LUNA

RECORDING SYSTEM

# LUNA 1.5.5 Manual

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# LUNA Application

## The First Recording Platform with Deep Apollo Integration

LUNA gives you the fastest recording environment for music production, editing, and mixing. In addition to its seamless hardware-software integration with Thunderbolt-equipped Apollo and Arrow interfaces, LUNA Recording System allows capturing audio through DSP-powered UAD plug-ins with no discernible latency, as well as offering new Accelerated Realtime Monitoring™ — which provides analog-style tracking and overdubbing workflows using Apollo's onboard DSP acceleration.

You can also run LUNA in Core Audio mode with any Core Audio interfaces, with automatic aggregation and flexible routing options.

### LUNA Technology — Work the Way you Want

Using an all-new audio architecture built from the ground up over four years, LUNA brings audio recording into a new era. Intelligent workflow and compatibility features let you capture inspiration the moment it strikes.

### Accelerated Realtime Monitoring™

No more toggling between Apollo's Console app and your DAW. In Apollo mode, Accelerated Realtime Monitoring uses Apollo's onboard DSP to give you deterministic, sub-2ms recording latency — from input to output — for fast analog-style tracking and overdubbing workflows with UAD plug-ins and UAD Instruments.

### Realtime UAD Processing

Track, overdub, and mix with UAD plug-ins in real time, including Unison mic preamp plug-ins from Neve, Manley, API, Avalon, and more, while enjoying seamless transitions between tracking, overdubbing, and playback.

### Automatic Conversion Between UAD-2 and UADx Plug-Ins

Offload processing to native versions of supported plug-ins. In Apollo mode, when LUNA needs to switch to a realtime UAD-2 plug-in in ARM mode, the UAD-2 version loads automatically. When the track or bus goes out of ARM mode, the UADx plug-in is restored automatically. You can also switch all supported plug-ins from UAD-2 to UADx and vice versa with a simple menu item.

## Much, much more

- **Unlimited Track Count** — Record and playback as many tracks as your Mac can handle.
- **Contextual Editing & Browsing** — LUNA intelligently switches tools and viewing modes for less menu diving during the creative process.
- **Run Audio Units Plug-Ins and VIs, UADx Plug-Ins, and UAD Instruments** — Easily use your favorite Audio Units plug-ins and virtual instruments inside LUNA, and your native UAD plug-ins and instruments.
- **Session Autosave** — LUNA is constantly saving, so you'll never lose your work again, no matter what happens.
- **Session Templates** — Set up templates and always have your session starting points ready to go.
- **Import Session Data** — LUNA's powerful session import capability allows you to import data from another session, including plug-ins, track routing data, audio and MIDI, and track versions. Preview the data to import, and import only a range of data with all the flexibility you need.
- **AAF Imports** — Seamlessly integrate with other DAWs and easily import sessions using the industry-standard Advanced Authoring Format (AAF).
- **Save Track Versions and Bookmarks, and Restore Auto-Saved Backups** — Save a bookmark to remember a stopping point or save a mix. Create a session version to make bigger changes, while still retaining the older session. Restore to an auto backup whenever you want.
- **Persistent Undo** — Harness undo/redo even after closing and re-opening sessions.

# LUNA Concepts

LUNA Recording System is the new music production system from Universal Audio. LUNA is the most inspiring Mac-based recording system on the planet, providing a complete environment for recording, MIDI creation, editing, arranging, and mixing – all with an intuitive and contextual user interface.

---

## A Natural Analog Workflow

LUNA (in Apollo mode) is based on a powerful hardware-software integration, giving Apollo interface owners the fastest, most natural recording system for music creation, editing, and mixing on your Mac. No more toggling between Apollo's Console app and your DAW to track through UAD plug-ins in real time.

Instead, LUNA's Accelerated Realtime Monitoring™ lets you record through UAD plug-ins with no discernible latency, and eliminates hassles in creating monitor mixes, cue mixes, setting up Unison plug-ins, and so much more.

---

## Apollo mode and Core Audio mode

LUNA operates in Apollo mode or Core Audio mode.

### APOLLO MODE

in **Apollo mode**, LUNA is integrated directly with Universal Audio interface hardware. When a Thunderbolt-equipped Apollo is connected and powered on, you can set LUNA to Apollo mode. Tight integration with UA hardware means that much of the complexity of audio interface configuration is removed with LUNA. All of your available hardware inputs and outputs are automatically configured and available in LUNA. In addition, all preamp channel features and Unison inserts are automatically available in LUNA, and most routing features of the hardware, including Cues and routing matrix features, are available.

If you have an Apollo connected, LUNA automatically starts in Apollo mode.

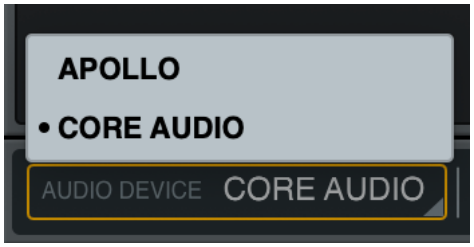
### CORE AUDIO MODE

In **Core Audio mode**, you can use LUNA with supported Core Audio devices. LUNA can support multiple Core Audio devices at once. All of your available hardware inputs and outputs for enabled devices are automatically configured and available in LUNA, though you may have to make adjustments in the hardware setup panel. In Core Audio mode, Unison plug-ins are not supported on LUNA inputs, though you can use Unison inputs in Apollo Console if you use an Apollo interface.

If you do not have an Apollo connected, LUNA automatically starts in Native mode.

To switch between Apollo mode and Core Audio mode

- At the bottom left of the LUNA screen, click Audio Device, and choose Apollo or Core Audio.




## Accelerated Realtime Monitoring

Accelerated Realtime Monitoring™ (ARM) is a deep hardware, DSP, and software integration feature inside LUNA that allows you to achieve the lowest possible latency while recording with UAD plug-ins in real time.

**Note:** Accelerated Realtime Monitoring is available only in Apollo mode. You cannot use Accelerated Realtime Monitoring in Native Mode.

For those familiar with UA's Console software, ARM eliminates the need to use the Apollo Console app altogether, while providing all of the same features and benefits (low latency plug-ins, input routing, cue mixing, and others). Unlike Console, LUNA and ARM automatically take care of the muting and unmuting of input channels, based on the transport state of the software: Apollo channels that are record-enabled or input-enabled are unmuted, and all other Apollo channels are muted.

For a detailed description of Accelerated Realtime Monitoring, see "Accelerated Realtime Monitoring."

Accelerated Realtime Monitoring™ (ARM) eliminates the need to use the Apollo Console app to track and input monitor through UAD plug-ins at the lowest possible latency. Accelerated Realtime Monitoring offers you the ability to effortlessly achieve the lowest possible latency while recording with Apollo. Accelerated Realtime Monitoring seamlessly handles channel input states, allowing for the use of UAD plug-ins on channel inserts for Realtime UAD Processing, without having to leave the LUNA workspace. ARM offers UAD plug-in processing at undetectable latencies while monitoring and/or recording multiple inputs and tracks.

LUNA takes care of the muting of input channels, based on what is in use in the session. Apollo channels that are record-enabled have their inputs unmuted, and all other channels have their inputs muted. Apollo integration automatically controls the muting of inputs and recorded material on disk according to the record enable or input enable and transport state.

**Note:** Tracks are not "muted" in LUNA. However, Apollo inputs are automatically muted and unmuted as required to record, monitor, and play back tracks.

You can turn Accelerated Realtime Monitoring on or off globally. Use this setting to achieve the lowest possible input monitoring latency when monitoring input signals through monitor, headphone, and cue outputs.

---

# Recording Features

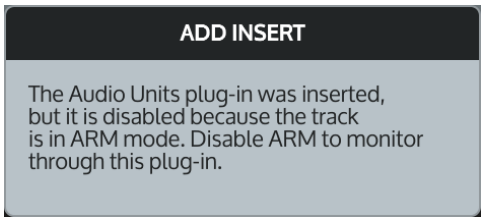
LUNA's recording engine is fast and highly capable. LUNA records 24-bit audio at the current hardware sample rate, on as many tracks as your computer can support. With LUNA, you can switch the transport in and out of Record while playing audio. You can also enable and disable recording on tracks while the transport is running, so you can punch in manually on one or more tracks while playing back a session. All audio and MIDI tracks, buses, the main output, and hardware outputs are delay-compensated on playback, so everything stays tightly synced.

## PLUG-IN PROCESSING (APOLLO MODE ONLY)

Previously, with the Console App, you had to choose whether or not to record insert effects on input channels. In LUNA, as with the Console App, Unison insert processing is always recorded to disk. However, unlike the Console App, each input channel has four available Record FX slots in addition to eight standard inserts (used for any combination of Audio Unit or UAD plug-ins). These inserts allow you to record through up to four UAD plug-ins on any available input channel (depending on available UAD DSP resources). In addition, UAD and non-UAD plug-ins can be assigned to standard Inserts (not recorded to disk) for monitoring while you record, without being recorded to disk.

**Notes on LUNA plug-in processing:**

- Only UAD plug-ins can be monitored on a record-enabled track when Accelerated Realtime Monitoring is enabled. When you enable ARM, any Audio Unit plug-ins on a record or input-enabled track are disabled.
- UADx plug-ins convert automatically to UAD plug-ins when tracks or buses that require UAD processing are put into ARM mode. So, for example, in ARM mode, if your vocal track feeds an ARM-enabled bus with a UADx Pure Plate Reverb inserted, and you record-enable that vocal track, the UADX Pure Plate Reverb is switched out for UAD Pure Plate Reverb (if you have the plug-in).
- When you add an Audio Unit plug-in to a record or input-enabled track when ARM is enabled, the plug-in is added in an inactive state, and LUNA displays a notification that the plug-in is disabled.




- When a track is record or input-enabled in ARM mode, the last four standard inserts are disabled.

# LUNA and Console

You never need to use Apollo's Console app when you are using LUNA in Apollo mode. LUNA replaces almost all functions for which you previously used Console. LUNA also includes a number of features that Console does not.

For example, a LUNA session includes persistent Inputs. When you configure a LUNA track with an input, all settings, including Unison plug-ins, Record FX plug-ins, and Insert effect plug-ins, are retained on that track. You can reuse the same input on your Apollo on multiple tracks, and each track in the session will continue to retain the settings that were last used for it, even after you close and reopen the session. This differs from Console, where the last-used set of Unison and Record FX plug-ins persist on an Apollo channel, but those plug-ins and settings do not automatically change when you use that channel on a different track in another DAW.

If you use Console, the settings and plug-ins you configure for an Apollo input channel in Console are retained until you reconfigure that input in LUNA. Your Console channel settings are restored when you close the LUNA session.

**Note:** The Isolate and Flex Routing features are configured in Console.

## CONSOLE ISOLATE FEATURE

Isolate retains current channel settings when different Console and LUNA sessions are loaded. Isolated channels are also not controlled by LUNA. Isolate allows you to seamlessly monitor live hardware inputs with Realtime UAD Processing, even when changing Console and LUNA sessions. You can use this to prevent a Console channel's state from changing across LUNA sessions. When a channel or channel pair is Isolated the plug-ins on that channel cannot be changed in LUNA, and the channel input pair is not automatically muted and unmuted by the LUNA mixer—the channel or channel pair is always live.

The only exception to this is that an Isolated input or input pair is muted when a track that uses that input is Record-enabled and LUNA is playing back audio from that track.

## CONSOLE TRACKING MODE

Console Tracking mode allows you to use Console for live channel inputs, and prevents LUNA from automatically muting and unmuting Console channels when recording. Essentially, all inputs remain live, and Console works as it previously did, while LUNA is running.

In Console Tracking Mode, UAD plug-ins do not persist in LUNA inputs as they normally do. Instead, when you record-enable a track in Console Tracking mode, the plug-ins assigned to the track in Console are

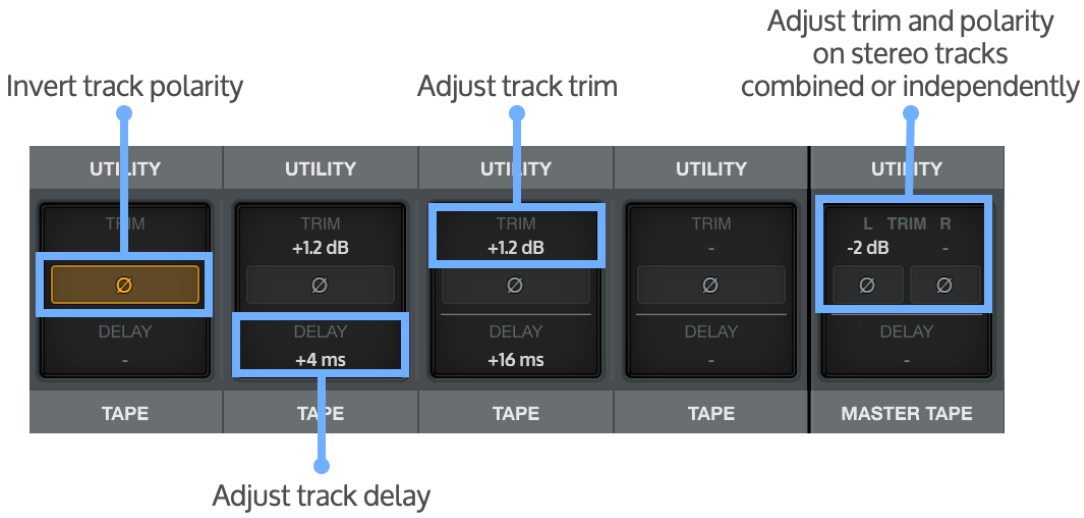
loaded into the LUNA channel. However, unlike with Isolated Console channels, in Console Tracking Mode, you can change the plug-ins assigned to the track in LUNA, and those changes will carry over to Console. Console channels then return to their previous states after you quit LUNA.

**Note:** A Console input is muted when ARM is enabled, a track that uses that input is Record-enabled, and LUNA is playing back audio from that track.

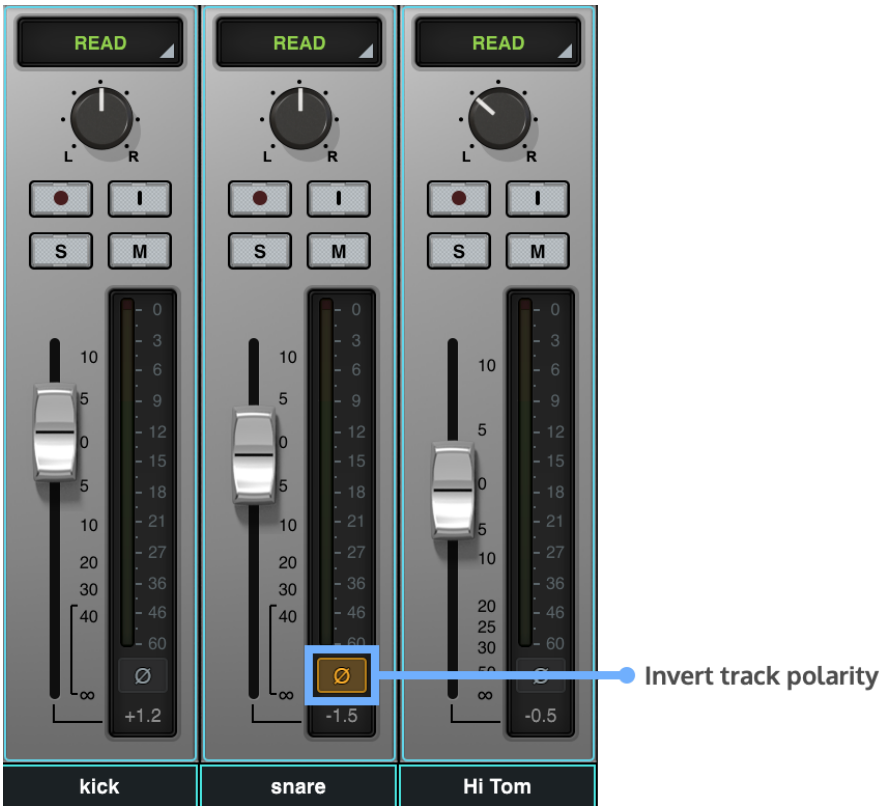
For more information about Console Tracking Mode, see “Using Console Tracking Mode.”

## Polarity Invert, Channel Trim, and Track Delay

Use the Utility row tools on any LUNA channel to trim the track after console summing, and before tape, plug-ins, or channel faders by as much as +12 dB or -144 dB. In the Utility row and on the channel fader you can invert polarity 180º for any track. You can delay a track by .1–1000 milliseconds. You can adjust linked stereo channels or unlink them to invert polarity or adjust trims independently.




Polarity invert is also available at the track fader.




# LUNA Extensions

LUNA Extensions are UA add-ons that run exclusively inside LUNA. LUNA includes the free Oxide Tape LUNA Extension. The optional Studer A800, Ampex ATR-102, API Summing, and Neve Summing LUNA Extensions are available for purchase from within LUNA. The included free ARP LUNA Extension provides arpeggiation effects on Instrument tracks.

## INTEGRATED MULTITRACK TAPE

LUNA's Multitrack Tape sounds, courtesy of the included Oxide LUNA Extension and optional Studer A800 Extension, give you the rich warmth, punch, and texture of magnetic tape on any audio or instrument track. Simply adjust the per-track Saturation control to dial up the desired amount of harmonics and tape character on your sources.

You can even mix-and-match up to four tape machines total, harnessing different tape formulas, tape speeds, and per-track controls for Bias, Repro, and Tone. It's a tape-head's delight — perfect for gluing together your mixes.

## INTEGRATED MASTER TAPE

LUNA's Master Tape sounds are provided by the Ampex ATR-102 Extension, which can be applied on bus tracks and on the Main track. Master Tape allows you to configure separate machines with different presets or settings on each bus and the main track, allowing deep flexibility in the mixing stage. You can set the tape machine as pre or post-fader, configure tape speed, tape head width, and tape formula directly on each bus track and on the main track. From the tape browser, you can configure the record and reproduce level, and configure bias settings, EQ, and enable noise.

