be the only option for a particular operation.

**NOTE:** When DaVinci Resolve is performing a Batch Output operation, you can only output clips using assemble editing or crash recording.

## Start Record Button

Once you've set In and Out points to define how much of the tape to record to, the Start Record button initiates device-controlled tape output.

# Setting Up for Tape Output

Before you perform an edit to tape, the Capture and Playback panel of the Project Settings has a number of options that you should set to match the format and type of tape output you're doing.

## General Options

The Output LTC checkbox, when turned on, directs DaVinci Resolve to output LTC timecode.

## Capture and Playout Settings

These settings affect both capture and playback when using the Tape Ingest options of the Media page, or the Tape Output options of the Deliver page.

- **Video capture and playback:** You can choose the video format (frame size and frame rate) with which to output to tape from this drop-down menu. HD timelines can be downconverted to SD, and SD timelines can be upconverted to HD using the format conversion of your DeckLink card.
- **Use left and right eye SDI:** A checkbox that enables supported video interfaces to ingest and output muxed stereoscopic video when used with supported VTRs, such as HDCAM SR decks with 4:2:2 x 2 mode. (When muxed stereoscopic signals are ingested, each eye is separated into individual left-eye and right-eye image files.) This parameter only appears when your hardware is set up appropriately.

- **Video connection operates as:** Selects between the available signal options: Use 4:4:4 SDI, and enable Single Link. Which options are available depend on which video capture card you are using.
- **Data Levels:** Lets you specify the data range (normally scaled or full range) that's used when ingesting from or outputting to tape. This option switches the data range of the signal output by your video capture card, but only during capture from tape in the Media page, or output to tape in the Deliver page. When capture or output is not currently occurring, your video capture card goes back to using the identically named data range setting in the Master Settings panel of the Project Settings, which governs how you monitor the signal being output on an external broadcast display or projector.
- **Video bit depth:** Choose the bit depth that corresponds to the capability of your deck. You can choose between 8-bit and 10-bit. Outputting to 10-bit is more processor intensive, but higher quality for compatible devices, and is the default setting.
- **Use deck autoedit:** If supported by your video deck, this is the best method to record video to the deck, as it enables the deck to roll the edit using the specified preroll, and control the edits via serial device control. If this checkbox is turned off, a basic edit On/Off mode is used by the deck, with the potential for frame inaccuracies if the "Non auto edit timing" setting is not properly adjusted.
- **Non auto edit timing:** Adjusts the edit synchronization of the connected deck when auto edit is turned off.
- **Deck preroll:** Sets the number of seconds for preroll. How much is appropriate depends on the performance of your deck.
- **Video output sync source:** When using a DeckLink card this is set to Auto. Other capture cards may require you to set the sync source to "Reference" for playout and "Input" for ingest. This setting is only available if you have a DVS card installed on your system.
- **Add 3:2 pulldown:** Inserts or removes the 3:2 pulldown required to record or play 23.98 fps media to or from a 29.97 tape format.

## Capture

These settings are used when you use the Capture mode in the Media page to capture clips from tape into the Media Pool. Media is captured as DPX image sequences.

- **Capture:** Lets you choose whether to capture both Video and Audio, or Video Only.
- **Video Format:** The format that scanned film frames are saved as. When capturing from tape, the available options are DPX and QuickTime. When capturing from the Cintel film scanner, this is restricted to Cintel Raw Image (CRI), which is a raw data format that DaVinci Resolve automatically debayers as a Cineon log-encoded image for grading.
- **Codec:** The codec used to write captured media. When capturing from tape, these include the various type of Apple ProRes, 8- and 10-bit YUV 422, 10-bit RGB, and the various types of DNxHD. Cintel Raw Image files default to RGB.
- **Save clips to:** A field that displays the directory path to which media files captured from tape are written. You want to choose a volume that's fast enough to accommodate the data rate of the media format you're capturing.
- **Browse:** Click this button to choose a directory to write captured media to. The directory you choose appears in the field above.

- **Save in this folder path:** A series of checkboxes let you specify what other information to use to define the directory hierarchy that will hold the captured media. Every checkbox you turn on adds an additional directory with a name defined by that checkbox's metadata. You can choose any or all of the following: Program name, Clip number, Reel number, and Roll/Card.
- **Apply reel number to:** Lets you choose how to write the reel name. Two checkboxes let you write the reel number to the file's name, and/or to the Header data.
- **Use prefix:** A field lets you type in a prefix to be used in the media file's name. This lets you add text identification that will make the media more easily identifiable and searchable.
- **Apply prefix to:** Two checkboxes let you choose to use the prefix you typed in the file name, and/or in the folder name.
- **Use frame number with:** When capturing to image sequences, you can choose how many digits to use when writing the frame number into the name of each frame file.
- **Set batch ingest handles to:** When capturing to image sequences from a batch list, defines how many frames of additional handles to ingest along with each logged clip.
- **Enable audio input:** Turn this checkbox on to capture audio along with the video. If you're capturing QuickTime or MXF files, the audio will be written as additional tracks inside each file. If you're capturing to a DPX image sequence, then a broadcast .wav file is recorded separately.
- **Input:** Lets you choose how many tracks of audio to capture, from 2 to 16.

## Playout Settings

These settings only affect the video signal that's output when you use the Edit to Tape mode of the Deliver page.

- **Output:** Lets you choose whether to output both Video and Audio, Video Only, or Audio Only if you're doing an audio layback.
- **Output Source Timecode:** Turn this checkbox on to output each individual clip's source timecode. This option is only applicable when assemble editing to tape.
- **Output LTC:** With a Blackmagic Design DeckLink or UltraStudio device using HD-SDI, longitudinal timecode (LTC) is available on track 16 of the HD-SDI video signal, making it easy to use a Mini Converter de-embedder to extract this analog timecode audio signal and feed it directly to a recording device. This is particularly helpful if you have outboard video processing equipment such as a noise reducer or format converter that does not pass through the VITC timecode.
- **Delay LTC by x frames:** When outputting LTC to bypass outboard processing gear, such as a noise reducer or format converter, you can compensate for the processing delay by delaying the timecode by a matter of frames to ensure that the processed image and timecode reach the deck at the same time. With a DVS card there is a separate timecode output.
- **Enable audio output:** When this checkbox is enabled, DaVinci Resolve will play all available timeline audio along with the video being output, so both can be recorded to tape.
- **Offset audio by x frames:** Lets you specify an offset between the audio track and video to achieve proper A/V sync in cases where the video is being delayed by outboard processing hardware.
- **Output x channels of audio:** Choose the number of audio tracks to output to tape.
- **Set batch playout head handle to x seconds:** When batch outputting multiple clips, you can specify a number of frames before the In point of each clip to be output as well.

- **Set batch playout tail handle to x seconds:** When batch outputting multiple clips, you can specify a number of frames after the Out point of each clip to be output as well.
- **Apply gaps between clips:** This checkbox lets you add a black gap, of the specified duration in frames, between every two clips being output when outputting in batch mode.

## Edit to Tape Queue Option Menu Settings

The following settings and options are available in the Option menu found at the top right-hand corner of the Edit to Tape Queue.

- **Show Job Details:** Lets you see more information about each job listed in the Render Queue.
- **Clear Recorded:** Clears all queue items that have already been output to tape.
- **Clear All:** Clears every queue item.
- **Sort by Reel & Timecode:** Does a multi-criteria sort by reel and timecode, reel first, then timecode.
- **Sort by Timecode:** Sorts by timecode only.
- **Output Source Timecode:** Sets tape output to write source timecode to tape (each clip's individual timecode), rather than record timecode (from the Timeline).
- **Use Preview for Tape Output:** Enables Preview mode when outputting to tape. Preview mode lets you test how an edit to tape operation will work before actually recording it.

## Tape Output Procedures

There are a few different ways you can output media to tape, depending on what you need to accomplish, and on how intensive your grades are relative to the processing capabilities of your workstation.

### Power Mastering

Power Mastering allows you to select either a range of clips, or an entire timeline, to be output to tape in real time, without rendering. This can save you from a time-consuming render, and it also saves disk space. Power Mastering is a no-compromise procedure, since your program is still output at full quality.

If there are a handful of clips with grades that you know are too processor-intensive to be Power Mastered, you can use the Render Cache controls to cache the problem clips before output. For more information, see *Chapter 8, "Improving Performance, Proxies, and the Render Cache."*

### Outputting a Program From the Timeline

The simplest method of outputting to tape is to output a single Timeline, either in its entirety, or in part if you're insert editing a small section that has been revised.

## To Power Master to tape:

- 1 Use the Render Cache, if necessary, to cache any clips that are too processor-intensive to output in real time.
- 2 Click the Edit to Tape mode button to the left of the transport controls to switch to tape output.
- 3 Define how much of the current Timeline to output by moving the playhead throughout the program, and then right-clicking clips that define the beginning and end of the range you need to output and using the Mark In and Mark Out commands.
- 4 Use the transport controls to find the In point on tape at which you want to start recording, and click the In button.
- 5 Choose Insert from the drop-down menu at the upper right-hand side of the Viewer, if you're either outputting to a striped and blacked tape, or inserting over an existing program on tape.
- 6 Click the Power Mastering (lightning bolt) button at the bottom of the tape settings to add the job you've just set up to the Edit to Tape Queue.
- 7 Click Start Record to begin the process of outputting to tape. Device control is used to record to the designated section of tape; a progress bar appears at the bottom of the Render Queue to show how long this will take.

If you don't want to Power Master, you can render the section of the Timeline you need to output as a single clip first, as a self-contained media file, and then add that clip directly to the Edit to Tape Queue. This might be an easier solution if you're outputting an extremely processor-intensive timeline.

## To output a pre-rendered media file to tape:

- 1 Click the Add Clips button at the bottom of the tape settings, and use the VTR Record dialog to select the media file you rendered in step 1, and click Add Clip(s) to Queue.  
The media file you selected is added to the Edit to Tape Queue as a Power Mastering job, and will be output in its entirety.
- 2 Use the transport controls to find the In point on the tape at which you want to start recording, and click the In button.
- 3 Choose Insert from the drop-down menu at the upper right-hand side of the Viewer, if you're either outputting to a striped and blacked tape, or inserting over an existing program on tape.
- 4 To preview what the edit will look like before actually writing it to tape, choose "Use Preview for Tape Output" from the Edit to Tape queue option-menu, and then click Start Record to watch DaVinci Resolve run through the edit using the deck. After previewing the edit, turn this setting off.
- 5 Click Start Record to begin the process of outputting to tape. Device control is used to record to the designated section of tape; a progress bar appears at the bottom of the Render Queue to show how long this will take.

## Batch Outputting Multiple Clips

You also have the option of outputting a number of clips to tape in a batch operation, as opposed to outputting from the Timeline. When you set up a batch of multiple clips in the Edit to Tape Queue, then DaVinci Resolve will automatically record them sequentially to tape.

How the timecode is generated during batch output depends on the "Output Source Timecode" setting in the Capture and Playback panel of the Project Settings. If this is turned off, then a

continuous timecode track will be written to cover everything being output to tape. If this is turned on, then each clip's source timecode will be written to tape discontinuously.

When batch outputting to tape, you can add black handles to each of the clips to space them out, making later ingest easier, using the "Set batch playout head/tail handle" settings in the Capture and Playback panel of the Project Settings.

## To make a Batch Record multiple clips to tape:

- 1 Use the transport controls to find the In point on tape at which you want to start recording, and click the In button.
- 2 Do one of the following to add items to output to the Edit to Tape Queue:
  - Click the Add Clips button at the bottom of the tape settings, and choose one or more media files from the VTR Record browser, and click Add Clip(s) to Queue.
  - Right-click any clip in the Timeline, choose Render This Clip, and then click the Power Mastering button at the bottom of the tape settings to add that clip to the Queue.
- 3 Choose either Assemble or Crash from the drop-down menu at the upper right-hand side of the Viewer. Because you're outputting clips with discontinuous timecode, you cannot insert edit when batch outputting.
- 4 Once you've added all the clips you want to output to the queue, click Start Record to begin outputting to tape. Device control is used to record to the designated section of tape; a progress bar appears at the bottom of the Render Queue to show how long this will take.

# Exporting Timelines to Other Applications

Once you've completed editing and grading a program, you may need to export your final graded timeline as EDL, AAF, XML, or OTIO files in order to send it to another application for further finishing, effects work, or to complete a round trip from an NLE.

To send a graded project to another application, you need to render the graded clips first using the controls on the Deliver page to render the Timeline as individual source clips. In this mode, the reel name and timecode metadata of each rendered clip is mirrored by the exported project file, to maintain the correlation between exported EDL, XML, AAF, or OTIO data and the rendered media. For detailed information about rendering in the Deliver page, see *Chapter 184, "Rendering Media."*

If you render using the Easy Setups that correspond to Final Cut Pro XML or Avid AAF round trips, then an XML or AAF will be exported to the same directory you've rendered to. However, you can still export an XML, AAF, or EDL file separately should the need arise.

Alternately, if you've edited a project from scratch in DaVinci Resolve and need to move a timeline to another application, you can export any timeline to any format for purposes of project exchange, without the need to render new media (depending on your workflow).

Even in situations where you've imported a timeline from another application, the robust project compatibility of DaVinci Resolve makes it possible to import one type of project exchange file, such as XML, and then export a completely different kind, such as AAF or EDL. This lets you use DaVinci Resolve as a project exchange utility.

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# Exporting Timelines from DaVinci Resolve

Modern post-production is not a one-stop process. It's a common need for timelines and assets to be moved between many different applications from a multitude of companies. While DaVinci Resolve has its own proprietary .drt format for use in passing timelines between DaVinci Resolve workstations, the program also offers a robust toolset for moving your assets to many other popular applications.

As of this writing, the most reliable way to pass DaVinci Resolve timelines between applications is as follows:

- **From DaVinci Resolve to/from another DaVinci Resolve workstation:** Export/Import a DaVinci Resolve Timeline file (.drt)
- **From DaVinci Resolve to/from another application:** Export/Import an OpenTimelineIO file (.otio, .otioz), if supported. If not supported, fall back to using XML or AAF files instead.

## Exporting to OTIO

DaVinci Resolve supports the Open Timeline IO (.otio) format for importing and exporting timelines between applications. OTIO is an open source media and timeline interchange format created by the Academy Software Foundation. It's designed to be application and platform agnostic, allowing you to pass your timeline and its media assets between programs with more compatibility than AAF or XML.

There are two different OTIO formats supported by DaVinci Resolve:

- **.otio:** These files contain just the metadata about the timeline and no associated media. They are small, portable, and require the end user to link the timeline to their own copies of the media.
- **.otioz:** These bundle files contain both the timeline metadata and all of the timeline's media assets zipped together into one file. As a result, this file can be very large, as it contains the full length media files of all assets used in the timeline. However it assures that whoever imports the file has all the media needed and is linked automatically to replicate the timeline on their machine without error.

### To Export an OpenTimelineIO (.otio, .otioz) file:

- 1 Select File > Export > Timeline (Shift-Command-O).
- 2 Type in a name for the timeline file.
- 3 In the file browser select either .otio files or .otioz bundle files in the format selector.
- 4 Click Save.

**NOTE:** If you selected to export .otioz bundle files, an additional step of creating the OTIO bundle will occur as it adds each complete media file from all clips in the timeline to the final bundled file. This can take a long time and may need additional storage based on the length and amount of media assets used.

# Exporting to AAF/XML

Whether you've edited your project from scratch inside of DaVinci Resolve, or you're doing a round trip with an application that uses AAF, Final Cut Pro 7 XML, or Final Cut X XML project exchange formats, you can export any DaVinci Resolve timeline in the Edit page to any project format DaVinci Resolve supports. Whatever your workflow, keep the following in mind:

- **Timelines are automatically exported when you render a timeline in the Deliver page:** When you use the "Final Cut Pro Round-Trip" or "Avid AAF Round-Trip" render setting presets, or a preset created from one of them, a corresponding XML or AAF file is automatically exported along with the media you render.
- **Even if you've imported a project from another application, you can re-edit imported projects before export:** If necessary, you can freely re-edit projects you're planning to export. When you export an AAF or XML file, the Timeline will be sent back to the originating NLE, or onward to the finishing application of choice.
- **Unsupported effects are sometimes preserved in Round Trip workflows:** If there were effects or clip constructs in the original sequence that were not compatible with DaVinci Resolve, how those effects will be handled depends on the project format you're exporting to, and whether or not you've edited the project. For XML projects, unsupported effects are saved internally by DaVinci Resolve, and are exported with the XML file that you output no matter what. Consequently, they should reappear when you reopen the exported file in the originating NLE. For AAF projects, you can export unsupported effects as long as you don't re-edit the project. However, if you do re-edit the project, then you can only export an AAF file that's been stripped of all unsupported effects.
- **Project formats can be converted to other formats:** Using DaVinci's Export commands, compatible project formats can be converted from one format to another. For example, an imported EDL can be output as Final Cut Pro X XML. For that matter, Final Cut Pro 7 XML can be imported and then exported as Final Cut X XML. Or, an AAF file from Media Composer can be imported and then exported as a Final Cut Pro XML file to be opened in any NLE or finishing application compatible with that format, such as Premiere Pro or Smoke.

## To export an AAF or XML file after you've rendered the graded clips:

Do one of the following:

- 1 To export the current Timeline, choose File > Export AAF, XML, or press Shift-Command-O.
  - Open the Edit page, right-click the Timeline you want to export in the Media Pool, and choose Timelines > Export > AAF/XML.
  - When the Export XML dialog appears, type a name for the file and choose a location for the exported XML file, then click Save.
- 2 An XML version of that timeline is saved, complete with references to the graded media you rendered, and is ready for import into an NLE or finishing application.

# More About Exporting to AAF

When you export to AAF, there are actually two options that are available to you, depending on whether you made editorial changes to the Timeline in the Edit page:

- **If you didn't make any editing changes to the Timeline you imported:** You can choose File > Export AAF, XML, and choose "AAF Files" from the Format drop-down menu. This exports all audio and effects using data from the original AAF file that was exported from Media Composer, regardless of whether or not they're supported in DaVinci Resolve. When you export an unedited AAF, DaVinci Resolve uses the Avid AAF file that you originally imported to create an updated one; make sure it's still in the same location as it was when you first imported it into DaVinci Resolve.
- **If you made editing changes to the Timeline you imported, or you're exporting a project that wasn't AAF to begin with:** Then you need to right-click the Timeline you want to export in the Media Pool and choose Timelines > Export > Generate New AAF. This option creates a brand new AAF file, but audio and effects that are not supported in DaVinci Resolve in an AAF import are discarded.

## Exporting an EDL

DaVinci Resolve is also capable of exporting EDLs that can be reimported into other applications. For more information about EDL workflows, see *Chapter 24, "Ingesting From Tape."* see *Chapter 56, "Conforming and Relinking Clips."* and *Chapter 60, "Conforming EDL Files."*

### To export an EDL:

- 1 Open the Edit page and select the Timeline you want to export an EDL from in the Media Pool.
- 2 Exported EDLs only have a single video track. For timelines with multiple tracks, only the events on the video track with the destination control assigned to it will be exported (the destination control is the first control at the left in the track header). If you want to export a track other than Video 1, you can assign the destination control to the specific track you need to export.
- 3 Right-click the Timeline in the Media Pool, and choose Timelines > Export > AAF/XML/EDL from the contextual menu.
- 4 When the Export Timeline dialog appears, type a name, choose a location for the exported EDL, and choose EDL Files from the drop-down menu at the bottom, then click Save. An EDL is exported.

# Exporting a Missing Clips EDL

This command lets you export a quick report listing all clips that are offline in the currently selected track of the Timeline in the Edit page. This report is in EDL format, with one event for each clip that's offline, which describes the reel number and source timecode of the missing media, as well as the record timecode of the missing media's position on the Timeline.

## Here's an example of an exported Missing Clips EDL:

TITLE: ( no title )						
1	A001_C002_0820GA_001	V	C	10:28:27:03	10:28:28:00	01:00:00:00
2	A004_C012_0820MC_001	V	C	14:07:31:21	14:07:35:13	01:00:12:13
3	A017_C001_0820CV_001	V	C	21:16:14:22	21:16:15:00	01:00:16:05

Once you've exported this information, you can hand it off to whomever can help you track down the missing media.

## To export a Missing Clips EDL:

- 1 Open the Edit page and open the Timeline you want to export a Missing Clips EDL for in the Timeline browser.
- 2 For timelines with multiple tracks, only the events on the video track with the destination control assigned to it will be examined for missing clips. If you want to examine a track other than Video 1, you can assign the destination control to the specific track you need to examine for missing clips.
- 3 Right-click the Timeline in the Media Pool, and choose Timelines > Export > Missing Clips EDL from the contextual menu.
- 4 When the Save Missing Clips EDL dialog appears, type a name and choose a location for the exported EDL, then click Save.

# Exporting Timeline Markers to EDL

If you keep notes about a project within the notes field of Timeline markers, found in the Timeline ruler, then it's possible to export those notes as an EDL.

## To export timeline markers as an EDL:

- 1 Right-click that timeline in the Media Pool, and choose Timelines > Export > Timeline Markers to EDL.
- 2 Choose a location and export format from the Export Edit Index dialog, and click Save. Each Timeline marker is listed in the resulting EDL, with any notes included along with a duration, where applicable.

# Exporting to CDL

DaVinci Resolve can export and import basic grading data to and from other applications via a Color Decision List (CDL). CDLs are an industry-standard file format originally developed by the American Society of Cinematographers' technology committee. DaVinci Resolve supports the 1.2 CDL standard that defines the slope, offset, and power for each of the red, green, and blue channels, as well as the overall saturation of each clip in a program.

CDL files are formatted similarly to EDLs, with SOP (Slope/Offset/Power), and SAT (Saturation) values embedded as metadata in much the same way as comments are in a more typical EDL.

## Here's an example of a single CDL event:

```
020 001 V C 03:02:49:13 03:02:53:00 01:01:28:11 01:01:31:22
*ASC_SOP (1.109563 1.717648 0.866061)(-0.238880 -0.390357 0.353743)
(0.672948 1.384022 0.889876)
*ASC_SAT 1.000000
```

Because the CDL definition of a grade is so narrow, projects you're planning to export to other applications via a CDL must be constrained to only those operations the CDL mathematically defines. Here are some things to keep in mind:

- Only primary corrections in the first node of each clip are exported.
- Restrict yourself to using the Lift/Gamma/Gain, Offset, and Saturation controls.
- Keyframes are never exported. If keyframes are present in a grade, only the parameter values at the first frame of the clip are used.
- The track grade and group grades are completely ignored.
- If there is an HSL Qualifier or a Power Window in the first node, it is ignored and the corrections in that node are exported as if it were a primary correction.
- Do not make Y' only adjustments; they're not compatible with CDLs. To ensure that your exported CDL is accurate, set the Lum Mix parameter in the Primary Controls palette for each grade to 0. For workflows involving frequent CDL export, you can turn on the "Luminance Mixer defaults to zero" option in the Color section of the General Options panel of the Project Settings to guarantee this parameter is always set to 0.

If your timeline conforms to all of these restrictions, then you're ready to export a CDL.

## To export a CDL:

- 1 Open the Edit page, right-click the Timeline you want to export in the Media Pool, and choose Timelines > Export > CDL from the contextual menu.
- 2 Enter a name for the CDL, choose a location to save it to, and click OK.

For more information on importing a CDL to add grades to your project, see *Chapter 147, "Copying and Importing Grades Using ColorTrace."*

# Exporting the Edit Index as a CSV or TXT File

You can export the current contents of the Edit Index, in the Edit page, as a self-contained file to use for reference in a variety of ways.

## To export the Edit Index:

- 1 Open the Edit Index, and choose one of the Edit Index filters from the Edit Index option menu, if necessary. For example, you could filter the edit index by Offline Clips Only if you wanted to export a list of all offline clips in the current timeline.
- 2 Right-click that timeline in the Media Pool, and choose Timelines > Export > Edit Index, then choose a location and export format from the Export Edit Index dialog, and click Save.

# Exporting to ALE

DaVinci Resolve is also capable of exporting ALE (Avid Log Exchange) files. ALE is a tab-delimited, ASCII text-based clip logging list format that enables the exchange of clip metadata that can't be embedded inside MXF files. ALE files are designed to let you export a log of all clips that are used in a particular timeline with all of the metadata that's associated with those clips in DaVinci Resolve, so this metadata can be imported into and associated with clips inside Media Composer or Symphony.

ALE files are divided into three sections, labeled Heading, Column, and Data:

- The Heading provides information about the clips being logged, including the picture and audio format, and the frame rate.
- The Column line defines each of the columns of metadata being exported in the list. There's an automatic minimum of metadata columns that are automatically included, regardless of whether they're populated or not. However, additional metadata columns are automatically added to this list by DaVinci Resolve when any corresponding metadata field in the Metadata Editor is populated. For example, if you enter information into the Camera, Keyword, and Shot fields of the Metadata Editor, then those columns will be added to the exported ALE. There are no user settings that control this.
- The Data section contains multiple lines, one for each event being referenced in the list, that contain all the data corresponding to that clip.

If you're exporting stereoscopic clips from stereoscopic timelines, the following additional columns of metadata are automatically included in the two ALE files that are generated:

- Pan (relative to timeline resolution)
- Tilt (relative to timeline resolution)
- Zoom
- Rotate
- Convergence (relative to timeline resolution)
- HFlip (0 or 1)
- VFlip (0 or 1)

If you're exporting ALE files from projects using ARRIRAW clips, the following additional columns of metadata can be included:

- Temperature
- Tint

#### To export an ALE file:

- 1 Open the Edit page, right-click the Timeline you want to export in the Media Pool, and choose Timelines > Export > ALE from the contextual menu.
- 2 Enter a name for the ALE file, choose a location to save it to, and click OK.  
The ALE file is saved, and a dialog appears reminding you of the file path to which it was saved (click OK to dismiss it).

#### Here's an example of a short ALE export:

##### Heading

<b>FIELD_DELIM</b>	TABS
<b>VIDEO_FORMAT</b>	1080
<b>AUDIO_FORMAT</b>	48khz
<b>FPS</b>	23.976

##### Column

Name, Tracks, Start, End, Take, Tape, UNC, FPS, Reel, Scene, Shoot, date, Manufacturer, Source Resolution, Source, Bit Depth, DESCRIPT, Comments, Audio SR, Audio Bit Depth, Auxiliary TC1, KN Start, Source File Path, Display Name

##### Data

```
A001_C002_V01.CBF6A4FD139AD.mxf, V, 10:28:27:03, 10:28:28:00,  
A001_C002_V01.CBF6A4FD139AD  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A001_C002_V01.CBF6A4FD139AD.mxf  
23.98, DaVinci Resolve, 1920x1080, 10  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A001_C002_V01.CBF6A4FD139AD.mxf  
A001_C002_V01.CBF6A4FD139AD  
  
A016_C008_V01.CBF6A4FD13ABD.mxf,V, 23:35:56:03, 23:36:00:11,  
A016_C008_V01.CBF6A4FD13ABD  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A016_C008_V01.CBF6A4FD13ABD.mxf  
23.98, DaVinci Resolve, 1920x1080, 10  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A016_C008_V01.CBF6A4FD13ABD.mxf  
A016_C008_V01.CBF6A4FD13ABD  
  
A004_C012_V01.CBF6A4FD1438E.mxf, V, 14:07:31:21, 14:07:35:15,  
A004_C012_V01.CBF6A4FD1438E  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A004_C012_V01.CBF6A4FD1438E.mxf  
23.98, DaVinci Resolve, 1920x1080, 10  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A004_C012_V01.CBF6A4FD1438E.mxf
```

**NOTE:** The commas shown above are not normally in the ALE but shown here for field clarity.

# Exporting to ALE with CDL

Avid Media Composer and Symphony also support the import of ALE files with additional CDL metadata columns with which to associate SOP (Slope/Offset/Power) and SAT (Saturation) adjustment metadata to each clip that's logged in the ALE.

When you import an ALE with CDL file into Media Composer, the SOP and SAT data populate metadata columns for preservation and export in various Avid workflows. Here's an example of the Heading, Column, and Data sections of a sample ALE with CDL, with one line of clip and CDL data.

## To export an ALE with CDL file:

- 1 Open the Edit page, right-click the Timeline you want to export in the Media Pool, and choose Timelines > Export > ALE and CDL from the contextual menu.
- 2 Enter a name for the ALE file, choose a location to save it to, and click OK.

The ALE file is saved, and a dialog appears reminding you of the file path to which it was saved (click OK to dismiss it).

## Here's an example of a short ALE with CDL export:

### Heading

FIELD_DELIM	TABS
VIDEO_FORMAT	1080
AUDIO_FORMAT	—
FPS	23.976

### Column

Name, Tracks, Start, End, Take, Tape, UNC, FPS, Reel, Scene, Shoot date, Manufacturer, Source Resolution, Source Bit Depth, DESCRIPT, Comments, Audio SR, Audio Bit Depth, Auxiliary TC1, KN Start, Source File Path, Display Name KeyCode, ASC\_SOP, ASC\_SAT, RESOLVE\_SIZING

### Data

```
A001_C002_V01.CBF6A4FD139AD.mxf, V, 10:28:27:03, 10:28:28:00,  
A001_C002_V01.CBF6A4FD139AD  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A001_C002_V01.CBF6A4FD139AD.mxf  
23.98, DaVinci Resolve, 1920x1080, 10  
/Volumes/Disk_1/Avid MediaFiles/MXF/1/A001_C002_V01.CBF6A4FD139AD.mxf  
A001_C002_V01.CBF6A4FD139AD  
(1.0260 1.0260 1.0260)(-0.0260 -0.0260 -0.0260)(0.8237 0.8237 0.8237) 0.8640  
(0.0000 0.0000 1.0000 0.0000 0.0000 0 0)
```

**NOTE:** The commas shown above are not normally in the ALE but shown here for field clarity.

# Exporting Timeline Markers to EDL

This command lets you export a quick report listing the text of all markers that have been added to the Timeline as notes in an EDL. Clip markers are ignored. This report is in EDL format, with one event for each Timeline marker, with a placeholder reel number (001 by default), and source and record timecodes that correspond to each marker's position in the Timeline (with a duration of one frame). An EDL note for each event lists the Marker note, if there is one. There is no note available for the color of the markers.

**Here's an example of an exported Timeline Marker EDL:**

```
TITLE: ( no title )

001 001   V   C   01:00:09:09 01:00:09:10 01:00:09:09 01:00:09:10
Replace with another car door sound effect

002 001   V   C   01:00:20:12 01:00:20:13 01:00:20:12 01:00:20:13
Trim this clip shorter

003 001   V   C   01:00:30:12 01:00:30:13 01:00:30:12 01:00:30:13
Find another stock footage clip of the bridge

004 001   V   C   01:00:30:13 01:00:30:14 01:00:30:13 01:00:30:14
Trim this montage three seconds shorter
```

# Exporting and Importing Media Pool Metadata

DaVinci Resolve makes it possible to export metadata from the Media Pool of one project for import into the clips of another project, for instances where you need to move metadata around. This process exports all metadata from the Media Pool as a .csv file.

For example, a DIT might have entered a lot of metadata to the DaVinci Resolve project used for generating dailies, but then an impatient editor might have created a separate project to begin editing those dailies. Instead of requiring the editor to enter each clip's metadata all over again, you can export the metadata from the DIT's project and import it into the editor's new project, automatically matching the relevant metadata to each corresponding clip.

## To export Media Pool metadata:

- 1 Open a project containing Media Pool metadata you want to export.
- 2 Optionally, select which clips in the Media Pool you want to export metadata for.
- 3 Choose File > Export Metadata From > Media Pool to export metadata from every clip in the Media Pool, or choose File > Export Metadata From > Selected Clips to only export metadata from clips you selected in step 2.
- 4 When the Export Metadata dialog appears, enter a name and choose a location for the file to be written, then click Save. All metadata is exported into a .csv file that can be viewed and/or edited in any spreadsheet application.