## CONSOLE SUMMING

LUNA includes optional Neve® Summing and API Summing LUNA Extensions. These extensions impart the sound and feel of meticulously modeled consoles into the fabric of the LUNA mixer, on bus tracks and the Main track. Console Summing LUNA Extensions change the behavior and appearance of the LUNA buses and Main track to display accurate fader tapers. When you route tracks to a bus with a summing model enabled, the fader tapers of the bus or Main track and the source tracks change.

Built-In Neve® Summing

A major ingredient behind thousands of influential, chart-topping records, Neve 80 series consoles are without equal. These classic analog desks from the '60s and early '70s — made famous in the Sound City documentary — deliver three-dimensional nonlinearities and analog heft that infuses your mixes with vibrancy and color.

Developed in partnership with AMS Neve exclusively for LUNA Recording System, the Neve Summing Extension emulates the entire summing circuit of an iconic Neve 80 series console — including its coveted 1272 bus amplifiers — giving your LUNA mixes all the color of Neve's most cherished analog desk.

Built-In API Summing

The sound behind five decades of landmark albums, API consoles are legend for good reason. From Stevie Wonder's *Talking Book* and Fleetwood Mac's *Rumours*, to The Cure's *Pornography* and Radiohead's *Hail to the Thief* — the mid-forward punch of API's classic analog consoles breathe aggressive, multi-dimensional color into your mixes.

Developed in partnership with API, exclusively for LUNA Recording System, the API Summing Extension emulates the 2520 op-amp and custom output transformers found in legendary API consoles over the past 50 years — giving your LUNA mixes all the attitude and tone of API's esteemed analog desks.

## API VISION CONSOLE EMULATION

The API Vision Console Emulation Bundle turns LUNA into a full API console. Track in real time through API preamp and channel modules, then mix with API's illustrious analog summing and bus compression — seamlessly switching between low-latency tracking using Apollo DSP (Apollo mode only), and high-powered native mixing within LUNA. You can create new audio, instrument, and bus tracks with API Vision Console elements pre-assigned, building sessions within the complete Vision console emulation experience.

## ABOUT LUNA EXTENSIONS DOCUMENTATION

- Learn how to use the LUNA Tape Extension at “Using Tape LUNA Extensions.”
- Learn how to use Neve and API Summing Extensions at “Using Neve Summing” and “Using API Summing.”
- Learn how to use API Vision Console Emulation at “API Vision Console Emulation.”
- Learn how to operate the ARP MIDI Arpeggiator at “ARP MIDI Arpeggiator.”
- Learn about LUNA Extension controls at “About LUNA Extensions.”

# UAD Instruments

UAD Instruments bring Universal Audio's expertise in electrical and acoustic modeling, sampling, synthesis, and signal processing to instruments for the first time ever.

LUNA Recording System comes with a curated bundle of inspiring sounds, delivering a new level of realism for software-based instruments.

The Shape and Spitfire Audio UAD instruments are exclusive to LUNA Recording System. Other UAD Instruments can be used in LUNA and macOS hosts that support VST 3, Audio Units, or AAX plug-ins.

## MOOG® MINIMOOG

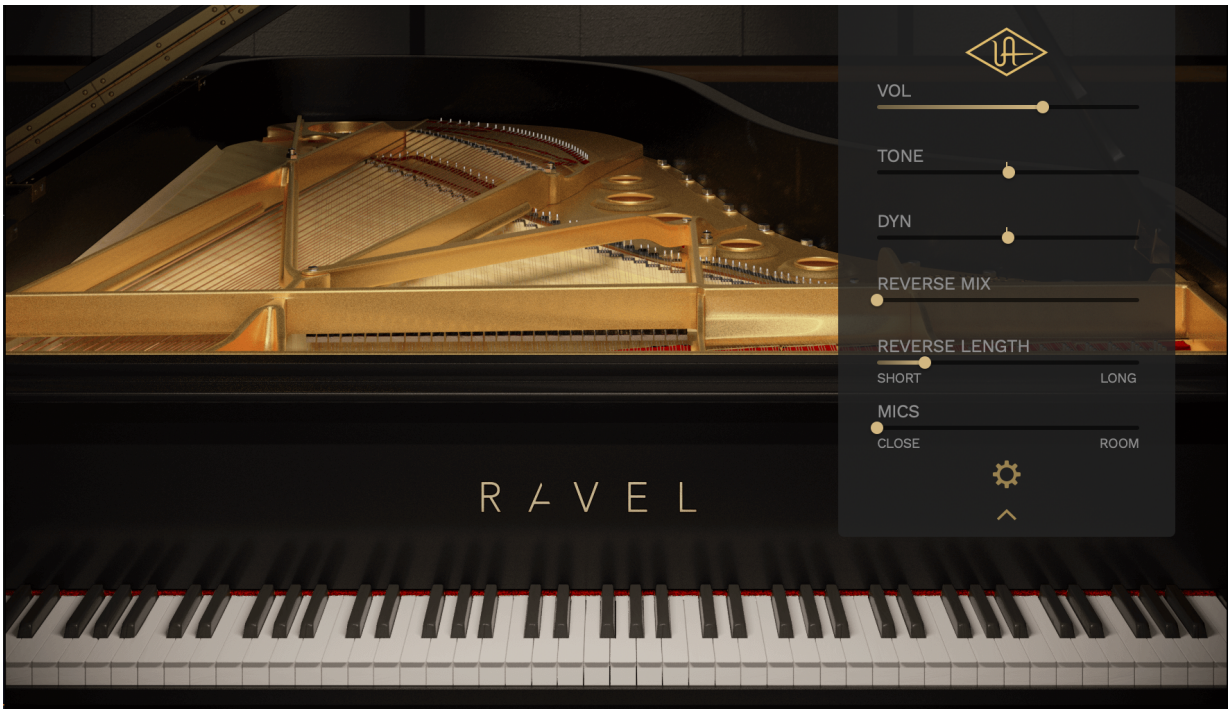
Developed in partnership with Moog Music, the Minimoog UAD Instrument is an incredibly accurate and inspiring emulation of Bob Moog's pioneering synthesizer.

By perfectly capturing every nuance of the classic Moog oscillators and ladder filters and harnessing discrete transistor VCA modeling, the Minimoog UAD Instrument faithfully captures every detail of this classic instrument used by everyone from Parliament-Funkadelic, to Kraftwerk, Dr. Dre, and more.

## RAVEL™ GRAND PIANO

UA's first acoustic instrument model, Ravel is a breathtaking emulation of a Steinway Model B* grand piano based on UA's exclusive sampling, physical modeling, and new Ultra-Resonance™ technology, giving you all the sonic nuance of this studio classic.

Captured at Ocean Way Studios, Ravel gives you an immaculately recorded studio piano that’s album-ready, with easy-to-use Tone, Dynamics, and Microphone controls, as well as an innovative Reverse feature for startlingly creative sounds and textures.




## SHAPE

A comprehensive creative toolkit included free with LUNA, Shape is a painstakingly curated UAD Instrument featuring a collection of the best vintage keys, drums/percussion, guitar/bass, orchestral content, and real time synthesis - courtesy of Universal Audio, Spitfire Audio, Orange Tree Samples, Loops de la Creme, and more. You can expand Shape with more content and sample packs.

### ABOUT UAD INSTRUMENTS DOCUMENTATION

- Learn how to insert, play, and record UAD Instruments in “Playing a Virtual Instrument and Recording MIDI.”
- Learn how to operate individual UAD Instrument controls in the separate “UAD Instruments” section.

---

## Non-Destructive Audio

When you record audio in LUNA, that audio is stored in the session file. You can edit the audio by copying, cutting, trimming, and deleting, while not actually changing the underlying audio file. Similarly, when you record multiple audio “takes” while loop recording (recording with a loop selected and Loop Playback/Record enabled), or you record audio over an existing audio file or file section, the previous audio files are retained. You can access all of the whole audio files recorded with loop recording using the Track Versions feature.

---

## How do I Save?

With LUNA, all changes are saved automatically. LUNA writes changes to a database file that is embedded within the LUNA session file. This database is updated with every change and keeps a constant record of your LUNA session. All edits and modifications are automatically saved, and all audio is embedded in the

LUNA session file. You can undo and redo changes (except when recording) even after closing and reopening a session.

While there is no traditional Save function in LUNA, you can save session Versions and Bookmarks. Versions and bookmarks have slight differences.

- Creating a version is like saving a new session, without actually creating a new session. A version creates a top-level item in the version history. The name of the currently loaded version appears appended to the session name at the top of the LUNA application. A version can be useful when you are adding elements to a session, changing the arrangement of a session, or otherwise significantly changing the session.
- Bookmarks recall a state of the session, below a specific version. Bookmarks are created below the latest version, or the currently recalled version. A bookmark can be useful to save separate mixes below a version, or for minor changes in the mix or arrangement. For example, you could make bookmarks under a version for your test mix, a mix with the vocals up and down 3dB, and an instrumental mix.

LUNA also automatically autosaves versions to which you can revert, based on the Autosave Interval in LUNA settings. You can show autosaved versions when viewing sessions and bookmarks, and easily open any autosaved version.

For more information on session versions and bookmarks, see Using Session Versions and Bookmarks.

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## Undo and Redo

You can undo and redo changes in an open session at any time, except during recording. You can even undo and redo changes after a session has been closed and reopened.

---

## Supported Plug-In Formats

LUNA supports UAD Powered Plug-Ins, LUNA Extensions, UAD Instruments, and Audio Units (AU) plug-ins. LUNA Extensions include Tape Machines and Neve Summing. Extensions are incorporated into the LUNA workflow. Instruments appear in a separate plug-ins list from insert effect plug-ins.

---

## Track Modes: Time and Tempo

Audio tracks can be in one of two Track Follows Modes: Time or Tempo.

- A track in Track Follows Time mode maintains its original playback time, regardless of changes in the tempo of the session. All audio clips on the track, and elements associated with those clips, maintain their original time duration, including start and end points, edits, fades, and automation.
- A track in Track Follows Tempo mode adjusts to the tempo of the session and any session tempo changes. An audio clip that is configured in Track Follows Tempo mode will automatically become

shorter or longer if the session tempo is adjusted. All audio clips on the track, and elements associated with those clips, scale to the new tempo. Clip start and end points, duration, edits, fades, and automation all scale to the new tempo.

## Sample Rates, Imported Audio, and Imported Sessions

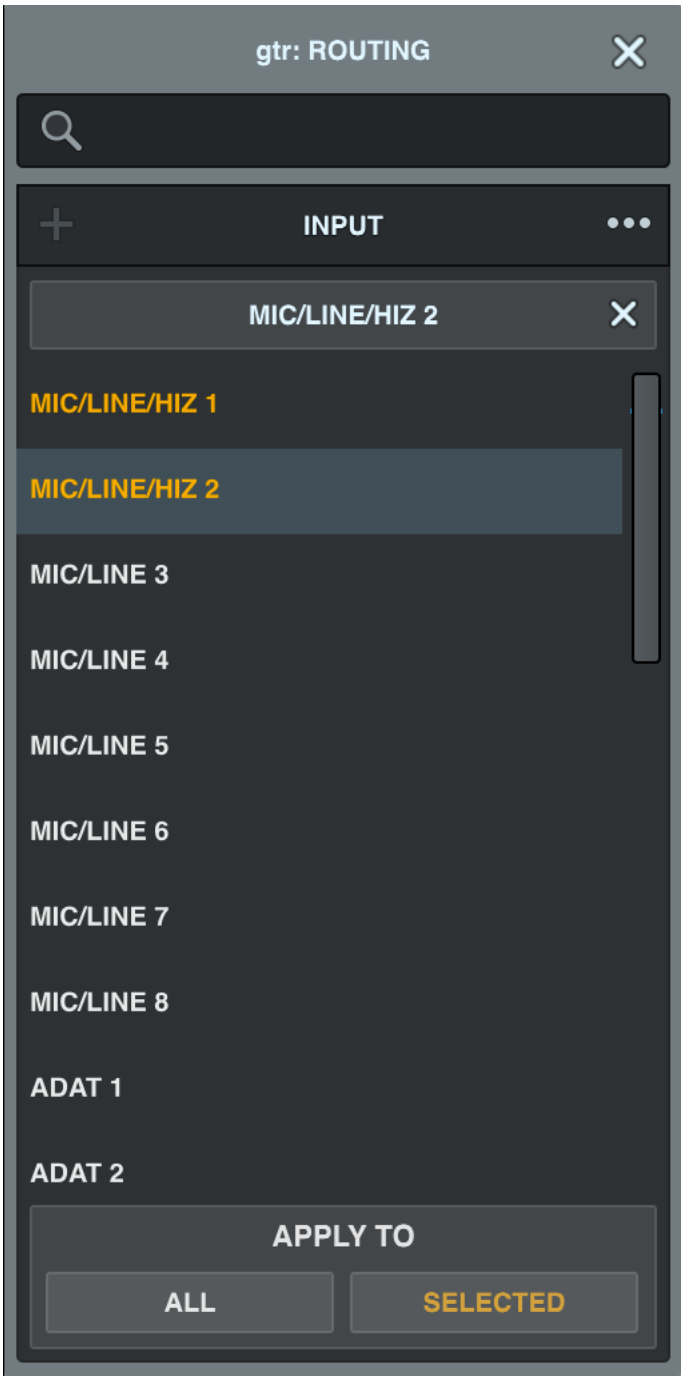
LUNA sessions are not locked to a specific sample rate. You can change the sample rate of a LUNA session after you create or import it, without changing the sound or playback speed of the session.

LUNA always records audio as 24-bit files at the current hardware sample rate. All internal files, exports, and mix operations employ a 32-bit floating point architecture. You can import audio of any sample rate, or play back an audio session at any supported hardware sample rate, and LUNA intelligently renders and manages the audio to play it back correctly. Audio that you import into LUNA is saved in the session file with the same bit depth and sample rate at which it was imported.

## Focus Browsers Overview

In LUNA, many operations open a Focus Browser at the left of the screen. For example, when you click the Preset button on a plug-in, a list of available presets appears at the left side of the screen. This methodology is much more conducive to fast workflows instead of burying functions within menus and submenus.

With a Focus Browser, you typically make a choice. For example, you choose an input to use for a track, or a preset to use with a plug-in.



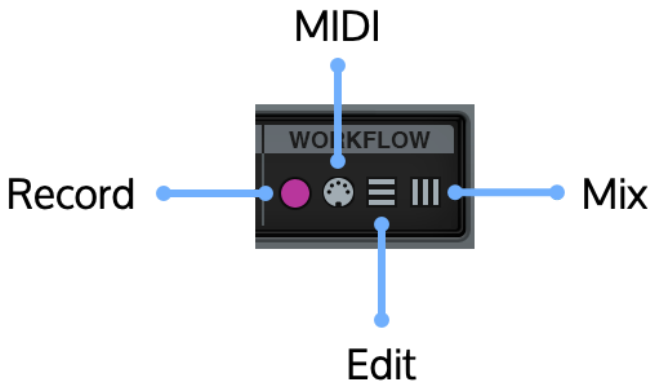

## EXPANDING AND COLLAPSING FOLDERS IN THE FOCUS BROWSER

To expand or collapse a folder in a Focus Browser, click the folder name. For example, click the UADx folder in the Inserts Focus Browser to open or close the list of UADx plug-ins. To expand or collapse all folders in a Focus Browser, Option+Click on any folder name.

**Note:** The Expand and Collapse settings for a Focus Browser are saved globally across all sessions in LUNA.

## Workflows

Workflows provide common editing, arranging, and navigation commands on a toolbar that you can open under the main LUNA control bar.




For more information about workflows, see “Using Workflows.”

## Keyboard Shortcuts and Menu Reference

LUNA includes many convenient keyboard shortcuts for menu items and workflows so you can operate the system quickly. A complete list of all Keyboard Shortcuts and a full Menu Reference are available.

## LUNA Key Commands mapped to macOS Shortcuts

Some key commands are mapped to shortcuts in macOS by default. These key commands must be disabled or remapped in order to use the LUNA key commands. These key commands and remapping instructions are listed here.

- **Command+Spacebar** (Toggle Record): By default, this key command is mapped to the macOS Spotlight search feature. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Spotlight > Keyboard Shortcuts uncheck the key commands, or map them to different key commands. Refer to your macOS documentation for more information.
- **Control+**↑ (Increase selected track heights): By default, this key command is mapped to the macOS command for Mission Control. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Keyboard, click Shortcuts and disable this

key command, or map it to a different key command. Refer to your macOS documentation for more information.
- **Control+↓** (Decrease selected track heights): By default, this key command is mapped to the macOS command for Application Windows. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Keyboard, click Shortcuts and disable this key command, or map it to a different key command. Refer to your macOS documentation for more information.
- **MIDI Keyboard Mode**: MIDI keyboard Mode overrides some keys that are used as shortcuts.

# Getting Started with LUNA

This article contains everything you need to get started making music with LUNA. Read this article to learn about LUNA's system requirements, how to install and authorize LUNA, how to create a session, and an overview of how LUNA works.

For a video overview of the Installation and authorization process, see LUNA Basics 0: Installing LUNA.

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## LUNA system requirements

To operate LUNA Recording System, your system must meet the following requirements:

- **LUNA System Requirements**

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## Installing LUNA

To install and authorize LUNA, you'll need to follow these instructions. Detailed instructions are provided later in this section.

1. Download and install UA Connect.
2. In UA Connect, click the LUNA tab, and install LUNA.
3. Follow the instructions in the installer.

After the install completes, LUNA starts and the Shape UAD Instrument downloads and installs automatically.

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## About uaudio.com and iLok accounts

LUNA uses two different accounts.

- Your uaudio.com account connects LUNA with the Universal Audio cloud, so you can purchase, download, and manage updates to LUNA, UAD instruments, and LUNA Extensions. You can also buy UAD plug-ins and access LUNA educational and informational resources with your uaudio.com account.
- Your iLok account (iLok USB hardware and/or iLok Cloud) authorizes the LUNA app, UAD Instruments, native UAD plug-ins, and LUNA Extensions. You can either use an existing iLok.com account, or create one automatically and link it during the UA Connect installation process.

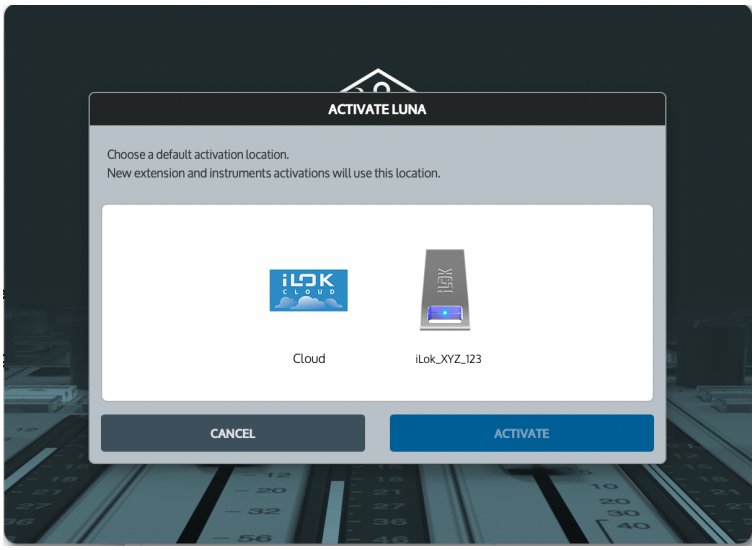
## USING AN ILOK HARDWARE KEY OR ILOK CLOUD

LUNA includes two authorizations for the LUNA app, and two licenses for each authorized Extension and Instrument. You can move iLok authorizations to physical iLok USB hardware keys to use your authorizations with multiple macOS systems, or you can use one iLok Cloud session.

iLok Cloud allows you to authorize LUNA, LUNA Extensions, and UAD Instruments on a macOS system that is connected to the internet. iLok Cloud requires a constant connection to the internet, as the licenses are checked periodically. With iLok Cloud, you can authorize one LUNA instance at a time. If you start a second iLok Cloud session, the existing iLok Cloud session is logged out. If you need to log in to a second machine while an iLok Cloud session is running, you'll need to use a physical iLok USB hardware key with a license installed.

If your system is not continuously connected to the internet, or is only connected periodically, use a physical iLok key with a license installed. You can install a LUNA license on your physical iLok USB hardware key by manually dragging and dropping the LUNA license into the key from within the iLok License Manager application.

On first run, LUNA prompts you to choose a default license location (iLok Cloud, or an iLok USB hardware key if you have one). Choose the license location that you prefer.

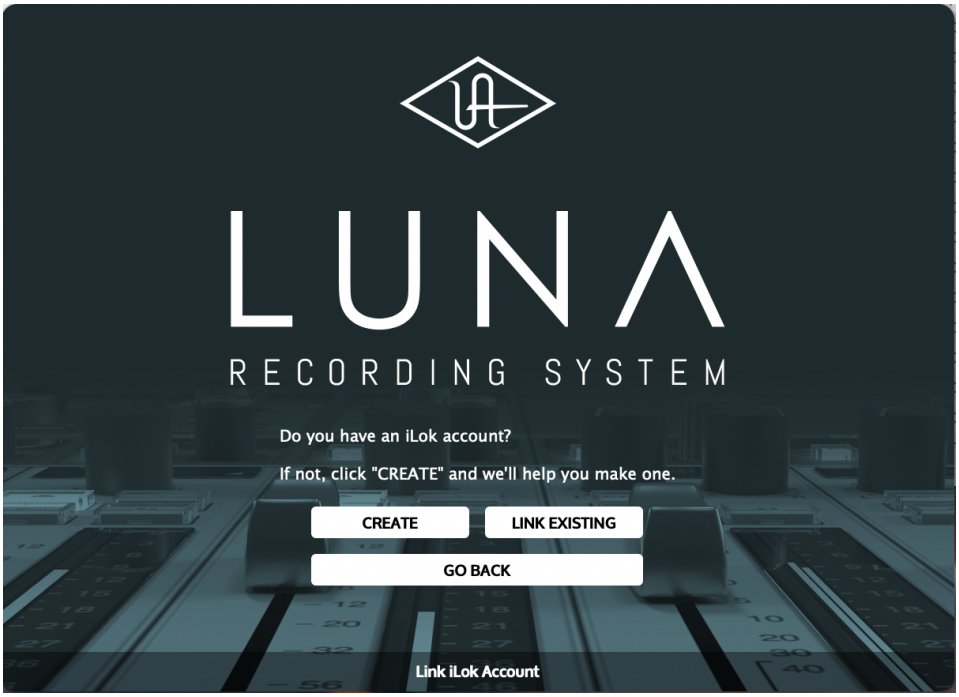



## INSTALLING LUNA AND CREATING AN ILOK ACCOUNT

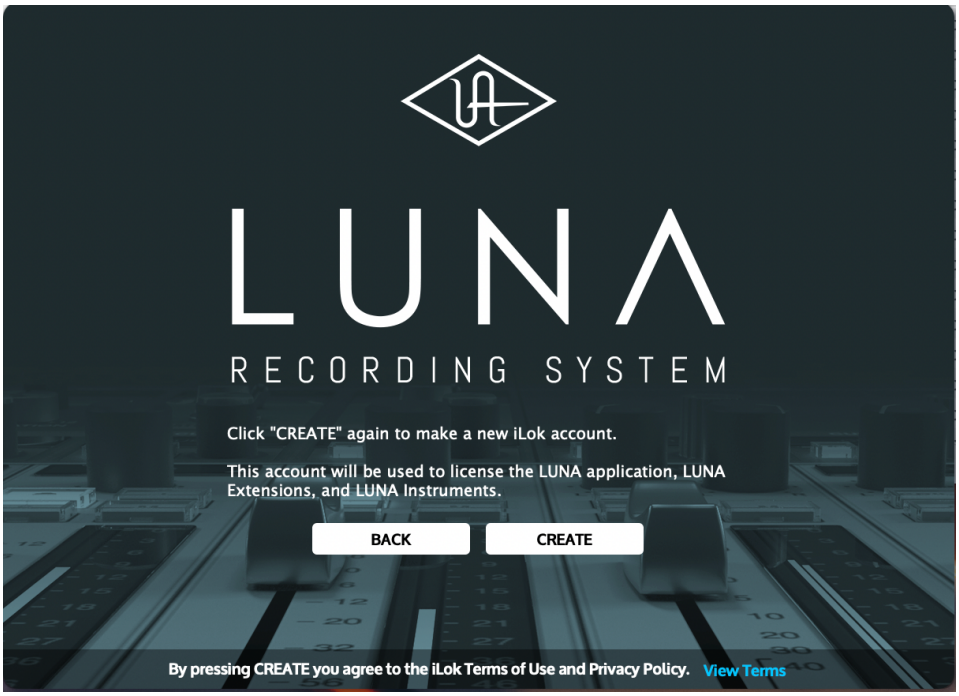
**Note:** Use this workflow when you do not have an existing iLok account and you want to automatically create an iLok account and link it to your uaudio.com account to authorize your software.

**Note:** If you have already activated UAD plug-ins or a UAD Spark subscription in UA Connect, you have already created or linked an iLok account, and you will not be required to link or create an iLok to use LUNA.

1. Download and install UA Connect.
2. In UA Connect, click the LUNA tab, and install LUNA.
3. Follow the instructions in the installer.
4. Open LUNA from Launchpad or the macOS Dock.
5. If you have not created or linked an iLok account, the Link iLok Account screen opens. Click Create to create a new iLok account.




6. Click Create again to confirm that you want to create a new iLok account. To read the terms of the iLok License agreement, click View Terms.




7. The iLok account is created and linked, and licenses are deposited, then LUNA checks for the license. This might take some time.

8. When you are prompted to allow access to the Microphone, click OK.
   **Note: You must allow LUNA to access the Microphone in order to record audio.**
9. When you are prompted to allow LUNA to access files in your Documents folder, click OK. LUNA stores sessions and other data in this area.

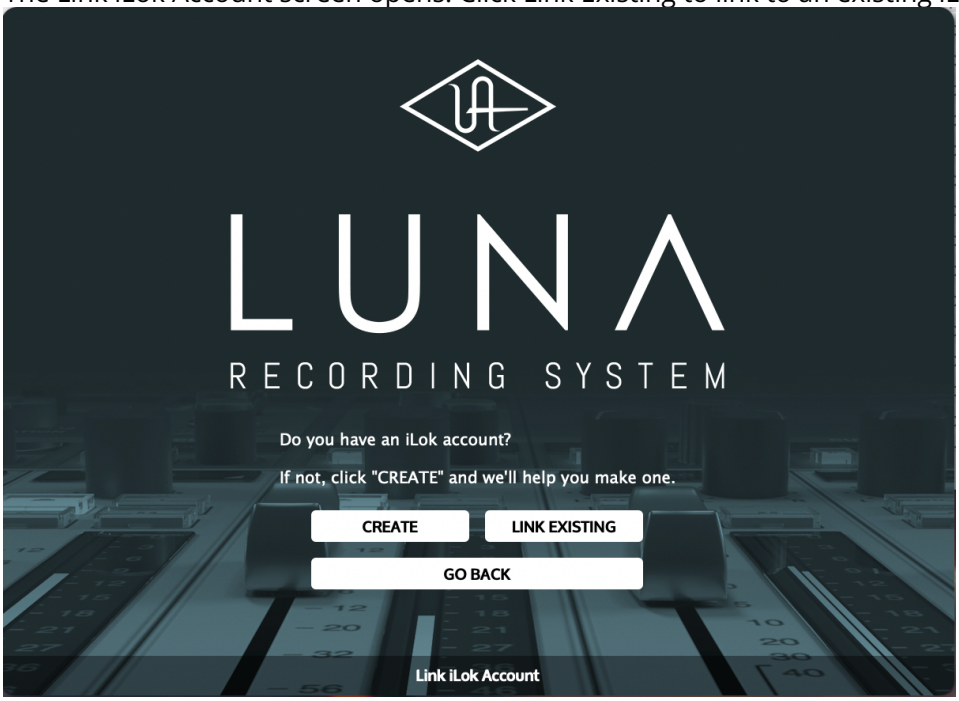
LUNA now starts, and shows the Create Session screen. Note that the first time you run LUNA, LUNA downloads the UAD Instrument “Shape” in the background.

## INSTALLING LUNA AND LINKING AN EXISTING ILOK ACCOUNT

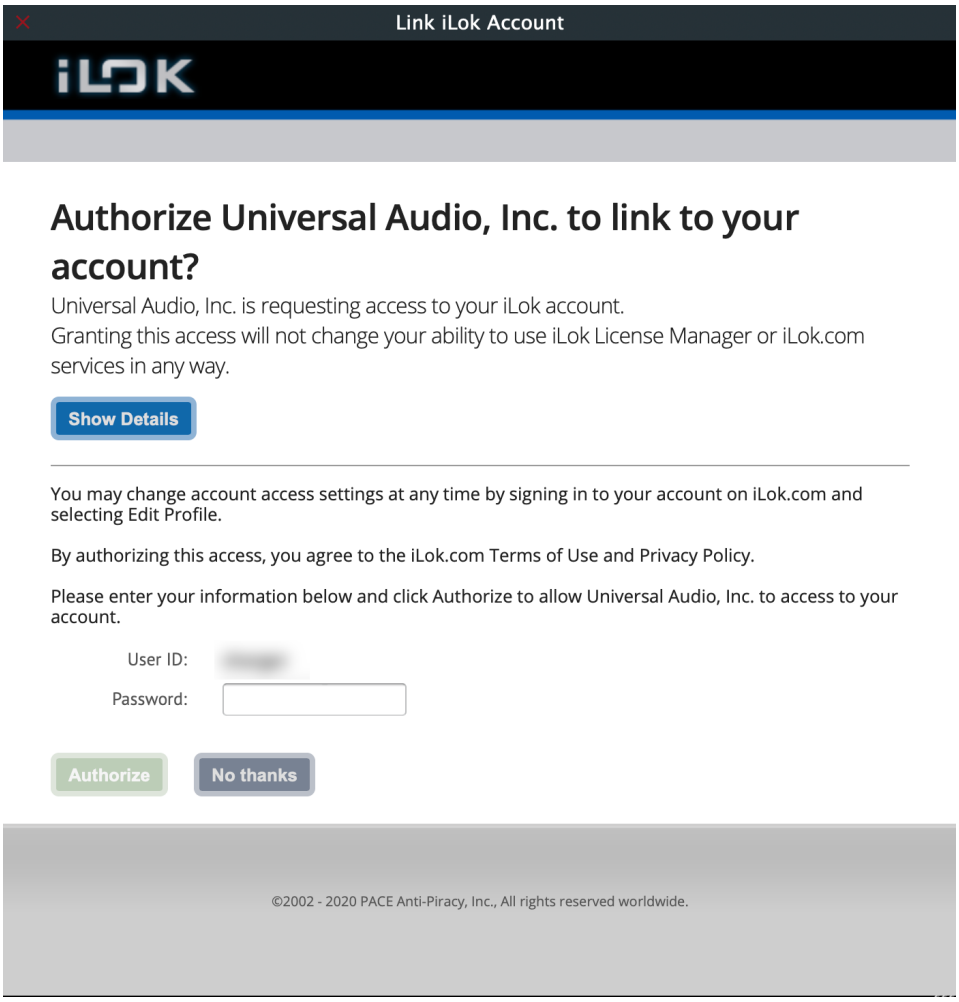
**Note:** Use this workflow when you have an existing iLok account, and you want to link it to your uaudio.com account to authorize your software.

**Note:** If you have already activated UAD plug-ins or a UAD Spark subscription in UA Connect, you have already created or linked an iLok account, and you will not be required to link or create an iLok to use LUNA.

1. Download and install UA Connect.
2. In UA Connect, click the LUNA tab, and install LUNA.
3. Follow the instructions in the installer.
4. Open LUNA from Launchpad or the macOS Dock.
5. The Link iLok Account screen opens. Click Link Existing to link to an existing iLok account.




6. Type your iLok user name and click Link. The Link iLok Account screen opens.




7. Type your iLok password, and click Authorize. The iLok account is linked, licenses are created and deposited, and LUNA checks for the license. This might take some time.

8. When you are prompted to allow access to the Microphone, click OK.
   **Note: You must allow LUNA to access the Microphone in order to record audio.**
9. When you are prompted to allow LUNA to access files in your Documents folder, click OK. LUNA stores sessions and other data in this area.

LUNA now starts, and shows the Create Session screen. Note that the first time you run LUNA, LUNA downloads the UAD Instrument "Shape" in the background.

Login tips

- If you forget your password, click Log In, and the Forgot Password link appears. Click Forgot Password to receive password reset instructions.
- To stay logged in, click Remember Me.
- You can skip the login screen by clicking Skip. If you skip the login, you can use LUNA and licensed Extensions and Instruments with the licenses on your iLok hardware key or licenses from the iLok Cloud. However, you cannot update software, make purchases, or download from the Manage screen until you log in.

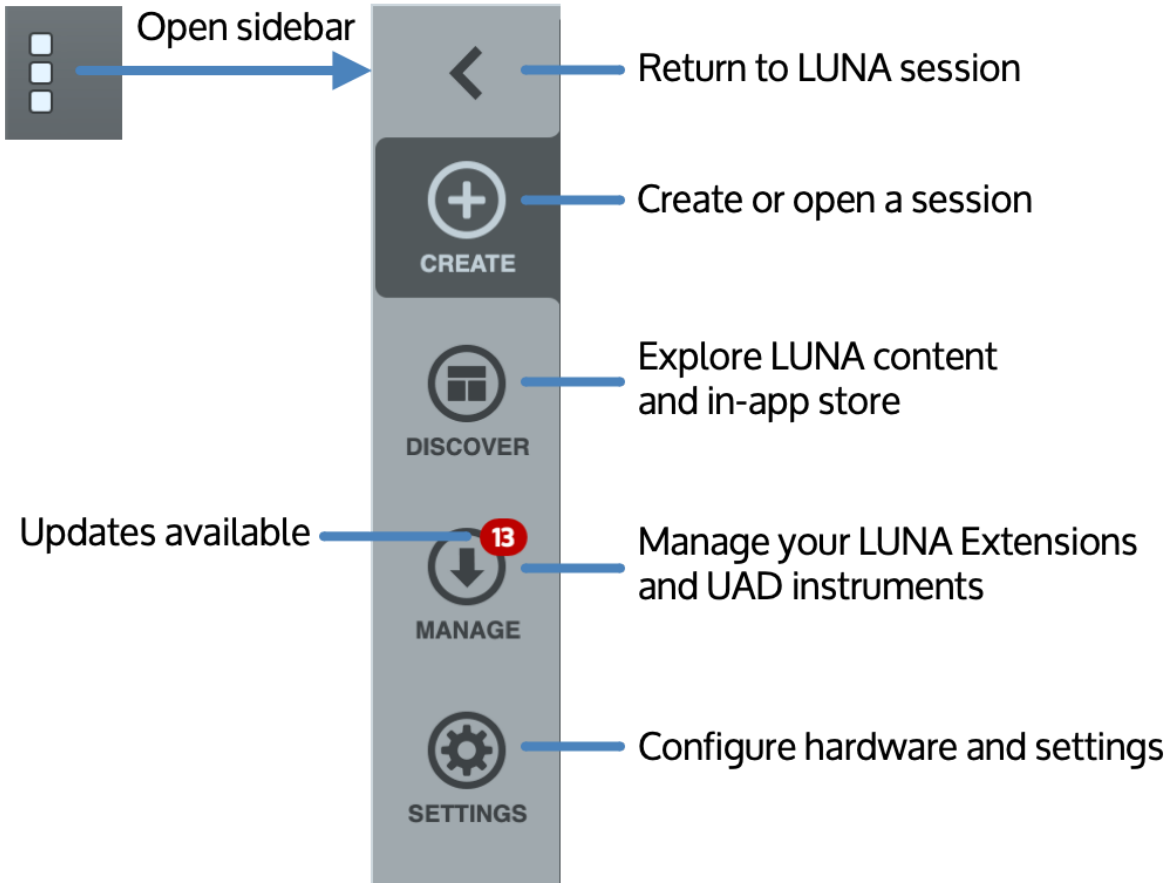
## STARTING LUNA

1. From Launchpad or the macOS Dock, start LUNA.
2. Log in with your Universal Audio account information. LUNA opens, and shows the Create Session page.