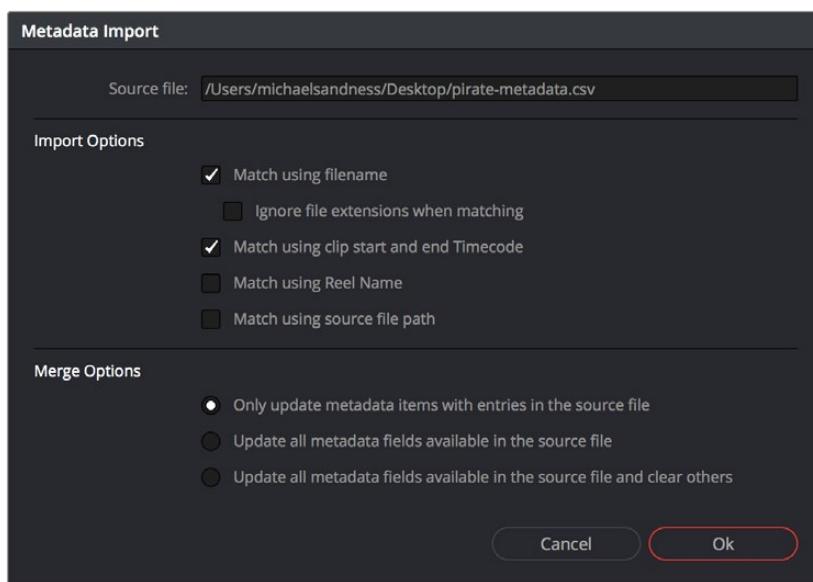
## To import Media Pool metadata:

- 1 Open a project containing clips you want to populate with imported metadata.
- 2 Optionally, select which clips in the Media Pool you want to import metadata to.
- 3 Choose File > Import Metadata To > Media Pool to import metadata to potentially every clip in the Media Pool, or choose File > Import Metadata To > Selected Clips to only import metadata to clips you selected in step 2.
- 4 When the Import Metadata dialog appears, choose a metadata .csv file to import, and click Open.
- 5 When the Metadata Import dialog appears, choose the Import Options you want to use to match the .csv file's metadata to the correct clips in the currently open project. By default, DaVinci Resolve tries to use "Match using filename" and "Match using clip start and end Timecode" to match each line of metadata in the .csv file with a clip in the Media Pool, but there are other options you can use such as ignoring file extensions, using Reel Name, and using source file paths.
- 6 Next, choose which Merge Option you want to use in the Metadata Import dialog. There are three options:

**Only update metadata items with entries in the source file:** The default setting. Only updates a clip's metadata if there's a valid entry in the imported .csv file. Other clip metadata fields are left as they were before the import.

**Update all metadata fields available in the source file:** For each clip that corresponds to a line of metadata in the imported .csv file, every single metadata field referenced by the .csv file is overwritten, regardless of whether or not there's a valid entry for that field.

**Update all metadata fields available in the source file and clear others:** For each clip that corresponds to a line of metadata in the imported .csv file, every single metadata field referenced by the .csv file is overwritten, regardless of whether or not there's a valid entry for that field. Furthermore, metadata fields that aren't referenced by the imported .csv file are cleared of whatever metadata was there before.



The Metadata Import dialog that lets you choose options for how to match and merge imported metadata

- 7 The Metadata Import dialog that lets you choose options for how to match and merge imported metadata
- 8 When you're finished choosing options, click Ok and all available metadata from the source .csv file will be imported.



# Blackmagic Cloud

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## Chapter 188

# Blackmagic Cloud Project Server

This chapter describes setting up and using the Blackmagic Cloud Project Server, allowing you to share projects and collaborate with other DaVinci Resolve users around the world.

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# Cloud Project Libraries

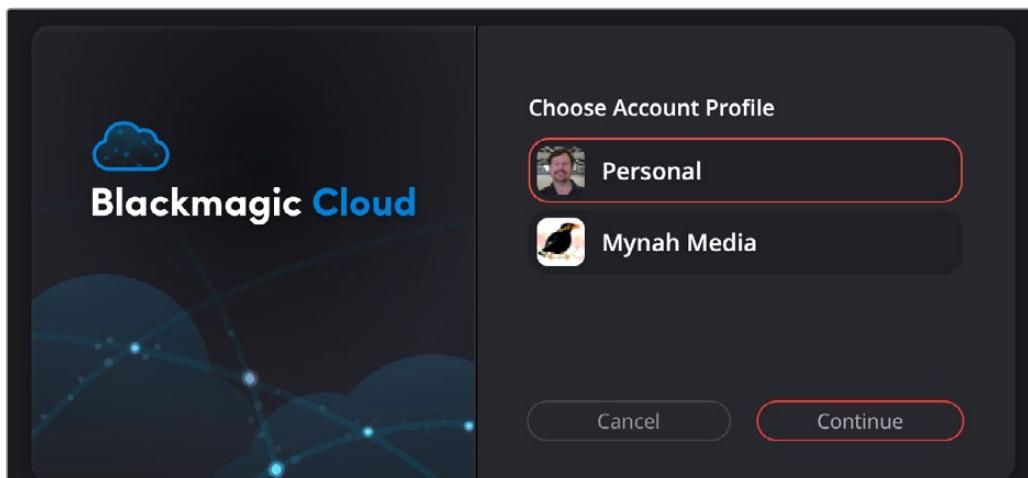
Cloud project libraries are hosted on Blackmagic's Project Library servers on the internet, allowing DaVinci Resolve users to connect and collaborate on the same projects from any location in the world.

## Connecting to a Blackmagic Cloud Project Library

Blackmagic houses project library cloud servers in various locations around the world that users can access for a nominal monthly fee. While Blackmagic does host the project files, no actual media is stored on the Blackmagic servers making it still a very secure method of working remotely.

### To sign into to the Blackmagic cloud:

- 1 Sign up for a Blackmagic ID using your email address and credit card at <http://blackmagicdesign.com>
- 2 In the Project Manager Window select Cloud from the Project Library icons in the upper left.
- 3 Choose the Blackmagic Cloud option from the Sign-In dialog, and input your Blackmagic ID and Password.
- 4 If you are a member of an Organization Profile, you can choose to sign into that account or your personal account.



The Blackmagic Cloud login dialog box

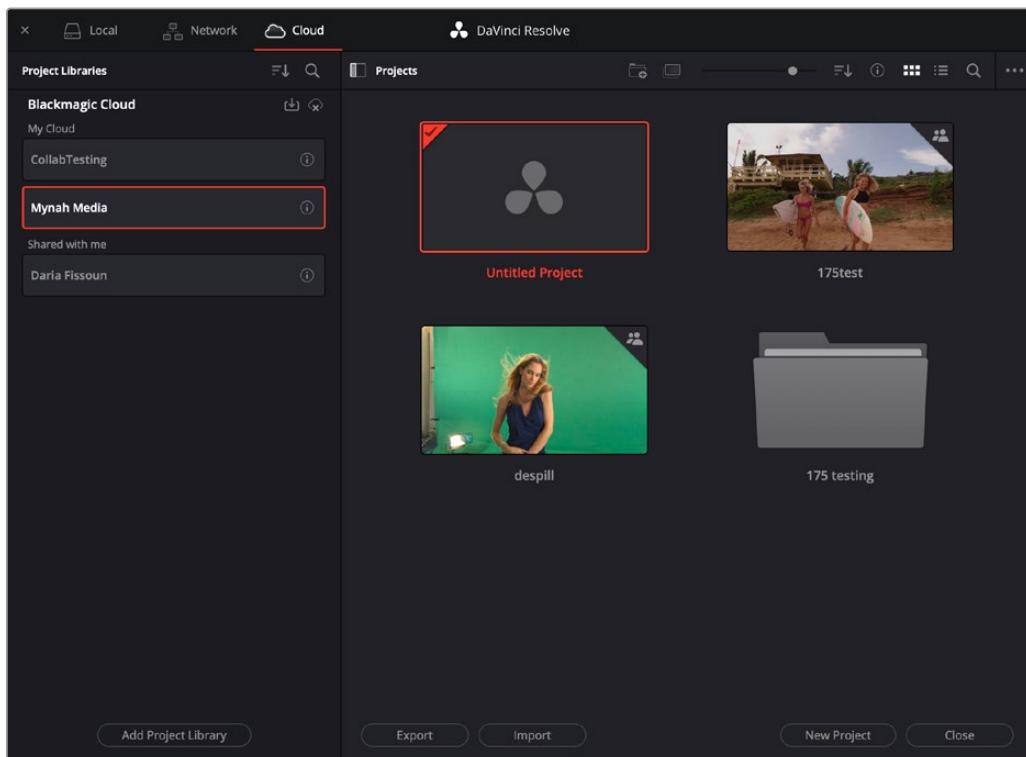
### To sign out of the Blackmagic cloud:

- 1 In the Project Manager window, select Cloud from the Project Library icons in the upper left.
- 2 Click on the Sign Out icon (The small cloud with an "x" under it) in the upper right of the Blackmagic Cloud panel.

## Accessing the Cloud Project Library in DaVinci Resolve

Once connected, cloud project libraries are accessed by clicking on the Show/Hide Project Libraries icon in the upper left of the Project Manager. A sidebar then opens up showing all your connected project libraries. Click on the Cloud icon to open up the cloud project library. It is split into two

sections: "My Cloud," which manages all the project libraries that you create, and "Shared with me," which shows project libraries that other users have created, but given you shared access to.



The Blackmagic cloud library

## Optimization and Performance of a Cloud Project Library

Before learning about how to create and manage cloud project libraries, it's worthwhile addressing server lag and optimizations. The project library is a database of all the edits, clip metadata, visual effects, color corrections, and audio engineering applied to your timeline. This project library is queried and updated constantly as you use DaVinci Resolve. When the project library is local to, or on the same network as your workstation, these updates happen more or less instantaneously. However, when the project server is half-way around the world on the internet, the speed of light and internet routing start to insert perceptible lag time.

Luckily the majority of the changes required to mitigate this have been done by the DaVinci Resolve team. They have re-written the underlying project library code over a period of several months to optimize it for internet performance, and in most cases the responsiveness will be indistinguishable from using a local project library. However, these types of processes involve intensive and persistent project library operations, and some lag will become apparent when:

- Changing cloud project libraries
- Loading a project from the cloud project library
- Backing up and restoring cloud project libraries

It's important to keep in mind, that once loaded, actually working in DaVinci Resolve will still be as fluid and responsive as you are used to working with local libraries.

**TIP:** The major optimization that the user can make in cloud library performance is to decide where to physically locate the server. The best performance will be found closest to the city where the team is working. In some cases, the team will be working in multiple cities and countries around the world. In those cases, the server should be hosted in the region of the person who uses the project library the most, and that person is the editor. In the Edit and Cut pages, the project library is written to whenever the user releases the mouse button, while on the Color page the project library is only written to when you select a new clip. So for the best performance, you want to host the server location as close to the editor as possible.

## Creating a New Cloud Project Library

Creating a new cloud library requires manually adding it on the Blackmagic Cloud website.

### To create a new cloud project library:

- 1 Tap on the Cloud icon to Sign into the Blackmagic cloud server in the Project Manager.
- 2 Tap on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Tap on the "Add Project Library" button at the bottom of the sidebar.
- 5 A web browser will open up, automatically taking you to the Blackmagic Cloud web interface.
- 6 Tap on the "Add Project Library" button at the bottom of the sidebar in your web browser
- 7 Enter a new name for your cloud project library, and then select the region in the world in which you want to host the server. It is best to select a server closest to the project's editor, and then the Version of Davinci Resolve you want the library to be compatible with.
- 8 Press the Add button.

You can now create or import new projects directly into your new cloud project library.

## Deleting or Renaming a Cloud Project Library

If you are finished with a particular cloud project library and want to delete it or wish to change its name you can do so through the Project Libraries interface.

### To delete a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Right-click on the library you want to delete in the Project Libraries sidebar, and select Delete from the drop-down menu.
- 5 Click the Delete button on the confirmation dialog box that opens.

Deleting a cloud project library is a permanent and not undoable action. Make sure you have everything you need from this library before you click delete. Once it's gone, it's gone.

### To rename a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Right-click on the library you want to rename in the Project Libraries sidebar, and enter the new name in the dialog box.
- 5 Click the OK button.

**TIP:** You can not delete or change the name of the currently connected project library (indicated by an orange highlight around it). In order to do so, you must select and connect to another project library first, and then apply the steps above.

## Upgrading a Cloud Project Library

From time to time, new versions of DaVinci Resolve require changes to the way projects are created, which requires project libraries created with older versions of DaVinci Resolve to be upgraded before you can access the projects within. Fortunately, this is a simple process.

### To upgrade a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Right-click on the library you want to upgrade in the Project Libraries sidebar, and select Upgrade from the drop-down menu.
- 5 Click the upgrade button on the confirmation dialog box that opens.

## Sharing a Cloud Project Library

You can share a cloud project library with other users around the world with a Blackmagic ID.

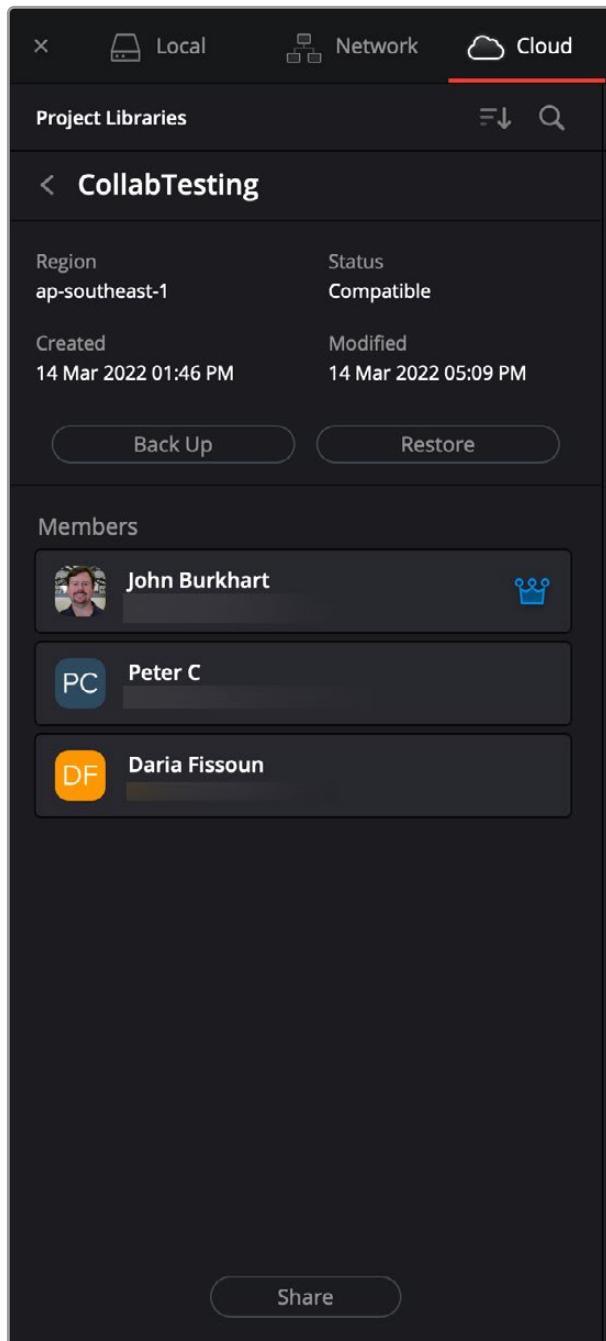
### To share a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Click on the Details icon (the circled letter "i") on the cloud project library you wish to share to open the details settings.
- 5 A members list will appear, and your user name and email will be first on the list with a little crown icon, showing that you are the owner of this project library.
- 6 Click the Share button at the bottom of the sidebar.

- 7 Enter the Blackmagic ID (email address) of the person you want to share this project library with.
- 8 Press the Share button.

The user will instantly have access to this shared library, and an email will inform them as well. If the user was already logged in with their Blackmagic ID, they will have to log out and re-login again for the shared project library to show up in their cloud library.

**IMPORTANT:** The users you share your project library with have access to modifying and deleting any projects within that shared library, so be judicious about who you give access to.



The Members section of the Blackmagic cloud library

# Removing a User from a Shared Cloud Project Library

If you are the owner of a shared cloud project library, you can remove another shared user's access to it.

## Removing a shared user from a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Click on the Details icon (the circled letter "i") on the cloud project library you wish to share to open the details settings.
- 5 A members list will appear, showing all users that have access to this project library.
- 6 Right-click on the user you wish to remove and select Remove Member from the drop-down list.

# Backing up and Restoring a Cloud Project Library

You can back up and restore a cloud project library in the Blackmagic cloud itself.

## To back up a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Click on the Details icon (the circled letter "i") on the cloud project library you wish to back up to open the details settings.
- 5 Click the Back Up button.
- 6 After some time, a dialog box will appear confirming the backup has been made to the cloud.

## To restore an older version of a cloud project library:

- 1 Sign into the Blackmagic cloud server in the Project Manager.
- 2 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 3 Select the Cloud icon from the Project Library options.
- 4 Click on the Details icon (the circled letter "i") on the cloud project library you wish to restore to an earlier version to open the details settings.
- 5 Click the Restore button.
- 6 Navigate to the version that you want to restore in the Backups list.
- 7 Assign a new name to the restored library.
- 8 Click the Restore button.

## Blackmagic Cloud Support for Importing ATEM Projects

If you're working with ATEM switchers, and use the workflow of creating multiple ISO feeds and the accompanying DaVinci Resolve project, you can now log into a Blackmagic Cloud project library, select an existing DaVinci Resolve cloud project, and use the Camera Uploads mechanism to synchronize recorded media to DaVinci Resolve. DaVinci Resolve collaborators can see the edit decisions made from the switcher as a new timeline in that project.

- The DaVinci Resolve project needs to be set to synchronize camera originals to see the uploaded media from the switcher.
- New timelines may use custom settings if the ATEM resolution or frame rate differs from project settings.

## Setting up a Cloud-Based Collaboration Workflow

As internet bandwidth has increased over the years, it has recently become possible to collaborate on a project completely online. While once you needed to be in the same building connected to a fast LAN, and Network Attached Storage (NAS), it is now possible to collaborate in real time from all around the world using the internet and cloud storage instead. Below are instructions for setting up a completely cloud-based workflow using the tools and settings in DaVinci Resolve 18 or higher.

This sample workflow consists of Editor A, Colorist B, and Audio Engineer C, all in different parts of the world, and wanting to collaborate on the same project at the same time. The ideal is to minimize the amount of media management involved and to not have to send individual project files back and forth.

### Set up the Blackmagic Cloud and a Cloud Library

- Users A, B, and C sign up for the Blackmagic cloud service.
- Users A, B, and C log into the cloud in the Project Manager in their own copies of DaVinci Resolve.
- User A creates a new cloud library, and invites Users B and C to share it. Since User A is the editor, they will locate the cloud library's server nearest themselves.

### Set up the Cloud Storage

- Users A, B, and C sign up for a cloud storage provider (Dropbox, iCloud, OneDrive, Google Drive, etc.)
- Users A, B, and C configure their cloud storage so they all can share access to the same cloud-based folder. This folder should be at the top level of the cloud storage. They decide to name the folder Episode 12.
- Users A, B, and C create a file hierarchy system in their shared Episode 12 folder, such as new subfolders for Audio, Proxies, and Graphics.
- Users A, B, and C mount their shared storage folder on their own computers. Editor A adds some logos and still photos to the Graphics folder. Audio Engineer C adds some music and sound effects to the Audio folder. This takes a while to upload and distribute from the cloud, but eventually all users have the same media locally on their computers.

## Create the Proxy Media

- Colorist B has the RAW camera masters on a hard drive connected to their system. Since only they need access to the RAW camera files for color grading, they will make low bandwidth proxies for the Editor and Audio Engineer to work with. These files are small enough to upload and store in their cloud storage folder.
- Colorist B creates proxy files of the RAW media in the Blackmagic Proxy Generator application. For more information on using the Blackmagic Proxy Generator, see *Chapter 8, “Improving Performance, Proxies, and the Render Cache.”*
- Colorist B uploads the proxy files to the Proxies folder in their cloud storage.

## Setup the DaVinci Resolve Project and Settings

- Colorist B creates the new project in the cloud library, and sets up its resolution and frame rate, etc.
- Colorist B turns on the File > Multiple User Collaboration setting.
- Users A, B, and C open the project and set their individual file paths to their cloud storage folder “Episode 12” in the Path Mapping section of the Project Settings. For more information on Path Mapping, see *Chapter 6, “Project Settings.”*
- Colorist B imports the RAW media from their local hard drive into their Media Pool, and links them to the proxies he uploaded to the Episode12/Proxies folder. At this point, Editor A, and Audio Engineer C now have access to the proxy media, while Colorist B can switch back and forth between RAW media and Proxies as needed. If necessary, Colorist B can also decide to upload the RAW media to the shared folder if space and time allow. While the other users are waiting for this media to upload, if they have the “Prefer Camera Originals” setting checked in Playback > Proxy Handling menu, they can continue to edit using the proxies, and as the RAW media files upload, they will automatically replace the proxy files as they come in.
- Editor A imports their still photos to the Media Pool from the Episode 12/Graphics folder. They immediately become available to Users B and C without relinking.
- Audio Engineer C imports their music tracks to the Media Pool from the Episode 12/Audio folder. They immediately become available to Users A and B without relinking.
- As the users continue to add more media into the shared folder and bring it into the Media Pool, there may be a lag as the media is uploaded to the cloud storage, and then downloaded to the other users. During this time the clip will appear as media offline but will relink automatically once the file finishes its download to the local computer.

## Continue working in DaVinci Resolve’s Collaborative Workflow

From here, the editor edits, the colorist colors, and the audio engineer handles the sound design all using DaVinci Resolve’s existing collaborative workflow tools. For more information on using these tools, see *Chapter 193, “Collaborative Workflow.”*

## Chapter 189

# Blackmagic Cloud Storage

This chapter describes how to set up and use your Blackmagic Cloud Storage.

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# Blackmagic Cloud Storage

Blackmagic Cloud Storage provides a centralized and secure space online for your media assets and proxies. How you use this space is up to you, from a multi-user world-wide collaboration session, to a single user just picking up their laptop and leaving their workstation behind, to simply having a secure back up of media from an old spinning hard drive. Blackmagic Cloud Storage is completely integrated into DaVinci Resolve and the existing Blackmagic Cloud service.

All Blackmagic Cloud users, both new and existing, get a limited amount of free storage.

You can log into [cloud.blackmagicdesign.com](http://cloud.blackmagicdesign.com) to access this storage, and purchase project libraries and/or additional storage. User plans and prices are listed there.

The Free Storage can be used to:

- Upload camera captures from the Blackmagic Camera app.
- Downloads require logging into the Blackmagic Cloud Website, and manually downloading the clips.

The Paid Storage can be used to:

- Sync media and proxies for DaVinci Resolve Cloud collaboration projects.
- Remote Camera Collaboration from the Blackmagic Camera app.
- Upload camera captures from the Blackmagic Camera app.

## Setting up a Blackmagic Cloud Project

Setting up a Blackmagic Cloud based project has been refined and simplified in 18.6, allowing you to set up all the configuration options, including Blackmagic Cloud Storage, from one easy setup screen.

**NOTE:** To use Blackmagic Cloud, you must first sign up for a Blackmagic Cloud account at [cloud.blackmagicdesign.com](http://cloud.blackmagicdesign.com) and then sign into your account in DaVinci Resolve.

### To setup a new Cloud Project:

- 1 From DaVinci Resolve's Project Manager, select Cloud from the Project Library options in the upper left. Your Blackmagic Cloud Library should be active (highlighted in orange).
- 2 Click the New Project button or right-click in the background and select New Project from the contextual menu. Or import an existing local DaVinci Resolve project that you want to add to the Blackmagic Cloud.
- 3 Choose the options you want in the Create New Cloud Project dialog.
- 4 Click the Create Button.

The Create New Cloud Project dialog box lets you set up the media locations and sharing parameters of your project.



Select Remove Unused Clips from the Media Pool option menu

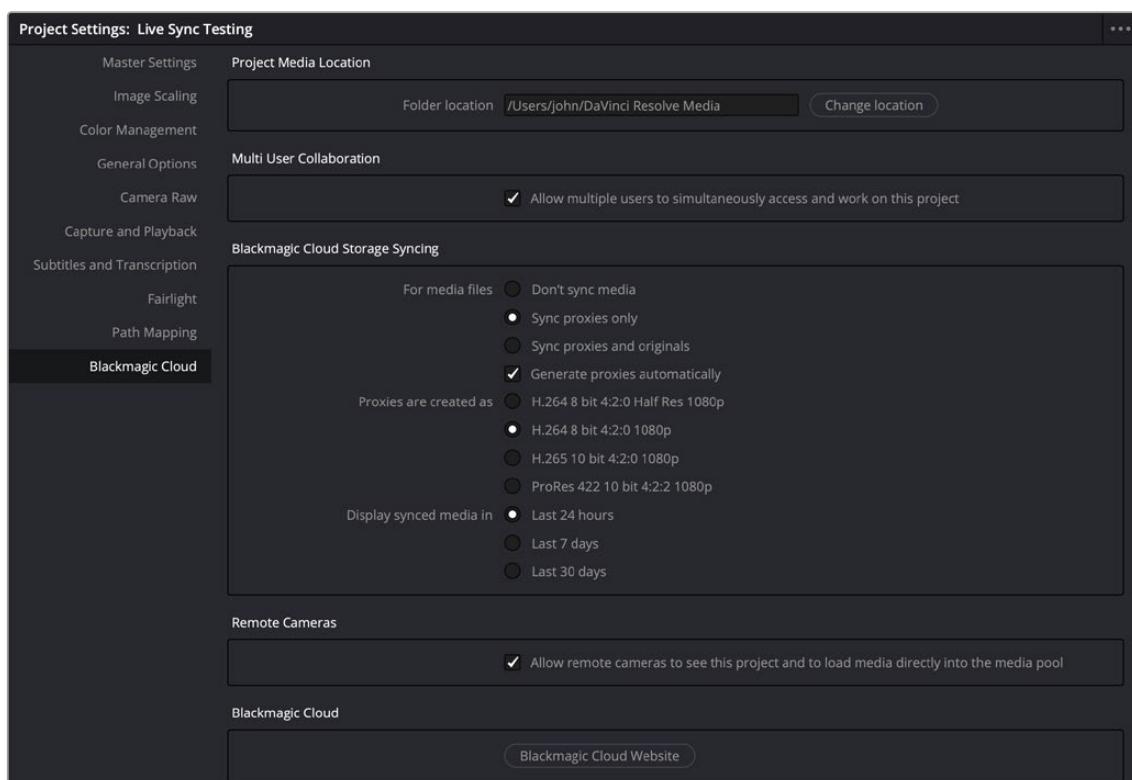
- **Name Your Project:** Type in a name for your Cloud Project.
- **Choose a Location for your Project Media:** Choose a location on your file system for imported media files, graphics, and audio files you wish to use for the project.
- **Share Project with Multiple Users?:** Lets you determine if you want to share this project with other users.
  - Allow Multiple Simultaneous Users:** Enables collaboration mode for working with multiple people on the same project concurrently.
  - Set Project to Single User:** Disables collaboration mode and is designed for one person working on the project at a time.

- **Synchronize Storage with Blackmagic Cloud?**: These options let you choose what media to upload and sync to your Blackmagic Cloud Storage account for other users' access.
- Don't Sync Media**: Does not upload any media to Blackmagic Cloud Storage.
- Sync Proxies Only**: Uploads only proxy media to Blackmagic Cloud Storage.
- Sync Proxies and Originals**: Uploads both proxies and the original media to Blackmagic Cloud Storage. This can use an extremely large amount of storage depending on the amount and size of the original media.

- **Allow Remote Camera Access**: Sets permissions for users of the Blackmagic Camera app.
- **Allow Remote Cameras Access**: Allows Blackmagic Camera app users that are members of this project to upload media from their phones to the Blackmagic Storage account and will add it to the project's Media Pool directly.
- **Don't Allow Remote Cameras**: Does not allow Blackmagic Camera app users to upload footage to this project, even if they happen to be a member of it.

Once you press Create, a new project will be made with the parameters you've set above.

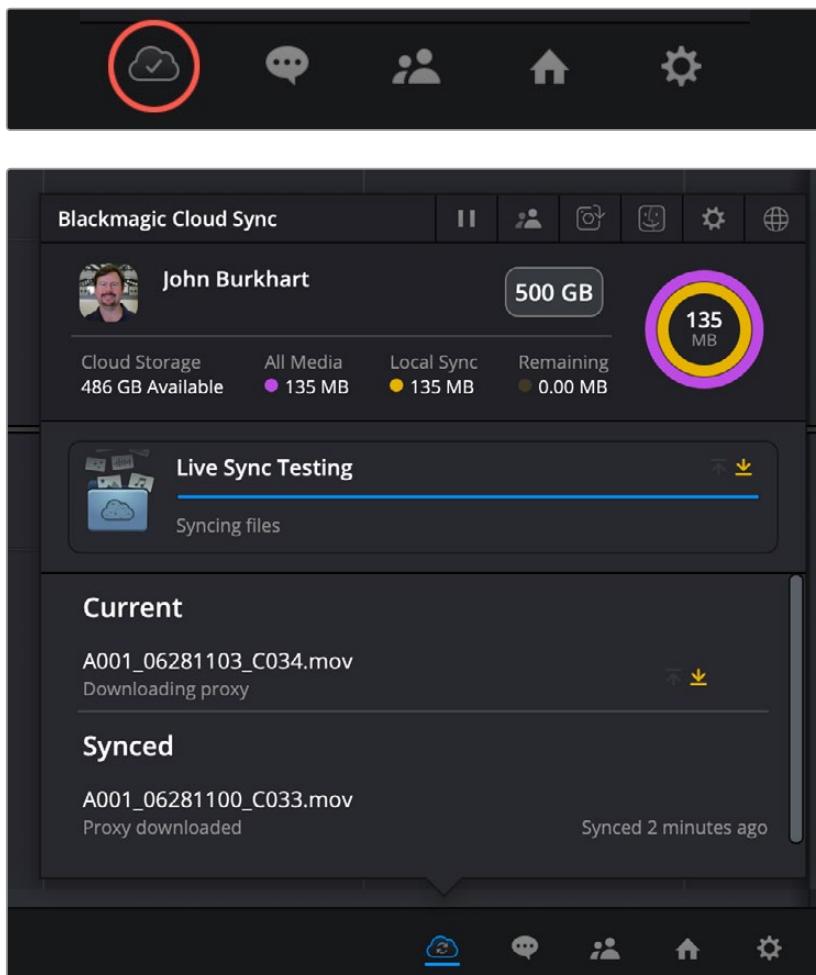
If at any time you wish to change these parameters after a project has been created, you can access them again by opening the Project settings, and selecting the Blackmagic Cloud tab.



You can modify all the cloud settings of an existing Blackmagic Cloud project in the Project Settings.

# Blackmagic Cloud Sync Manager

When working with a project in a cloud library, several of the most common cloud management functions can be accessed directly by clicking on the Blackmagic Cloud Sync Manager in the lower right of the interface. This icon only shows up when working with a cloud library.



The Blackmagic Cloud Sync Manager opens an array of useful cloud management tools.

From Left to Right on the top bar, the following tools are available:



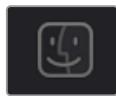
**Pause/Resume Sync:** Pauses or Resumes the upload and download of media from the host computer.



**Enable/Disable Multi User Collaboration:** Opens a dialog box to toggle between Set to Single User or Allow Multiple Users (collaboration mode).



**Enable/Disable Camera Capture:** Opens a dialog box to toggle between Allow or Don't Allow Blackmagic Camera app users to upload footage to storage and import the clips to the project's Media Pool.



**Open in Finder/File Explorer:** Opens the Project Media Location in the computer's file system.



**Open Settings:** Opens the Blackmagic Cloud tab in the Project Settings window.



**Go to Blackmagic Cloud Storage:** Opens up your web browser to the Blackmagic Cloud Storage page on the internet.

Underneath this toolbar there are two status areas. The top one shows the user logged into the Blackmagic Cloud account and how much Blackmagic Cloud Storage has been used and is available. The ring display shows the Total of all media in the outside ring, the amount of media synced locally in the middle ring, and how much media is left to upload in the inside ring.

The bottom one shows the progress of the media syncing over the internet. The top display shows the progress bar on the sync status and how much material is left to sync. Directly underneath that is the media list showing the current clip syncing, and a list of media that has already synced.

## Automatic Proxy Generation and Upload to Blackmagic Cloud Storage

When in the Media, Cut, Edit and Fairlight pages, DaVinci Resolve can automatically generate proxies in the background to upload to Blackmagic Cloud. In all pages, users can still explicitly generate proxy media from the media pool to start uploads.

### To enable automatic proxy generation and upload:

- 1 In the Project Settings, click on the Blackmagic Cloud tab.
- 2 In the "For media files" section, click on "Sync proxies only."
- 3 Check the "Generate proxies automatically" box.
- 4 In the "Proxies are created as" section, select the codec you want the proxy format to be rendered to.
- 5 Click on the Save button.