When you are logged in, lists of your installed products and other account details appear in LUNA's Manage panel.

# Managing UAD Instruments and LUNA Extensions

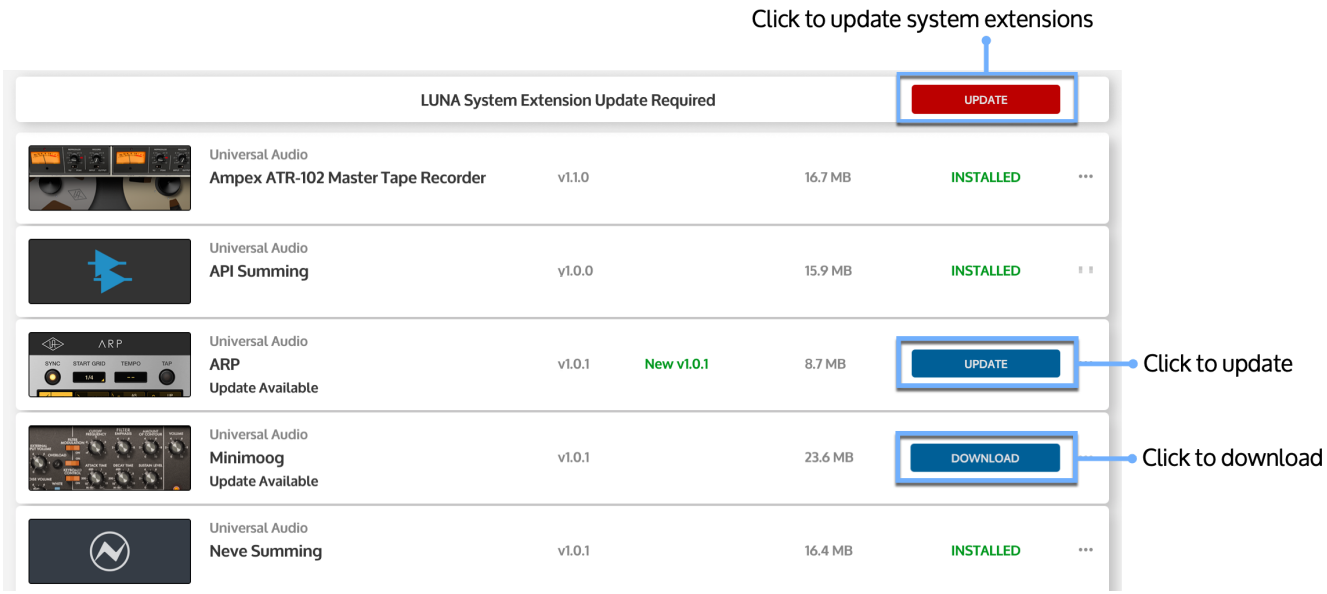
You can manage UAD Instruments and LUNA Extensions with the LUNA Sidebar. You can also manage LUNA Extensions and UAD instruments on the LUNA tab in UA Connect.




## TO DOWNLOAD AND INSTALL UAD INSTRUMENTS AND LUNA EXTENSIONS:

1. Open the LUNA Sidebar by clicking the three dots on the top left of the screen, then click Manage, or choose LUNA > Preferences from the app menu, and choose Manage.
2. If updates are available, a red dot appears to the right of the Manage button in the LUNA Sidebar. Click the Manage button to see the updates.
3. Click the red Update button to update LUNA System Extensions.
4. Click the Download button to download any available downloads.
5. Click the Update button to update any Instruments or Extensions that have more recent versions than what is installed.

LUNA installs and updates the Instruments and Extensions. You will see a notification as each Instrument or Extension is installed or updated.




## EXTENSION AND INSTRUMENT OPTIONS

Click the ••• options menu to the right of an Extension or Instrument to see the available options for that Extension or Instrument.

- More Info - Opens LUNA's Discover panel with more information about the Instrument or Extension.
- Move - Lets you choose a drive to which you can move Instrument content. Note that this drive must be an SSD, formatted with APFS. Sample content is moved to the additional drive, however the Instrument itself is stored on a local volume.
- Delete - Deletes the Instrument or Extension. Items can be downloaded again whenever you have an internet connection.
- Download Settings - Specifies the Volume on which local Extensions and Instruments are installed.

## TAPE LICENSES

LUNA includes a free license for the Oxide Tape Recorder LUNA Extension.

If you own the UAD Studer A800 plug-in, you will get a free license deposited for the Studer A800 Multichannel Tape Recorder Extension. If you own an Ampex ATR-102 license, you will get a free license deposited for the ATR-102 Master Tape Recorder Extension.

If you do not own the UAD Studer A800 or Ampex ATR-102 plug-ins, you can activate them as demos or purchase the LUNA Extensions. When you purchase the extensions, the UAD plug-ins are included. Go to the Manage page to activate a demo or purchase the Studer A800 or Ampex ATR-102 Extension.

## SUMMING LICENSING

LUNA Neve and API Summing Extensions are optional. You can activate a demo or purchase the Neve Summing or API Summing Extensions from within LUNA. Go to the Manage page to activate a demo or purchase Neve or API Summing.

### API VISION CONSOLE EMULATION LICENSING

API Vision Console Emulation Bundle is a separate license that includes API Vision Console Extensions and UAD plug-ins. Go to the Manage page to activate a demo or purchase API Vision Console.

### UAD INSTRUMENT LICENSING

LUNA includes the Shape UAD Instrument, which is authorized with your LUNA application authorization. All other UAD Instruments are optional. You can activate a demo or purchase UAD Instruments from within LUNA. Go to the Manage page to activate a demo or purchase a UAD Instrument.

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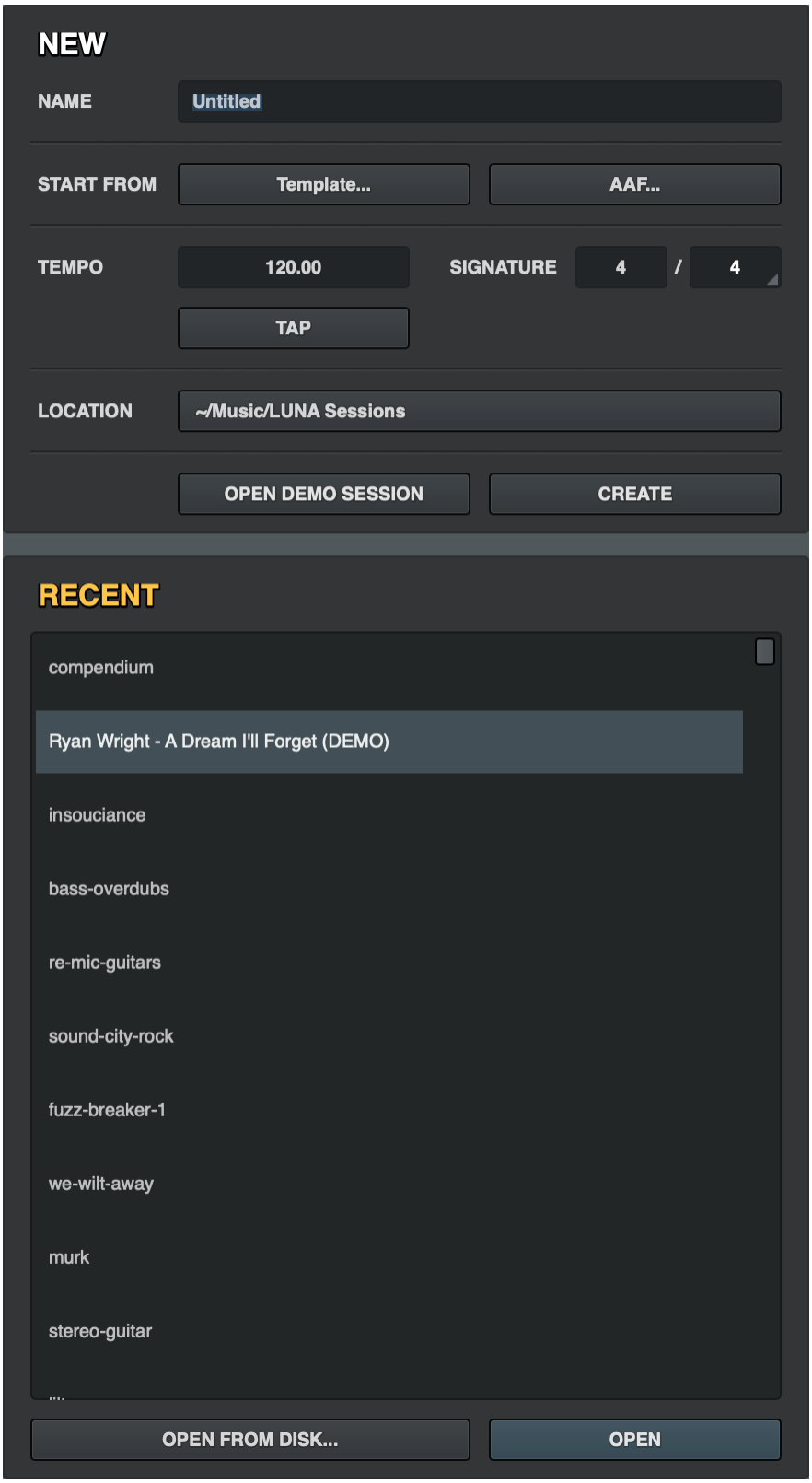
## Creating a LUNA Session

When you start LUNA, you see the Session panel.


NEW
NAME
Untitled
START FROM
Template...
AAF...
TEMPO
120.00
SIGNATURE
4
/
4
TAP
LOCATION
~/Music/LUNA Sessions
OPEN DEMO SESSION
CREATE
RECENT
compendium
Ryan Wright - A Dream I'll Forget (DEMO)
insouciance
bass-overdubs
re-mic-guitars
sound-city-rock
fuzz-breaker-1
we-wilt-away
murk
stereo-guitar
OPEN FROM DISK...
OPEN

## TO OPEN THE LUNA DEMO SESSION

The LUNA demo session shows some of the capabilities of LUNA's mix engine and the LUNA Extensions.

- Click the Open Demo Session button. The Demo Session opens.

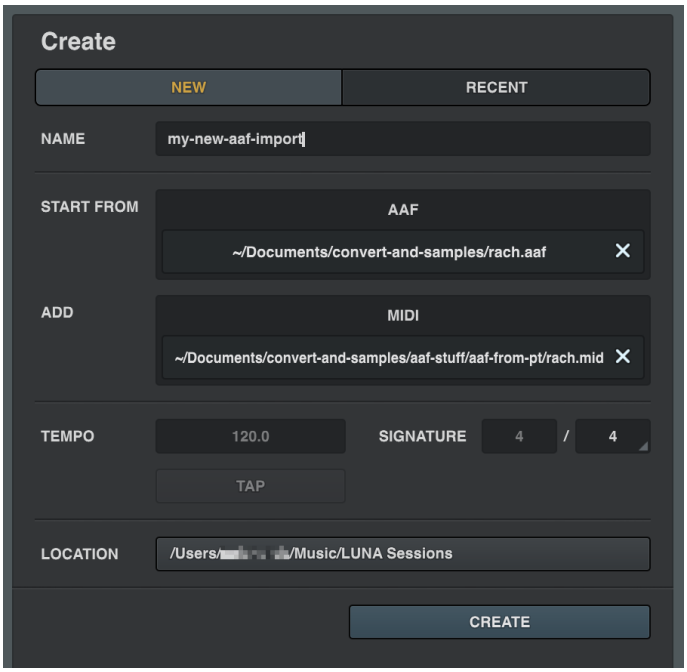
## TO CREATE A NEW EMPTY SESSION

1. In the New Session area, type a name for the session.
2. Specify a tempo and time signature for the session, or accept the defaults. Note that you can change the tempo and time signature after you create the session.
3. To find the approximate tempo, you can tap the Tap button in time four or more times.
4. Click the Location bar to open a dialog where you can select the location for the session, or accept the default location. By default, sessions are saved in ~/Music/LUNA Sessions.
5. When you have configured the new session settings, click Create.

To create a new session from the main LUNA window, choose File > New, or use the Command+N shortcut.

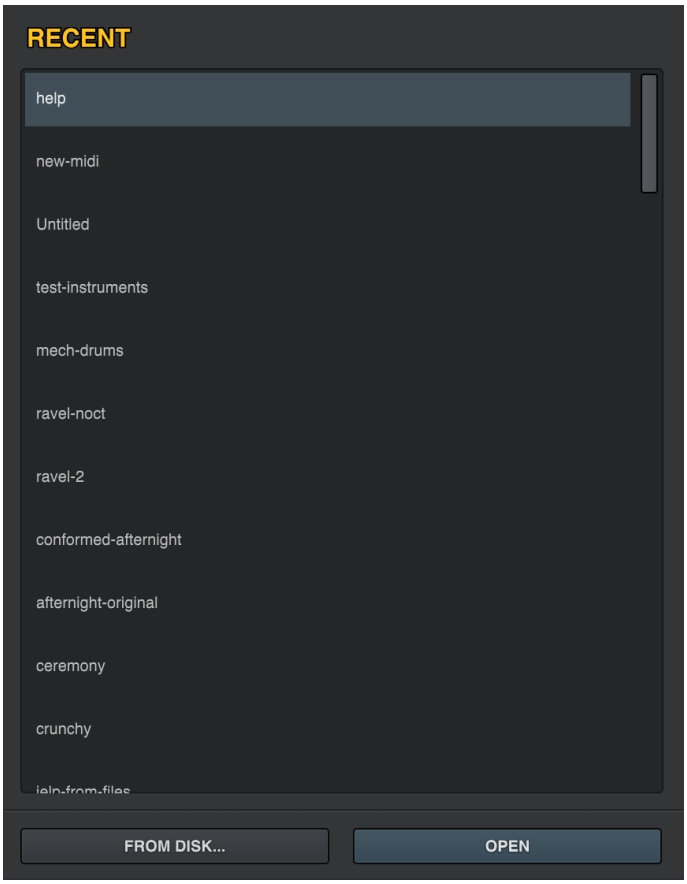
## TO CREATE A SESSION FROM AN AAF (ADVANCED AUTHORING FORMAT) FILE:

1. On the Create Session panel, type a name for the session.
2. Click the Start From AAF button.
3. From the dialog that opens, choose the AAF session to import.
4. Type a name for the session.
5. Specify a tempo for the session, or click the MIDI button, and choose a MIDI file to import.
6. Click the Location bar to open a dialog where you can select the location for the session, or accept the default location. By default, sessions are saved in ~/Music/LUNA Sessions.
7. When you have configured the new session settings, click Create.




## Opening a Session

When you start LUNA, the Session panel appears. Choose a file from the Recent list and click Open to open a recent existing session. To choose a session from the disk, click From Disk... and navigate to a session to open.




## Undo and Redo

You can undo and redo changes in an open session at any time, except during recording. You can even undo and redo changes after a session has been closed and reopened. LUNA supports up to 64 Undo or Redo actions within each Autosave interval period. To configure the Autosave interval, see “Configuring the Session Autosave interval.”

- To undo a change, use the menu item Edit > Undo, or press Command+Z.
- To redo a change, use the menu item Edit > Redo, or press Shift+Command+Z.

## Uninstalling LUNA and Resetting Preferences

### TO UNINSTALL LUNA, DELETE THE FOLLOWING FILES AND FOLDERS:

- /Applications/LUNA.app
- /Library/Application Support/Universal Audio/Plug-ins/*.lunacomponent

- /Library/Application Support/Universal Audio/Plug-Ins.json
- /Library/Application Support/Universal Audio/skippedplugins.txt
- ~/Library/Application Support/Universal Audio/workspace
- ~/Library/Preferences/com.uaudio.luna.plist
- ~/Library/Preferences/Universal Audio/LUNAprefs.json
- ~/Documents/Universal Audio/Presets/
  *This will delete presets inside LUNA. Do not delete this folder unless you are removing LUNA permanently.
- ~/Music/LUNA Sessions (This will delete all your LUNA sessions!!)

### TO RESET YOUR LUNA PREFERENCES, DELETE THESE FILES:

- ~/Library/Preferences/com.uaudio.luna.plist
- ~/Library/Preferences/Universal Audio/LUNAprefs.json
- ~/Library/Application Support/Universal Audio/workspace

# Using LUNA

LUNA is split into Mixer and Timeline views. At the top of the screen is the Control Bar, which you use in both views.

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## An overview of the Control Bar

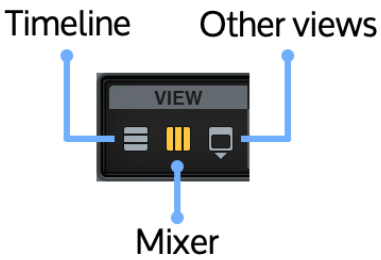
At the top of the LUNA screen is the Control Bar.

The Control Bar includes several sections that you can use to navigate and control your LUNA session.

### SETTING THE LUNA VIEW OPTIONS

LUNA provides two main windows: Mixer and Timeline.

Choose the view by clicking in the selector at the far left of the control bar.