### To disable automatic proxy generation and upload:

- 1 In the Project Settings, click on the Blackmagic Cloud tab.
- 2 In the "For media files" section, click on "Don't sync media."
- 3 Uncheck the "Generate proxies automatically" box.
- 4 Click on the Save button.

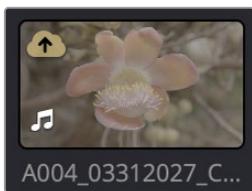
## Cloud Storage Sync Icons

If you are working in a cloud library, there are Sync icons in the upper left of a clip in the Media Pool that let you know the status of each clip's status in the cloud.



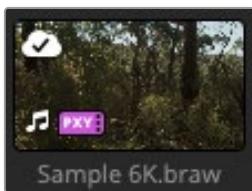
The Proxy Processing icon in the upper left

**White Cloud with 3 Dots:** This icon indicates that proxy media is currently being processed.



The Upload Queue icon in the upper left

**Yellow Cloud with an Up Arrow:** This icon indicates that the clip is in the queue for being uploaded to the cloud.



The Successful Sync icon in the upper left

**White Cloud with a Checkmark:** This icon indicates that the clip has successfully been uploaded and synced to the cloud.

## Chapter 190

# Blackmagic Cloud Presentations

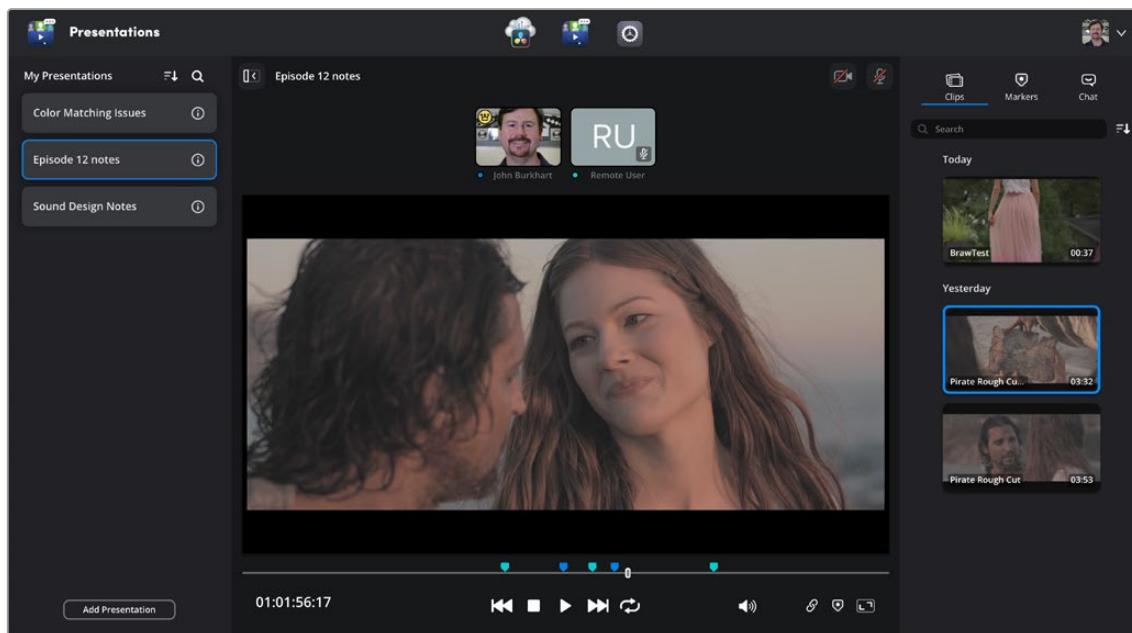
This chapter describes how to use the Presentations application in the Blackmagic Cloud, allowing you to setup review and collaboration sessions online with people from around the world.

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# Blackmagic Presentations

The Presentations application in Blackmagic Cloud allows real time collaboration and review of DaVinci Resolve timelines using only an internet browser. Collaboration tools consist of video conferencing for real time communication, a chat interface for persistent notes and comments, and markers that sync directly with a DaVinci Resolve timeline. With these tools, you can play back a video with frame accurate sync for all users, while video conferencing at the same time.



The Blackmagic Presentations application in a web browser

The Presentations application is comprised of three parts. The left column is My Presentations, where all your different presentations are created, stored, and organized. The center area is the Viewer that lets you navigate the clip, add markers, and adjust the audio playback. On top of the Viewer is the Video Conferencing area, allowing you to collaborate in real time with other members. The right column is divided into three sections: Clips, Markers, and Chat. Clips show all the available clips to comment and collaborate on. Markers will show a list of markers and comments that sync with a DaVinci Resolve timeline. Chat opens up a simple chat interface to have a record of your notes and comments.

**NOTE:** As of this writing, Presentations is still in beta. As beta software, the features described below may be changed, redesigned, or removed completely from the final release.

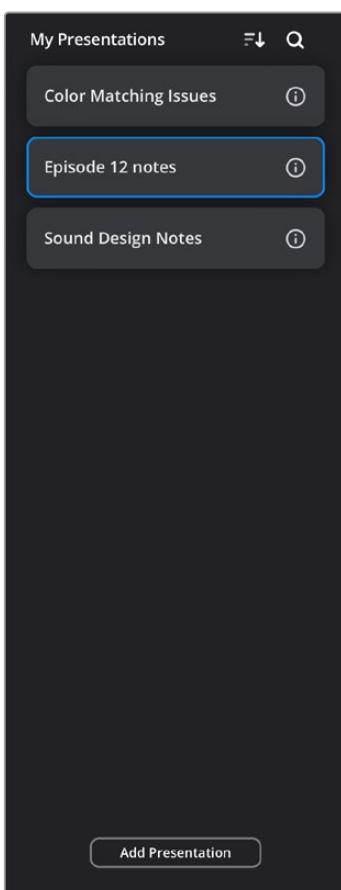
# Creating and Managing Presentations

Online collaboration in Presentations is comprised of two parts: first, the Presentation in the Blackmagic Cloud and secondly, a timeline from a DaVinci Resolve workstation (described below). This section describes the creation and management of Presentations.

**NOTE:** Presentations uses a slightly different nomenclature describing clips than DaVinci Resolve. In Presentations, a “clip” is a DaVinci Resolve “timeline,” and not a clip that you would find in the Media Pool.

## Creating a New Presentation

Each presentation can be thought of like a project in DaVinci Resolve, except that it’s about discussion rather than post production. Presentations contain multiple “clips” to review and have a variety of collaboration tools, rather than editing/color/fx/audio tools. While making a new presentation for each project is perfectly valid, you can also make presentations based off other criteria, like who is collaborating, a date, or a specific stage of the post production process.



The My Presentations column

## To Create a Blackmagic Cloud Presentation

- 1 Log into your Blackmagic Cloud account in a web browser at [www.blackmagicdesign.com](http://www.blackmagicdesign.com).
- 2 Select the Presentations icon in the upper center of the web page.
- 3 In the My Presentations column, click on the Add Presentation button in the lower left.
- 4 Select a Name for the presentation and click Add.
- 5 Click on the Presentation in the My Presentations column to launch it.

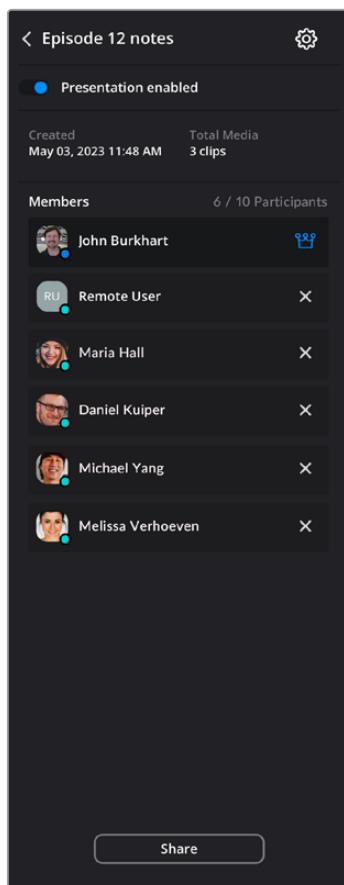
If you find you have more presentations than can fit on the screen, the My Presentations column can be sorted by name and date in ascending or descending order by clicking on the sort icon just to the right.

The My Presentations column is also searchable by clicking on the magnifying glass to the right and entering your search terms. Only presentations matching your search terms will be shown.

Until you upload your first clip from a DaVinci Resolve project, the Viewer will show “Upload clips from DaVinci Resolve to get started.” That process is described below in the “Sending a Timeline to Presentations” section.

## Sharing a Presentation with Another User

You can share a presentation with up to 10 other users. The only requirement is that each user has their own Blackmagic Cloud account.



The information panel  
of a presentation

## To Share a Blackmagic Cloud Presentation

- 1 Click on the information icon (the circled letter i) next to the presentation name. A Members pane is exposed, showing all the current users that the presentation is shared with. The user with the crown icon is the presentation administrator, and only they can add or remove users.
- 2 Click on the Share button at the bottom of the Members pane.
- 3 Enter the email address (used to create the Blackmagic Cloud account) of the user you wish to share the presentation with.
- 4 Click on the Share button.

The user's name will now appear in the Members pane, and the presentation will show up in their own My Presentations column when logging into the Blackmagic Cloud. They can now watch any clips, video conference, or make comments in that presentation.

Additionally, an email will be sent to the user's email address, notifying them of the presentation and a direct link to access it.

To remove a user from a presentation, simply click on the "x" next to their name in the Members panel. Only the administrator can add or remove members.

## Enabling and Disabling a Presentation

The administrator can choose to temporarily disable a presentation. This is used to temporarily lock access to the presentation without deleting it. This keeps all the clips, users, and comments in place and only prevents the presentation being viewed or modified until it's enabled again.

### To Enable or Disable a Blackmagic Cloud Presentation

- 1 Click on the Information icon (the circled letter i) next to the presentation name.
- 2 Click on the Presentation enabled switch directly below the presentation name to toggle between enabling and disabling the presentation.

## Renaming a Presentation

The administrator can easily rename a presentation to more accurately describe its purpose or contents.

### To Rename a Blackmagic Cloud Presentation

- 1 Click on the Information icon (the circled letter i) next to the presentation name.
- 2 Click on the Settings icon (the small gear) next to the presentation name.
- 3 Select Rename from the drop-down menu.
- 4 Type in the new name for the presentation.
- 5 Click on the Save button.

The presentation's name will be then updated in the My Presentations column for all users.

## Deleting a Presentation

When you've finished with a presentation, the administrator can delete it from the Blackmagic Cloud. A deleted presentation permanently removes all clips and comments and is not undoable, so make sure you are completely finished before you delete it.

### To Delete a Blackmagic Cloud Presentation

- 1 Click on the Information icon (the circled letter i) next to the presentation name.
- 2 Click on the Settings icon (the small gear) next to the presentation name.
- 3 Select Delete from the drop-down menu.
- 4 Click on the Delete button in the warning dialog box.

## Leaving a Presentation

As a user you can leave a Presentation at any time. This removes permission for you to view and edit the presentation, and removes it from your My Presentations column. If you wish to gain access to a presentation again once you've left, the presentation administrator must re-share it with you.

### To Leave a Blackmagic Cloud Presentation

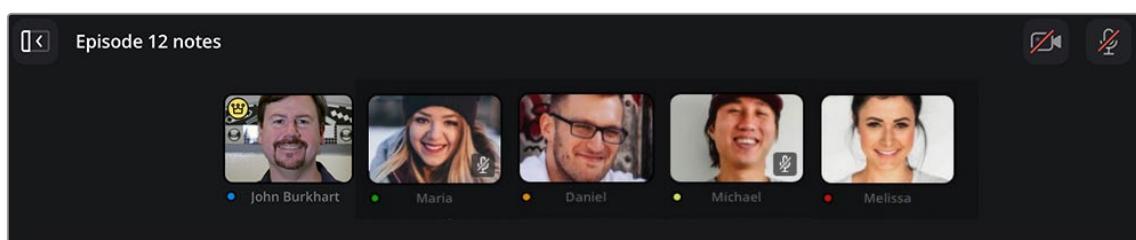
- 1 Click on the Information icon (the circled letter i) next to the presentation name.
- 2 Click on the Settings icon (the small gear) next to the presentation name.
- 3 Select Leave from the drop-down menu.
- 4 Click on the Leave button in the warning dialog box.

# Using Presentations

The heart of Presentations is the Viewer; here you can both video conference and control the playback of a clip. The Viewer provides a low latency, streaming video that you can use to accurately mark and comment on, as those comments show up in real time to other users and on the DaVinci Resolve timeline.

## Video Conferencing

The top strip of the Viewer contains a basic video conferencing interface, with each user's video stream appearing in a live thumbnail. By default the camera and microphone are turned off, so you will need to switch them on manually.



The video conferencing interface; note the Camera and Microphone on/off controls in the upper right.

## To Turn On and Off the Camera and Microphone for a Blackmagic Cloud Presentation

- 1 Click on the Camera and/or Microphone icons in the upper right of the Viewer.
- 2 Give your OS and browser appropriate permissions to use the devices.
- 3 To turn off the Camera and Microphone, click their respective icons again.

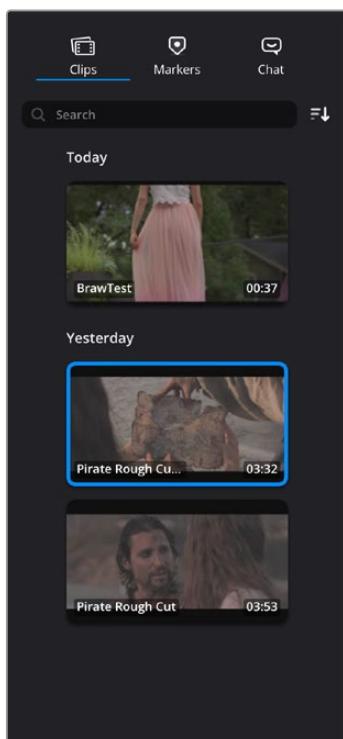
With your camera and microphone on, all other connected users will see and hear you through their web browsers, so be generous and discrete with your comments.

## Controlling a Clip in the Viewer

Each user can view and comment on any of the clips (including the same clip) in real time. The Viewer for each user is independent of all the others, though the administrator has the option to sync everyone's Viewer to their own, in order to watch the same clip at the same time.

### Selecting a Clip

Selecting a clip to view is as easy as clicking on the clip's thumbnail in the Clips column. Clips are sortable by date, duration, and name in ascending or descending order. The Clips column is also searchable by clicking on the magnifying glass to the right and entering your search terms. Only clips matching your search terms will be shown. You can also hover your pointer over the clip thumbnail to scrub through the video.



The Clips column

Administrators can edit the names, and delete clips from the presentation by hovering over the thumbnail and selecting the appropriate icons (pencil and trashcan) in the upper right.

## Viewer Controls

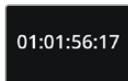
The Presentations Viewer has a set of playback controls at the bottom of the browser that you can use to position your playhead exactly.



The Viewer controls



**Jog Bar:** The long line across the bottom of the browser shows your current playhead position as a rectangle and any markers that have been set. You can click and drag the playhead to scrub back and forth in the clip.



**Timecode:** The timecode of the current clip that refers back to the original DaVinci Resolve timeline.



**Previous Clip:** (Up Arrow) Loads the clip above the current clip in the Clips column into the Viewer. If the current clip is already at the top of the stack, it will wrap around to the clip at the bottom.



**Stop:** Stops playback of the clip in the Viewer.



**Play:** Plays the clip in the Viewer forward at 1x speed.



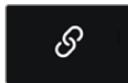
**Next Clip:** (Down Arrow) Loads the clip below the current clip in the Clips column into the Viewer. If the current clip is already at the bottom of the stack, it will wrap around to the clip at the top.



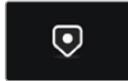
**Loop:** Toggles between no looping (the default), Loop One which will loop the current clip over and over, and Loop All which will play back all the clips in the Clips column and loop back to the beginning of the stack.



**Volume:** Clicking on this icon mutes the audio. Dragging the slider next to the icon controls the volume of the clip.



**Start Sync:** (Administrator only), clicking this icon allows the contents of your Viewer to display for all members. The administrator's view overrides the Viewers of all the other users, ensuring that everyone is watching the same thing at the same time.



**Add Marker:** Clicking this icon adds a marker at the playhead position. Editing and commenting on this marker is done in the Markers column described below.

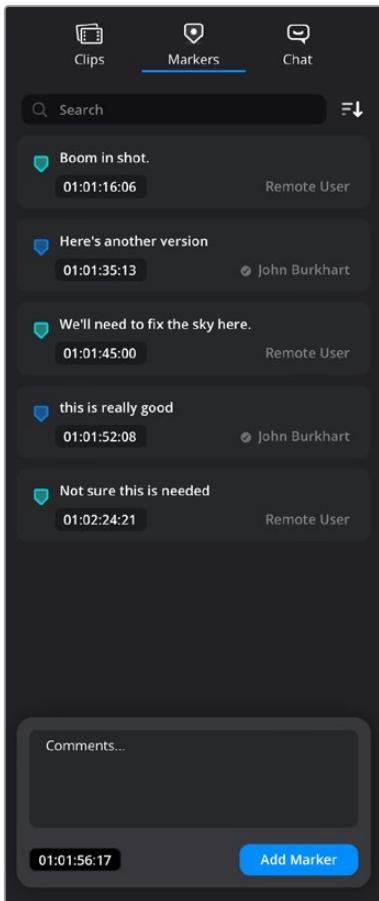


**Full Screen:** This expands the Viewer to take up the entire screen.

**NOTE:** You can move the playhead frame by frame forward and back by using the left and right arrow keys respectively.

# Using Markers

There are three ways to make your opinion known on a clip in Presentations. The first is speaking directly through video conferencing as described above, the second and third are through markers and chat.



The Markers column

Markers allow you to make written comments attached to a specific frame of video. This lets you give targeted advice exactly where it needs to be. The main benefit of using markers is that they also immediately transfer to the DaVinci Resolve timeline used to make the clip. This ensures that your comments make it back to the editor/colorist/audio engineer as they work on the project.

## To Add a Marker to a Clip at the Playhead Position, do one of the following:

- Click on the Add Marker icon in the Viewer.
- Tap the letter M on your keyboard.
- In the Markers column, write your comment in the text box at the bottom, and click on the Add Marker button.

Markers will show up as a triangle that is the same color as the colored dot associated with the user's thumbnail in the Video Conferencing pane.

## To Edit the Text Contents of a Marker:

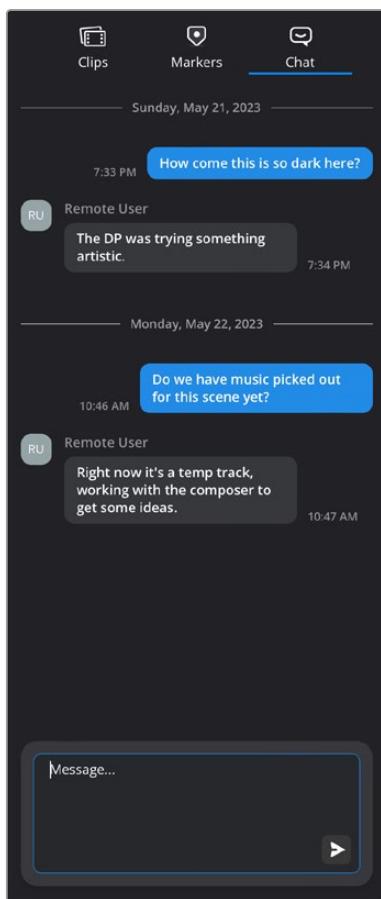
- 1 Hover over the marker in the Markers column, and tap on the Pencil icon.
- 2 Write your comment in the text box.
- 3 Click on save.

## To Delete a Marker from a Clip:

- 1 Hover over the marker in the Markers column, and tap on the Trashcan icon.
- 2 Click on Delete in the warning dialog.

## Using Chat

The Chat column gives you a simple text-based conversation tool that is persistently saved. This lets you leave notes, comments, and refer back to previous sessions if necessary. The Chat column is not tied to any specific clip but to the presentation as a whole.



The Chat column

## To Leave a Chat Comment:

- 1 Write your message in the text box at the bottom of the Chat column.
- 2 Press the Send icon.

Your message will appear in the chat window in chronological order. Chat messages you've sent will be unattributed and right justified. Messages other members sent will be left justified and have their names and User icon attached to them.

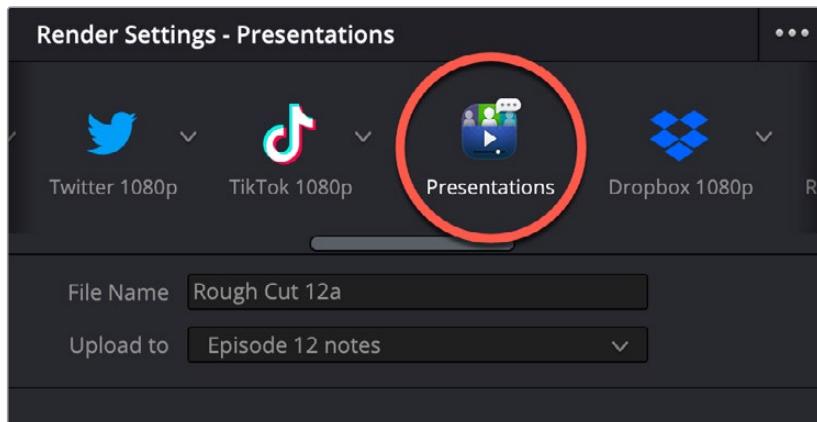
Currently, the chat is visible to all members of the presentation, and there is no way to delete a chat message once it is sent, so be kind.

# Presentations in DaVinci Resolve

The Presentations application is designed to work in conjunction with DaVinci Resolve. Each “clip” in Presentations is linked to a DaVinci Resolve timeline. Any markers added by members in Presentations are updated to the timeline in DaVinci Resolve automatically and vice versa.

## Sending a Timeline to Presentations

Each “clip” in Presentations is a DaVinci Resolve timeline. In order to populate the Clips column with footage to work with, you will first need to export your timeline from DaVinci Resolve to Presentations.



The Presentations Render Preset in the Deliver page.

### To Send a DaVinci Resolve Timeline to Presentations:

- 1 Make sure you are signed into your Blackmagic Cloud account in the Internet Accounts section of the DaVinci Resolve Preferences.
- 2 Make sure you are a member of the presentation you wish to send the timeline to.
- 3 Open the timeline you wish to send.
- 4 In the Deliver page, select the Presentations render preset.
- 5 In the File Name field, type in a name for your timeline to appear as in Presentations.
- 6 In the Upload to field, select the presentation you wish to upload the timeline to. If the presentation is not in the list, see steps 1 and 2.
- 7 Click on the Add to Render Queue button at the bottom of the Render Settings.
- 8 Click on the Render All button under the Render Queue.

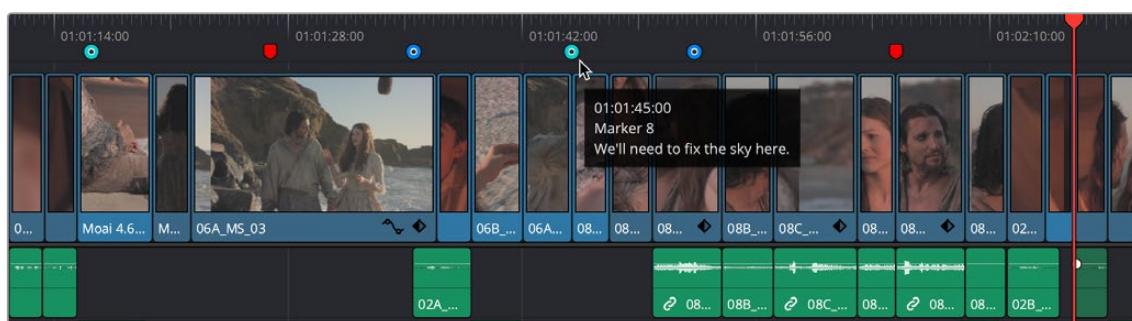
There are no video or audio codec parameters to set, and DaVinci Resolve will proceed to render your timeline and upload it automatically to the selected presentation. Any member can upload a timeline to a presentation, not just the administrator.

The timeline will now appear as a “clip” in the Clips column of the presentation.

# Using Markers Between Presentations and DaVinci Resolve

A key benefit of Presentations is persistent markers between a presentation and a DaVinci Resolve timeline. Once a timeline has been uploaded to a presentation, it's automatically linked behind the scenes and any markers added, either in the Presentations app or in DaVinci Resolve, will sync with each other.

On the DaVinci Resolve side, the sync occurs when a timeline is open, and the user is logged in to the Blackmagic Cloud. For example, markers can be added by members the previous night and will then sync when the editor opens the timeline in the morning. You can also collaborate live with a presentation if the members are online and the editor is working in the timeline, updating markers in real time.



Presentations markers are circular in shape and are synced between the timeline and its associated Presentations clip.

Markers that are linked to Presentations display as circular on the DaVinci Resolve timeline to differentiate them from normal markers that are triangular in shape. Presentations Markers will also reflect the color of the member creating the marker.

Markers don't just travel one way from Presentations to DaVinci Resolve. While working on a timeline in DaVinci Resolve, the user can add special Presentations markers that will sync and show up in the Presentations application, to be viewed by all members.

## To Add a Presentations marker on a DaVinci Resolve Timeline:

- 1 You must have already uploaded a timeline to Presentations as described above.
- 2 Place the playhead in the Timeline where you want the Presentations marker.
- 3 Select **Mark > Add Marker > Presentations**.

## To Delete a Presentations marker on a DaVinci Resolve Timeline:

- 1 Select the circular Presentations marker on the Timeline.
- 2 Press the Delete key.
- 3 Click on the Delete button in the warning dialog.

Deleting a Presentations marker will remove it from both the Timeline and the presentation itself. This operation is not undoable. The timeline user is able to delete a Presentations marker from any member, not just their own.

## Chapter 191

# Live Sync

This chapter describes how to edit using the Live Sync feature with DaVinci Resolve, Blackmagic Cloud and Blackmagic Cameras.

## Contents

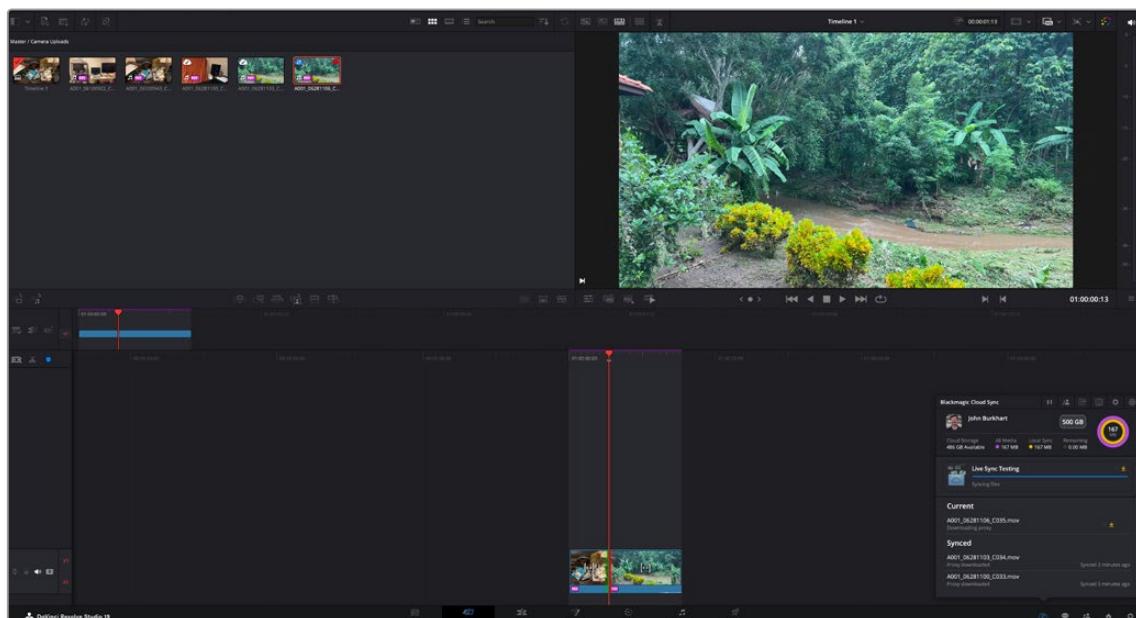
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# Live Sync

Live Sync allows the near real time editing of camera files as they are being recorded. This has obvious benefits for time sensitive applications, such as news and live events, however even scripted drama and documentaries can benefit from editing as you go for quick turnarounds.

Live Sync automatically will start uploading an HD H.265 proxy file, even while the master clip is still being recorded in the camera. This file is immediately accessible from the Media Pool in DaVinci Resolve. As the clip continues to be recorded in the camera, the clip continues to grow in the Media Pool, letting you access future events from the same clip. As each clip finishes, the Media Pool grows with new proxy clips. Depending on your need, you can export your final project using this proxy media for immediate delivery or relink your footage to the camera masters later for the highest-quality output.

Live Sync is an integrated system requiring a Blackmagic Camera, Blackmagic Cloud Storage, and DaVinci Resolve to work seamlessly. This chapter will explain how to set up these three elements to work together.

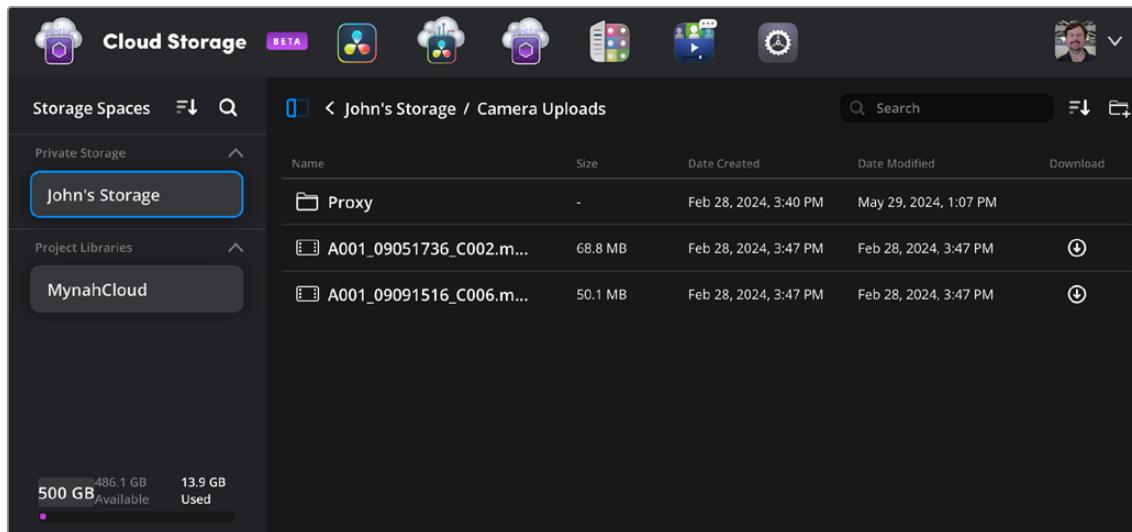


Editing a live clip as it is being recorded in the Cut page.  
The Blackmagic Cloud Sync Manager is in the lower right.

## Setting Up Live Sync on Blackmagic Cloud Storage

In order to record and edit Live Sync footage, you first need somewhere accessible to both the editor and the camera operator to store the project and camera files, and that place is Blackmagic Cloud Storage. At the minimum you will need enough cloud storage space to hold all of the proxy files from the Blackmagic Camera. If you also wish to upload the camera originals, you will need considerably more space, depending on the codec the camera is using.

For more information on setting up a Blackmagic Cloud Storage account and purchasing space, see *Chapter 189, “Blackmagic Cloud Storage.”*



The Blackmagic Cloud Storage web interface

Once you have your Blackmagic Cloud Storage space and project library set up, after the first clip is recorded from a Blackmagic Camera, you will see a Camera Uploads folder created. Inside that folder is a Proxy subfolder (where all the Live Sync proxies will be stored), and a list of currently uploaded master clips. Having this specific folder helps organize and separate your incoming camera footage from any other media folders you have in your storage.

**NOTE:** While you can do simple media management (deleting and organizing clips) in the Blackmagic Cloud Storage web interface, the media management tools both in the Blackmagic Camera and DaVinci Resolve are much better suited for this purpose. It's best to leave the Cloud Storage simply as a passive sync from these devices.

## Setting up Live Sync on Blackmagic Cameras

Each Blackmagic Camera model will have its own method of uploading clips to the Blackmagic Cloud; please see your camera's documentation on the specifics for that model. Below are the instructions for setting up the Blackmagic Camera app for iOS and Android.

### Setting up Live Sync with the Blackmagic Camera App for iOS and Android

When you sign into Blackmagic Cloud on your Blackmagic Camera app, you can choose to upload clips directly to a DaVinci Resolve Cloud project or to manually select the clips you want to upload from your

camera's media pool. Alternatively, clips can also be uploaded straight to your own private Blackmagic Cloud storage directly, without syncing to a Resolve Cloud project.

You can choose to upload proxy files or both proxy and original files in Settings > Media > Upload Clips.

## Logging into Blackmagic Cloud

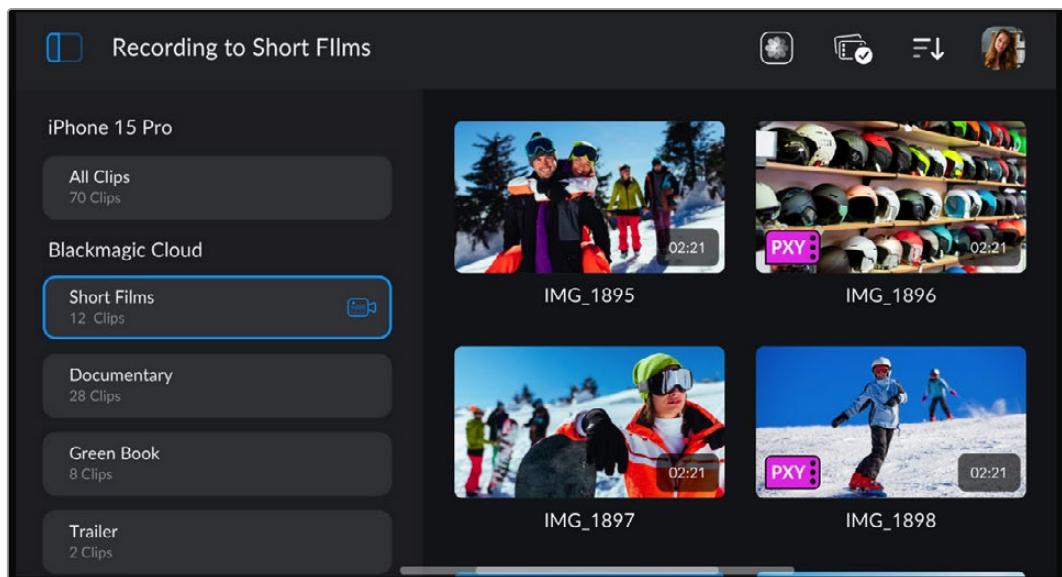
To log into your Blackmagic Cloud account:

- 1 Go to Settings > Blackmagic Cloud > Log in to Blackmagic Cloud, or tap the Blackmagic Cloud icon in the upper right of the Media workspace.
- 2 Enter your login details, tap 'login' and use the touchscreen keyboard to enter your email address and password.

Once logged in, your Blackmagic Cloud avatar will be displayed in the Media and Chat workspaces. You can tap your avatar to view your account details or to log out of your account.

## Blackmagic Cloud Projects Panel

Tap the sidebar icon at the top left of the Media workspace to open the Blackmagic Cloud projects panel.



When you are signed into your Blackmagic Cloud account, projects that you can upload clips to are listed in the 'Blackmagic Cloud' section of the Viewer.

## Uploading Clips to a Blackmagic Cloud Project

Selecting a Blackmagic Cloud project lets you upload proxy files, or both proxies and originals, as you record clips to your camera's media. When a project is selected in the projects panel, a clip will be immediately uploaded as soon as you stop recording on your phone. This will happen in the background as you continue recording clips for as long as your phone is connected to the Internet and logged into your Blackmagic Cloud account.

### To upload to a Blackmagic Cloud project:

- 1 Tap on a Blackmagic Cloud project to select it.
- 2 Tap the Camera icon to close the Media Pool and return to the HUD.
- 3 The name of the selected Blackmagic Cloud project will appear above the timecode display on your phone's HUD. The next time you record a clip, your camera will automatically start uploading media to the selected cloud project.

If your phone's internet connection is interrupted, the name of the cloud project will be grayed out and uploads paused. Your camera will automatically restart the uploading process when the internet connection is restored.

When you have finished recording, tap on the Media icon to open the Media Pool and view the upload status of your clips.

Your Blackmagic Cloud avatar will remain visible in the menus and you will stay logged in, even if you have disconnected your phone from the internet. This ensures that any recordings you have in your project upload queue will resume as soon as possible after connecting your phone again. Your phone will immediately try to reestablish your internet connection and resume any uploads it has in its queue.

This also means when you choose to record directly into a project, you can operate in areas with patchy cellular coverage and not worry about reconnecting to upload as the process happens automatically. For example, you could record clips in locations where there is no Internet connection or cellular signal at all, and then simply connect when you are in range or have a wifi Internet connection and quickly upload your proxies then.

## Live Sync

Turn this slider on in the Media Settings to immediately start uploading a proxy file to your Blackmagic Cloud project as you record a clip. The clip will appear in your DaVinci Resolve Cloud project, and grows dynamically in the Media Pool as the recording comes in over the internet. This lets the editor work on the first part of a shot even while it's still being recorded in real time. The editor can always return to the same clip again and again for additional material as it grows.

The speed at which the Live Sync clip updates is dependent on the speed of your internet connection.

## Clip Upload Status Indicators

When you have chosen to upload clips to a Blackmagic Cloud project, you can check the upload status by selecting the project from the Blackmagic Cloud projects panel.

Next to the cloud project name, the overall upload status is displayed including number of clips, completed percentage, upload speed and estimated time remaining.

# Live Sync in DaVinci Resolve

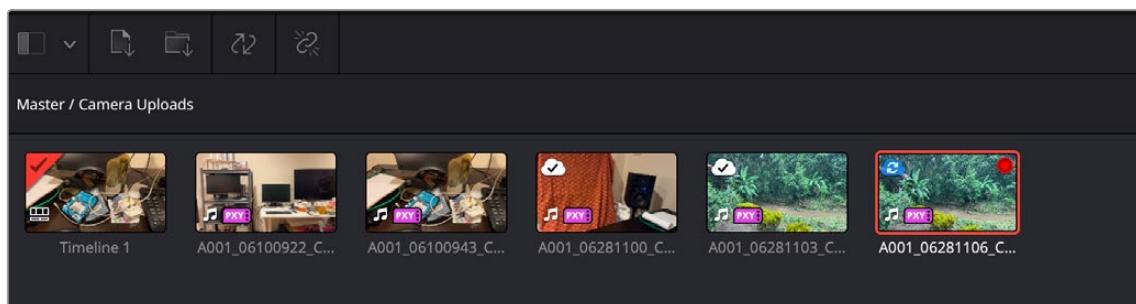
## Setting up a Cloud Project in DaVinci Resolve

Before starting a Live Sync editing session, you will have to create a Cloud project in DaVinci Resolve that the camera can link to. This can be a new or existing Cloud project. For Live Sync to function, the “Allow Remote Camera Access” button in the Create New Cloud Project dialog box must be turned on. For more information on setting up a Cloud Project, see *Chapter 189, “Blackmagic Cloud Storage.”*

## Editing Live Sync in DaVinci Resolve

Once you’ve opened your Cloud project in DaVinci Resolve, you can start editing live footage as it comes in. You can edit from either the Cut or Edit pages.

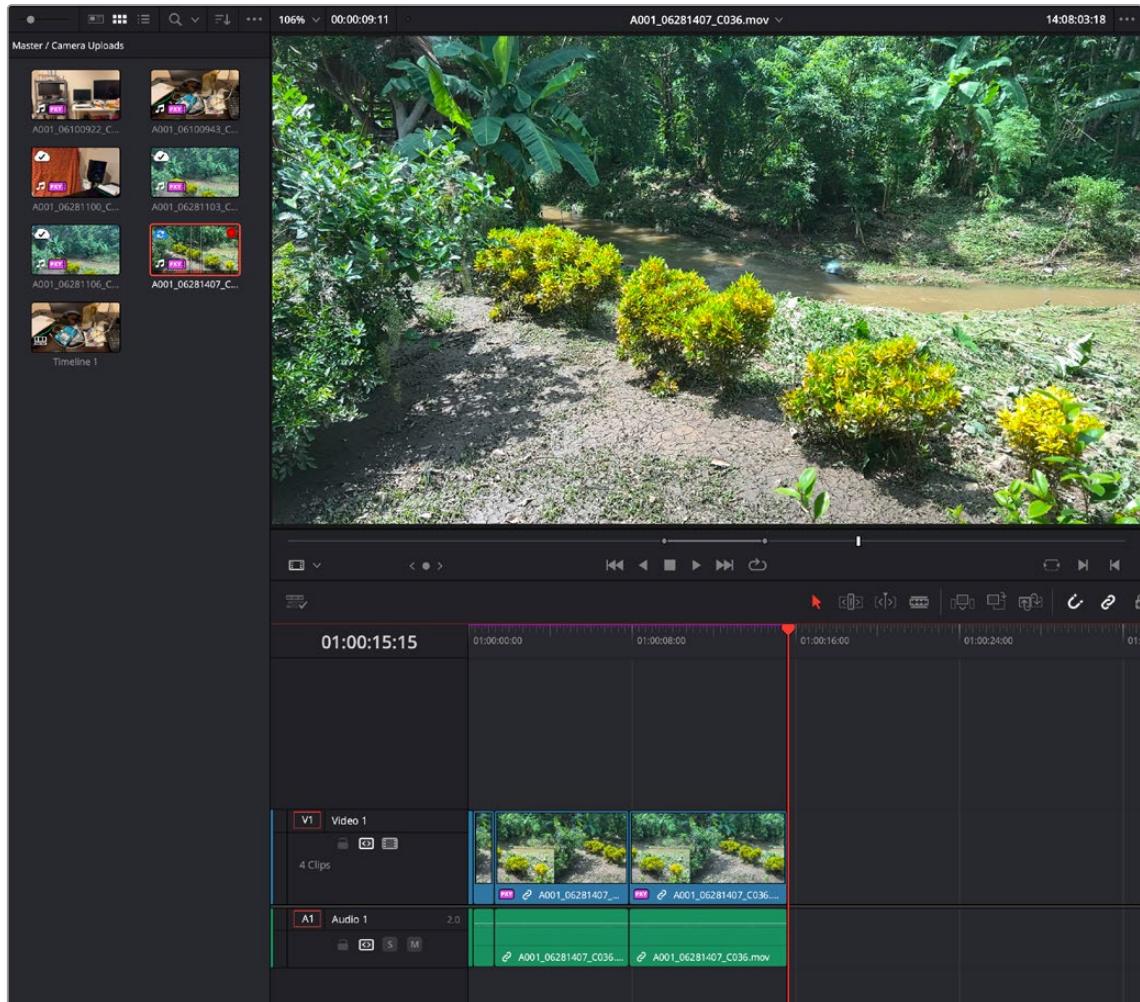
In the Media Pool, a folder called Camera Uploads is created. This folder is where all the Live Sync media will be accessed from. Each thumbnail in the folder has icons that tell you the status of each clip. A red dot in the upper-right corner of a clip shows you which clip is currently “live” and being recorded to at the moment.



The Cut page Media Pool showing the proxy and sync status of the clips in the Camera Uploads Folder. The clip with the red dot in the upper-right corner is currently being recorded “live.”

## Working with Live Sync Clips

Working with Live Sync clips in the Cut or Edit pages is very similar to working with normal clips with the exception that the Live Sync clip is constantly expanding. What this means in practice is while you are scrubbing the footage and marking In and Out points in the Viewer, the Live Sync clip automatically gets longer as new material is downloaded. This process does not require any action on the part of the editor to “refresh” the clip, so there is never any need to leave the Viewer. As the clip grows and something newly interesting happens, you can update the clip with a new set of In and Out points to edit it into the timeline. You can always leave the Live Sync clip to edit with other previously recorded shots, and it will still be there when you return... quietly growing...



The Edit page showing a Live Sync clip growing in the Source Viewer. As the clip grows in size, you can update the In and Out points in the Viewer to add new sections of the clip into the timeline.

The Live Sync clip is limited in length only by your storage capacity, and the speed at which it updates is dependent on the speed of the internet connection for both the Blackmagic Camera and the DaVinci Resolve workstation.



# Project Libraries, Collaborative, and Remote Workflows

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## Chapter 192

# Managing Project Libraries and Project Servers

This chapter describes how to set up and use project libraries in greater detail, giving you more control over how projects are saved and organized.

The chapter details how to set up local, network, and cloud project libraries you can use to administer DaVinci Resolve projects that are available to multiple DaVinci Resolve workstations.

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## What is a Project Library?

A Project Library (formerly project database), is a database file storing one or more DaVinci Resolve projects. When you create or load a project from the Project Manager, or save a current project, you read from or write to a project library. A project library contains multiple projects, and each project contains all the timelines, grades, clip metadata, visual effects, audio mixing, etc. for your film. A project library does not store the original media itself, only the instructions on how to use that media to create a finished film. DaVinci Resolve can access multiple project libraries, but can only connect to one project library at a time.

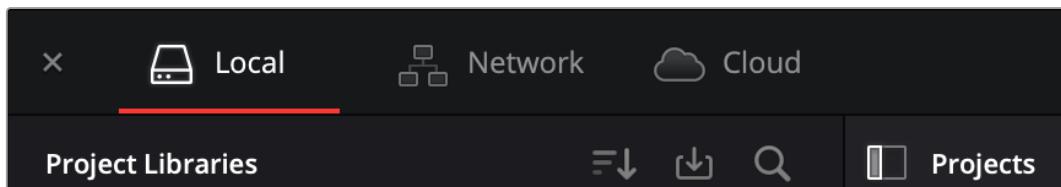
## Using Project Libraries

Setting up a structure for storing projects and project libraries is an important part of creating streamlined and efficient workflows. For example, creating a separate project library for each TV series, commercial, or film a post house is working on helps compartmentalize your clients, and improves performance by only loading up what you need for a specific project.

There are three ways DaVinci Resolve uses to access project libraries, and the choice of which to use is largely determined by the amount of people working on the same project, and where they are in the world. Each option is described in detail below.

- **Local Project Libraries:** (the default option) Best used for productions using a single workstation to complete the entire film. Multiple people may work on the same project, but they work one at a time on the same machine. Your project libraries are stored locally on the computer where DaVinci Resolve is installed, and all media drives in the project are connected locally.

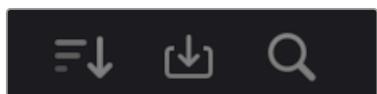
- **Network Project Libraries:** Best used for post houses or productions that have multiple DaVinci Resolve workstations in the same building, and want to be able to work on the same project from each room, or collaboratively at the same time. Your project libraries are stored on a separate computer, running the DaVinci Resolve Project Server application. All workstations must be connected to this computer on the same local area network (LAN), and either connected to the same media drives via a NAS or MAM system, or each having a locally connected copy (or proxies) of the media available.
- **Cloud Project Libraries:** Best used for post houses, companies or productions that have multiple DaVinci Resolve workstations in different places around the world, and want to be able to work on the same project from each location individually, or collaboratively at the same time. Your project libraries are stored in the Blackmagic cloud service. All workstations must be connected to the internet, and each system must have a locally connected copy (or proxies) of the media available.



The three types of Project Libraries: local, network, and cloud

Navigating the and using the Project Libraries sidebar is common to all the above types of project libraries.

- **Project Library:** Each accessible project library is listed by name, and clicking on it will connect that library and its contained projects to DaVinci Resolve. You can choose from many libraries, but only one library can be active at a time.
- **Sort Libraries:** Selects the sort order of how the project libraries appear, options are Name, Schema (date), Status, and Location. They can be sorted in both Ascending and Descending order.
- **Restore:** Allows you to load a project library that you previously backed up.
- **Search:** Allows you to search for a specific project library by text, and you can limit the search by Name, Schema, Status, and Location.



Project Libraries sidebar controls  
(L-R): Sort, Restore, Search

## Local Project Libraries

Local project libraries are the simplest and most common type of project library and require no additional set up or configuration by the user, other than installing DaVinci Resolve. These libraries are saved locally to your workstation; by default they are placed in a folder called Resolve Disk Database, though they can be placed manually anywhere on your file system.

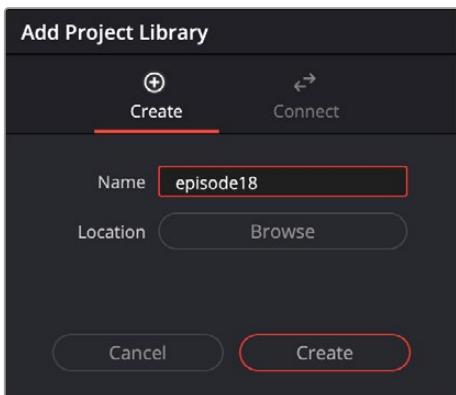
# Creating a New Local Project Library

Creating a new local library is a simple and straightforward process.

## To Create a New Local Project Library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Local icon from the Project Library options.
- 3 Click on the “Add Project Library” button at the bottom of the sidebar.
- 4 Select the Create option to make a new project library.
- 5 Enter a new name for your project library.
- 6 Press the Browse button next to Location, to select where on your local computer to save the project library.
- 7 Press the Create button.

You can now create or import new projects directly into your new local project library.



Creating a local project library

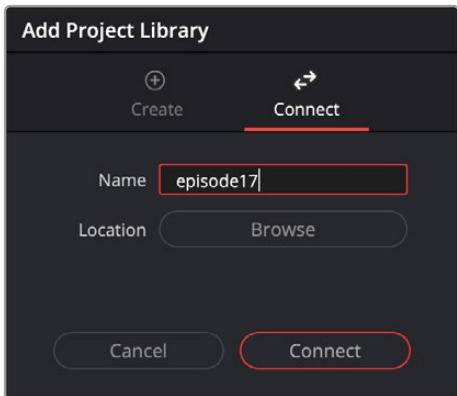
# Connecting to an Existing Local Project Library

You can reconnect to an already existing project library using the following steps.

## To connect to an existing project library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager, to expose the sidebar.
- 2 Select the Local icon from the Project Library options.
- 3 Click on the “Add Project Library” button at the bottom of the sidebar.
- 4 Select the Connect option to access the existing project library.
- 5 Enter a new name for your project library.
- 6 Press the Browse button next to Location, to select where on your local computer the folder containing the existing project library is. It is commonly named “Resolve Disk Project library.”
- 7 Press the Connect button.

You can now view and use all the existing projects directly from the existing local project library.



Connecting to an existing local project library

## Disconnecting from a Local Project Library

You can disconnect and remove an already existing project library from the Project Libraries list using the following steps.

### To disconnect from a project library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Local icon from the Project Library options.
- 3 Right-click on the project library that you want to disconnect from, and select disconnect from the context menu.
- 4 Press the disconnect button in the confirmation dialog.

Disconnecting a project library simply removes it from the available options in the Project Libraries sidebar. It does not delete the project library. You can either manually delete it in the OS filesystem, or reconnect to it using the steps described in Connecting to an Existing Local Project Library.

## Duplicating Project Libraries

Local Project Libraries can be duplicated in the same database for backup or iteration purposes.

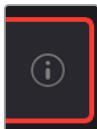
- 1 Right-click on the Library, and select Duplicate from the drop-down menu.
- 2 Select the Resolve Database Folder in the file system browser. This can either be the same one you use for the original project or a new one.
- 3 Click on the Open button.
- 4 Rename the new Library in the Clone Library dialog.

## Backing up a Local Project Library

You can also back up project libraries by exporting them, and then reimport them later.

### To backup/export a project library:

- 1 Select the project library you want to back up.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).



The Display Project Library Details icon

- 3 Select the Back Up button.
- 4 Choose a location to which to save the backup in the Backup Project Library dialog, and click Save.

## Restoring a Local Project Library

You can import existing project libraries to pass multiple projects between systems.

### To restore/import a project library:

- 1 Click the Restore button at the top of the Project Libraries sidebar.

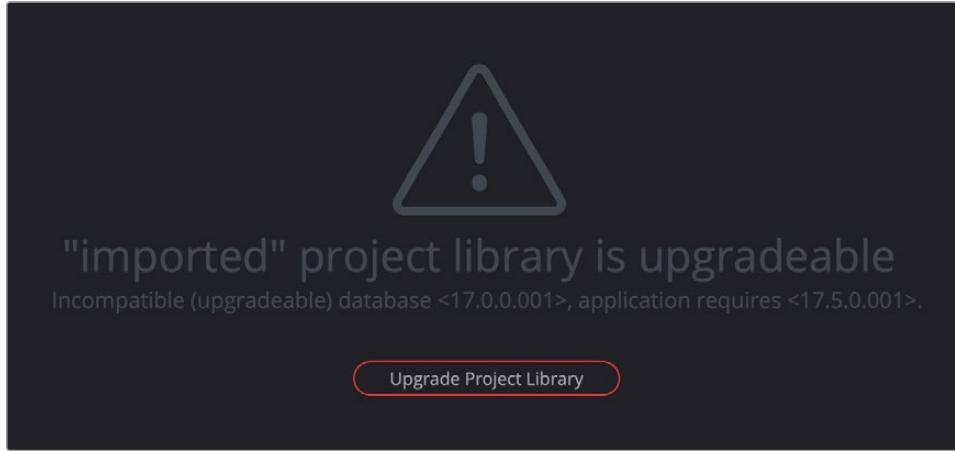


The Restore button

- 2 Find the project library you need to import using the file import dialog, and click Open.
- 3 In the Add Project Library dialog, do the following:
  - a) Type a name for the new project library into the Name field. This will rename the imported project library but will not alter its contents. You can also name it the same as the original project library.
  - b) Click within the Location field and use the Filesystem navigation dialog to choose the directory that contains the existing DaVinci Resolve project libraries.
- 4 Click Create, and the imported local project library will appear in the Local section of the Project Libraries sidebar.

## Upgrading a Local Project Library

Selected libraries display an upgrade warning in the Project Manager only when you've installed a new version of DaVinci Resolve and you have project libraries that were created in older versions of DaVinci Resolve that need upgrading.



The upgrade warning in the Project Manager indicates that project library needs to be upgraded.

It's generally a good idea to back up a project library prior to upgrading it, in case something goes wrong. In general, upgrading from a whole version release to the next whole version release of DaVinci Resolve usually requires an upgrade, while upgrading to a dot release of the same version may or may not. If the currently used project library requires an update, you'll be told on application startup.

#### **To upgrade a project library from an old version of DaVinci Resolve:**

Click on a project library that needs updating, and select the Upgrade Project Library button. A dialog appears to confirm if you really want to upgrade that project library. Click Upgrade to proceed.

## Network Project Libraries

Multiple DaVinci Resolve workstations can access the same project when you set up a Project Server that shares one or more network project libraries over a local network. Once you've set this up, there are two ways of using a shared project library.

### Multiple Users Sharing Projects

The simplest case is for users to simply open up a project on the Project Server and work on it. Working this way, if you ever have to change rooms, or switch workstations, you can easily open that same project from any machine that's connected to the server on the same network without needing to export and import it first. For example, an assistant could be working with a colorist to prepare files for the next reel by conforming shots, managing VFX replacements, doing dust busting repairs, and so on in an unsupervised editing suite anywhere in the building, before saving their work and closing the project so the colorist can immediately open that same project in the grading theater across the hall.

Another way of taking advantage of shared Project Servers is to split large projects into sections, so multiple artists can work in parallel on different pieces of the whole in different suites, handing them off when necessary. For example, a feature film may be split into reels, or a film can be separated from the trailer and electronic press kit projects that it shares media with. In this case, each project can be edited, mixed, and graded by different people accessing the Project Server.

When a shared project is opened by someone else after it's already been opened, a dialog informs you that it's being opened in Read-only mode to prevent multiple users from accessing the project at the same time. If you load a Read-only project and decide you want to make changes anyway, you'll need to use the Save As command to create a duplicate project file using a new name in order to preserve your work.

## Using Collaborative Workflow for Network Project Libraries

Alternately, you can use the Collaborative Workflow features in DaVinci Resolve to enable multiple collaborators on multiple workstations in multiple rooms to open and work on the very same project at the same time. For example, an editor can be editing a project's main timeline in one room, while an assistant organizes media and adds metadata within the same project in another room, and a colorist grades dailies in that same project in yet another room, all accessing the same Project Server which allows them to work together in parallel. For more information, see *Chapter 193, "Collaborative Workflow."*

All participants in a Collaborative Workflow must be using a network project library on a Project Server that's properly set up.

## Connecting to a Network Project Library on a DaVinci Resolve Project Server

The main difference between a local project library, and a network project library is that the network project library resides on another computer connected on the same network running the DaVinci Resolve Project Server. Setting up the Project Server itself is covered later in this chapter, but as a network project user in DaVinci Resolve you will need to understand how your local workstation connects to the Project Server.

Once the hardware and software install is done (essentially all computers connected on the same network, all running DaVinci Resolve, and one computer running the Project Server), you will need to authorize your computer to access the network project libraries on the Project Server and this is handled by "keys."

If you want to have access to a network project library you must be provided a key to it that is generated by the Project Server. The key is simply an .xml file with the extension ".resolvedbkey".

### To use an access key to enable easy connection to a Project Server:

- 1 Open DaVinci Resolve, and when the Project Manager appears, open the Project Libraries sidebar.
- 2 Drag the .resolvedbkey file and drop it anywhere within the Project Manager.
- 3 The shared project library should now appear in the Project Libraries sidebar, and if you select it, you'll see all of the projects that are located in that project library on the Project Server.

You also may have been set up as a Member of the Project Server, and provided your own username and password. If that is the case, see the section "Connecting to an Existing Network Project Library" below.

Once you are connected to a network project library, you can manage them just as if you were connected locally.

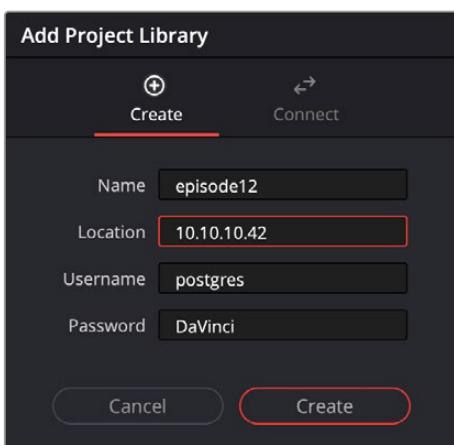
# Creating a New Network Project Library

Creating a new network project library is a simple and straightforward process.

## To create a new network project library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Network icon from the Project Library options.
- 3 Click on the "Add Project Library" button at the bottom of the sidebar.
- 4 Select the Create option to make a new project library.
- 5 Enter a new name for your project library.
- 6 Enter the IP address of the DaVinci Resolve Project Server you're accessing.
- 7 If you are a Member of the Project Server, enter your Username and Password. Otherwise, use the default user: postgres and password: DaVinci.
- 8 Click on the Create button.

You can now create or import new projects directly into your new network project library.



Creating a network project library

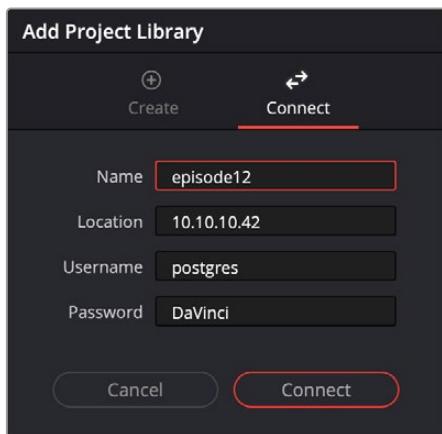
# Connecting to an Existing Network Project Library

You can connect to an already existing project library on a Project Server by using the following steps.

## To connect to an existing project library on a Project Server:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Network icon from the Project Library options.
- 3 Click on the "Add Project Library" button at the bottom of the sidebar.
- 4 Select the Connect option to access the existing project library.
- 5 Enter the name of the project library on the Project Server.
- 6 Enter the IP address of the DaVinci Resolve Project Server you're accessing.
- 7 If you are a Member of the Project Server, enter your Username and Password. Otherwise, use the default user: postgres and password: DaVinci.
- 8 Press the Connect button.

You can now view and use all the existing projects directly from the existing network project library.



Connecting to an existing  
network project library

## Disconnecting from a Network Project Library

You can disconnect and remove an already existing project library from the Project Libraries list using the following steps.

### To disconnect from a network project library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Network icon from the Project Library options.
- 3 Select the project library you want to disconnect.
- 4 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 5 Select the Remove button.
- 6 Press the disconnect button in the confirmation dialog.

Disconnecting a project library simply removes it from the available options in the Project Libraries sidebar. It does not delete the project library. You can either manually delete it in the OS filesystem, or reconnect to it using the steps described in Connecting to an Existing Local Project Library.

## Backing up a Network Project Library

You can also back up project libraries by exporting them, and then reimport them later.

### To backup/export a network project library:

- 1 Select the project library you want to back up.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 3 Select the Back Up button.
- 4 Choose a location to which to save the backup in the Backup Project library dialog, and click Save.

## Restoring a Network Project Library

You can import existing project libraries to pass multiple projects between systems.

### To restore/import a network project library:

- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Network icon from the Project Library options.
- 3 Click the Restore button at the top of the Project Libraries sidebar.



The Restore button

- 4 Find the project library you need to import using the file import dialog, and click Open.
- 5 In the Add Project Library dialog, do the following:
  - a) Enter a new name for your project library.
  - b) Enter the IP address of the DaVinci Resolve Project Server you're accessing.
  - c) If you are a Member of the Project Server, enter your Username and Password. Otherwise, use the default user: *postgres* and password: *DaVinci*.
  - d) Click on the Create button and the imported local project library will appear in the Network section of the Project Libraries sidebar.

## Duplicating a Network Project Library

You can also duplicate a network project library as an additional backup, or save point in a large project.

### To duplicate a network project library:

- 1 Select the project library you want to duplicate.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 3 Select the Duplicate button.
- 4 Choose a new unique name for the duplicated library and click OK.

## Optimizing a Project Library

Sometimes, project libraries in DaVinci Resolve can become so large that their size affects performance. In these cases you may need to optimize them to improve access speed by “vacuuming” the project library of unnecessary spaces and reindexing it. Using the Optimize command can also be a valuable troubleshooting step in certain cases where you’re having problems opening, importing, or otherwise using projects saved within network project libraries.

### To optimize a project library:

- 1 Select the project library you want to optimize.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 3 Click the Optimize button.
- 4 A warning dialog will appear. Click Optimize to proceed, otherwise click cancel to leave the project library in its current state.

## Sharing a Key to a Network Project Library

If you wish, you can share your access key to a network project library with another user on the same local network.

### To export a key to a network project library:

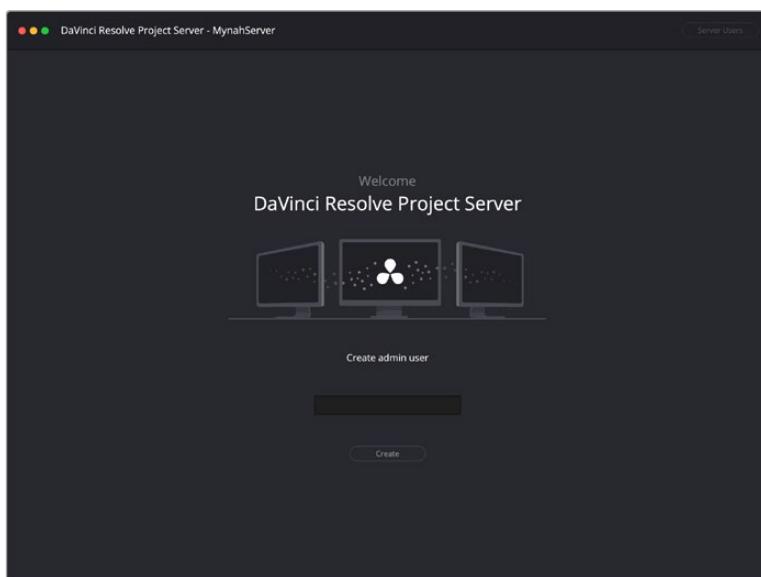
- 1 Click on the Show/Hide Project Libraries icon in the upper left of the Project Manager to expose the sidebar.
- 2 Select the Network icon from the Project Library options.
- 3 Select the project library you want to share the key to.
- 4 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 5 Click the Share Key button.
- 6 Select the directory in your file system where you want to save the key to and click save.
- 7 Send the resulting .resolvedbkey file to the other user.