Click on the Timeline view icon to switch to Timeline view. Click on the Mixer view icon to switch to Mixer view.

To switch between LUNA views, use the key shortcut Command+= or choose View > Toggle Timeline/Mixer from the LUNA menus.

To open another LUNA window so you can view the Mixer and Timeline at the same time, use the key shortcut Shift+Command+= or choose Window > New Alternate Window from the LUNA menus.

Click the Other views icon to show and hide other window views.

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## Understanding Mixer view

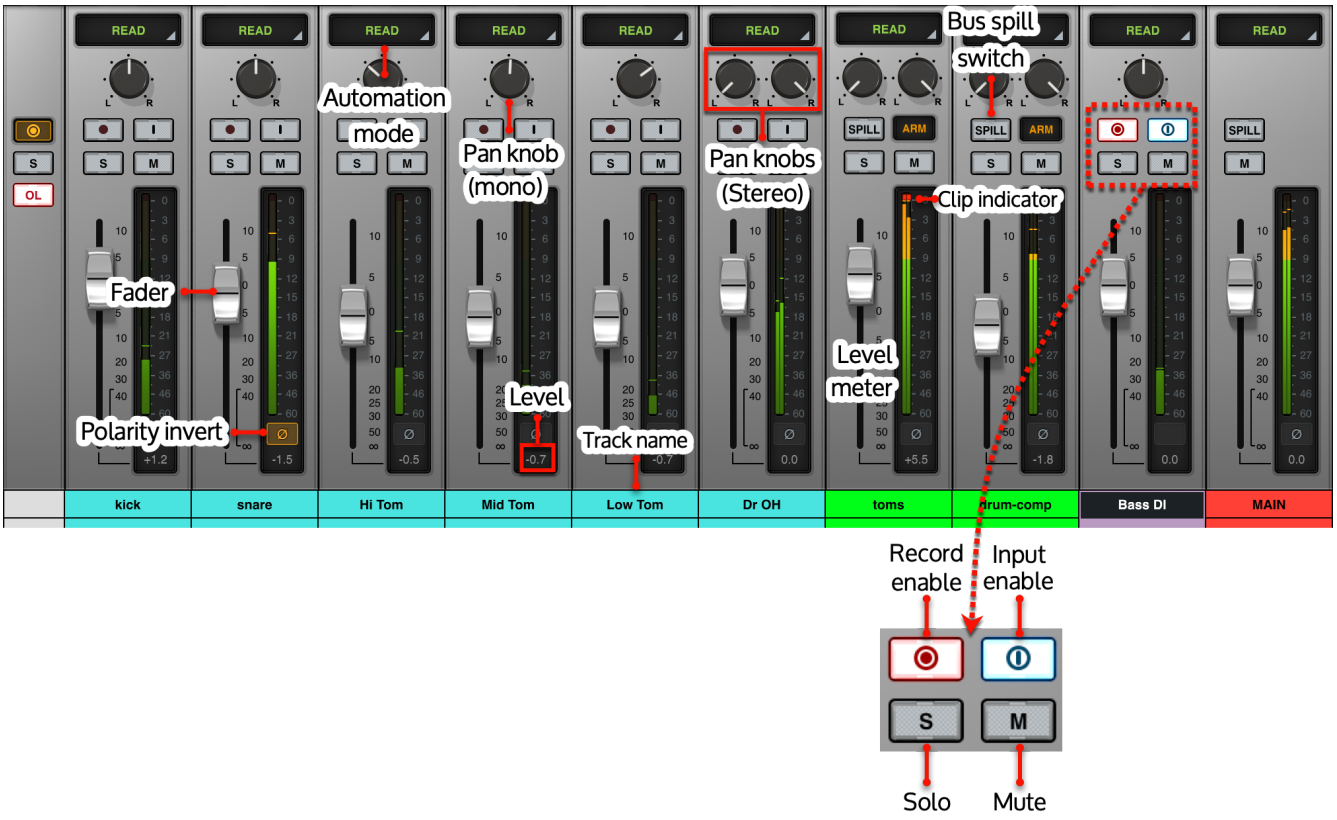
Mixer view allows you to view the track channel strips for a session, to set up inputs for tracks to record, and to mix a session. Each track in the Mixer consists of two sections: the Mixer rows and the Fader section.

## MIXER ROWS

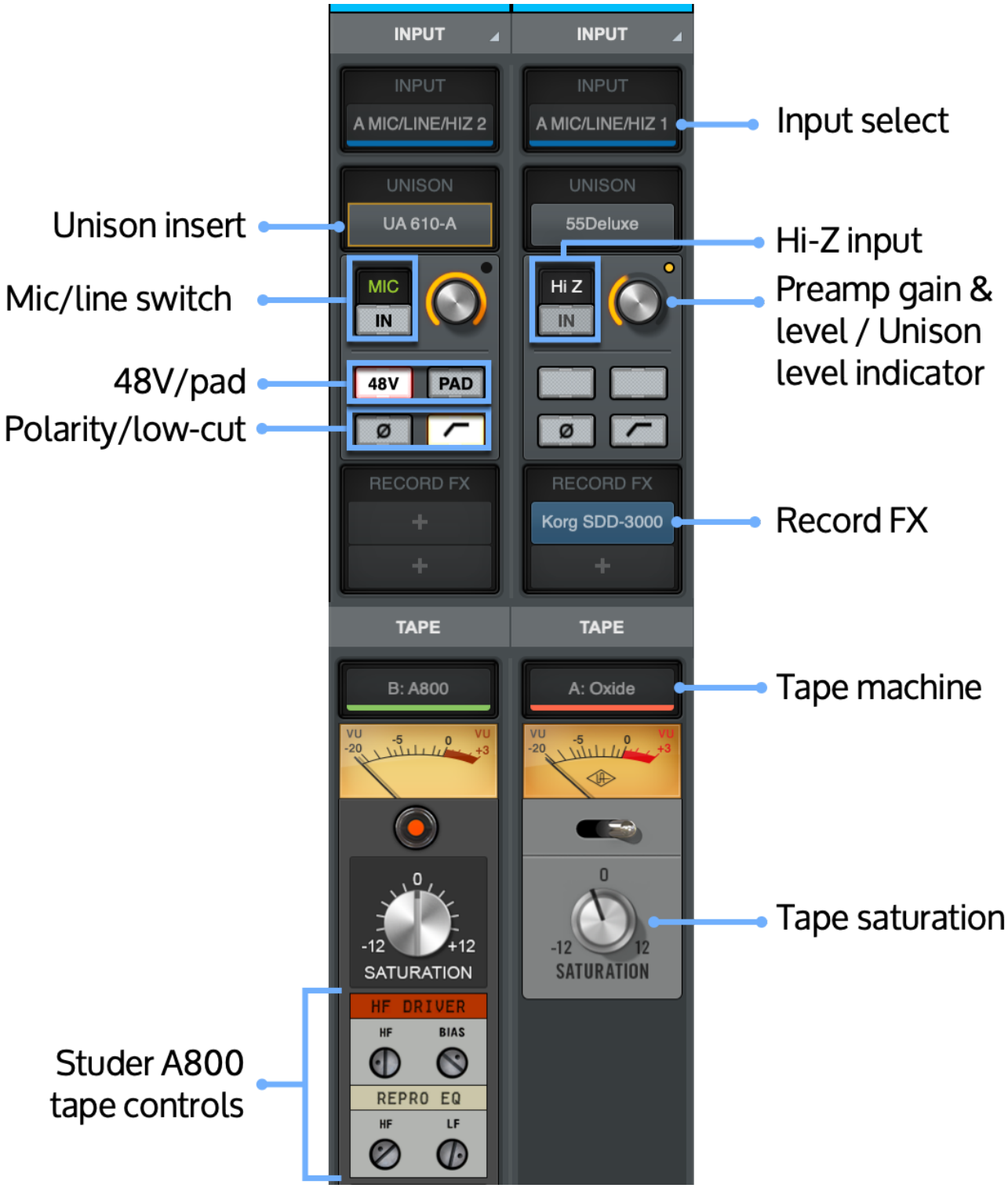
In the Mixer rows, you assign audio and MIDI inputs, set trim and polarity, configure plug-ins, and assign sends, cues, buses, bus returns, and outputs. You also configure plug-ins, Tape processing, API Vision Console, and Summing in the Mixer.

## FADER SECTION

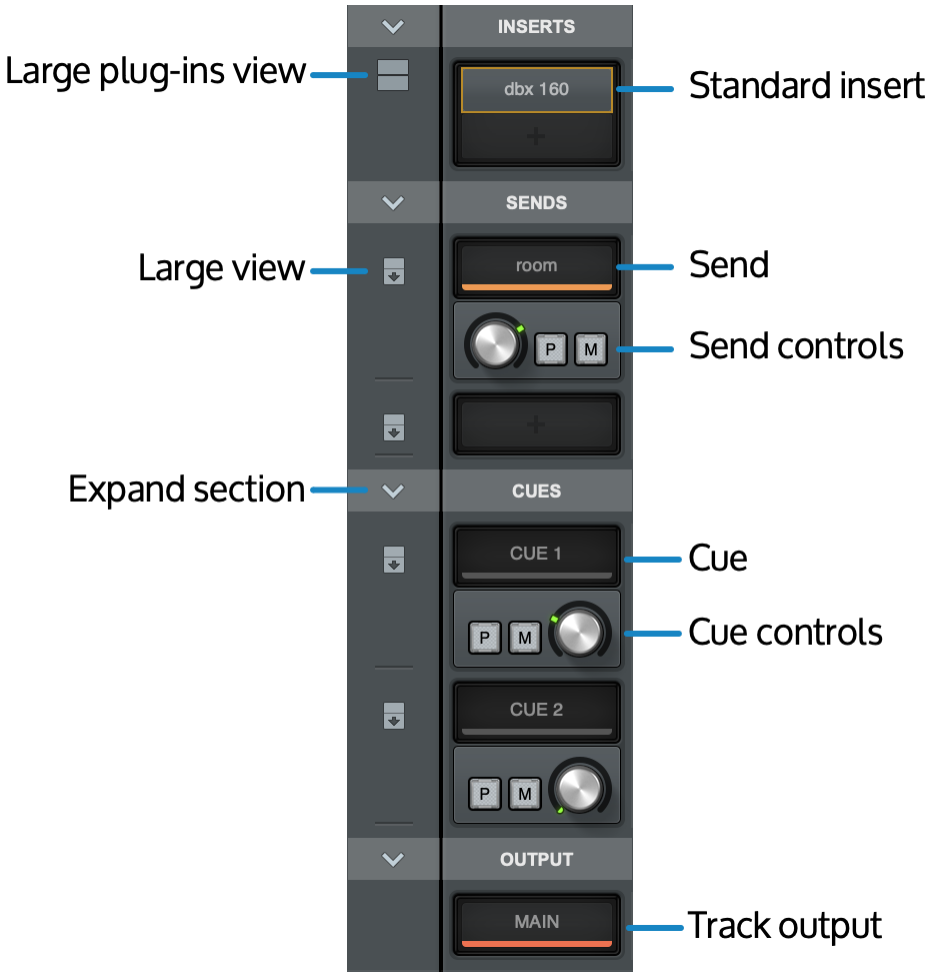
In the Fader section, you adjust audio, instrument, and bus track levels and panning, enable tracks for recording or input monitoring, solo and mute tracks, enable and record automation, invert track polarity if necessary, and monitor the levels of tracks. When a track input is enabled, you can adjust the level with the gain knob, and see the level, or the state of a Unison control, with the visual ring around the gain knob.


READ
Automation mode
Pan knob (mono)
Pan knobs (Stereo)
Bus spill switch
Clip indicator
Fader
Polarity invert
Level
Track name
Level meter
SPILL
ARM
S
M
OL
kick
snare
Hi Tom
Mid Tom
Low Tom
Dr OH
toms
drum-comp
Bass DI
MAIN


Record enable
Input enable
S
M
Solo
Mute




**1 Input and tape controls**



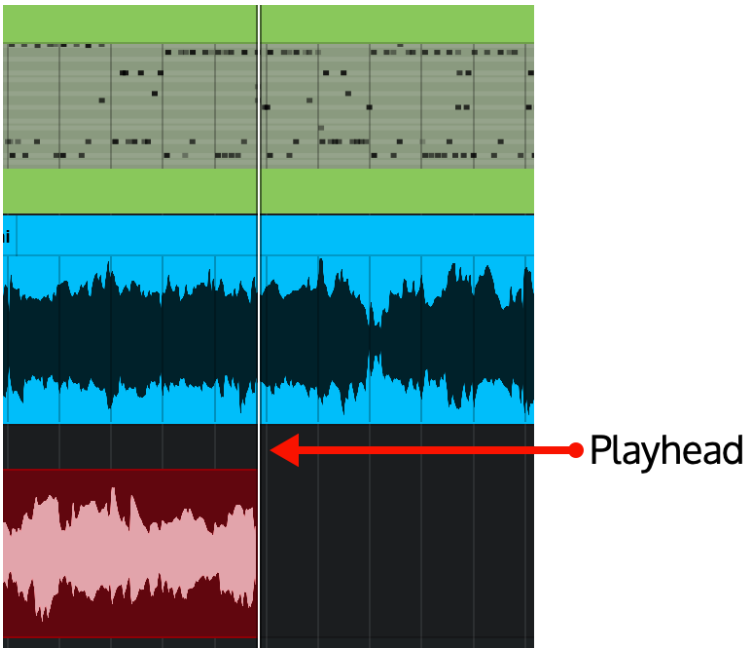

**2 Plug-ins, sends, cues, and output**

## Understanding Timeline view

Timeline view shows you a visual layout of your audio and MIDI tracks. On the Timeline, you can record, edit, and arrange audio and MIDI clips. In the Timeline you can also view the Focus channel for a selected track, which allows you to access the functions of the Mixer window on that track.

## THE PLAYHEAD

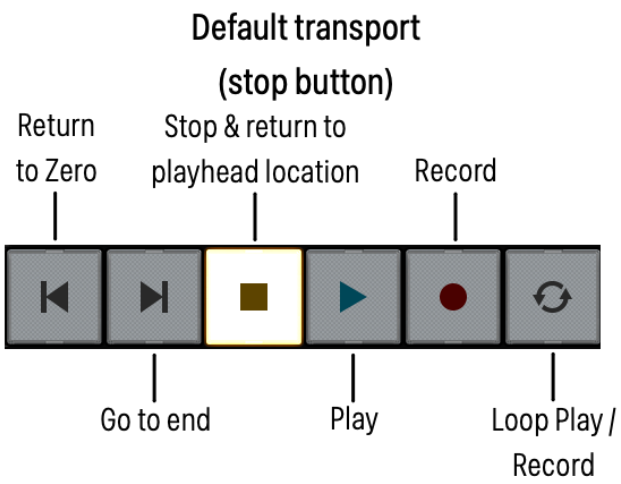
In the Timeline, the tall vertical cursor that indicates where LUNA is currently playing from and recording to is called the *playhead*. You use the playhead to set where to play and record, make edits, add markers, tempo changes, and time signature changes, and make selections.

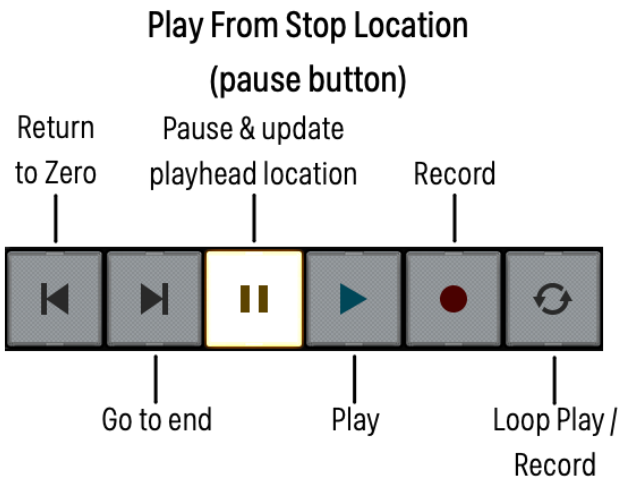



## Using the transport controls

Use the transport controls to play, record, and stop audio, and toggle loop record and playback.

There are two Transport modes. In the default mode, the transport has a stop button, and pressing Stop or the Spacebar returns to the last playhead start location. When the Play From Stop Location option is enabled, the transport's stop button becomes a pause button, and pressing Pause or the Spacebar stops the playhead at the current playback position. When you press play or the Spacebar again, playback continues from the current position.



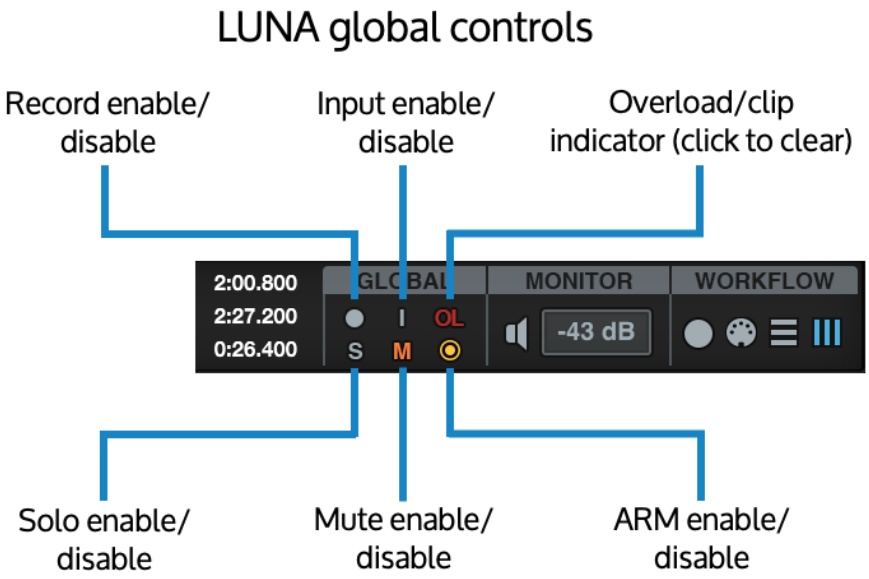
- To play audio, click Play or press the Spacebar.
- To stop playback, click Stop or press the Spacebar.
- To toggle Play From Stop Location, select Transport > Play From Stop Location.
- To stop in the alternate mode from the play mode you are currently using (for example, pausing when Play From Stop Location is not enabled), press Shift+Spacebar.
- To Record audio, click Record, or press Command+Spacebar. You can also click Record while playback is occurring, to begin recording on any record-enabled tracks. If no tracks are record-enabled, recording begins on any selected tracks.
  **Note:** By default, the key command to start recording, Command+Spacebar, is mapped to the macOS Spotlight search feature. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Spotlight > Keyboard Shortcuts uncheck the key commands, or map them to different key commands. Refer to your macOS documentation for more information.
- When LUNA is in Loop Playback mode, the current selection loops continually (depending on how you make the selection and the Link Edit/Play Selections setting). See “Loop Playback and Recording” for more information. When LUNA is in Loop Record mode, LUNA records multiple “takes” of audio or MIDI data on record-enabled tracks, until you stop playback or toggle out of Record.
- To return to the start of the session, click Return to zero or press Return.
- To move to the end of the session, click Go to end.