## Using the DaVinci Resolve Project Server Application

DaVinci Resolve Project Server is a stand-alone application that lets you create, manage, backup, restore, and most importantly share project libraries on any workstation. Using this application, it's not necessary to launch DaVinci Resolve just to manage your project libraries.

## Installing the DaVinci Resolve Project Server

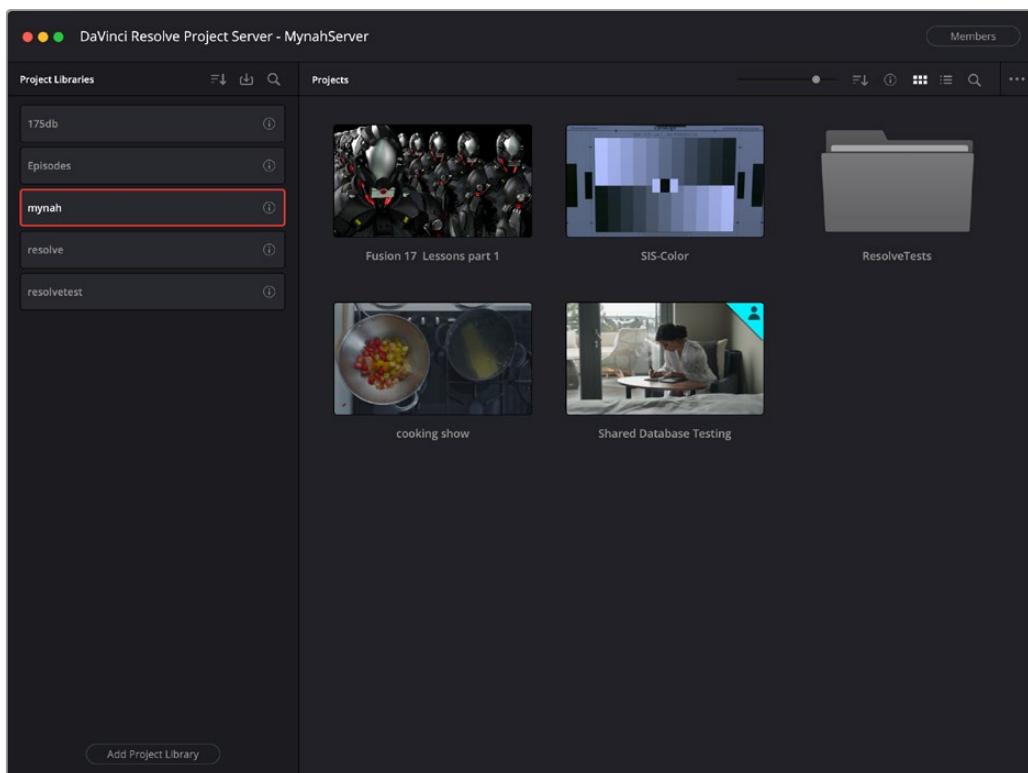
The hardware and software setup required to install the DaVinci Resolve Project server is outlined in the User's Guide document included in the program download. On initial startup, you will be presented with a screen to set up an Admin account for the server. This account will give you full permissions to adjust any aspect of the project libraries and make changes to the Project Server itself.



On initial startup, the DaVinci Resolve Project Server will ask you to create an administrator account.

# The DaVinci Resolve Project Server Interface

The DaVinci Resolve Project Server interface greatly resembles the DaVinci Resolve Project Manager with the Project Libraries sidebar open. However, it exposes all of the project library management tools that are available for creating and managing project libraries, including controls for sharing project libraries and creating access keys that are essential for quickly and easily creating and connecting to Project Servers.



The DaVinci Resolve Project Server window

This window has three main UI areas:

- **Project libraries list:** The Project libraries list in the Project Server application shows every single DaVinci Resolve network project library on your machine; even ones that have been disconnected. This makes it easy to find project libraries that you want to reconnect.
- **Projects browser:** Shows all projects and folders within the currently selected project library as icons or as a hierarchical list.
- **Toolbar:** A toolbar at the top of the window shows you functions that are available for managing DaVinci Resolve project libraries on your workstation.

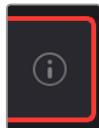


Project Libraries toolbar controls  
(L-R): Sort, Restore, Search

The three controls at the top of the Project Libraries toolbar have the following functions:

- **Sort Order drop-down menu:** This menu lets you choose how to sort the various local and network project libraries displayed in the sidebar. You can sort by Database Name, Schema (by date), Status, or Location in Ascending or Descending order.
- **Restore:** Imports .resolve.backup files to restore a backed up project library.
- **Show Search Field:** Displays a search field and search criteria drop-down that lets you search for project libraries in the sidebar by Name, Schema, Status, or Location.

Clicking on the Display Project Library Details icon (the circled letter “i” to the right of the project library), shows additional information underneath each database in the sidebar, and exposes the Backup and Optimize buttons.



The Display Project Library Details icon

The controls exposed in the Project Library details have the following functions:

- **Project Library Settings:** Clicking on this gear icon allows to choose to Rename, Delete, or Export an Access Key for the library.
- **Project Library Enabled:** This toggle enables or disables the project library sharing.
- **Project Library Information:** Displays metadata about the library, such as Location (IP address of the Project Server), Status (compatible or upgrade required), and the created and modified dates.
- **Backup:** Selecting this button lets you export the project library to a backup file.
- **Optimize:** Selecting this button lets you optimize the project library for better performance.
- **Members:** This area shows you which members have access to the project, and the Manage Members button lets you add or remove their access.

Project Library details exposed

# Creating New Network Project Libraries

If necessary, you can create new network project libraries right within the DaVinci Resolve Project Server.

## To create a new network project library:

- 1 Click the Add Project Library button at the bottom of the Project Libraries list.
- 2 When the Create Project Library window appears, type a name for the new project library into the Name field. Because all projects in a network project library are saved internally within the network project library, no other changes are necessary.
- 3 Click Create, and the new network project library will appear in the Project Libraries list.

# Backing Up and Restoring Project Libraries

You can also back up and restore project libraries without needing to open DaVinci Resolve.

Furthermore, you can back up project libraries from older versions of DaVinci Resolve, making it easy to back up project libraries for safety before you upgrade them.

## To backup/export a project library:

- 1 Select the project library you want to back up.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 3 Click the Back Up button.
- 4 Choose a location to which to save the backup in the Backup Project library dialog, and click Save.

## To restore/import a project library:

- 1 Click the Restore button at the top of the Project Libraries sidebar.



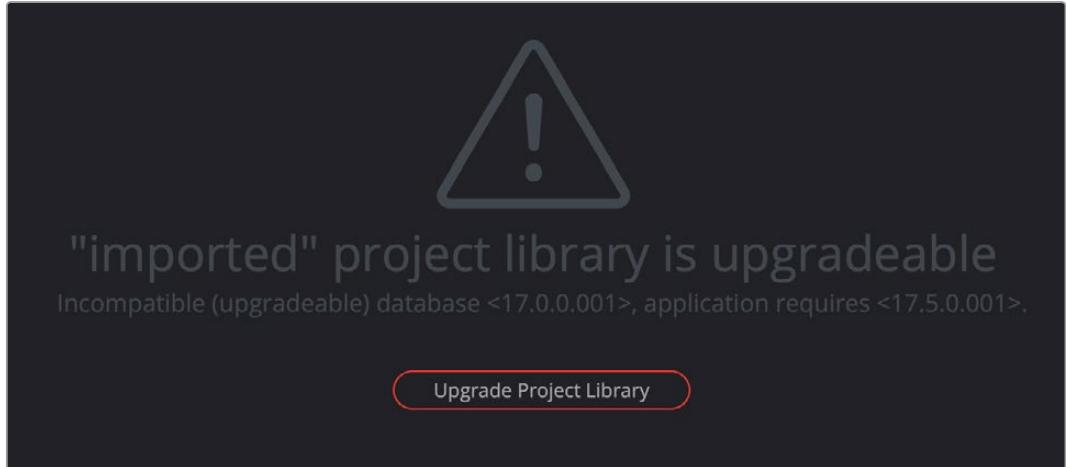
The Restore button

- 2 Find the project library you need to import using the file import dialog, and click Open.
- 3 In the Add Project Library dialog, type a name for the new project library into the Name field. This will rename the imported project library but will not alter its contents. You can also name it the same as the original project library.
- 4 Click Create, and the imported local project library will appear in the Project Libraries sidebar.

# Upgrading Project Libraries

From time to time, new versions of DaVinci Resolve require changes to the way projects are created, which requires project libraries created with older versions of DaVinci Resolve to be upgraded before you can access the projects within. Fortunately, this is a simple process.

It's generally a good idea to back up a project library prior to upgrading it, in case something goes wrong. In general, upgrading from a whole version release to the next whole version release of DaVinci Resolve usually requires an upgrade, while upgrading to a dot release of the same version may or may not. If the currently used project library requires an update, you'll be told on application startup.



The upgrade warning in the Project Manager indicates that project library needs to be upgraded

#### To upgrade a project library from an older version of DaVinci Resolve:

Click on a project library that needs updating, and select the Upgrade Project Library button. A dialog appears to confirm if you really want to upgrade that project library. Click Upgrade to proceed.

## Viewing Project Library Contents

If you're using multiple project libraries to organize your projects, you can browse the contents of each project library to search for what you're looking for. Simply click to select a project library in the sidebar, and an orange highlight will appear. All projects corresponding to that project library appear in the Project Manager window.

## Optimizing Project Libraries

Sometimes, project libraries in DaVinci Resolve can become so large that their size affects performance. In these cases you may need to optimize them to improve access speed by "vacuuming" the project library of unnecessary spaces and reindexing it. Using the Optimize command can also be a valuable troubleshooting step in certain cases where you're having problems opening, importing, or otherwise using projects saved within network project libraries.

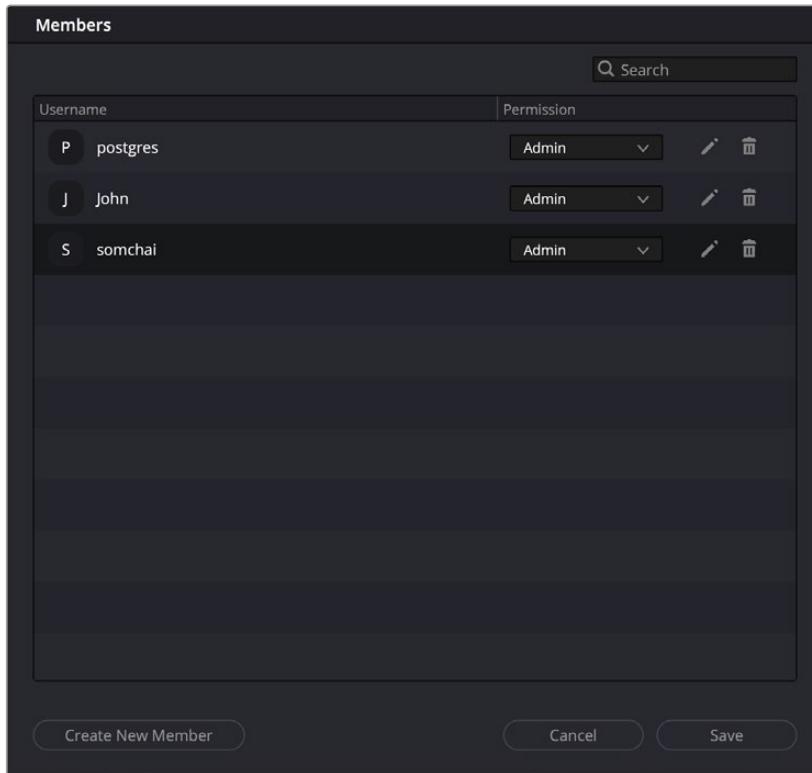
#### To optimize a project library:

- 1 Select the project library you want to optimize.
- 2 Click the Display Project Library Details icon (the circled letter "i" to the right of the project library).
- 3 Click the Optimize button.
- 4 A warning dialog will appear. Click Optimize to proceed, otherwise click cancel to leave the project library in its current state.

## Member Management in the DaVinci Resolve Project Server

It is possible to assign specific users to specific project libraries and adjust their roles. This gives extra granularity for security for complex projects with many users. Every network project library starts with the default user: postgres and password: DaVinci. This was until recently the only way to sign

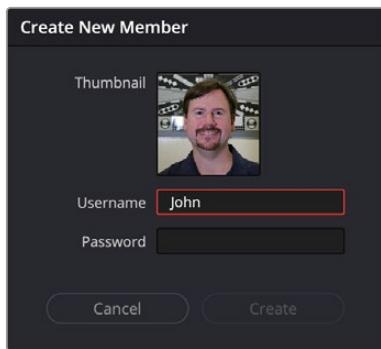
into the DaVinci Resolve Project Server remotely, but now you can add custom users and passwords as well. Members will be able to use their individual credentials to sign into network projects in the Project Manager.



The DaVinci Resolve Project Server  
Members management window

#### To add a new member to the DaVinci Resolve Project Server:

- 1 Click the Members button on the top right of the DaVinci Resolve Project Server.
- 2 Click the Create New Member button at the bottom of the Members window.
- 3 Select a username and password for the member, you can optionally add a thumbnail photo as well. This thumbnail will be used to identify the user in collaboration mode.



The DaVinci Resolve Project Server  
Create New Member window

- 4 Repeat as for as many new users as you want to add.
- 5 Click the Save button to store the new users, or click Cancel to discard your changes.

## To delete an existing member from the DaVinci Resolve Project Server:

- 1 Click the Members button on the top right of the DaVinci Resolve Project Server.
- 2 Find the user you want to delete and press the trash can icon in that user's row. There is no warning dialog for the deletion, and it is not undoable, so make sure you double check that you have selected the correct user.

## To modify an existing member's permissions in the DaVinci Resolve Project Server:

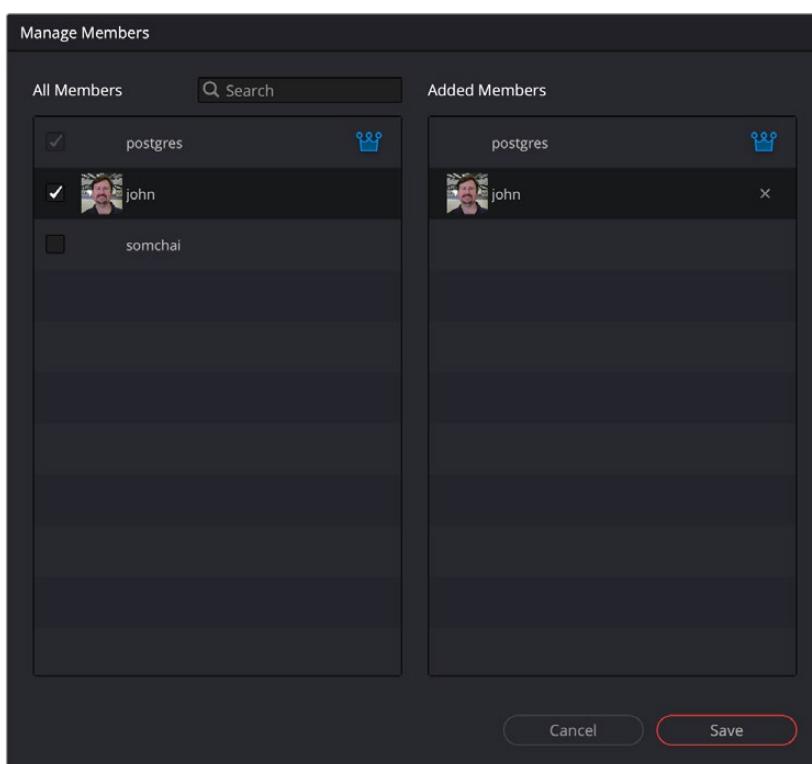
- 1 Click the Members button on the top right of the DaVinci Resolve Project Server.
- 2 To change the user's role between Administrator and Collaborator use the selection menu.
- 3 To edit a user's name and password details select the Pencil icon.

## Assigning Members to Specific Project Libraries

Once you have created some members, you can add them to specific project libraries. This lets you have multiple teams of people, working on multiple projects off the same Project Server, without the off chance that they accidentally delete another teams projects, or have access to sensitive material.

### To add or remove a member from a specific project library:

- 1 Open a project library's details settings by clicking on the "i" icon to the right of its name.
- 2 Click on the Manage Members button at the bottom of the project library.
- 3 To add a member, check the box next to their name in the All Members field.
- 4 To remove a member, click on the "x" next to their name in the Added Members field.



The DaVinci Resolve Project Server Mange Members window

Members added to a project library in this way will be able to log-in using their credentials in the Network Libraries section of the Project Manager in DaVinci Resolve.

# Sharing Network Project Libraries via the Project Server

You can also use the DaVinci Resolve Project Server to easily set up a shared Project Server on your local network. However, for this to work, you need to adhere to the following requirements:

- All workstations need to be connected to the Project Server on a local network.
- All network connections should be reasonably fast (preferably Gigabit Ethernet or faster).
- The computer functioning as the Project Server should be reasonably fast, but it doesn't need fast GPU processing.

The following procedures describe how to set up a shared Project Server, and how to export an access key with which to easily set up other workstations to connect to it.

## To configure the DaVinci Resolve Project Server:

- 1 Open the DaVinci Resolve Project Server application.
- 2 In the File > Network Interface menu choose the IP address you wish to use to connect to the client workstations.



The Network Interface menu

**IMPORTANT:** You must select the appropriate Network Interface IP address that matches the network the client computers are on before you create and share a project library or create an access key, otherwise a connection error will occur.

## To share a project library using the DaVinci Resolve Project Server:

- 1 Select or create a DaVinci Resolve project library you want to share, and click the Project Library Enabled slider on. It's at the top of the project library's details section.
- 2 When a dialog appears asking if you want to authorize the configuration of your Project Server, click Authorize. That project library can now be shared among other DaVinci Resolve workstations on the same network.

Once you've set up a Project Server, it's easy to connect other machines to that server using access keys that you can create using the DaVinci Resolve Project Server application.

### To create an access key to enable easy connection to a Project Server:

- 1 Select a project library that you've set up to share, enter the library's details section, and choose the Export Access Key option from the settings icon in the upper right.
- 2 Choose a location via the Create Access Key dialog, and click Save. An access key file is saved to the location you chose with the file extension .resolvedbkey.
- 3 Copy the .resolvedbkey file to the workstation you want to connect to the shared project library.
- 4 Open DaVinci Resolve, and when the Project Manager appears, open the Project Libraries sidebar, and then drag the .resolvedbkey file and drop it anywhere within the Project Manager. The shared project library should now appear in the Project Libraries sidebar, and if you select it, you'll see all of the projects that are located in that project library on the Project Server.

If necessary, you can also disable sharing for any project library, preventing remote access to it from other workstations on the network.

### To disable sharing:

- 1 With the DaVinci Resolve Project Server application open, select a project library you enabled sharing for, and click the Project Library Enabled slider off. It's at the top of the project library's details section.
- 2 When a dialog appears asking if you want to authorize the configuration of your PostgreSQL server, click Authorize. That project library will no longer be shared.

**IMPORTANT:** If you enable sharing on a computer that is later moved to another network (for example, if you set up Project Server sharing on a laptop), you'll need to disable sharing and then re-enable it before you create access key files that will successfully connect to the new network location.

## Cloud Project Libraries

Cloud project libraries are hosted on Blackmagic's Project Library servers on the internet, allowing DaVinci Resolve users to connect and collaborate on the same projects from any location in the world.

For more information on Cloud Project Libraries, see *Chapter 188, "Blackmagic Cloud Project Server."*

## Chapter 193

# Collaborative Workflow

Multi-user collaborative workflow uses “bin locking” to manage who has access to what when multiple collaborators open the same project.

However, collaborative workflow also allows multiple artists to do simultaneous editing, compositing, grading, and metadata entry to clips on the same timeline within a single project for which Collaboration has been enabled. Multiple users can simultaneously access the same timeline within the same project to edit, composite, and grade at the same time, while other editors and assistants can open different bins containing different timelines within the same project to do editorial and media management. This chapter describes how to set up multiple DaVinci Resolve workstations to collaborate, and how to use bin locking to work together.

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# Introduction to Collaborative Workflow

Multi-user collaborative workflow allows simultaneous editing, compositing, grading, and Media Pool clip management by multiple people within a single project that has been enabled for collaboration. Collaboration takes three different forms:

- Using bin locking, multiple editors can simultaneously edit different timelines in different bins of the same project, while assistant editors can reorganize clips and edit the metadata in other bins within the same project. Bins are automatically locked when selected by a particular user and unlocked when deselected by that same user, or they can be manually set to be either locked or unlocked as circumstances require.
- Using clip locking, multiple colorists and compositing artists can work together in the same timeline, in either the Color page or Fusion page, without fear of overwriting one another's work. A clip is locked automatically when a user selects that clip to work on, and is unlocked (with the work checked in) when that same user selects a different clip. Clip locking in the Fusion page is maintained separately from clip locking on the Color page, so a compositing artist and colorist can work together on the same shot.
- One editor, one compositing artist, and one colorist can work together on the same clip in the same Timeline of the same project without conflict.

Overall, working in DaVinci Resolve in Collaborative Workflow mode is identical to working in non-collaborative mode. However, there are a few collaborative capabilities that are worth knowing about.

## Collaborative Render Cache Support

Each collaborator on a project will have the exact same render cache format settings automatically configured across all machines. If you are collaborating across operating systems (Mac, Windows, Linux), it is important that the Render Cache Format is set to a codec that is supported by all platforms.

## Collaborative Support for Individual Monitoring

If necessary, each collaborator on a project can override the output and monitoring settings of a project on their particular workstation. When a project is set to use Collaborative Workflow, a "Use Local Overrides" checkbox appears in the Video Monitoring group of the Project Settings that lets you choose how to monitor on your particular workstation.

## Collaborative Marker, Flag, and Clip Color Support

Collaborative workflow supports the modification of markers, flags, clip metadata, and clip color from the Color page. Additionally, FrameIO comment markers are supported by collaborative workflow.

## Read Only Mode

Users can load collaborative projects in Read Only Mode.

## Collaborative Support for HDR

Starting with DaVinci Resolve 16, there is support for Dolby Vision and HDR10+ in collaborative workflows.

# Requirements for Collaboration

In order to use collaborative workflow:

- All users must be working on a project that's been saved either in the Blackmagic Cloud, or on a properly configured remote project library server. This remote project library server can be on one of the actively used DaVinci Resolve workstations, or it can be another computer on your network that simply hosts shared projects, but it should be on a computer that is never shut down or put to sleep, to prevent projects suddenly becoming unavailable.
- All machines participating in a collaborative workflow must be networked. They can be on the same local area network (LAN), but you can also connect computers on different subnets.
- Shared projects should ideally use media on some type of fast storage area network (SAN), with each collaborator connected to that SAN so that every workstation that's connected to the project being collaborated on has direct access to the same media. In a pinch, shared volumes over a network will work, but proper SANs will provide significant performance benefits. Facilities using multiple computer platforms (macOS, Windows, and Linux) together can use the Mapped Mount option of the Media Storage Locations list, found in the DaVinci Resolve System Preferences, to facilitate cross platform drive connection.
- Alternatively, all workstations can be connected via the internet to the same cloud storage folder with the proper Path Mapping set up in the Project Settings.

For more information on setting up a project library server, see *Chapter 192, "Managing Project Libraries and Project Servers."*

# Enabling Multiple User Collaboration

Enabling Multiple User collaboration mode on a project is required to use the collaboration toolset.

### To open a project and initiate a collaborative workflow:

- 1 Open DaVinci Resolve on a computer that's connected to a remote project library or Blackmagic Cloud server.
- 2 Open any project on the remote project library DaVinci Resolve is connected to using the Project Manager.
- 3 When the project is open, choose File > Multiple User Collaboration.

Once collaboration is enabled, two additional buttons appear at the lower-right corner of the DaVinci Resolve interface, next to the Project Manager and Project Setting buttons. These are the Collaboration Chat and Collaboration buttons.

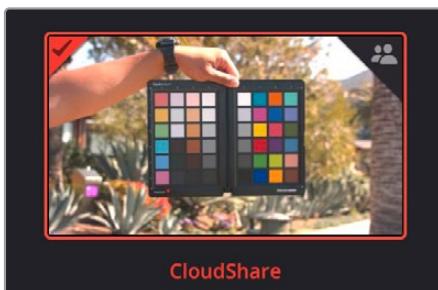


The Collaboration Chat button (far left) and the Collaboration button (second from left)

**NOTE:** When you enable collaboration, the “Auto conform missing clips as media is added to Media Pool” option in the General Options panel of the Project Settings is automatically disabled, as it interferes with collaborative workflow. Also, Live Save is automatically turned on in the Auto Save panel of the User Preferences, to ensure that all collaborators’ work is saved regularly to avoid conflicts between collaborators.

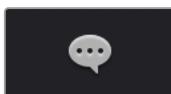
# Opening Projects to Collaborate

Projects that have Collaboration enabled appear with a badge on their thumbnail in the Project Manager to let you know that project is available for collaboration.



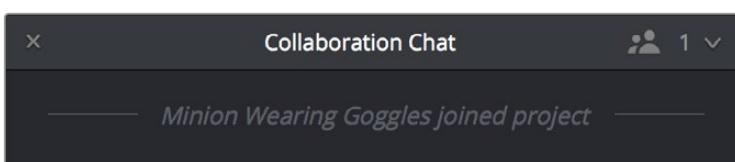
An icon indicates that a project in the Project Manager is available for collaboration

At this point, anyone else who has access to this remote project library server can simply open this project up and work collaboratively with you. Whenever a collaborator opens the same project you’re working in, the Collaboration Chat button at the bottom of the DaVinci Resolve UI highlights to let you know you have a message.



The Collaboration Chat button highlights to let you know you have a message

Opening the Collaboration Chat window shows who’s collaborating with you.



A new message in the Collaboration Chat window lets you know who else has opened the project you’re working on

# Customizing Your Collaborator Identification

Once you've set up a project for collaboration, you want to make sure it's easy to tell all your collaborators apart. Clicking the Collaboration button opens a list of all collaborators, or project members, working in that project.



Opening the Collaboration list shows all the current project members

The top member is you, and you can change the name you use by editing the text field. Your user icon is set automatically based on the image you chose either in your Blackmagic Cloud account or the DaVinci Resolve Project Server. If you haven't chosen an image, it defaults to the first two letters of your user name. Additionally, you can see the other member's workstation OS revealed as an icon to the right of their name.

## How Collaboration Works

At its simplest, collaborative workflow uses a "first come, first served" model to manage who has can make changes to what. Essentially, the first collaborator to select a bin in the Media Pool, open a timeline, or select a clip in the Fusion page or Color page gets a "lock" on that item. Once an item is locked (indicated by a colored collaborator badge), other collaborators can look at it, but they cannot make changes. This prevents versioning conflicts from occurring.

Bin and clip locks are released when a collaborator selects a different bin or timeline in the Media or Edit pages, or a different clip in the Fusion page or Color page. At that point, the changes that have been made to the previously locked item are "checked in" and made available to all collaborators once they refresh their project (by clicking a circular refresh icon that appears to the right of bins in the Media Pool or in the corner of the Edit page Viewer).

All changes that collaborators make are automatically saved to the project as they're made, so no work will ever be lost as you collaborate with your team. However, each collaborator gets to decide when they want to update the bin, timeline, or clip they're currently working on to see the changes made by everyone else, in order to prevent a kaleidoscope of constant alterations to compositions and grades from being a distraction while you're working.

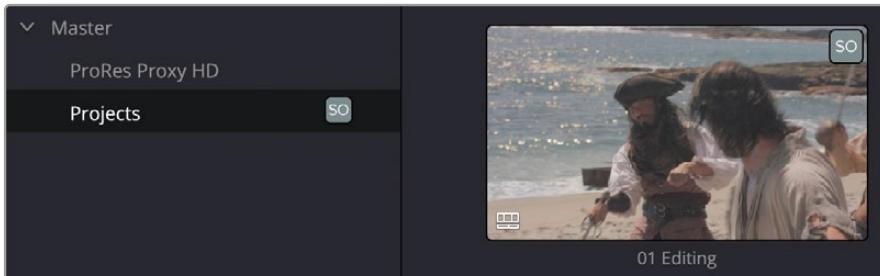
The following sections describe Bin and Timeline locking and Clip locking in more detail.

## Automatic Bin and Timeline Locking

Whenever a collaborator opens a particular bin, that bin and its contents are locked, preventing any other collaborators who open that project from making alterations to anything inside that same bin. This prevents versioning conflicts while work is in progress. When a bin is locked, you can still view its contents, if for instance you just need to figure out where a particular clip has been put, but you can't make changes.

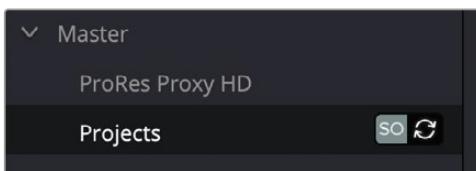
Collaborators can open locked bins and see the contents for reference, but they cannot make any organizational or editorial changes. The only things that can be changed once a bin and its contents are locked are the creation or alterations of clip compositions in the Fusion page, and alterations to clip grades in the Color page.

You can always tell when a collaborator has a lock on a bin and its contents because a badge appears to the right of the bin in the Bin list, and in the corner of timeline thumbnails that are visible in the Media Pool browser area. Hovering the mouse over that badge in the Bin list reveals a tooltip with that collaborator's name.



An icon indicates that another collaborator has a lock on the Projects bin.

Once a collaborator (someone other than you) makes changes to a bin's contents or to a timeline, you'll see a circular "refresh" badge appear by each affected bin in the Bin list of the Media Pool, alongside their collaborator icon. Click these badges whenever you want to update your version of the shared project with all organizational and editorial changes made by others in that bin.



An icon indicates that another collaborator has made changes; clicking it refreshes your project to show those changes

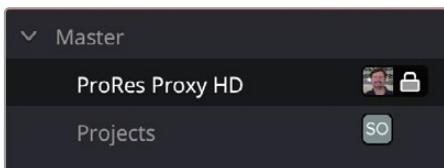
To release a bin or timeline, simply select another bin or timeline. It's that simple.

# Managing Bin Locks Manually

You can also manually control the locked state of bins, during instances where you want to keep bins locked for future use or prevent them from becoming locked when you only want to browse the contents.

## Keeping Bins Locked

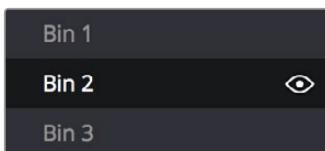
If you want to lock one or more bins that you know you're going to be switching among to either prevent other collaborators from making changes or so that nobody else inadvertently prevents you from having access, you can right-click one or more selected bins and choose Lock Bins to lock them. Bins locked in this way remain locked, even when you deselect them, until you right-click them again and choose Unlock Bins. Other users will see your collaboration icon as well, so they will know who currently has the bin locked.



Manually locked bins stay locked  
even when they're not selected

## Keeping Bins Unlocked

Additionally, you can choose to keep bins unlocked when selected. For example, you may just want to examine the contents of a bin without keeping someone else from editing its contents. In this case, simply Option-click any bin to open that bin in read-only mode, which is indicated by an eyeball badge to the left of that bin in the Bin list. In this mode, any other collaborator can still lock that bin while you're examining its contents. Selecting any other bin will clear this read-only status.



Selecting a bin in read only mode  
allows collaborators to lock that  
bin while you examine its contents

**TIP:** While a bin is open but manually unlocked by you, you can still open clips into the Source Viewer and add markers to them, so long as another user doesn't select that same bin and lock you out.

# Manually Locking and Unlocking Timelines

You can also manually manage the locking of timelines. Opening a timeline automatically locks other collaborators out of making changes to that timeline, but it does allow other users to modify the bin that timeline appears within. This allows for greater flexibility in setting up your Media Pool and avoids locking media or other timelines in the same folder. You can still manually choose to lock individual Media Pool bins to secure their contents independently.

### To unlock a timeline to let other collaborators work on it:

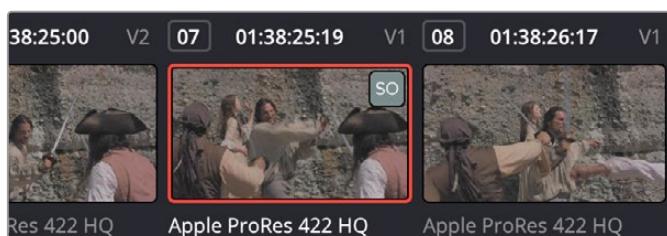
- Right-click that timeline in the Media Pool and choose Timelines > Unlock Timeline from the contextual menu.

### To lock a timeline preventing other collaborators from working on it:

- 1 Right-click that timeline in the Media Pool and choose Timelines > Lock Timeline from the contextual menu.
- 2 Other collaborators will be unable to modify the timeline while you have a lock on it, however they will be able to modify any other clips and timelines in the bin.

## Automatic Clip Locking

Clip locking in the Fusion and Color pages works similarly. As multiple compositing artists work in the Fusion page, and multiple colorists work in the Color page, the first compositing artist or colorist to select any given clip has an automatic lock on that clip. Other compositing artists or colorists will see a badge on that clip in the Thumbnail timeline showing that it's locked as well as letting them know who has the lock. In the following screenshot, the SO badge in the corner of clip 7 in the Color page Thumbnail timeline indicates that clip is locked.



Badges in the Thumbnail timeline indicate which clips are locked because a collaborator is grading them

### Automatically Checking In Work When You Change Clips

When you're finished with the clip you're working on, you need only select another clip for the changes you made to the previously selected clip to be automatically saved and pushed to all other colorists who are working on that timeline in the Color page. No refresh is needed. This is the main difference between clip locking in the Color page and bin locking.

### Compositing Artists and Colorists Can Work Together

The Fusion page and Color page each maintain separate clip locks. This means that for any given pool of compositing artists, only one will be able to work on a given clip at a time, while in the Color page only a single colorist will be able to work on a clip at a time.

However, because Fusion and Color page clip locking is maintained separately, that means that one compositing artist and one colorist can work on a single clip in the timeline simultaneously, even while an editor is working on that timeline.

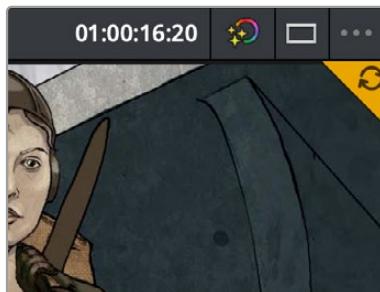
# Receiving Changes Made by Collaborators

As you work collaboratively, it will be common for groups of compositing artists to be executing multiple compositions at a time, while colorist and their assistants will be working on the grade, and an editor and their assistants will be refining the edit, all working together within the same project.

## Receiving Changes On the Edit Page

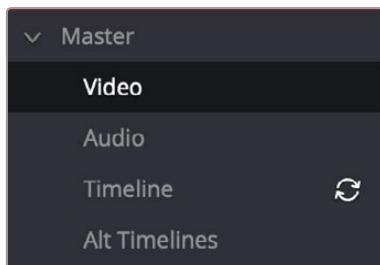
While compositors are compositing and colorists are grading clips within the same timeline of the same project, each clip that's adjusted in the Fusion or Color page triggers a Refresh badge to appear in three areas of the Edit page, so the collaborating editor(s) can decide when to update their timeline to see the changes that have been made.

- At the upper-right corner of the Timeline Viewer. Clicking this badge refreshes the composites and grades of all clips in the currently open Timeline.



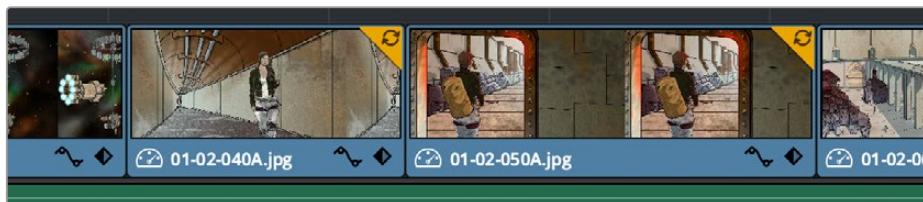
A clickable “update” badge appears in the corner of the Timeline Viewer for timelines with edits, grades, and composites that have been updated

- At the right of the bin containing the modified timeline in the Media Pool’s bin list. Clicking this badge refreshes all clips in the Timeline within that bin.



A clickable “update” badge appears over bins containing timelines in the Media Pool with edits, grades, and composites that have been updated

- At the upper-right corner of each modified clip in the Timeline.

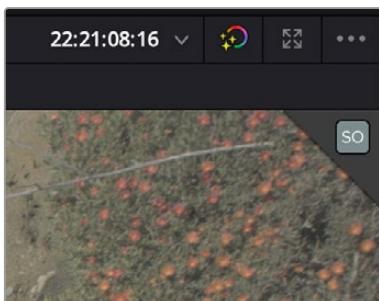


A clickable “update” badge appears over clips in the Timeline with edits, grades, and composites that have been updated

## Receiving Changes On the Fusion and Color Pages

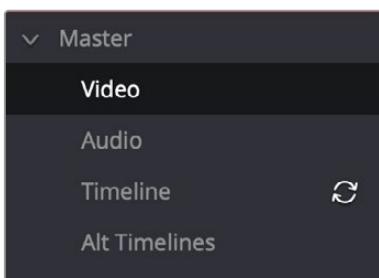
For collaborators working on the Fusion or Color pages, other badges indicate when editors have made changes to the Timeline, or when other compositing artists or colorists have made changes to other clips in that timeline.

- Timelines that you're locked out of because another collaborator has a lock on them are indicated by a badge at the upper-right corner of the Viewer, while changes made to the Timeline by editors on the Edit page are indicated by a refresh badge in the same location. Clicking this badge refreshes all clips in the Timeline.



A badge in the Viewer shows that a viewer has a lock on this timeline

- If you open up the Media Pool, then a badge appears at the right of any bin in the Bin List that's been reorganized or that contains a modified timeline. Clicking this badge refreshes all clips in the Timeline within that bin.



A badge appears to the right of bins in the Media Pool containing timelines that have been updated

- A badge appears at the upper-right corner of each clip in the Thumbnail timeline that's been modified by a fellow compositing artist or colorist. Clicking a single clip's badge updates that clip alone.



A badge appears over clips in the Timeline with grades that have been updated.  
Clicking this badge refreshes just that clip.

# Examples of Collaborators Working Together

The first collaborator that opens a timeline is the only person that can make editorial changes to that timeline in the Edit or Fairlight pages. Other collaborators who open that project are “locked out” of making changes to the Edit or Fairlight pages, but they can see the Timeline, and they can make grading changes in the Fusion or Color pages. This means in situations where you want multiple editors to be working on a project, it can be ideal to organize your program into separate “reels,” where each reel of a project is a separate timeline in a separate bin.

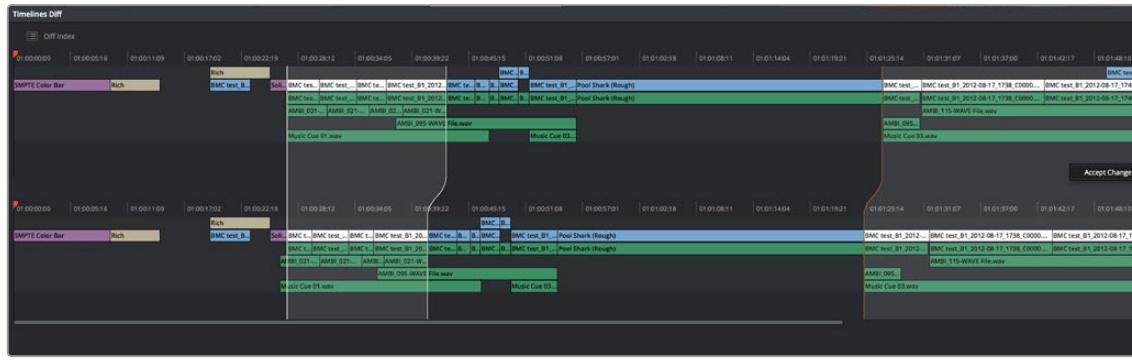
## Multiple Editors Working Together

The first collaborator that opens a timeline is the only person that can make editorial changes to that timeline in the Edit or Fairlight pages. Other collaborators who open that project are “locked out” of making changes to the Edit or Fairlight pages, but they can see the Timeline, and they can make grading changes in the Fusion or Color pages. This means in situations where you want multiple editors to be working on a project, it can be ideal to organize your program into separate “reels,” where each reel of a project is a separate timeline in a separate bin.

On the other hand, if two or more editors must both work on the same timeline, this can be accomplished using duplicate timelines and then merging the changes back together later on. For example, collaborating editor Anne can do the following to make changes to a timeline that editor Erin is already working on:

- First, Anne can duplicate the locked timeline into a separate bin from the one Erin has a lock on.
- Alternately, Erin could be proactive and duplicate the timeline into a separate bin in advance.
- Second, Anne will re-edit the duplicate timeline to make whatever changes are necessary to a different scene than the one Erin is currently working on. Working on different scenes is the cleanest and easiest way of using this workflow.
- Third, Anne uses Collaborative Chat to notify Erin that the changes are finished.
- Fourth, Erin then refreshes the project to see Anne’s updated duplicate timeline in the Media Pool, right-clicks it, and chooses Compare With Current Timeline from the contextual menu to show the Timeline Comparison window that makes it possible to merge the changed section of the duplicate timeline with the original timeline that Erin already has open.

In the following screenshot, Erin’s highlighted changes (made while Anne was working) can be seen at the left, and Anne’s highlighted changes can be seen at the right. Right-clicking within the right highlighted area reveals an Accept Change command that lets that scene’s changes be merged from the duplicate timeline back to Erin’s original timeline.



Using the Compare With Current Timeline command lets you see the differences between two differently edited versions of the same timeline, and merge a scene's worth of changes that a collaborator has made (at right) back to the original timeline.

For more information on comparing timelines, see *Chapter 34, "Creating and Working with Timelines."*

## Editors and Assistant Editors Working Together

Collaborators can edit metadata, create new bins, and reorganize clips within unlocked bins only. This means that your project should be organized so that an editor can lock the contents of the bins they need to work with at a given point in time, while the assistants can work on additional timelines and media within other bins in that project.

However, in addition to being able to copy timelines from a locked bin to a bin that you control, you can also copy clips from one timeline to another. In this way, if you absolutely need to make changes to source clips while the original source clips are locked, you can make your changes to copies of these clips.

## Editors and Compositing Artists Working Together

Editors and compositing artists can work together closely, since compositing artists can create compositions for one or more clips in a timeline while it's being edited, even though that timeline and the bin it's in are locked to other editors.

Here's an example of an editor working on a commercial spot with a lot of greenscreen material working together with one or more compositing artists.

- First, the editor cuts together each foreground clip with actors performing as a rough cut, and once that rough cut is assembled, they edit in the background clips that accompany each greenscreen clips to create a series of stack of clips.
- Second, the editor selects each stack of clips, one by one, and uses the New Fusion Clip command to create Fusion clips that the compositing artists can work on. By making each of these clips into Fusion clips, the editor is making it easy for the compositing artists to have access to all the clips necessary for each composition from within the Fusion page, collaboratively.
- At this point, the editor uses collaborative chat to notify the compositing artists that there are composites ready for them to work on, and the editor can then turn their attention back to refining the edit.
- Upon being notified that they can begin work, one or more compositing artists start working through the Fusion clip compositions while the editor is working, to create each multi-layered composite that's necessary. As each compositing artist finishes a clip and moves to a new clip to begin work, the editor sees a notification badge at the upper-right corner of each clip in the

Timeline that's been composed, as well as notification badges in the Bin List of the Media Pool, and at the upper-right corner of the Timeline viewer. Clicking any of these badges will refresh one or more of these clips, so the editor can see the changes.

## Multiple Compositing Artists Working Together

To prevent versioning issues, only one compositing artist can work on a particular clip at a particular time in the Fusion page, and the first compositing artist to select a clip puts a lock on that clip. Other collaborators looking at the Thumbnail timeline in the Fusion page will see a small icon that shows it's locked, letting them know they can't make any changes to it until whoever is working on that composition moves to another clip.



A small icon indicates that you're locked out because another compositing artist is working on that clip

This means that multiple compositing artists can't work on the same composition at the same time. However, an assisting compositing artist can do preparatory work on one composition, such as doing rotoscoping, paint, particle system design, or any other time-consuming task, while a lead compositing artist works on another shot in the meantime. Once the assisting compositor is done, they can select another clip to work on and use collaborative chat to let the other compositor know they're done and that clip is ready for more work.

In order to prevent half-finished work from being disseminated to other collaborators, a clip that's in the process of being worked on in the Fusion page isn't updated for anyone else who's working on that same timeline until the compositing artist who's working on it selects another clip. Immediately upon being deselected, all changes are automatically checked in and made available to all other collaborators, who see notification badges in the Fusion page and the Edit page to alert them that changes are available and that they can refresh their timeline to see the updates.

## Editors and Colorists Working Together

Colorists and editors can work together very closely in DaVinci Resolve, as colorists can grade the shots of a timeline that an editor is currently working on, even though that timeline and the bin it's in are locked to other editors.

From the colorist's point of view, whenever the editor makes an alteration to the Timeline, a badge appears at the upper-right corner of the Color page Viewer to indicate that a change has been made to the timeline being graded. Clicking this badge updates the timeline the Colorist is working on.

In order to prevent half-finished work from being disseminated to the editor (or worse, being seen by the client), clips that are in the process of being graded aren't updated for other collaborators that are looking at that timeline until the colorist who's working on it "checks in" their work by selecting another clip. So, from the editor's point of view, whenever a colorist has finished grading a clip and

has selected another clip to grade, a series of badges appear in the Edit page, one on the clip that's been graded, one on the Timeline Viewer and one on the bin in the Bin List that contains the Timeline. Clicking any of these badges updates the Timeline with the latest grades.

## Multiple Colorists Working Together

Only one colorist can work on a particular clip at a particular time, and the first colorist to select a clip puts a lock on that clip. Other collaborators looking at the Thumbnail timeline in the Color page will see a small icon that shows it's locked, letting them know they can't make any changes to it until whoever is grading that clip moves to another clip.



A small icon indicates that you're locked out because another colorist is grading that clip.

In order to prevent half-finished work from being disseminated to other colorists or editors, a clip that's in the process of being graded isn't updated for other collaborators that are looking at that timeline until the colorist who's working on it selects another clip. These changes are then automatically made available to all other collaborators working in the Color page, who see badges appear in the Edit and Color pages to indicate which clips have updates available.

This makes it easy for multiple colorists to work together. For example, an assistant colorist can be notified via Collaborative Chat to draw a custom window that a senior colorist needs for a grade. The assistant opens that timeline in another suite, selects the appropriate clip, and draws the window. Once finished, the assistant simply selects a different clip, and the changes they've made are immediately available to the senior colorist, who sees a badge on that clip in the Thumbnail timeline and can click to update it.

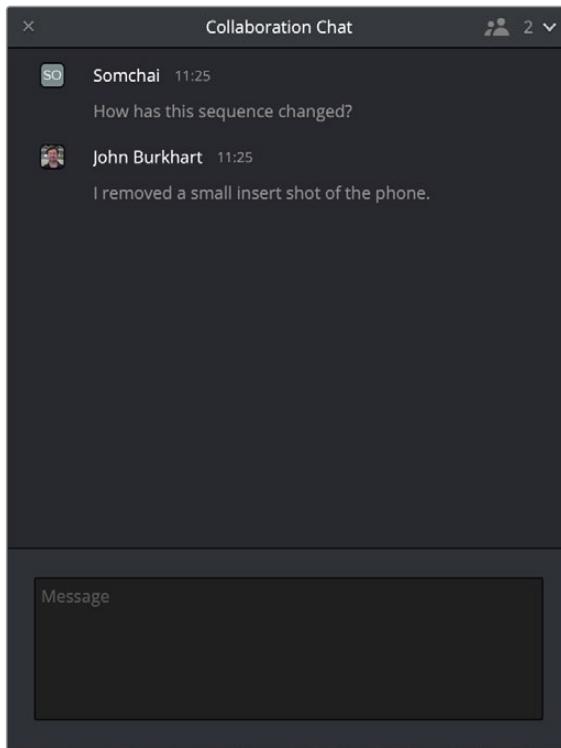
## Managing Notes Among Collaborators

If an editor wants to send a note to colorists or compositing artists, they can do one of the following:

- They can add a marker with note text to the Timeline ruler (the marker appears in the marker submenu in the Color page Viewer option menu)
- They can add a marker with note text to a clip (that marker appears in the mini-timeline of the Color page)
- They can color code clips in different ways to get the colorist's attention (clip color coding appears as a dot in the Thumbnail timeline).
- Of course, the editor and colorist can always interact via the collaborative chat window, as well.

# Collaboration Chat

To facilitate communication among collaborators, DaVinci Resolve has built-in text chat, called Collaboration Chat. Simply click the Collaboration Chat button to open the chat window, and chat away.



The Collaboration Chat window for communication among collaborators

The Collaboration Chat button at the bottom of the DaVinci Resolve interface highlights orange whenever someone texts while this window is closed, letting you know you have messages that are waiting.



The Collaboration Chat button highlights to let you know you have a message.

# Remote Grading and Remote Monitor

This chapter describes how to set up Remote Grading using two separate DaVinci Resolve systems in different locations via the internet, to have one system remotely control the other for color grading. While DaVinci Remote Monitor allows you to stream a high quality video signal from one DaVinci Resolve system to another workstation over the internet or on the same network.

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# Introduction to Remote Grading

To enable colorists to work interactively with clients across the globe, DaVinci Resolve offers a remote grading option. It allows two matching DaVinci Resolve systems to be synchronized via an Internet connection such that changes made on the colorist's workstation are immediately applied on the remote client's workstation.

Cue commands are also synchronized to ensure that both systems are always on the same frame in the Timeline. Starting or stopping playback on the colorist's DaVinci Resolve also starts and stops the remote client system. While a remote grading session is in progress, input from the user at the remote client's DaVinci Resolve workstation is ignored.

Currently, the remote grading feature supports only color correction and does not allow editing or conforming during a session. The two colorist and remote DaVinci Resolve systems must have matching timelines and the number of clips, clip durations, and system resolutions must match. The requirements and limitations of a remote grading session are summarized below.

## Requirements for Remote Grading

- The same version of DaVinci Resolve must be installed on both systems.
- The Timeline to be graded must be conformed on both machines prior to the start of the remote grading session.
- The number of clips on the Timeline and the duration of each clip must be identical.
- While grading, the active Timeline and versions on the remote client system are constantly updated. Creating, deleting, or switching the Timeline on the client's DaVinci Resolve is not allowed. Doing so will terminate the remote grading session immediately.
- You cannot make any grading adjustments on the remote client's DaVinci Resolve workstation until the remote grading session has ended.

**NOTE:** Remote grading does not require a shared project library.

## Setting Up for Remote Grading

To start a remote grading session, the client's DaVinci Resolve must be able to connect to the colorist's system using TCP/IP.

- 1 Open DaVinci Resolve on the remote client's workstation (the one that's being remotely controlled), log in, and open the project that will be remotely graded.
- 2 Choose Workspace > Remote Grading (Ctrl-G) on the remote client's workstation. A window is displayed with text fields to enter the IP address and port number of the colorist's system.

- 3** Set the IP address field to the IP of the colorist's DaVinci Resolve workstation. If the colorist's system already has a public IP address, the port number can be left at its default value (15000). If the colorist's system is on a private network, the colorist or their network administrator should set the port number to one on the public IP router that is internally routed to port 15000 of the colorist's DaVinci Resolve.
- 4** Once the remote client clicks Connect, the client's DaVinci Resolve system will attempt to establish a connection with the remote colorist's workstation.
- 5** Once the connection is established, a pop-up appears on the colorist's screen asking for permission to accept a Remote Grading connection.
- 6** Click OK to accept, minimize the size of this dialog window, and continue grading normally.

The Remote Grading session will remain active until one of the users chooses to disconnect or an error occurs causing DaVinci Resolve to automatically terminate the session.

## Remote Grading Restrictions

To allow operation over low bandwidth and a potentially long latency Internet connection there are some restrictions to remote operation.

- When playback is started, the playback speeds on the two DaVinci Resolve systems may differ. The frame positions are only guaranteed to be synchronized when playback is stopped.
- Input/output/display LUTs applied from the Config page on the colorist's DaVinci Resolve will not have any effect on the client system. LUTs selected on the client's DaVinci Resolve will be applied instead.
- Presets applied from the Config/Color pages on the colorist's system will not have any effect on the client's system. Presets selected on the client's DaVinci Resolve will be applied instead.

## DaVinci Remote Monitor (Studio Version Only)

DaVinci Remote Monitor is an application that allows you to have access to a low latency, high quality video signal over a network for monitoring, editing, and color grading purposes. The DaVinci Remote Monitor shows the output of the host's Viewer in real time as they work in DaVinci Resolve. This allows producers to monitor a session, while editors and colorists have the ability to work remotely using the DaVinci Resolve interface and a data stream from a remote DaVinci Resolve workstation. This data stream is of high enough quality that you can run the signal through a Blackmagic DeckLink or UltraStudio device to a grading monitor and have the same confidence in the output as if it was connected locally.

The stream quality can be adjusted for your particular needs and available bandwidth. For example, an editor may only need an HD h.264 8-bit 4:2:0 codec for offline editing, while a colorist may need the full UHD h.265 12 bit 4:4:4 RGB codec for HDR grading.

**NOTE:** For clarity in this section we will refer to the main DaVinci Resolve workstation in the post house or data center that is streaming the video as the “Resolve Host” and the devices that are receiving the stream as the “Resolve Clients.” However, in reality these are all just devices running the same version of the DaVinci Resolve Studio and the DaVinci Remote Monitoring apps.

# Requirements for DaVinci Remote Monitor

In order to reliably stream a high-quality video signal from one system to another, there are some technical hardware and software limitations and requirements for the Host and Clients.

The Resolve Host must have the following hardware and software requirements for DaVinci Remote Monitor:

- The Resolve Host needs to have the Mac, Linux, or Windows version of DaVinci Resolve Studio installed.
- For Linux and Windows users, the Resolve Host needs an RTX series NVIDIA GPU and drivers installed. AMD and Intel GPUs are currently unsupported.
- The Host must have a Blackmagic Cloud account.

The Resolve Client must have the following hardware and software requirements for DaVinci Remote Monitor:

- The Resolve Client needs to have the Mac, Linux, or Windows version of DaVinci Resolve Studio installed. The DaVinci Remote Monitor App is automatically installed in the same folder as DaVinci Resolve.
- Apple iPhone and iPad devices are supported as Client platforms. Download the DaVinci Remote Monitor app from the App Store (The Studio Version of DaVinci Resolve is not required on these devices).
- For Linux and Windows users, the Resolve Client needs an RTX series NVIDIA GPU and drivers installed. AMD and Intel GPUs are currently unsupported.
- All Clients must have a Blackmagic Cloud account.

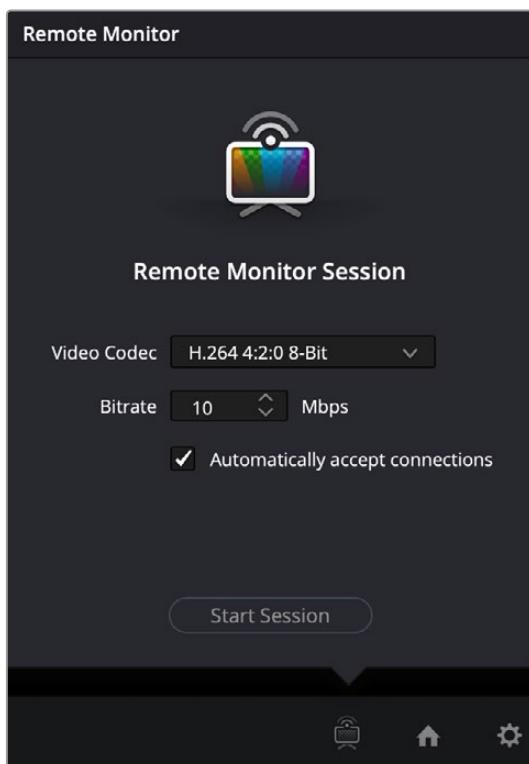
# Setting Up DaVinci Remote Monitor

Setting up a Remote Monitor session is easily done from the DaVinci Resolve Studio interface: additionally, the Host and all Clients must have Blackmagic Cloud accounts.

## To Start a DaVinci Remote Monitor session as the Resolve Host:

- 1 The Resolve Host needs to be running the full DaVinci Resolve Studio version of the software.
- 2 Select Workspace > Remote Monitor.
- 3 Sign into your Blackmagic Cloud account, if necessary.
- 4 In the Remote Monitor Window, select the Video Codec and Bitrate you wish to use for the session. Please note, the Video Codec used must be one that all the client devices support.

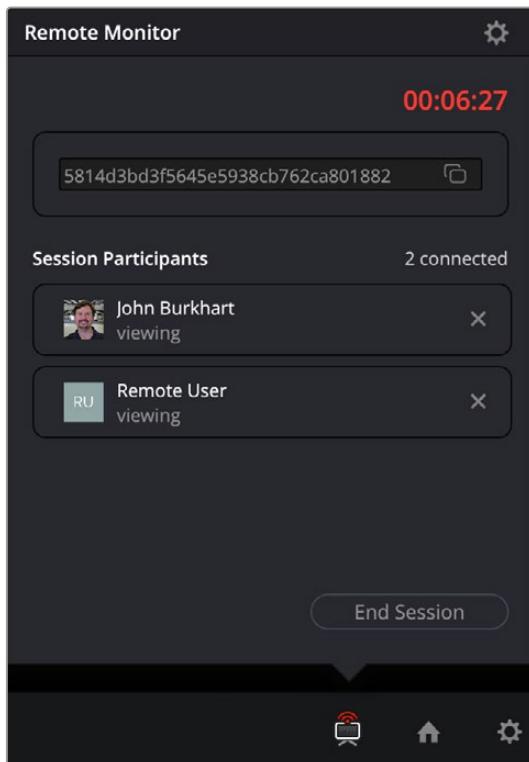
For maximum compatibility, H.264 4:2:0 8-bit is a good choice, however accurate color monitoring may necessitate using another 10- or 12-bit codec instead. Bandwidth needs to increase with the number of clients that are connected. While Remote Monitoring over the internet is possible, the best performance will be had with a wired ethernet connection.



The DaVinci Remote Monitor Session Setup

- 5 Check the "Automatically accept connections" box to let anyone with the Session Code connect directly. If you wish to approve each connection manually, uncheck this box.
- 6 Click the Start Session button.
- 7 Copy the generated Session Code from its field, and disseminate it to all the Resolve Clients via email, text message, etc.

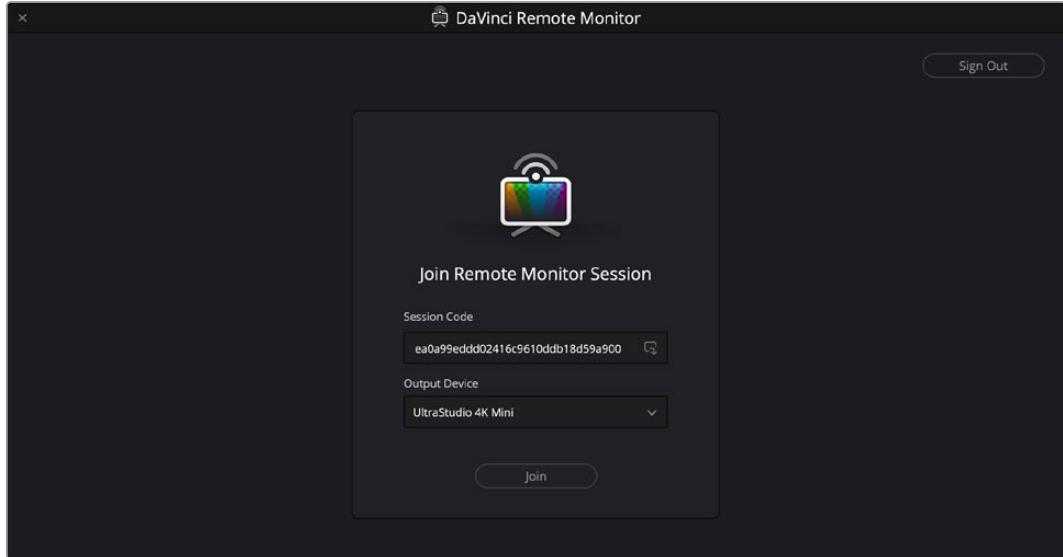
At this point your Remote Monitor has started, and a timer will show the duration of the current session. A Remote Monitor icon will appear in the lower right of the DaVinci Resolve interface, and the top of it will turn red to indicate that at least one Client has connected and you are now “live.” A Session Participants field shows you who is currently connected as a Client.



The DaVinci Remote Monitor showing the time connected and the participants involved

#### To Connect to a DaVinci Remote Monitor session as a Resolve Client:

- 1 The Resolve Client needs to have the full DaVinci Resolve Studio version of the software installed, or the iOS app installed.
- 2 Launch the DaVinci Remote Monitor app on your device. This is found in your DaVinci Resolve folder on your computer where you installed the software.
- 3 Sign into your Blackmagic Cloud account.
- 4 Paste the Session Code you received from the Resolve Host into the provided field.
- 5 Select the Output Device you wish to use for monitoring. This can be a connected computer display, or a Blackmagic Decklink or UltraStudio device for color accurate monitoring.
- 6 Click the Join button.



The DaVinci Remote Monitor app Join screen

At this point your Remote Monitor window will appear, and you will see and hear the output of the current viewer of the Resolve Host as they work.

**NOTE:** Remote Monitoring uses WebRTC to initiate connections between DaVinci Resolve Studio and multiple clients. However, some heavily restricted network setups may still block the initiation of a session, and a VPN may be required. A wired connection is recommended for the best performance.

#### To End a DaVinci Remote Monitor session as the Resolve Host:

- 1 Click on the DaVinci Remote Monitor icon in the lower right of the interface.
- 2 Click on the End Session button to stop the Remote Monitor for all users, or click on the X next to the name of a Client to disconnect the session for that user only.

#### To Leave a DaVinci Remote Monitor session as a Resolve Client:

- 1 Make the DaVinci Remote Monitor app active (not the Remote Monitor window).
- 2 Click on the Leave button to end your session.

#### To Change the Codec and Bitrate of a current DaVinci Remote Monitor session as the Resolve Host:

- 1 Click on the DaVinci Remote Monitor icon in the lower right of the interface.
- 2 Click on the Settings icon in the upper right of the Remote Monitor window.
- 3 Select a new Codec and Bitrate for the video stream.
- 4 Click on the Save button.

This will change the streaming settings to the new codec and bitrate that you chose. Existing Clients will be automatically reconnected to the new stream without having to do anything on their end.

This lets you easily change the quality of the video stream on the fly to compensate for bandwidth and hardware issues.

# DaVinci Remote Monitoring Using IP Address Connections

As an option, you can use Remote Monitoring over normal IP Address Connections, rather than having to sign in through Blackmagic Cloud. However, you will need some technical knowledge on setting up your network appropriately.

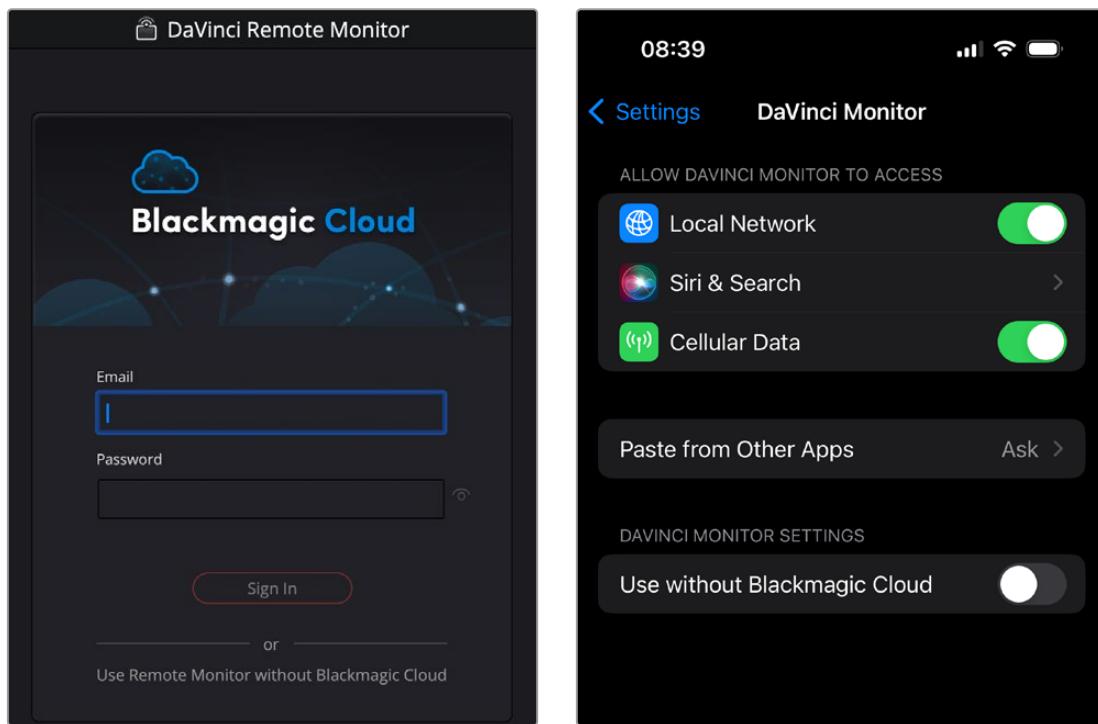
Setting up Remote Monitoring over IP connections on the Resolve Host

**Follow the instructions below to set up your host grading computer for other people to monitor.**

- 1 Make sure you are signed out of Blackmagic Cloud in Preferences > Internet Accounts.
- 2 In Preferences > System > General, check the “Use Remote Monitoring without Blackmagic Cloud” box.
- 3 Select Workspace > Remote Monitoring.
- 4 Adjust the codec and bit-rate parameters you want, then click Start Session.
- 5 Share the IP Address or configured host name for the Resolve host with the clients.