# Using global controls

LUNA provides global controls for record and input enable, clearing clip overload (OL) indicators, enabling and disabling mutes and solos, and enabling and disabling ARM mode. Global controls allow you to switch in and out of modes and clear clips globally.

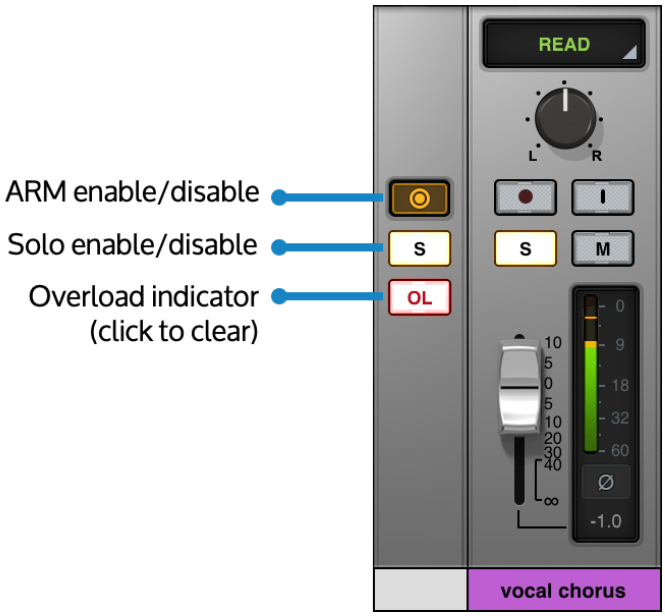
## GLOBAL CONTROLS IN BOTH VIEWS

LUNA global controls are located at the top of the control bar in both mixer and timeline views.



## GLOBAL CONTROLS IN THE MIXER FADER BANK

A subset of global controls for enabling and disabling ARM mode, enabling and disabling solo, and clearing clip overload (OL) indicators appear to the left of the track faders in the mixer.




Global controls explained

The following global controls are available. The global controls in the mixer fader bank have the same functions as the global controls at the top of the mixer and timeline view.

- **Record enable/disable** — Lit when any tracks are record enabled. Click this to toggle record enable (one or more tracks must be record enabled first for this to function). Note that if no tracks are record-enabled, recording begins on any selected tracks when you press Record.
- **Input enable/disable** — Lit when any tracks are input enabled. Click this to toggle input enable (one or more tracks must be input enabled first for this to function).
- **Clip overload (OL) indicator** — Indicates clipping that is occurring somewhere in the session. This indicator lights when clipping is occurring visually (on a track in the session), and also lights when clipping occurs out of immediate visibility (for example, on an input, output, cue or send). Click the indicator to clear clips.
  **Note**: The Clip Hold preference, if set in LUNA preferences, automatically clears clips after a set duration.
- **Solo enable/disable** — Lit when one or more tracks are soloed. Click this to toggle soloed tracks (one or more tracks must be soloed first for this to function).
- **Mute enable/disable** — Lit when one or more tracks are muted. Click this to toggle muted tracks (one or more tracks must be muted first for this to function).
- **ARM enable/disable** — Lit when ARM mode is enabled. Click to toggle ARM mode globally.

# Using tempo, click, and counter controls

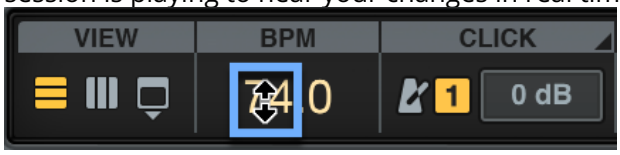
The Tempo, click and counter controls allow you to set and change the session tempo, listen to a click and set the click volume, set a count in before recording starts, see the current playhead location, and navigate to other locations quickly.

## SETTING A TEMPO

When you change the session tempo, elements in the LUNA session that are tempo-based adjust to the new tempo. Instrument tracks are adjusted, and audio clips that are set to Track Follows Tempo mode are stretched or compressed to fit the new tempo. Audio clips that are time-based are not stretched or compressed, but LUNA keeps the start of each clip at the same relative point in the Timeline.

To set the overall tempo of the session:

- Hover over the Tempo control. The cursor changes to a double arrow. Click and drag up or down to adjust the tempo by 1 BPM increments. To adjust by .1 BPM increments, hold Shift while you click and drag. Release the cursor to set the Tempo. You can click and drag to change tempo while the session is playing to hear your changes in real time.



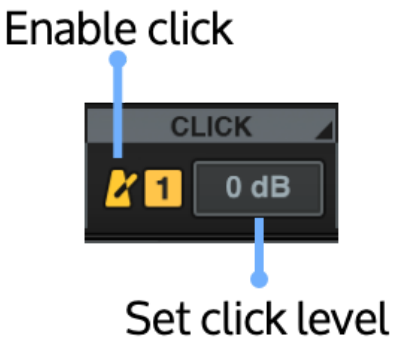

- To type the new tempo, click to select the Tempo in the control bar, type a new tempo, and press Return.

To set the tempo by tapping, add tempo changes, make tempo changes over time, and automate tempo changes, see “Setting the tempo and making tempo changes.”

## LISTENING TO A CLICK IN PLAYBACK AND RECORD

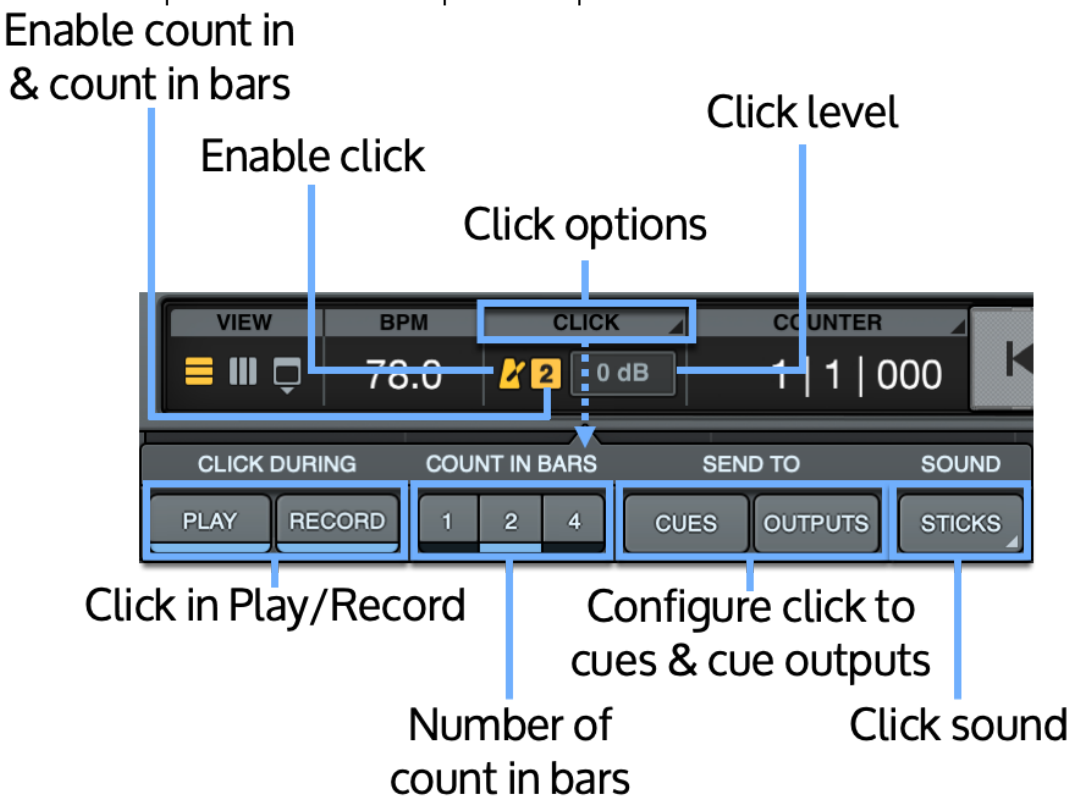
To listen to a click during playback or record:

1. Click on the metronome icon to enable the click, or press the K key, or 7 on the Numeric Keypad.
2. Set the click level by dragging the volume up and down, or click and type a dB value for the volume, then press Return.




To choose to hear the click during playback or record:

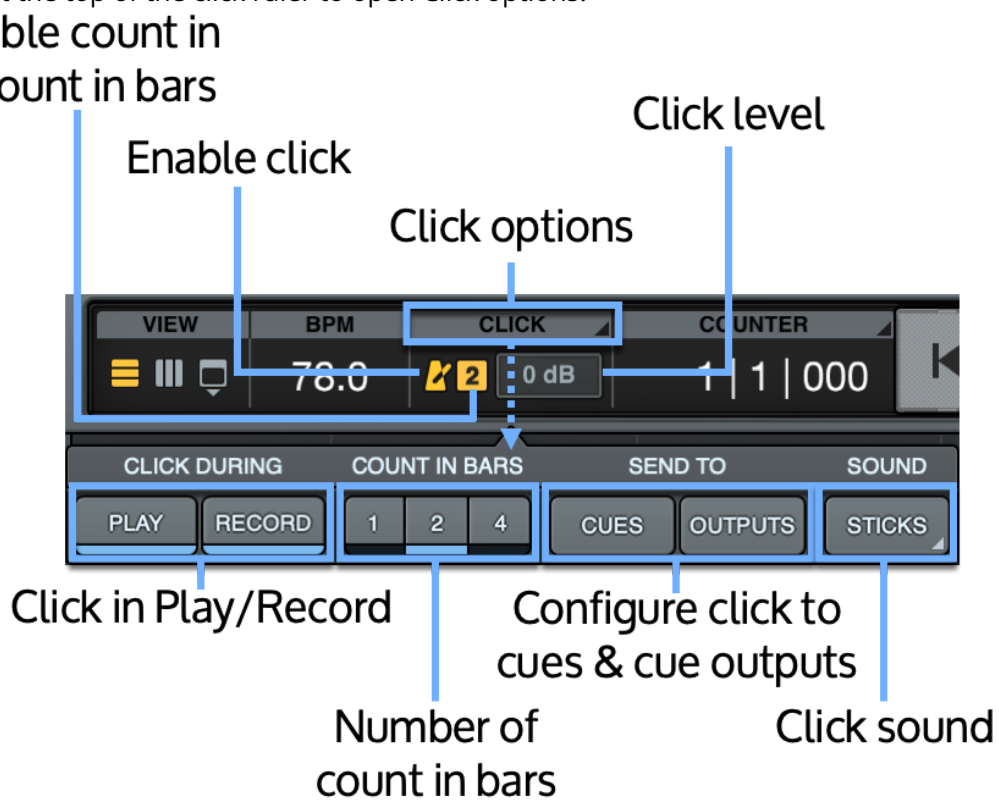
1. Click at the top of the click ruler to open Click options.



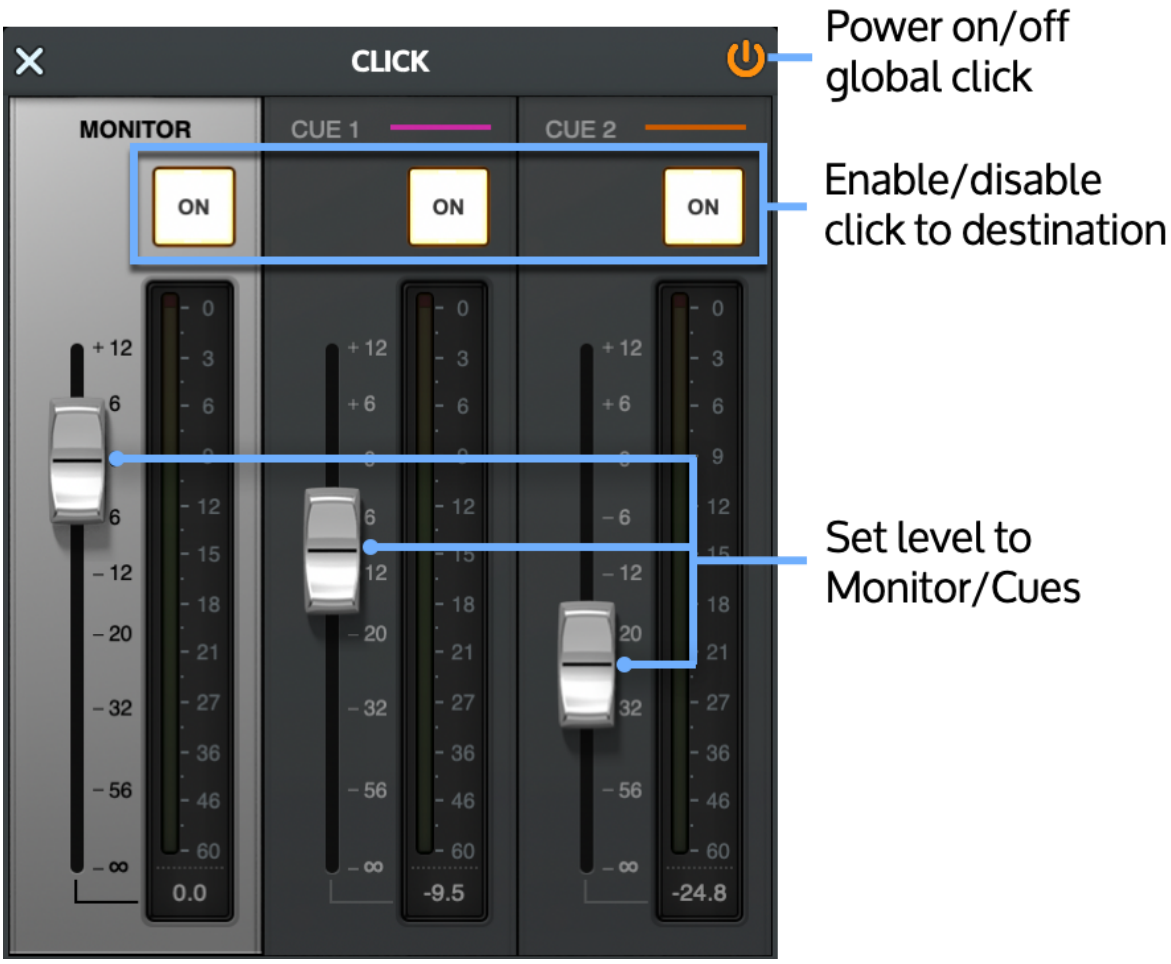

2. Under Click During, select whether to enable the click during Play, Record, or both.

To send the click to a cue mix:

1. Click at the top of the click ruler to open Click options.



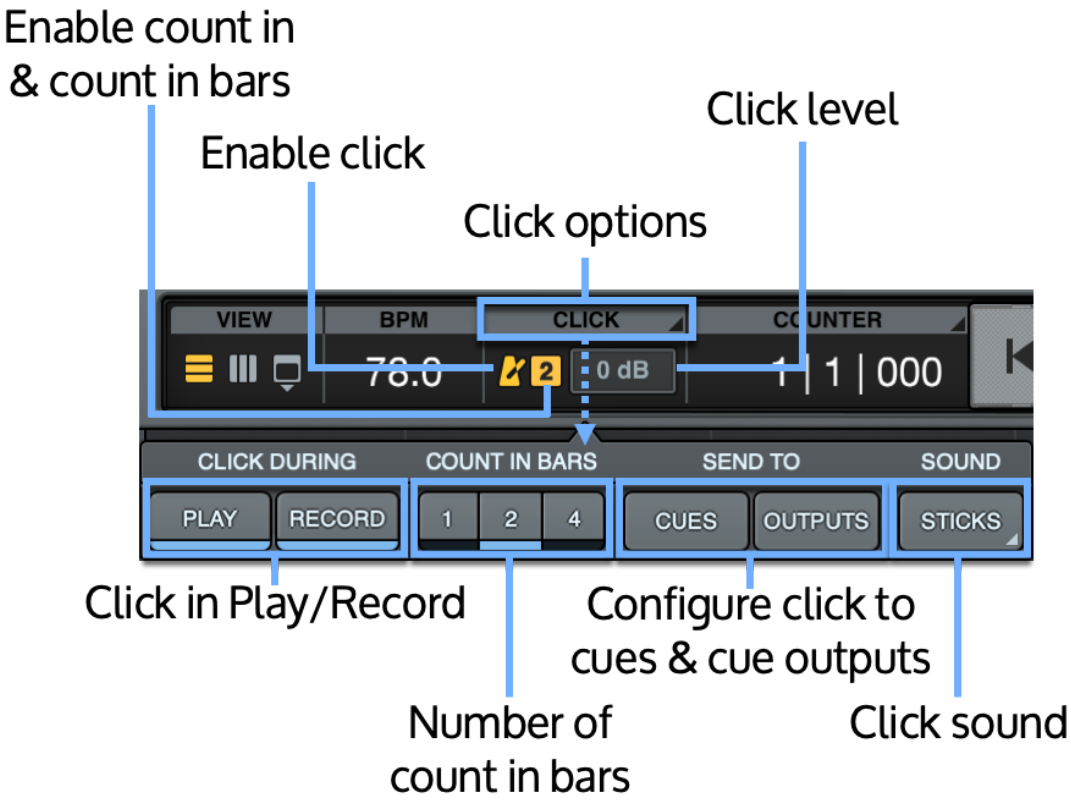

2. Under Send To, click the Outputs button to see the Cue Outputs popover. Configure cue sends as necessary.
3. Under Send To, click the Cues button to configure the click send levels.
4. Enable or disable the click globally with the Power button in the popover. Assign the click to the cues using the On buttons and the level faders.