## Setting up Remote Monitoring over IP connections on the Resolve Clients

Follow the instructions below to set up your client computer to monitor the host’s workstation.



The Use Remote Monitor without Blackmagic Cloud settings in the computer and iOS versions

- 1 Launch the DaVinci Remote Monitor application.
- 2 In the Remote Monitor setup dialog, choose “Use Remote Monitor without Blackmagic Cloud.”

- 3** In the iOS or iPadOS versions of the App, go to the iOS Settings > DaVinci Monitor, and toggle on "Use Remote Monitor without Blackmagic Cloud."
- 4** Enter the Resolve host's server IP Address or Host Name in the Host field.
- 5** Click Join.

Firewall exceptions and appropriate port forwarding will need to be manually configured in order to use this mode. The procedure to initiate a session and accept connections remains the same. This mode uses TCP server port 16410 and TCP/UDP port 16411, 16412, etc. for each client.

## DaVinci Remote Monitoring via User Specified TURN Servers

When collaborating across complex network security setups that restrict the WebRTC STUN protocol, you may now decide to use self-configured or cloud-based TURN servers to route and relay monitoring streams.

To use this function, check the box under Preferences > System > General > Use TURN server for Remote Monitoring. Then add the URL of your custom TURN server.

## DaVinci Remote Monitor Restrictions

There are currently some limitations to the DaVinci Remote Monitor application to be aware of.

- When connecting over the internet, bandwidth restrictions can hamper performance. If the bandwidth drops too low or cuts out completely, the Host will disconnect with an error message.
- Currently DaVinci Remote Monitor only works in the Media, Cut, Edit, Color, and Deliver pages.
- Currently Audio is limited to only 2 channels.
- Currently on the Color page, GUI viewer overlays (for power windows, reference wipes, Open FX controls, etc.) do not display in the DaVinci Remote Monitor application.



# Advanced Workflows

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196	Creating DCTL LUTs.....	4038
197	TCP Protocol for DaVinci Resolve Transport Control.....	4043

## Chapter 195

# Workflow Integrations

This chapter describes third party Workflow Integration and Codec plugins for DaVinci Resolve.

## Contents

<b>DaVinci Resolve Renderer Plugin for OFX VFX Applications (Studio Version Only) .....</b>	4032
<b>Workflow Integrations in DaVinci Resolve (Studio Version Only) .....</b>	4035
<b>Creating Workflow Integration Plugins .....</b>	4035
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# DaVinci Resolve Renderer Plugin for OFX VFX Applications (Studio Version Only)

The Open FX plugin DaVinci Resolve Renderer allows third-party applications to open and apply DaVinci Resolve's color changes using exported DRX stills. Essentially this turns an installation of DaVinci Resolve Studio into one large OFX plugin. This can be very useful when round tripping with various VFX authoring applications where you may want to maintain the exact look created in DaVinci Resolve.

Exporting a DRX still contains much more information about the grade than a simple LUT. DRX files can include data like all the native color and sizing palettes and other items you stored in a Gallery still. This ensures that the grade the colorist created can be exactly replicated in the VFX software.

## **As of this writing, the following attributes WILL transfer via the DaVinci Resolve OFX Renderer Plugin:**

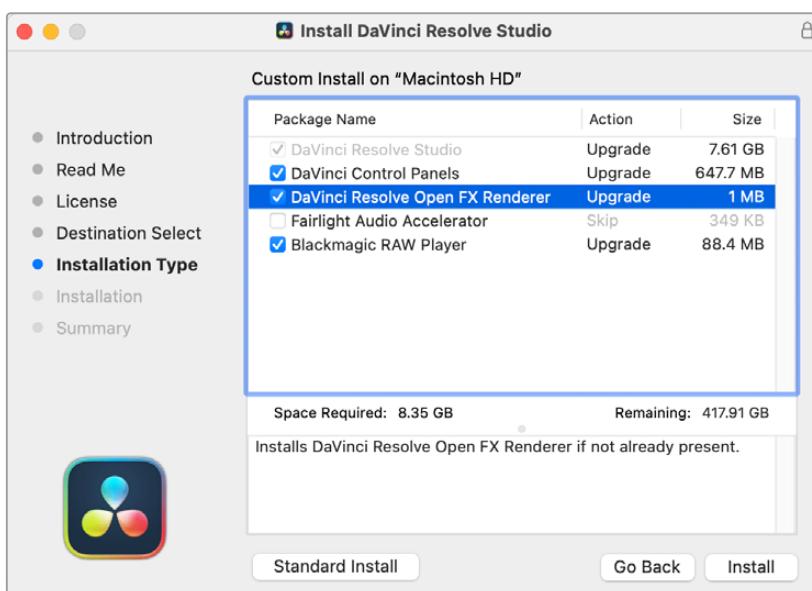
- All native color palettes (Primaries, HDR, Curves etc.).
- All native sizing palettes (Input, Output, Node etc.).
- Most Resolve FX.
- Most third-party Open FX.

## **As of this writing, the following attributes WILL NOT transfer via the DaVinci Resolve OFX Renderer Plugin:**

- Resolve and Open FX that are temporal based.
- Magic Mask.

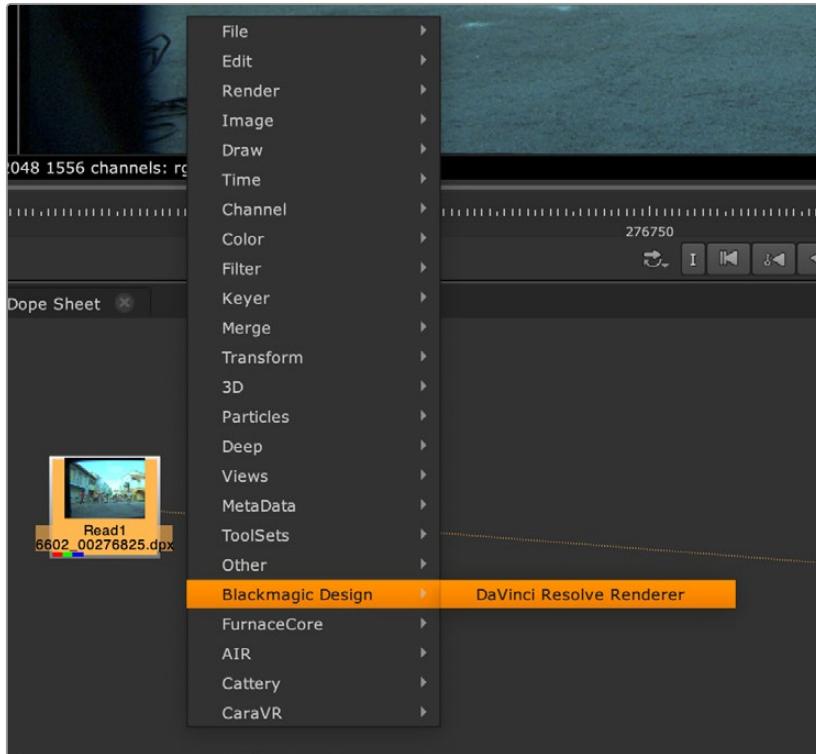
## **To set up the DaVinci Resolve OFX Renderer Plugin:**

- 1 When installing DaVinci Resolve Studio, select Custom Install and then check the plugin option in the program installer.



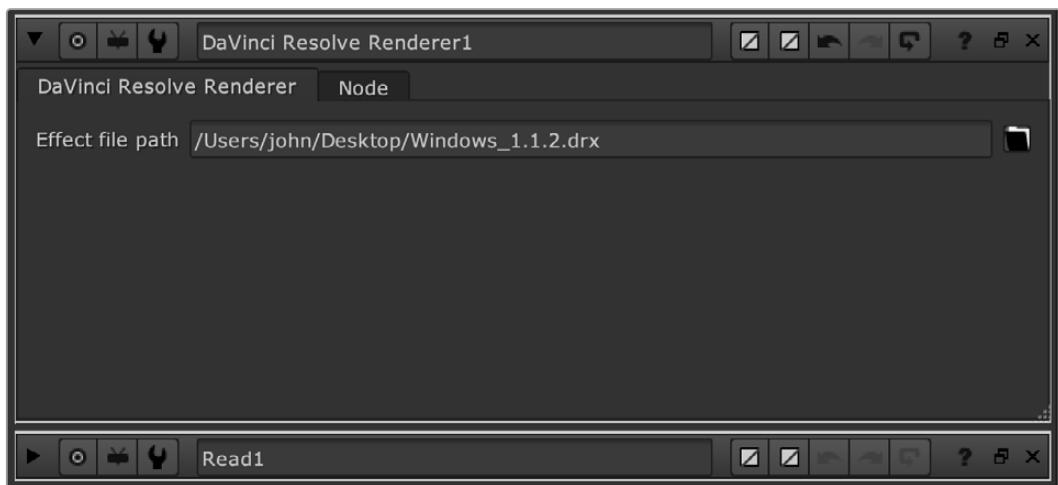
Select Custom Install, then check DaVinci Resolve Open FX Renderer to install the plugin

- 2 Create your grade for a clip in the Color page, then save a still to the Gallery. From the Gallery, export a .DRX file.
- 3 In the third-party application, apply the DaVinci Resolve Renderer plugin where appropriate for your composition.



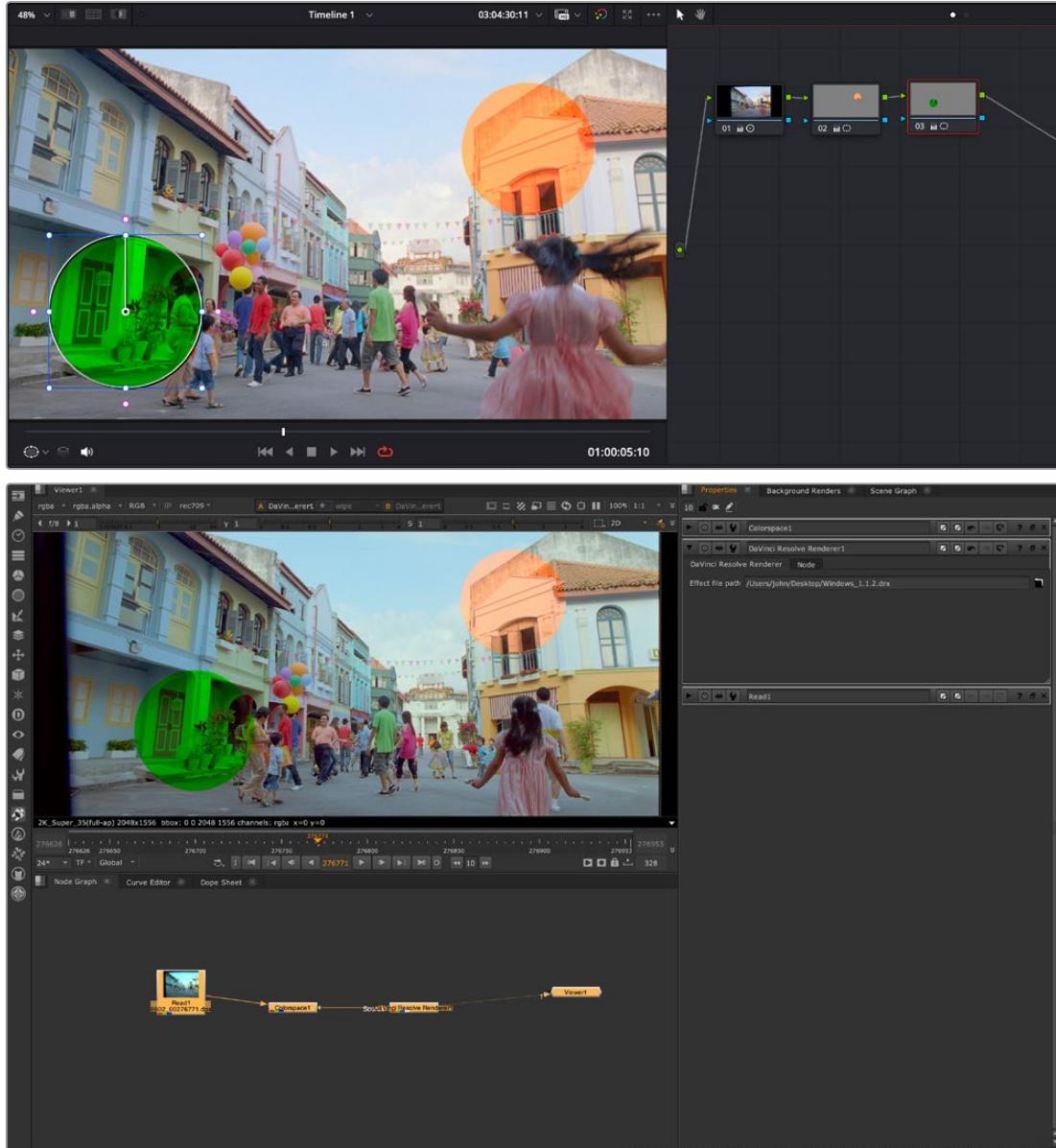
Inserting the DaVinci Resolve Renderer OFX into a Nuke node tree

- 4 In the DaVinci Resolve Renderer plugin in your application, choose the .DRX file you exported from the file browser.



Select the .DRX file you exported from DaVinci Resolve in the plugin.

The Color Grade Plugin should work with most Open FX-capable VFX software, such as Autodesk Flame and The Foundry's Nuke.



The DaVinci Resolve Renderer OFX Plugin in Nuke (below), showing a balanced grade with green and orange Power Windows from multiple nodes in DaVinci Resolve (above).

**IMPORTANT:** Use of the plugin requires a DaVinci Resolve Studio license on the system that is running the third party application.

# Workflow Integrations in DaVinci Resolve (Studio Version Only)

DaVinci Resolve allows third parties to create their own custom interface plugins using scripting languages. This makes possible a direct integration between DaVinci Resolve and other software programs, for a variety of uses. More than one Integration plugin can be active at the same time.

After installation, plugins can be enabled in DaVinci Resolve by going to Workspace > Workflow Integrations, and selecting your plugin from the drop-down menu.

## Creating Workflow Integration Plugins

Users can write their own Workflow Integration Plugin (an Electron app), using Resolve Javascript's API, and Python or Lua scripts. For more information on how to create a Workflow Integration Plugin go to Help > Documentation > Developer, and open up the Workflow Integrations folder for technical details and sample code.

## Workflow Integration Plugins

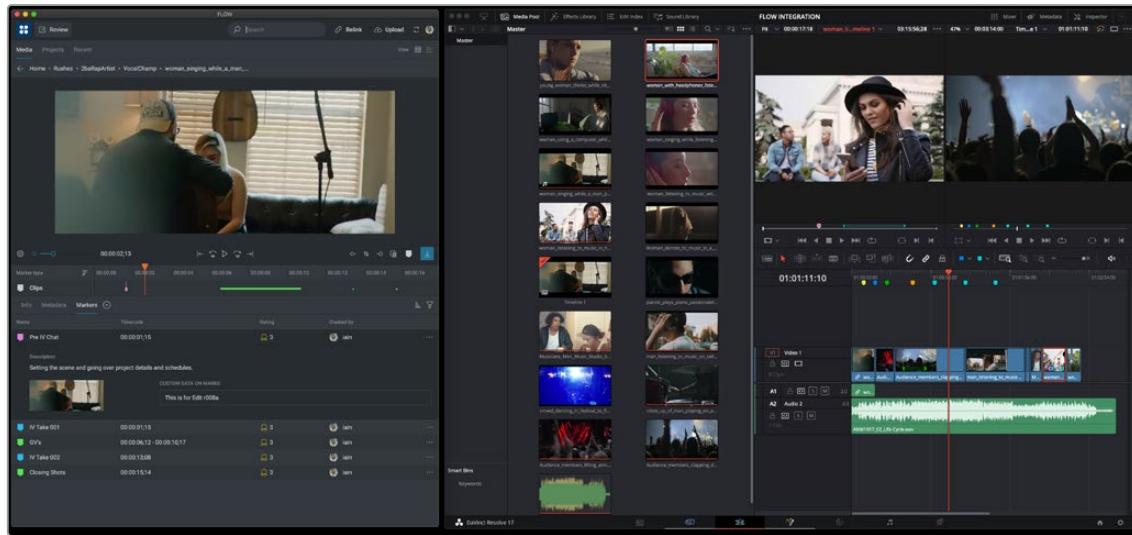
There are several Media Asset Management (MAM) systems that can now directly be accessed through DaVinci Resolve using the Workflow Integration Plugins.

### EditShare

EditShare has created a workflow integration plugin that allows DaVinci Resolve to interface directly with their FLOW media management system. This plugin allows you to comment, search, and preview media in FLOW without leaving DaVinci Resolve. You can also upload revisions, manage proxy media, and maintain full metadata support throughout the process.

For more information on this plugin and how FLOW works with DaVinci Resolve go to:

<https://editshare.com/say-hello-to-flow-and-davinci-resolve-studio/>

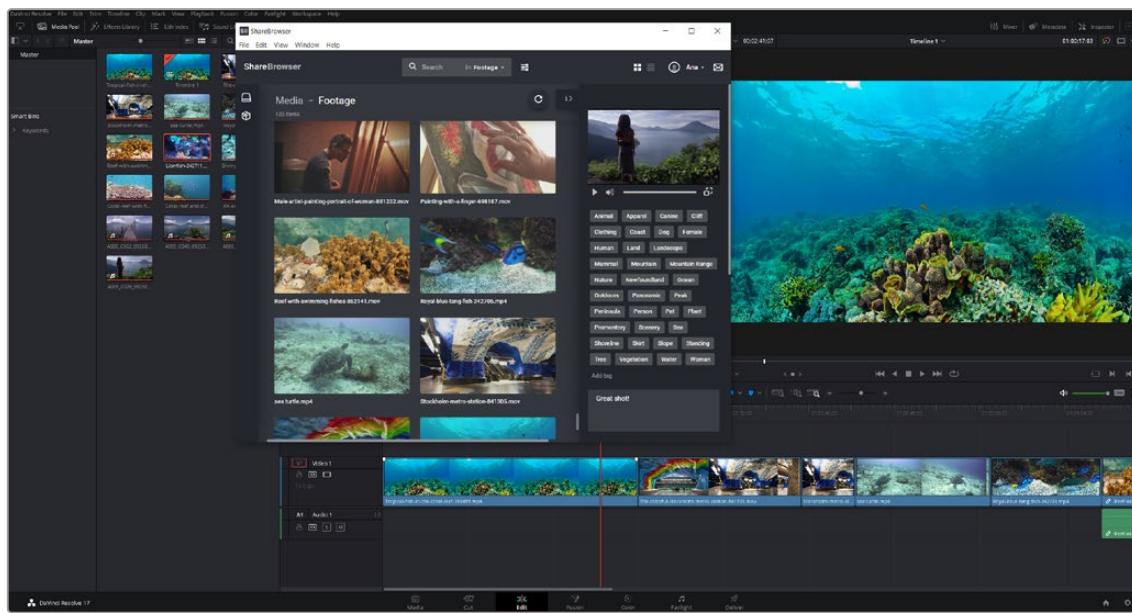


EditShare's FLOW Integration Plugin

## Studio Network Solutions (SNS)

Studio Network Solutions (SNS) created the ShareBrowser Integration Plugin to interface between DaVinci Resolve and their ShareBrowser media asset management software, included with SNS EVO media servers. This plugin allows your team to search, tag, preview, comment, organize, and import media without leaving the DaVinci Resolve interface. Your team can directly import the media into a DaVinci Resolve project and the metadata you entered carries over along with the media.

For more information on this plugin and how SNS's high-speed server or cloud solutions work with DaVinci Resolve, go to: <https://www.studionetworksolutions.com/>.



SNS ShareBrowser Integration Plugin

# Codec Plugins (Studio Version Only)

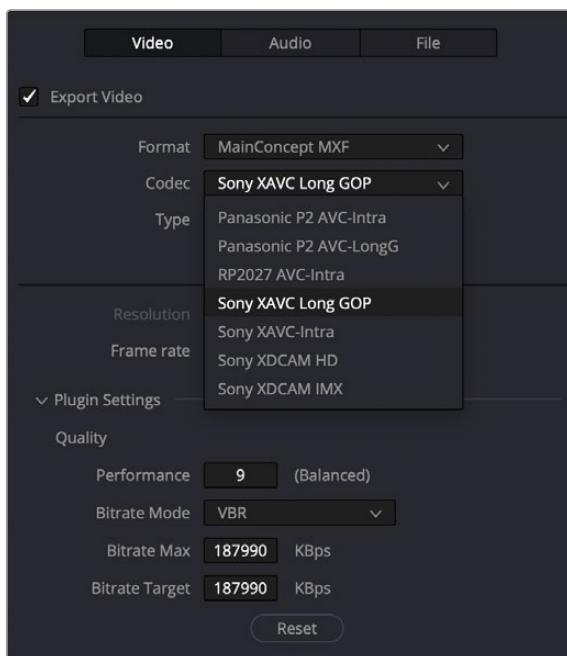
Codec plugins allow third parties to install new codecs for encoding in the Deliver page that are not currently supported in the main DaVinci Resolve software. This opens the door for extremely specific deliverables that would normally require passes through multiple programs to deliver.

## MainConcept

The MainConcept Codec Plugin allows you to render your DaVinci Resolve Studio timelines in a variety of new codecs:

- AS-11 UK SD, AS-11 UK HD along with an included XML metadata file to create AS-11 UK DPP compliant content.
- MainConcept's software HEVC Main and Main 10 profiles, allowing H.265 files in 8-bit/10-bit 4:2:0/4:2:2 at up to 8K resolution.
- MainConcept MXF and MP4, allowing encoding into the native camera formats used by Sony XAVC/XDCAM and Panasonic P2 AVC based cameras.

More information on the MainConcept Codec Plugin for DaVinci Resolve can be found here: <https://www.mainconcept.com/blackmagic-plugins>



The MainConcept Codec Plugin for DaVinci Resolve options in the Deliver page

# Creating DCTL LUTs

This chapter describes how to create DCTL LUTs to perform your own custom mathematical transformations in DaVinci Resolve.

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DCTL Syntax .....	4039
A Simple DCT LUT Example .....	4041
A Matrix DCT LUT Example .....	4041
A More Complex DCT LUT Example .....	4042

# About DCTL

DCTL files are actually color transformation scripts that DaVinci Resolve sees and applies just like any other LUT. Unlike other LUTs, which are 1D or 3D lookup tables of values that approximate image transformations using interpolation, DCTL files are actually comprised of computer code that directly transforms images using combinations of math functions that you devise. Additionally, DCTL files run natively on the GPU of your workstation, so they can be fast.

Anyone with the mathematical know-how can make and install a DCTL. Simply enter your transformation code, using a syntax that's similar to C (described in more detail below), into any text editor capable of saving a plain ASCII text file, and make sure its name ends with the ".dctl" (DaVinci Color Transform Language) file extension. Once that's done, move the file to the LUT directory of your workstation. Where that is depends on which OS you're using:

- **On Mac OS X:** Library/Application Support/Blackmagic Design/DaVinci Resolve/LUT/
- **On Windows:** C:\ProgramData\Blackmagic Design\DaVinci Resolve\Support\LUT
- **On Linux:** /home/resolve/LUT

When DaVinci Resolve starts up, assuming the syntax of your .dctl is correct, they appear in the Color page Node contextual menu within the DaVinci CTL submenu.

## DCTL Syntax

Users need to put `__DEVICE__` in front of each function they write. For example:

```
__DEVICE__ float2 DoSomething()
```

The main entry function (transform) should come after all other functions, with the following format argument:

```
__DEVICE__ float3 transform(float p_R, float p_G, float p_B)
```

The main entry function must also have a float3 return value.

For the following floating point math functions, please use the described syntax:

```
float _fabs(float)           // Absolute Value
float _powf(float x, float y) // Compute x to the power of y
float _logf(float)           // Natural logarithm
float _log2f(float)          // Base 2 logarithm
float _log10f(float)         // Base 10 logarithm
float _exp2f(float)          // Exponential base 2
float _expf(float)           // Exponential base E
float _copysignf(float x, float y) // Return x with sign changed to sign y
float _fmaxf(float x, float y)   // Return y if x < y
float _fminf(float x, float y)   // Return y if x > y
float _saturnef(float x, float minVal, float maxVal) // Return min(max(x, minVal), maxVal)
```

```

float _sqrtf(float)           // Square root
int   _ceil(float)            // Round to integer toward + infinity
int   _floor(float)           // Round to integer toward - infinity
float _fmod(float x, float y) // Modulus. Returns x - y * trunc(x / y)
float _fremainder(float x, float y) // Floating point remainder
int   _round(float x)          // Integral value nearest to x rounding
float _hypotf(float x, float y) // Square root of (x^2 + y^2)
float _atan2f(float x)         // Arc tangent of (y / x)
float _sinf(float x)           // Sine
float _cosf(float x)           // Cosine
float _acosf(float x)          // Arc cosine
float _asinif(float x)          // Arc sine
float _fdivide(float x, float y) // Return (x / y)
float _frecip(float x)          // Return (1 / x)

```

The following functions support integer type:

```
min, max, abs, rotate
```

Other supported C Math functions include:

```
acosh, acospi, asinh, asinpi, atan, atanh, atanpi, atan2pi, cbrt, cosh, cospi,
exp10, expml, trunc, fdim, fma, lgamma, log1p, logb, rint, round, rsqrt,
sincos, sinh, sinpi, tan, tanh, tanpi, tgamma
```

Vector types float2, float3, and float4 are supported. The data fields are:

```
float x
float y
float z
float w
```

To generate a vector value, use make\_floatN() where N = 2, 3, or 4.

Users can define their own structure using "typedef struct." For example:

```
typedef struct
{
    float c00, c01, c02;
    float c10, c11, c12;
} Matrix;
```

To declare constant memory, use `__CONSTANT__`. For example:

```
__CONSTANT__ float NORM[] = {1.0f / 3.0f, 1.0f / 3.0f, 1.0f / 3.0f};
```

To pass the constant memory as a function argument, use the `__CONSTANTREF__` qualifier, e.g.:

```
__DEVICE__ float DoSomething(__CONSTANTREF__ float* p_Params)
```

A float value must have the 'f' character at the end (e.g. 1.2f).

# A Simple DCT LUT Example

The following code shows an example of how to create a simple color gain transformation using the DCT LUT syntax.

```
// Example to demonstrate simple color gain transformation
__DEVICE__ float3 transform(float p_R, float p_G, float p_B)
{
    const float r = p_R * 1.2f;
    const float g = p_G * 1.1f;
    const float b = p_B * 1.2f;
    return make_float3(r, g, b);
}
```

# A Matrix DCT LUT Example

The following code shows an example of creating a matrix transform using the DCT LUT syntax.

```
// Example to demonstrate the usage of user defined matrix type to transform RGB to YUV in Rec. 709
__CONSTANT__ float RGBToYUVMat[9] = { 0.2126f , 0.7152f , 0.0722f,
                                         -0.09991f, -0.33609f, 0.436f,
                                         0.615f , -0.55861f, -0.05639f };

__DEVICE__ float3 transform(int p_Width, int p_Height, int p_X, int p_Y,
                           float p_R, float p_G, float p_B)
{
    float3 result;

    result.x = RGBToYUVMat[0] * p_R + RGBToYUVMat[1] * p_G + RGBToYUVMat[2] * p_B;
    result.y = RGBToYUVMat[3] * p_R + RGBToYUVMat[4] * p_G + RGBToYUVMat[5] * p_B;
    result.z = RGBToYUVMat[6] * p_R + RGBToYUVMat[7] * p_G + RGBToYUVMat[8] * p_B;

    return result;
}
```

# A More Complex DCT LUT Example

The following code shows an example of creating a mirror effect, illustrating how you can access pixels spatially.

```
// Example of spatial access for mirror effect

__DEVICE__ float3 transform(int p_Width, int p_Height, int p_X, int p_Y, __
TEXTURE__ p_TexR, __TEXTURE__ p_TexG, __TEXTURE__ p_TexB)
{
    const bool isMirror = (p_X < (p_Width / 2));
    const float r = (isMirror) ? _tex2D(p_TexR, p_X, p_Y) : _tex2D(p_TexR, p_
Width - 1 - p_X, p_Y);
    const float g = (isMirror) ? _tex2D(p_TexG, p_X, p_Y) : _tex2D(p_TexG, p_
Width - 1 - p_X, p_Y);
    const float b = (isMirror) ? _tex2D(p_TexB, p_X, p_Y) : _tex2D(p_TexB, p_
Width - 1 - p_X, p_Y);
    return make_float3(r, g, b);
}
```

# TCP Protocol for DaVinci Resolve Transport Control

This chapter describes how to create third-party utilities that use Transport Control with DaVinci Resolve.

## Contents

<b>About the TCP Protocol Version 1.2 .....</b>	4044
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Command Format .....	4044
Response Format .....	4044
Communication Delays .....	4044
Status Response Values .....	4045
<b>TCP Protocol Stream .....</b>	4045
connect .....	4045
goto .....	4045
play .....	4045
gettc .....	4045
getframerate .....	4045

# About the TCP Protocol Version 1.2

This protocol defines the communication standard between third-party applications ("Client") and DaVinci Resolve ("Server") using the TCP protocol.

Port number 9060 will be used by the server. SSL will not be used in this protocol. Communication takes the form of request-response messages, where the Client initiates a command, and the Server responds appropriately.

To use this protocol, you must first type the following string into the Advanced panel of the DaVinci Resolve System Preferences:

```
System.Remote.Control = 1
```

## Data Types

The following data types are used in this protocol:

- **float (f)**: A 4-byte IEEE 754 single precision float
- **int (i)**: A 4-bytes signed int
- **unsigned char (uc)**: A 1-byte unsigned char (0–255)
- **string (s)**: A UTF-8 encoded string. No terminator is specified. The string is a composite type, transmitted as a single int (i) specifying the number of characters in the string (N), followed by N unsigned chars (uc) containing the letters of the string.

**NOTE:** The bytes of the float and int types are transmitted in little endian order.

## Command Format

Commands are transmitted as a single string (using characters a-z (0x61 – 0x7A) only), followed by any additional payload required by the command in the definition.

## Response Format

The response to any command is composed of a status byte (unsigned char), followed by any additional payload required by the response.

## Communication Delays

Once the first byte of the command string is sent, the rest of the command string and the payload data must follow without delay. At the end of COMMAND, the server must respond immediately. If there is a delay of more than 5 seconds during this process, the party waiting for data may drop the connection assuming that the peer has become unresponsive.

There is currently no limit on the delay between two consecutive commands.

**NOTE:** Alternatively, a maximum allowable delay may be defined, in which case, the client may issue periodic 'connect' commands to keep the connection alive.

## Status Response Values

The meaning of the status values are as follows:

- **0x00:** Command was executed successfully. Any additional payload is sent as expected.
- **0xFF:** Command could not be executed successfully. No additional payload will follow.

# TCP Protocol Stream

The following commands can be sent over the protocol stream.

### connect

The client initiates the stream by sending a connect command string. There is no payload. The server responds with a status value of 0x00.

### goto

The client sends a goto command string followed by four unsigned chars representing the hour, minute, second, and frame of the timecode.

The server responds with an appropriate status byte based on the execution of the command.

### play

The client sends a play command string followed by a floating point value. Play in real-time is 1.0, stop is 0.0, reverse is -1.0, 2x is 2.0, etc.

The server responds with an appropriate status byte based on the execution of the command.

### gettc

The client sends a gettc command string.