5. Click the Cues and Outputs buttons again or press Esc to close the Click Outputs and Click popovers.

To set a click sound:

1. Click at the top of the click ruler to open Click options.




2. Under Sound, click the sound button to see the available click sounds.

3. Select a click sound.

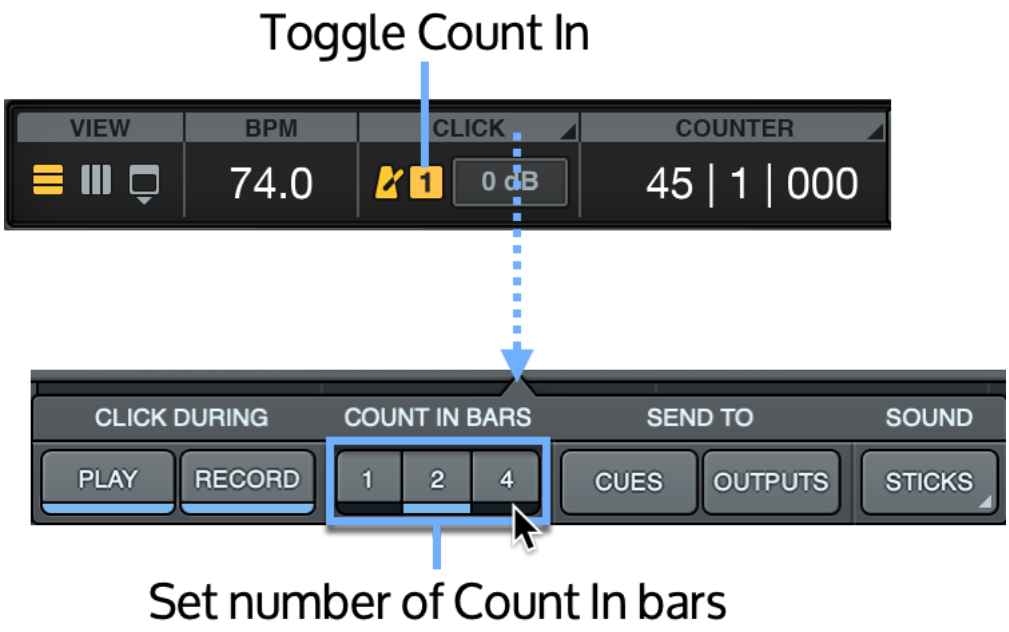
**Tip:** Press Play and enable the click to audition sounds in the list.

Using Count In

You can use Count In to play 1, 2, or 4 bars of clicks before recording starts. There is no session playback during Count In. Count In bars only play when the Record button is enabled in the transport.

To enable or disable Count In:

1. Click the Count In icon (a 1, 2, or 4 next to the metronome), or press Shift+K or 8 on the Numeric Keypad to toggle Count In on or off
2. To set the number of bars of Count In, click at the top of the click ruler to open Click options. Under Count In Bars, click the number of bars of Count In.



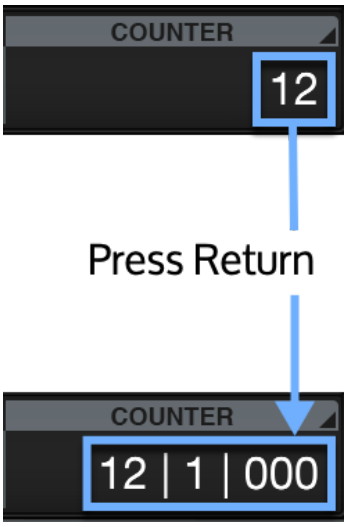

## SETTING THE COUNTER UNITS

You can set the counter to show bars and beats, minutes and seconds, or samples. Note that the session time display also follows the units you set.

1. Click the word Counter in the Control Bar. A popover menu appears.
2. Select bars and beats, minutes and seconds, or samples.

### NAVIGATING WITH THE COUNTER

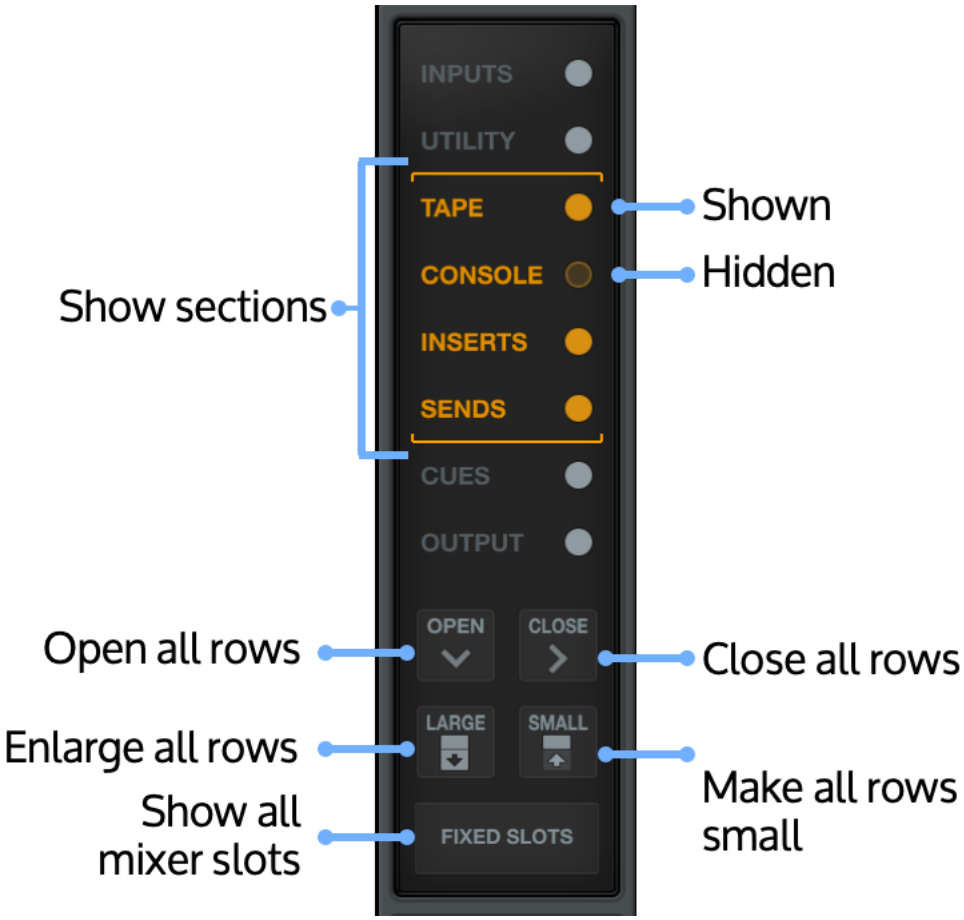
You can navigate by entering a time value in the counter. For example, you can enter 12 to go to 12|1|00 in Bars and Beats mode, or you can enter 10 in Minutes and Seconds mode to go to :10 in the session.




## Using the Mixer Navigation panel

In Mixer view, select View > Section > Mixer Navigation to show the Mixer Navigation panel. Mixer Navigation enables you to navigate between sections of the mixer, expand or close mixer rows, switch all rows between small and large views, and show or hide all slots.

By default, all mixer rows are open, and only slots that are in use plus one empty slot row are displayed.




## TO USE THE MIXER NAVIGATION PANEL:

- Click a section in the Mixer Navigation area to scroll that section to the top of the visible area. Mixer rows that are visible are illuminated in the Mixer Navigation section.
- To hide a row, deselect the button next to the row name.
- To show only one row, Command+Click the row name.
- To expand all mixer rows, click Open. To Close all mixer rows, click Close.
- To show large view icons and elements in all mixer rows, click Large. To show small view icons and elements, click Small.
- To show all possible mixer slots for any open rows, click Fixed Slots. Click Fixed slots again to only show the slots that are in use.

## USING THE FOCUS CHANNEL NAVIGATION PANEL

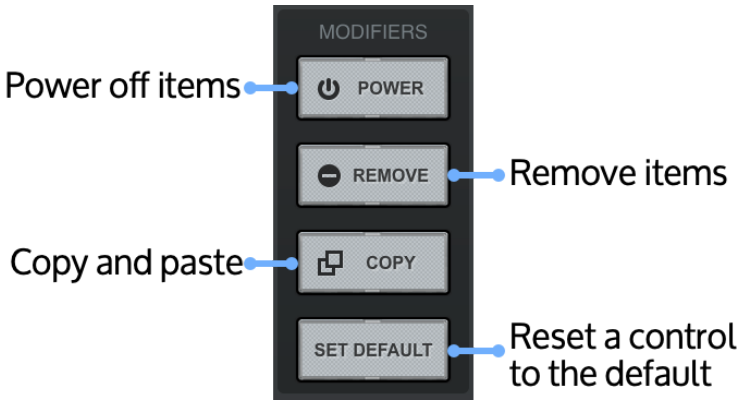
Just like the mixer, the focus channel can be configured to chow only certain items. Focus channel navigation enables you to navigate between sections of the focus channel, expand or close focus channel rows, switch all rows between small and large views, and show or hide all slots.

By default, all focus channel rows are open, and only slots that are in use plus one empty slot row are displayed.

To use the focus channel navigation panel:

- Right-click or Control-click at the top of the focus channel and select Navigation...
  The focus channel Navigation panel opens as a popover.
- Click a section in the focus channel navigation area to scroll that section to the top of the visible area. Focus Channel rows that are visible are illuminated in the focus channel navigation section.
- To hide a row, deselect the button next to the row name.
- To show only one row, Command+Click the row name.
- To expand all focus channel rows, click Open. To Close all mixer rows, click Close.
- To show large view icons and elements in all focus channel rows, click Large. To show small view icons and elements, click Small.
- To show all possible focus channel slots for any open rows, click Fixed Slots. Click Fixed slots again to only show the slots that are in use.

# Using Mixer modifiers




Mixer modifiers add several controls to the LUNA mixer that make common workflow tasks much faster and easier to accomplish. With mixer modifiers, you can easily copy and paste inserts or extensions, remove inserts or extensions, and power extensions or inserts on and off. When you click a mixer modifier button, the control latches.

## MODIFIERS TIMEOUT

When an option is latched, it is automatically unlatched (times out) after the Modifiers Timeout period to prevent inadvertent modifications.

The Modifiers Timeout is a preference set in the Settings > Options panel. The default Modifiers Timeout period is six seconds/flashes.

To power off items in the Mixer:

1. In the Mixer view, click the Power button on the Modifiers panel. Power modifier icons appear on all items in the Mixer that can be powered off, including sends, cues, Tape and Neve Summing Extensions, UAD Instruments, and plug-ins.
2. Click individual power modifiers, or swipe horizontally across multiple modifiers, to toggle power on or off for items in the Mixer.

To remove items in the Mixer:

1. In the Mixer view, click the Remove button on the Modifiers panel. Remove modifier icons appear on all items that can be removed in the Mixer, including inputs, sends, UAD Instruments, Tape and Neve Summing LUNA Extensions, and plug-ins.
2. Click individual remove modifiers, or swipe horizontally across multiple modifiers, to remove items from the Mixer.

To copy and paste items in the Mixer:

1. In  the Mixer view, click the Copy button on the Modifiers panel, or press Command+C. Copy modifier icons appear on all items that can be copied and pasted in the Mixer, including inputs, outputs, sends, cues, UAD Instruments, Tape and Neve Summing LUNA Extensions, and plug-ins.
2. Click the individual copy modifier for the item you want to copy. After a modifier is copied, the copy modifier turns to a red Paste modifier. Destinations to which the copied item can be pasted are highlighted.
3. Click individual paste modifiers, or swipe across multiple modifiers to paste multiple items.

To set a control to the default:

1. In the Mixer view, click the Set Default button on the Modifiers panel. The Set Default button blinks.
2. Click any control to return the control to its default value.

For example, the headroom and trim controls on the Neve Summing Extension, or the fader for a track can be returned to their default settings by clicking with the Set Default modifier latched. Tape Saturation knobs and controls on the Studer A800 Extension tape deck can also be returned to default settings by clicking with the Set Default modifier enabled.

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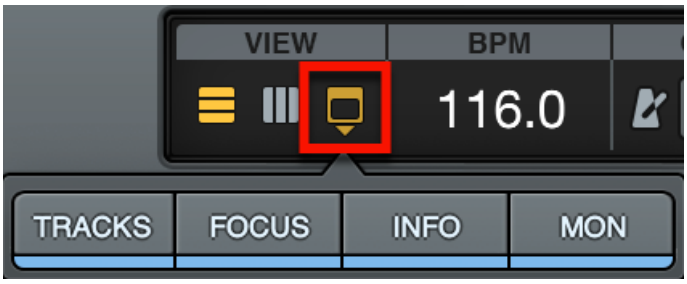
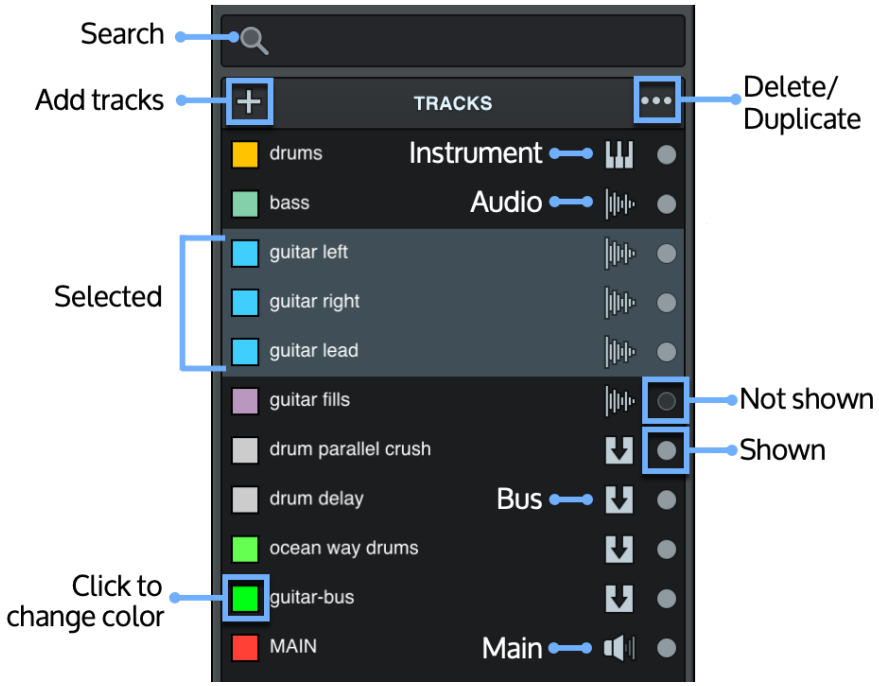
# Using Focus Browsers

From the Other Views popover, click Tracks, then Focus to show the Focus Browser.




You can also show the Focus Browser from the LUNA menus by choosing View > Section > Browser.

In its default view, the Focus Browser shows a list of tracks in a session.




You can create, duplicate, and delete tracks, show and hide tracks, change a track's color or name, select tracks, and search for tracks. Each track in the track browser includes a color square, the track name, a track type icon, and a show/hide circle. All changes are reflected in Timeline and Mixer view.

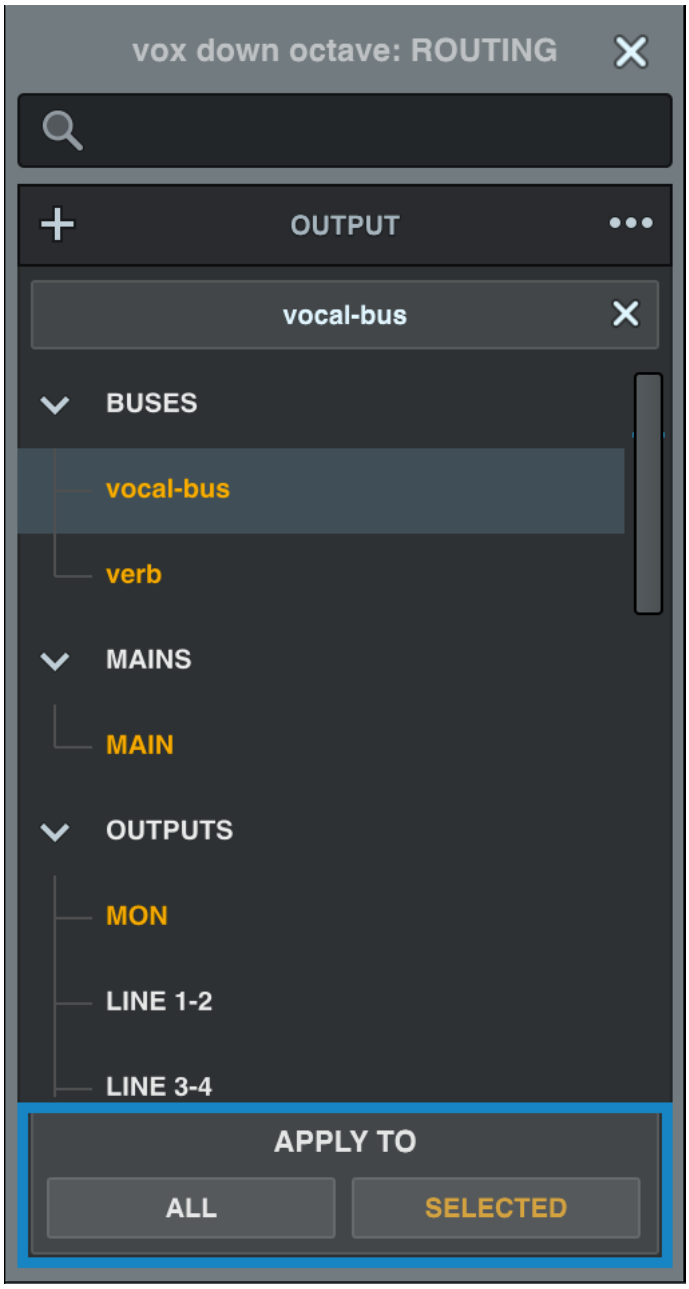
- To search for a track by name, click in the search bar and begin typing. To focus a track that you have located with Search, press Return. Use the arrow keys to cycle through tracks. When you are using the Focus Browser to choose other settings or options (for example, when inserting a plug-in or choosing a plug-in preset), you can cycle through and audition changes with the arrow keys.
- To show or hide a track, click the circle to the right of the track type icon. Note that hiding a track does not mute it.
- To rename a track, double-click the track name, type the new name, and press Return. You can type an optional comment in the Comment field.
- To change the color of a track, click the color square to the left of the track name, choose a color, and click Done. You can leave the color palette open to quickly recolor additional tracks.
- To select a track, click the track row. To select multiple contiguous tracks, Shift+Click the first and last track you want to select. To select multiple discontiguous tracks, Command+Click the tracks. To select all tracks, Option+Click a track.