The server responds with an appropriate status byte (status byte may be 0xFF if no timeline exists, for instance). If the status byte is 0x00, it is followed by four unsigned chars representing the hour, minute, second, and frame of the timecode.

### getframerate

The client sends a getframerate command string.

The server responds with an appropriate status byte. If the status byte is 0x00, it is followed by a floating point value for the frame rate.



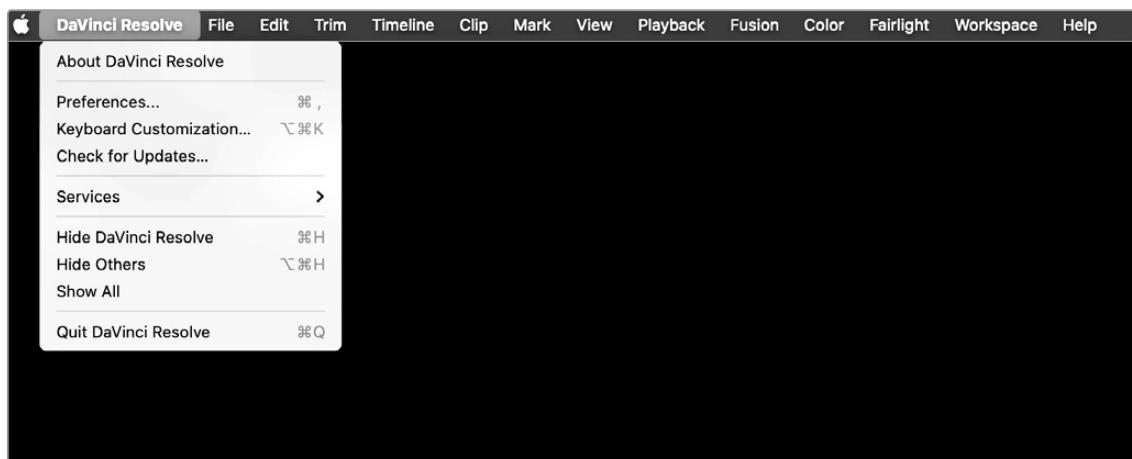
# Menu Descriptions

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DaVinci Resolve.....	4047	View.....	4054
File .....	4048	Playback.....	4055
Edit .....	4049	Fusion.....	4056
Trim .....	4050	Color .....	4057
Timeline .....	4051	Fairlight.....	4058
Clip .....	4052	Workspace.....	4059
Mark.....	4053	Help.....	4060

# DaVinci Resolve Menu

For ease of use navigating this manual, each menu item is listed here, and by clicking on the name of the menu function, you will be taken to the appropriate part of the manual that describes that function.



## DaVinci Resolve

### **About DaVinci Resolve**

Opens the splash screen showing the installed version of DaVinci Resolve.

### **Preferences – Page 91**

Opens the System and User Preferences window.

### **Keyboard Customization – Page 117**

Opens the Keyboard Customization Window.

### **Check for Updates**

Checks to see if a newer version of DaVinci Resolve is available.

### **Quit DaVinci Resolve**

Exits the program.

# File

## New Project – Page 70

Creates a new project.

## Open Recent Project – Page 81

Open a recent project from a list.

## New Bin – Page 518

Creates a new Bin.

## New Smart Bin – Page 371

Creates a new Smart Bin.

## New Timeline – Page 624

Creates a new timeline.

## Close Current Timeline

Closes the active timeline.

## Close Project – Page 87

Closes the active project.

## Save Project – Page 82

Saves the current project.

## Save Project As – Page 82

Rename and create a copy of the current project before you save it.

## Revert to Last Save Version – Page 69

Opens the last saved version of the current project, discarding any changes made after that.

## Import

Tools for the importation of files and media into DaVinci Resolve.

### — Bin – Page 385

### — Media – Page 385

### — Media from XML – Page 371

### — Timeline – Page 386

### — Fusion Composition – Page 1221

### — Subtitles – Page 1021

### — Pre-conformed EDL – Page 1134

### — Batch List From EDL – Page 442

## Import Project – Page 71

Imports a DaVinci Resolve Project file (.drp).

## Import Metadata To – Page 418

Imports Metadata from a .csv file into DaVinci Resolve.

## Export

Tools for the exportation of files and media from DaVinci Resolve.

### — Bin – Page 385

### — Timeline – Page 386

### — Subtitles – Page 1021

### — Fusion Composition – Page 1221

### — Current Frame as Still – Page 359

## Export Project – Page 69

Exports a DaVinci Resolve Project File (.drp).

## Export Metadata From – Page 417

Exports Metadata from DaVinci Resolve to a .csv file.

## Quick Export – Page 614

Opens the Quick Export Window.

## Project Manager – Page 69

Opens the Project Manager Window.

## Project Settings – Page 130

Opens the Project Settings Window.

## Project Notes – Page 87

Opens the Project Notes editor.

## Single User Project – Page 3987

Disables the Project Collaboration features.

## Multiple User Collaboration – Page 4008

Enables Project Collaboration with other DaVinci Resolve workstations

## Media Management – Page 930

Opens the Media Management Window.

## Reconform from Bins – Page 1092

Reconforms a timeline using media in a selected bin.

## Reconform from Media Storage – Page 1096

Reconforms a timeline using media in a specific file system folder.

## easyDCP – Page 3926

Exposes the easyDCP toolset.

## Dolby Vision® – Page 253

Loads the license and configuration files to enable Dolby Vision advanced trim controls

## Blackmagic Cloud Account – Page 3969

Log in and switch Blackmagic Cloud accounts.

# Edit

## **Undo – Page 65**

Undos the previous change.

## **Redo – Page 65**

Redo the previous change.

## **History – Page 65**

Opens the Undo History submenu.

## **Cut – Page 765**

Performs a cut operation on the current selection.

## **Ripple Cut – Page 765**

Performs a ripple cut operation on the current selection.

## **Cut Head – Page 3668**

Cuts the clip from the playhead backwards in the Fairlight page.

## **Cut Tail – Page 3668**

Cuts the clip from the playhead forwards in the Fairlight page.

## **Copy – Page 765**

Performs a copy operation on the current selection.

## **Copy Head – Page 3668**

Copies the clip from the playhead backwards in the Fairlight page.

## **Copy Tail – Page 3668**

Copies the clip from the playhead forwards in the Fairlight page.

## **Paste – Page 765**

Pastes the previously copied/cut selection.

## **Paste Insert – Page 765**

Pastes a clip as an insert edit.

## **Paste Attributes – Page 949**

Pastes video and audio attributes.

## **Paste Value – Page 3156**

Pastes a the value of a specific parameter between Color nodes.

## **Remove Attributes – Page 950**

Removes audio and video attributes.

## **Dolby Vision® – Page 253**

Copy and Paste Trim metadata for Dolby Vision.

## **Duplicate Clip or Current Timeline**

### **– Page 393**

Makes a copy of the current clip or timeline.

## **Duplicate Selection – Page 3663**

Duplicates one or more selected clips in Fairlight.

## **Delete Selected**

Performs a delete function on all selected items.

## **Ripple Delete – Page 724**

Performs a ripple delete on the selected clip.

## **Delete Gaps – Page 726**

Deletes gaps in the active timeline.

## **Select All**

Performs a Select All function on the active panel.

## **Deselect All**

Clears any selections in the active panel.

## **Select – Page 703**

Opens up a submenu for selecting adjacent clips in a timeline.

## **Insert – Page 792**

Performs an Insert Edit using the selected clip.

## **Overwrite – Page 791**

Performs an Overwrite Edit using the selected clip.

## **Replace – Page 793**

Performs a Replace Edit using the selected clip.

## **Place on Top – Page 548**

Performs a Place on Top Edit using the selected clip.

## **Ripple Overwrite – Page 546**

Performs a Ripple Overwrite Edit using the selected clip.

## **Fit to Fill – Page 776**

Performs a Fit to Fill Edit using the selected clip.

## **Append to End of Timeline – Page 801**

Adds the selected clip to the end of the timeline.

## **Multicam – Page 845**

Exposes the Multicam editing controls.

## **Swap Clips Towards Left – Page 760**

Swaps the selected clips with the clip to the left of the selection.

## **Swap Clips Towards Right – Page 760**

Swaps the selected clips with the clip to the right of the selection.

## **Switch to Timeline After Edit**

Automatically switches focus to the timeline after an edit, rather than the Source Viewer.

## **Decompose Compound Clips on Edit**

### **– Page 861**

Automatically decomposes nested clips on timelines for easier editing.

# Trim

## **Normal Edit Mode – Page 755**

Puts the timeline in Selection Mode.

## **Trim Mode – Page 865**

Puts the timeline in Trim Mode.

## **Range Selection Mode – Page 3641**

Selects Range Mode in Fairlight.

## **Dynamic Trim mode – Page 895**

Puts the timeline in Dynamic Trim Mode.

## **Toggle Slip/Slide Mode – Page 895**

Toggles between slip and slide trim modes.

## **Blade Edit Mode – Page 763**

Switches the timeline to blade mode.

## **Trim Editor – Page 871**

Enables the Precision Trim Editor.

## **Select Nearest Edit Point**

Selects the nearest edit point to the playhead

## **Select Nearest Video Edit Point**

Selects the nearest edit point to the playhead on the video tracks only.

## **Select Nearest Audio Edit Point**

Selects the nearest edit point to the playhead on the audio tracks only.

## **Select Nearest Clip/Gap**

Selects the nearest clip or gap to the playhead.

## **Select All Clips Under Playhead**

Selects all clips on all tracks under the playhead.

## **Edit Point Type**

Toggles the currently selected edit point among the outgoing, centered, or incoming part of the edit

## **Toggle V+A/V/A**

Toggles the Edit Point type above between video, audio, or video and audio combined selections.

## **Select Nearest Edit To – Page 876**

Selects the nearest edit point to a variety of clip parameters.

## **Select Nearest Clip To – Page 876**

Selects the nearest clip to a variety of clip parameters.

## **Nudge**

Opens a menu to move the selected clips one frame, or multiple frames left or right.

## **Trim Start – Page 893**

Cuts all clips intersecting the playhead from that point backwards.

## **Trim End – Page 893**

Cuts all clips intersecting the playhead from that point forwards.

## **Trim to Selection – Page 3538**

Trims the heads and tails of the clips to the selected range in the Fairlight page.

## **Extend Edit – Page 895**

Resizes one or more selected edit points or clips.

## **Extend Edit Selection To – Page 896**

Opens a menu to select previous and next tracks and edits for the Extend Edit function.

## **Move Edit Selection To – Page 896**

Opens a menu to move to previous and next tracks and edits for the Extend Edit function.

## **Resize – Page 865**

Changes the clip in/out points based on the playhead position.

## **Ripple – Page 865**

Changes the clip in/out points based on the playhead position, using a Ripple operation.

## **Roll – Page 865**

Changes the clip in/out points based on the playhead position, using a Roll operation.

## **Slip Playhead To – Page 895**

Slips the clip from the current position of the playhead to the in or out point of the clip.

## **Fade In to Playhead – Page 995**

Creates a fade in from the beginning of the clip to the playhead position.

## **Fade Out to Playhead – Page 995**

Creates a fade out from the playhead position to the end of the clip.

## **Crossfade Selection**

Creates a crossfade for the selected range in the Fairlight page.

## **Slip Audio – Page 732**

Opens a menu to slip audio forwards and backwards at a frame or subframe level.

## **Slip Eye – Page 331**

Slips the opposite eye left or right one frame in the Color Page's Stereo 3D palette.

# Timeline

## Add Transition – Page 954

Adds the default transition to the selected edit point.

## Add Video Only Transition – Page 954

Adds the default transition to the selected Video edit point only.

## Add Audio Only Transition – Page 954

Adds the default transition to the selected Audio edit point only.

## Bounce Selected Tracks

### to New Layer – Page 3744

Bounces the selected tracks to a new layer in the Fairlight page.

## Bounce Mix to Track – Page 3744

Bounces the selected mix to a new track in the Fairlight page.

## Select Clips Backward – Page 715

Selects all clips backward from the playhead on either a single track, or all tracks.

## Select Clips Forward – Page 715

Selects all clips forward from the playhead on either a single track, or all tracks.

## Select Clips With Flag Color – Page 715

Selects all clips previously flagged with a specific color.

## Select Clips With Marker Color – Page 715

Selects all clips having markers with a specific color.

## Select Clips With Clip Color – Page 715

Selects all clips with a specific color.

## Razor – Page 762

Activates the Razor (Blade) tool.

## Split Clip – Page 754

Splits a clip at the playhead position.

## Join Clip – Page 754

Joins two clips that are separated by a through edit.

## Detect Scene Cuts – Page 456

Activates Scene Cut Detection on the current selection.

## Create Subtitles from Audio – Page 1027

Automatically creates subtitles based off speech in audio tracks.

## Mute Tracks – Page 3741

Mutes the selected audio track in the Fairlight Page.

## Clear Mutes – Page 3741

Un-mutes all the tracks in the Fairlight Page

## Solo Tracks – Page 3741

Solos the selected audio track in the Fairlight Page.

## Clear Solo – Page 3741

Un-solos all tracks in the Fairlight Page.

## Clean Up Video Tracks – Page 773

Opens a toolset to improve the organization of a timeline's video tracks.

## Flatten Audio Track Layers – Page 3825

Flattens out Track Layers in the Fairlight Page.

## Trim Audio Edits to Frame Boundaries

### – Page 111

Eliminates any sub-frame audio adjustments.

## Switch to Camera Originals – Page 518

Toggles between Camera Masters and ISO's in ATEM projects.

## Match Frame – Page 840

Performs a Match Frame operation on the clip.

## Swap Timeline and Source Viewer – Page 861

Opens a timeline loaded in the source viewer in a timeline instead.

## Snapping

Turns playhead snapping on and off.

## Linked Selection – Page 728

Toggles linked selection of clips.

## Linked Move Across Tracks – Page 729

Toggles linked clips moving tracks together.

## Selection Follows Playhead – Page 648

Toggles the automatic selection of the clip under the playhead.

## Layered Audio Editing – Page 3670

Turns on Audio Layering in the Fairlight Page.

## Audio Scrubbing – Page 649

Toggles audio scrubbing on or off.

## Loop Jog – Page 3613

Toggles Loop Jog in the Fairlight Page.

## Ripple Timeline Markers – Page 826

Timeline markers will reflow with ripple operations.

## Playback Post-Roll – Page 649

The playhead will continue playing past the last clip in the timeline.

## Track Destination Selection – Page 777

Chooses specific tracks for editing operations.

## Lock Tracks

Prevents further changes to the selected track.

## Auto Track Selector – Page 703

Automatically select tracks for editing operations.

## Enable/Disable Video Tracks – Page 647

Shows or hides specific video tracks.

## Output Blanking – Page 290

Sets letterboxing options.

## Find Current Timeline in Media Pool

### – Page 402

Opens the bin in the media pool with the selected timeline, and highlights it.

# Clip

## New Compound Clip – Page 856

Makes a compound clip out of the selected clips.

## New Fusion Clip – Page 1202

Makes a Fusion composition out of the selected clips.

## New VFX Connect Clip – Page 1054

Links the current selection to the stand alone version of Fusion.

## Open in Timeline – Page 861

Opens a nested timeline temporarily into its component pieces for editing.

## Decompose in Place – Page 862

Breaks a nested timeline into its original component pieces.

## Conform Lock Enabled – Page 1091

Locks clip references to a specific media file, preventing accidental changes.

## Conform Lock with Media Pool Clip

### – Page 1091

Forces a clip to reference a specific media file selected in the Media Pool.

## Link to Reference Composition – Page 1206

Adds a clip to a Reference Composition.

## Create Reference Composition – Page 1204

Makes a Reference Composition from the selected clips.

## Unlink Reference Composition – Page 1207

Removes the link to a Reference Composition from the selected clip.

## Find Reference Composition in Media Pool

### – Page 1207

Locates the Reference Composition in the media pool.

## Enable Clip – Page 724

Toggles a clip's visibility on or off.

## Link Clips – Page 731

Toggles Link or Unlink for the selected clips.

## Show Keyframe Editor – Page 1040

Opens a clip's keyframe editor for animating parameters.

## Show Curve Editor – Page 1041

Opens the clip's curve editor for advanced keyframing.

## Change Clip Duration – Page 541

Opens the Change Clip Duration tools.

## Change Clip Speed – Page 1007

Opens the simple speed retiming controls.

## Freeze Frame – Page 1007

Creates a still frame for the duration of the selected clip using the frame under the playhead.

## Retime Controls – Page 1010

Opens the Retime Controls on the selected clip.

## Reset Retime – Page 1011

Resets the Retime Controls on a clip back to their original state.

## Auto Align Clips – Page 765

Aligns clips on a timeline based on timecode or audio waveform.

## Audio – Page 917

Opens a menu to change the audio volume of a clip.

## Take Selector – Page 855

Creates a Take Selector from the selected clips.

## Finalize Take – Page 856

Removes a Take Selector and uses the starred take.

## Multicam Cut – Page 851

Cuts to another angle in a Multicam Clip.

## Multicam Switch – Page 851

Changes to another angle in a Multicam Clip without cutting.

## Render Cache Fusion Output – Page 199

Toggles the options for caching Fusion compositions in a timeline.

## Render Cache Color Output – Page 199

Toggles the Render Cache on or off for Color operations in the timeline.

## Find Clip in Media Pool – Page 842

Locates the selected clip in the Media Pool.

## Match Frame to Source Clip – Page 841

Performs a Match Frame operation on the selected clip in the timeline.

# Mark

## **Mark In – Page 696**

Sets the In Point on a clip or timeline.

## **Mark Out – Page 696**

Sets the Out Point on a clip or timeline.

## **Mark Video In – Page 697**

Creates an in point for the video track of a split edit.

## **Mark Video Out – Page 697**

Creates an out point for the video track of a split edit.

## **Mark Audio In – Page 697**

Creates an in point for the audio tracks of a split edit.

## **Mark Audio Out – Page 697**

Creates an out point for the audio tracks of a split edit.

## **Convert In and Out to Duration Marker**

### **– Page 682**

Turns the in and out points into a duration marker.

## **Set In and Out from Duration Marker**

### **– Page 699**

Turns a duration marker into In and Out Points.

## **Clear In – Page 698**

Removes the In Point on a clip or timeline.

## **Clear Out – Page 698**

Removes the Out Point on a clip or timeline.

## **Clear In and Out – Page 698**

Removes both the In and Out Points on a clip or timeline.

## **Clear Video In and Out – Page 698**

Clears the In and Out Points on the Video track for a split edit.

## **Clear Audio In and Out – Page 574**

Clears the In and Out Points on the Audio tracks for a split edit.

## **Mark Clip – Page 781**

Automatically sets In and Out Points based on a clip duration.

## **Mark Selection – Page 781**

Automatically sets In and Out Points based on total duration of multiple clips.

## **Create SubClip – Page 453**

Creates a subclip based on the In and Out points of a clip.

## **Keyframe Timeline Mode – Page 3157**

Choose which keyframe types to copy between Color grades.

## **Add Keyframe – Page 3126**

Adds a Dynamic Keyframe at the playhead position.

## **Add Static Keyframe – Page 3256**

Adds a Static Keyframe at the playhead position.

## **Delete Keyframe**

Removes a keyframe at the playhead position.

## **Delete All Keyframes**

Removes all keyframes from a selected parameter.

## **Move Selected Keyframes Left**

Moves all selected keyframes left by 1 frame.

## **Move Selected Keyframes Right**

Moves all selected keyframes right by 1 frame.

## **Move Selected Keyframes Up**

Moves all selected keyframes up by 1 unit.

## **Move Selected Keyframes Down**

Moves all selected keyframes down by 1 unit.

## **Add Marker – Page 821**

Adds a marker to a clip or timeline by color.

## **Add and Modify Marker – Page 928**

Adds a marker to a clip or timeline, and opens the Marker properties dialog.

## **Modify Marker – Page 825**

Opens the Marker properties dialog for the selected marker.

## **Delete Marker – Page 827**

Deletes the selected Marker

## **Delete All Markers – Page 827**

Deletes all markers on a clip or timeline, or by specific marker color.

## **Favorite Keywords – Page 348**

Apply a favorite keyword to a clip from your list.

## **Add Flag – Page 820**

Adds a flag to a clip by color.

## **Clear Flags – Page 682**

Removes all flags from a selected clip.

## **Delete All Flags – Page 820**

Removes all flags from all clips by color.

## **Set Clip Color – Page 835**

Changes a clip's color in the timeline.

# View

## **Bypass Color and Fusion – Page 634**

Turns on or off Color and/or Fusion operations in a timeline.

## **Display Broadcast Safe Exceptions**

– Page 2836

Turns on the Broadcast Safe overlay.

## **Source/Timeline Viewer – Page 633**

Toggles between making the Source or Timeline viewer active in the Edit page.

## **Source Clip/Source Tape – Page 531**

Toggles between Source Clip and Source Tape in the Cut page viewer.

## **Zoom**

Zoom options for the viewer.

## **Zoom Around Mouse Pointer – Page 673**

Centers the timeline zoom on the pointer rather than the playhead in the Edit page.

## **Zoom Audio Waveform – Page 3544**

Sets waveform zooming parameters in the Fairlight page.

## **Safe Area – Page 534**

Toggles the safe area overlays for the Edit and Color pages.

## **Select Aspect Ratio – Page 2876**

Selects the Aspect Ratio for the Safe Area overlay.

## **Switch Eye To – Page 331**

Chooses the current eye for Stereoscopic workflows.

## **Viewer Overlay – Page 1002**

Sets the Viewer On Screen controls in the Edit Page.

## **Show Duplicate Frames – Page 678**

Duplicate clips are marked in the Edit page timeline.

## **Show File Names – Page 442**

Toggles between displaying Clip names or File names in the Edit page.

## **Overlay Synced Audio File Names**

– Page 441

Shows the names of the original audio files in the Edit page.

## **Show Audio Track Layers – Page 3840**

Reveals track layers in the Fairlight page.

## **Show Subtitle Regions – Page 1034**

Shows or Hides regions in the subtitle tracks.

## **Timeline Thumbnail Mode – Page 2910**

Toggles clip order between A or C mode in the Color page.

## **Timeline Thumbnail Info – Page 2907**

Choose what clip info is shown on the thumbnail in the Color page.

## **Timeline Thumbnail Size – Page 2904**

Chooses the size of the thumbnails in the Color page.

## **Show Current Clip With Handles – Page 2906**

Shows the handles of a clip in the Color page.

## **Show Markers – Page 833**

Shows or Hides markers based on color.

## **Show Flags – Page 821**

Shows or Hides flags based on color.

## **Timeline Scrolling – Page 3550**

Sets the timeline scrolling method in the Fairlight page.

## **Show Preview Marks – Page 783**

Toggles Preview Marks on or off in the Edit page.

## **Enable Multiview Edit Preview – Page 870**

Enables or disables the multi-frame displays in the Edit page.

# Playback

## Use Optimized Media if Available

- Page 186

Toggles the use of Optimized Media or original media.

## Proxy Handling – Page 208

Exposes a submenu to control how proxy media playback is handled.

## Timeline Proxy Resolution – Page 188

Options for Timeline Proxy Mode playback.

## Render Cache – Page 194

Options for using the Render Cache.

## Delete Render Cache – Page 186

Options for Deleting the Render Cache.

## Manage Render Cache – Page 200

Opens the Cache Manager.

## Fusion Memory Cache – Page 199

Options for using the Fusion Cache.

## Play Reverse – Page 688

Plays 100% backward.

## Stop – Page 688

Stops playback.

## Play Forward – Page 688

Plays 100% forward.

## Pause/Start Playback – Page 689

Stops and Starts playback.

## Play Again – Page 689

Restarts playback from the original position.

## Stop and Go to Last Position – Page 691

Playhead returns to original position on stop.

## Record – Page 3612

Initiates recording in the Fairlight Page.

## Fast Reverse – Page 682

Plays in Fast Reverse.

## Fast Forward – Page 688

Plays in Fast Forward.

## Play Slow – Page 690

Plays forward in Slow Motion.

## Fast Review – Page 642

Initiates the Fast Review function.

## Loop/Unloop – Page 691

Toggles Looping playback on or off.

## Play Around/To – Page 691

Options for choosing the Play Around/To mode.

## Timecode – Page 692

Options to increment or decrement timecode.

## Go To – Page 698

Options to move the playhead directly to a certain location.

## Step One – Page 689

Move forward or backward one frame or one second.

## Previous

Moves playhead to the previous Clip, Keyframe, Marker or Gap.

## Next

Moves playhead to the next Clip, Keyframe, Marker or Gap.

## Jump Left – Page 3616

Moves clip selection left in the Fairlight page.

## Jump Right – Page 3616

Moves clip selection right in the Fairlight page.

## Cintel Scanner – Page 473

Transport controls for the Cintel Scanner.

# Fusion

## **Show Toolbar** – Page 1172

Toggles the Fusion toolbar on or off.

## **Fusion Settings** – Page 1196

Opens the Fusion Settings window.

## **Reset Composition**

Resets a Fusion composition to its initial state.

## **Macro Editor** – Page 1306

Opens the Macro Editor.

## **Import**

Specific file format import for Fusion.

— Alembic Scene – Page 1809

— FBX Scene – Page 1753

— PSD – Page 1227

— Shapes – Page 1222

— SVG – Page 1223

— Tracks – Page 1222

## **Render All Savers** – Page 1233

Renders OpenEXR files.

# Color

## **Nodes – Page 3189**

Opens a menu for various node operations.

## **Reset – Page 3187**

Options for resetting a Node.

## **Grade Version – Page 3144**

Opens a menu for clip Version operations.

### **Stills**

Opens a menu for manipulating stills in the Gallery

— Grab Still – Page 3127

— Play Still – Page 2879

— Previous Still – Page 3130

— Next Still – Page 3130

## **Apply Grade – Page 3158**

Applies a grade to the selected clips.

## **Apply Active Layer – Page 3194**

Applies the current Node Stack Layer to the grade.

## **Append Node Graph – Page 3160**

Appends a node graph to the end of the current node tree.

## **Step Timeline Wipe – Page 3179**

Moves the selected wipe timeline clip forward one frame.

## **Preview Memory – Page 3188**

Preview a saved grade on the current clip.

## **Original Memory – Page 3188**

Reverts to a grade's original state.

## **Memories – Page 3141**

Load and Save Memories.

## **Apply Grade From One Clip Prior – Page 3158**

Copies a grade from one clip back.

## **Apply Grade From Two Clips Prior**

– Page 3158

Copies a grade from two clips back.

## **Presets – Page 3047**

Accesses HSL Qualifier color presets.

## **Ripple Node Changes to Selected Clips**

– Page 3166

Copies changes made in a node to a selected clips.

## **Ripple Node Changes to Current Group**

– Page 3167

Copies changes made in a node to a group.

## **Append Node to Selected Clips – Page 3167**

Appends the selected node to multiple clips.

## **Auto Color – Page 2927**

Performs an Auto Color operation.

## **Active Playhead – Page 2906**

Chooses the Active Playhead.

## **Tracker – Page 3101**

Basic Tracker controls.

## **Resolve Live – Page 311**

Opens the Resolve Live interface.

## **Printer Light Hotkeys – Page 2958**

Activates Printer Light controls on the numerical keypad.

## **Full Printer Light – Page 2957**

Adjust printer lights in Full increments.

## **Half Printer Light – Page 2958**

Adjust printer lights in Half increments.

## **Quarter Printer Light – Page 2958**

Adjust printer lights in Quarter increments.

## **Dolby Vision® – Page 253**

Performs an automatic Dolby Vision trim analysis.

## **HDR10+ – Page 271**

Performs an automatic HDR10+ trim analysis.

## **HDR Vivid – Page 272**

Performs an automatic HDR Vivid trim analysis.

## **Automatically Link AMF for – Page 245**

Choose Selected or All shots to link an ACES AMF file to.

# Fairlight

## **Bus Format – Page 3598**

Opens the Bus Format window where you can create mono to multi-channel Atmos buses.

## **Bus Assign – Page 3601**

Opens the Bus Assign window where you can patch buses to tracks, tracks to buses and buses to buses.

## **Presets Library – Page 662**

Opens the Presets Library allowing you to choose saved Preset Configurations for EQ, Dynamics, Plugins, Global Track, Global Bus and Fairlight Configurations.

## **Link Group – Page 3596**

Opens the Link Group window allowing you to link groups of tracks.

## **VCA Assign – Page 3739**

Opens the VCA Assign window allowing you to assign VCA groups to specific tracks.

## **Patch Input/Output – Page 3603**

Opens the Patch Input/Output window allowing you to patch Source to Destination routings.

## **Test Tones Settings – Page 3582**

Opens the Test Tones Settings window with the Oscillator for creating various signal tones.

## **Remote Control Settings**

Opens the SMPTE timecode settings in the Fairlight page.

## **Input Monitor Style – Page 3624**

Allows you to choose how to monitor an input.

## **Monitoring – Page 3824**

Allows you to change the Global monitoring between Mute, Dim, and Mono.

## **Exclusive Solo – Page 3741**

When selected takes all other soloed tracks out of solo mode.

## **Immersive Audio**

Exposes the following immersive audio tools.

- B-Chain Control – Page 3857
- Space View Scope – Page 3862
- Import Master - import ADM files
  - Page 3842
- Export Master - export ADM files
  - Page 3842
- Renderer Settings – Page 3842

## **Automation – Page 3748**

Lists the Fairlight automation options.

## **Batch Fade Settings – Page 3674**

Opens the Batch Fade Settings window to set fade types and durations.

## **Apply Batch Fades – Page 3674**

Applies the fades set in the Batch Fade Settings window.

## **View Clip Info Display – Page 3553**

Opens the Clip Info Display window.

## **Show Clip Gain Line – Page 3695**

Shows or hides the Clip Gain Line in clips on the timeline.

# Workspace

## **Switch to Page** – Page 14

Switches to the selected page.

## **Show Page** – Page 9

Shows or hides specific pages.

## **Show Page Navigation** – Page 15

Disables page navigation icons in the GUI.

## **Show Panel in Workspace** – Page 51

Shows or hides specific panels.

## **Active Panel Selection** – Page 49

Switches to the selected panel.

## **Media Pool Windows** – Page 395

Presents a list of open Bin windows.

## **Dual Screen** – Page 54

Puts the DaVinci Resolve interface in Dual Screen Layout.

## **Primary Display** – Page 54

Lets you choose the monitor for the primary DaVinci Resolve display.

## **Video Clean Feed** – Page 56

Shows the final video output on the selected screen.

## **Viewer Mode** – Page 2874

Chooses the Viewer Mode.

## **Fairlight Viewer** – Page 3835

Chooses the Fairlight Viewer mode.

## **Single Viewer Mode** – Page 635

Toggles Single Viewer mode in the Edit Page.

## **Layout Presets** – Page 56

Saves and Loads custom screen layouts.

## **Reset UI Layout** – Page 56

Resets the UI Layout to the default settings.

## **Background Activity** – Page 3883

Displays the upload progress of a render.

## **Data Burn-In** – Page 142

Opens the Data Burn-In window.

## **Gallery** – Page 3127

Opens up the Gallery Window in the Color Page.

## **Keyword Dictionary** – Page 345

Opens up the Keyword Dictionary.

## **People** – Page 414

Opens up the People window for face detection.

## **Scene Cut Detector** – Page 457

Opens the legacy Scene Detector in the Media page.

## **Timecode Window** – Page 654

Opens the floating timecode window.

## **Video Scopes** – Page 2887

Opens the Scopes window.

## **Remote Grading** – Page 4022

Connects to a Remote Grading client in the Color page.

## **Remote Monitoring** – Page 4023

Activates the viewer output to be monitored remotely.

## **Remote Rendering** – Page 3910

Sets the computer to be a rendering workstation.

## **Monitor Calibration** – Page 2877

Opens the Monitor Calibration tools.

## **Console** – Page 1474

Displays the Console Window for diagnostics and Fusion Scripts.

## **Scripts**

See the Workspace > Documentation menu for scripting information.

## **Workflow Integrations** – Page 4031

Chooses an installed Workflow Integration Plugin.

# Help

## **DaVinci Resolve Reference Manual**

Opens this manual.

## **DaVinci Resolve Training**

Links to Blackmagic Design's Training portal.

## **DaVinci Control Panels Setup**

Launches the DaVinci Control Panels Setup utility.

## **Welcome to DaVinci Resolve**

Opens the initial installer screen.

## **Documentation**

Links to Technical Developer documentation.

## **Create Diagnostics Log on Desktop**

Creates a Diagnostics Log for troubleshooting.

## **Deactivate License**

Deactivates the DaVinci Resolve Studio license on this computer.



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