- To reorder tracks, drag and drop the tracks. The track order is mirrored between Mixer and Timeline views.
- Right-click or Control-click to open the context menu and delete or duplicate a selected track or tracks. Select Duplicate to duplicate the track or tracks with content (plug-ins, audio clips, MIDI clips, send and routing assignments, and track versions). Select Duplicate Without Content to duplicate the track or tracks without content (without audio clips, MIDI clips, or track versions).
  **Note:** When you duplicate a bus track with content, the send routing to the bus is copied. To duplicate a bus without the send routing, use Duplicate Without Content.
- When you make a selection on any track, you can switch that selection to any other track by clicking the track in the track browser. To extend the selection to multiple contiguous tracks, Shift+Click the first and last track you want to select. To extend the selection to multiple discontiguous tracks, Command+Click the tracks. To extend the selection to all tracks, Option+Click a track.

Focus Browsers appear to the left of the screen so you can select and work with:

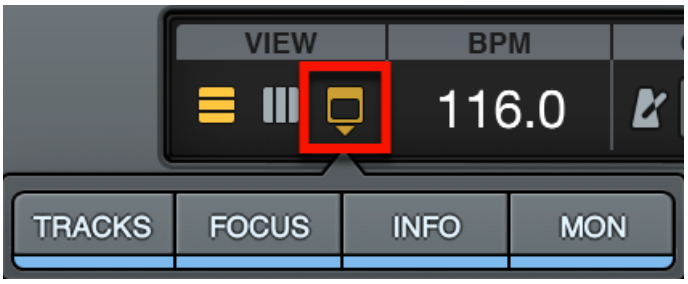
- Inputs
- Utility row items
- Tracks
- Audio and instrument track SHOW options
- Instruments
- Insert plug-ins
- API Vision Console LUNA Extension
- Plug-in presets
- Tape machine emulations
- Sends
- Cues
- Outputs

Some Focus Browsers allow more choices. For example, when you click a Send on a track, the browser allows you the option to apply the choices to the selected track or all tracks.




## Using the Focus Channel

From the Other Views popover, click Focus to show the Focus Channel.



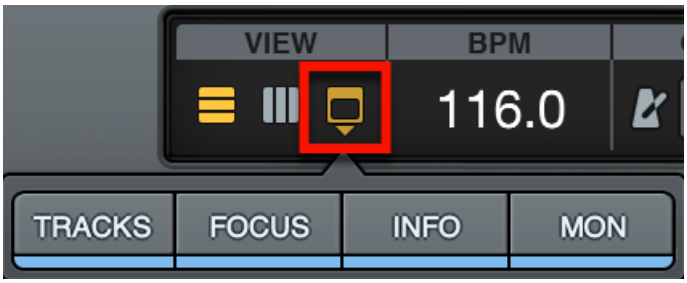

You can also show the Focus Chanel from the LUNA menus by choosing View > Section > Focus Channel.

The Focus Channel allows you to use a channel's Mixer channel strip without leaving Timeline view. The selected track, or the first selected track in a group selection, is shown in the Focus channel, when the Focus Channel is enabled.

## Using other views

Click the Other views icon to show and hide the other views in the Timeline and Mixer. Besides the Focus Browser and Focus Channel, other views include:

- System info (Info)
- The monitor section (Mon)



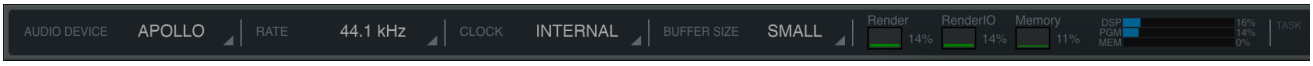

## VIEWING SYSTEM INFO

Click Info to show System Info at the bottom of the LUNA window. You can show System Info from the LUNA menus by choosing View > Section > Info.

System Info shows the following:

- Audio Device (Apollo or Core Audio). Note that you can choose the audio device from this menu
- Current hardware sample rate
- Clock source
- Buffer size (32–2048 samples). Note that you can choose the buffer size from this menu
- Render (the amount of CPU used for all native processing)
- Render IO (the amount of CPU used by plug-ins on Instrument tracks in ARM mode)
- Memory (the amount of memory used by LUNA)
- Task (when the system is importing audio, opening a session, converting bit rates, calculating overviews, or other tasks)

The system info section is displayed at the bottom of the LUNA window.



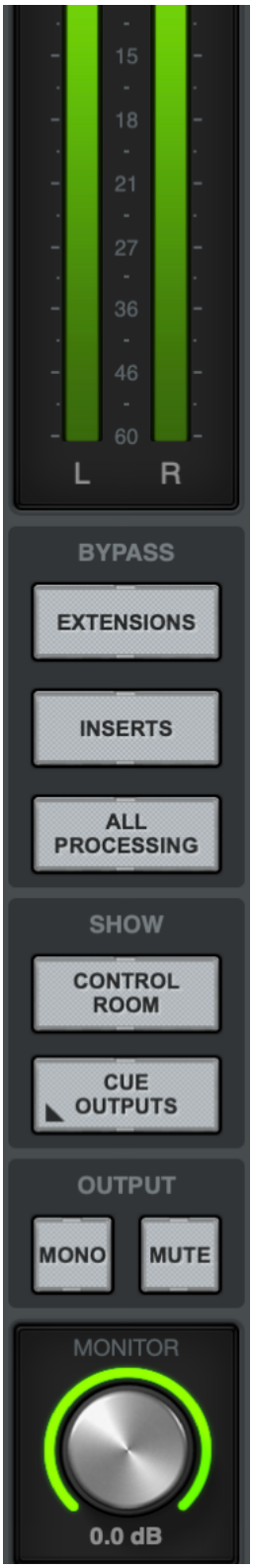

## VIEWING THE MONITOR SECTION

Click Mon to show the Monitor strip at the right of the LUNA window. You can show the Monitor strip from the LUNA menus by choosing View > Section > Monitor. The Monitor strip shows the audio meters for the session, and allows you to configure control room settings, cues, ALT speakers, and to set the level or mute, or send a mono mix to the Monitor outputs.

The monitor section also allows you to easily bypass inserts, Extensions, or all processing.

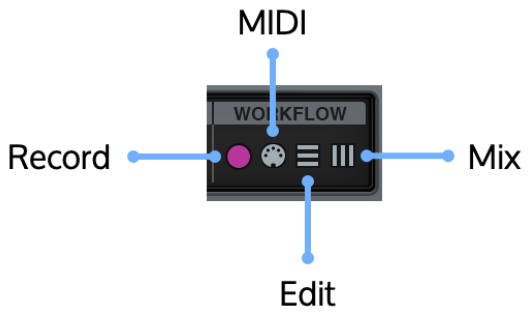
**Note**: Some Monitor features are available only in Apollo mode.

See “Using Monitor, Control Room, and Talkback” for more information.

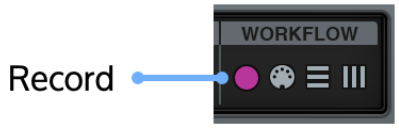

15
18
21
27
36
46
60
L
R
BYPASS
EXTENSIONS
INSERTS
ALL PROCESSING
SHOW
CONTROL ROOM
CUE OUTPUTS
OUTPUT
MONO
MUTE
MONITOR
0.0 dB

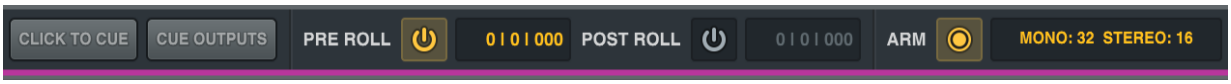
# Using workflows

Workflows provide common editing, arranging, and navigation commands on a toolbar that you can open under the main LUNA control bar.




## THE RECORD WORKFLOW




Click the Record workflow icon to enable the Record workflow. The Record Workflow allows you to use the following commands:

| Command | Description |
|---|---|
| Click to Cue | Enables the Click to the cue mix buses, and allows you to set click volumes for each individual cue mix. |
| Cue Outputs | Shows the Cue Outputs configuration. |
| Pre Roll | Click the power button to enable pre-roll. Pre-roll specifies an amount of time that the transport plays before LUNA plays from the playhead or your selection. Material in the session before the playhead or selection will play during pre-roll. You can set a time value when pre-roll is enabled; for example, a value of 2 sets two bars of pre-roll.<br>**Note:** Pre-roll only plays the first time the transport starts in loop playback/record mode.<br>You can also set pre-roll by Option-clicking to the left of the playhead or your selection in the Timeline. |

| | |
|---|---|
| Post Roll | Click the power button to enable post-roll (an amount of time that the transport plays after LUNA reaches the end of your selection). Material in the session after the selection will play during post-roll. You can set a time value when enabled; for example, a value of 2 sets two bars of post-roll.<br>**Note:** Post-roll only plays when there is a selection, and loop playback/record is not enabled.<br>You can also set post-roll by Option-clicking to the right of the selection in the Timeline. |
| ARM | Click the power button to enable Accelerated Realtime Monitoring for indiscernible latency when recording audio. When you enable ARM, available ARM resources are displayed. Available ARM resources depend on the Apollo hardware in your system and how many ARM-enabled tracks you have Input-enabled or Record-enabled. See "Accelerated Realtime Monitoring" for more information. |

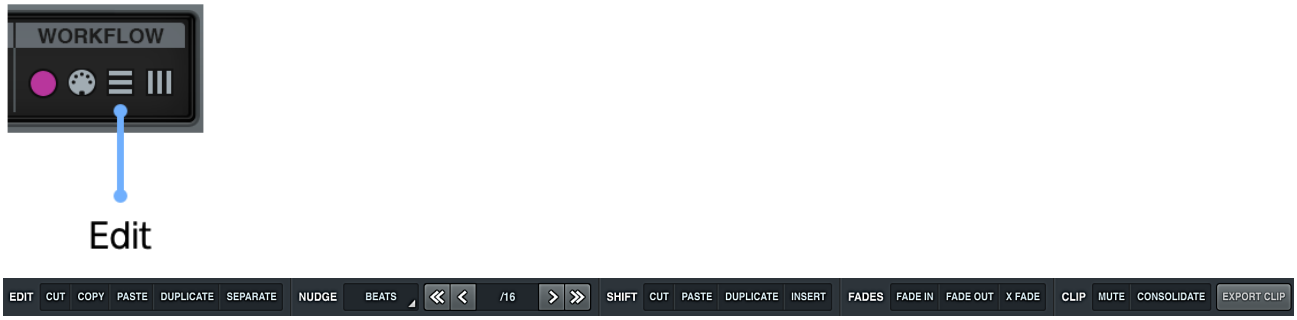
## THE MIDI WORKFLOW

Click the MIDI workflow icon to enable the MIDI workflow. The MIDI Workflow allows you to use the following commands:

| Command | Description |
|---|---|
| MIDI Merge | Click the power button to enable MIDI Merge. When MIDI Merge is enabled, the MIDI notes you play while recording are combined with the existing notes over which you record. MIDI Merge is useful, for example, if you want to build up a track like a drum part by playing in separate drums on successive record passes. When MIDI Merge is disabled, any existing MIDI over which you record is replaced with the new MIDI you record. |
| Panic | Sends an All Notes Off MIDI command. |

| | |
|---|---|
| MIDI Keyboard | Click the power button to enable and disable the MIDI Keyboard. The MIDI keyboard lets you record and play MIDI notes over a range of keys on the computer keyboard. See the keyboard for the note mapping. You can click keys on the MIDI keyboard with your mouse to trigger notes, even when MIDI Keyboard is disabled.<br>Key command: Option+Command+M. |
| Octave | Raises or lowers the octave of computer keyboard MIDI input.<br>Key Commands: Z to lower the range one octave, X to raise the range one octave. |
| Velocity | Raises or lowers the fixed velocity of computer keyboard MIDI input.<br>Key Commands: C to lower the velocity, V to raise the velocity. |
| Key buttons | Shows the computer keys that correlate to notes on the MIDI keyboard. You can also click on keys on this keyboard to play notes, whether the MIDI Keyboard is enabled or not. |
| Status | Indicates external MIDI activity. |
| Export Clip | Opens the Export pane, where you can select clips to export. You can export any audio or MIDI clip with the Export Clip window. MIDI clips are exported as MIDI files (.mid) and audio files are exported according to the settings you configure.<br>Key command: Shift+Command+K. |

## THE EDIT WORKFLOW




Click the Edit workflow icon to enable the Edit workflow. The Edit Workflow allows you to use the following commands:

| Command | Description |
|---|---|

| | |
|---|---|
| Cut | Cuts the selected audio, MIDI, or automation data and places it on the clipboard.<br>Key command: Command+X, X. |
| Copy | Copies the selected audio, MIDI, or automation data and places it on the clipboard.<br>Key command: Command+C, C. |
| Paste | Pastes copied or cut audio, MIDI, or automation data at the playhead.<br>Key command: Command+V, V. |
| Duplicate | Copies the selected audio, MIDI, or automation data to the clipboard and pastes it immediately after the current selection.<br>Key command: Command+D. |
| Separate | Splits clips at the playhead. Clips on all selected tracks are split at the playhead position. To split clips on all tracks, place the playhead using the All Tracks ruler.<br>Key command: Command+E. |
| Nudge Settings | Opens the Nudge Settings popover, where you can set the units and nudge amount for the nudge commands. |
| Nudge Left Next Amount | Nudges the selection, clip, playhead, or selection to the left by the next higher nudge amount.<br>Key command: M |
| Nudge Left | Nudges the selection, clip, playhead, or selection to the left by the nudge amount.<br>Key command: , |
| Nudge Amount (field) | Displays the nudge amount. You can type a custom nudge amount in this field and press Enter. |
| Nudge Right | Nudges the selection, clip, playhead, or selection to the right by the nudge amount.<br>Key command: . |
| Nudge Right Next Amount | Nudges the selection, clip, playhead, or selection to the right by the next higher nudge amount.<br>Key command: / |

| | |
|---|---|
| Shift Cut | Cuts the selected audio, MIDI, or automation data to the clipboard and shifts all subsequent data earlier in the Timeline by the amount selected.<br>Key command: Shift+X. |
| Shift Paste | Pastes copied or cut audio, MIDI, or automation data at the playhead, and shifts subsequent audio, MIDI, or automation data later in the Timeline by the amount pasted.<br>Key command: Shift+V. |
| Shift Duplicate | Copies the selected audio, MIDI, or automation data to the clipboard and pastes it immediately after the current selection, and shifts subsequent audio, MIDI, or automation data later in the Timeline by the amount pasted.<br>Key command: Shift+D. |
| Shift Insert | Inserts the selected amount of space at the playhead, and shifts subsequent audio, MIDI, or automation data later in the Timeline by the amount of space inserted. Space is inserted only on selected tracks. To insert space for the entire session, make the selection on the All Tracks ruler.<br>Key command: Shift+I. |
| Fade In | Creates a fade In to the playhead. You must place the playhead in an audio clip. You can create fades on multiple tracks if you have multiple tracks selected with the playhead placed in an audio clip.<br>Key command: Control+D. |
| Fade Out | Creates a fade out from the playhead. You must place the playhead in an audio clip. You can create fades on multiple tracks if you have multiple tracks selected with the playhead placed in an audio clip.<br>Key command: Control+G. |
| X-fade | Creates a crossfade at the selection. The selection for a crossfade must be a boundary between two clips, or a selection of two clips with a gap between them.<br>Key command: Command+F, F. |
| Mute Clip | Mutes an audio or MIDI clip.<br>Key command: Command+M. |

| | |
|---|---|
| Consolidate Clips | Consolidates selected clips into one clip. You can select multiple contiguous clips, and clips on different tracks.<br>Key command: Option+Shift+3. |
| Export Clip | Opens the Export pane, where you can select clips to export. You can export any audio or MIDI clip with the Export Clip window. MIDI clips are exported as MIDI files (.mid) and audio files are exported according to the settings you configure. By default, the destination for exported clips is the Exported Files folder in your LUNA session folder.<br>Key command: Shift+Command+K. |

## THE MIX WORKFLOW

Click the Mix workflow icon to enable the Mix workflow. The Mix Workflow allows you to use the following commands:

| Command | Description |
|---|---|
| Solo Mode | Click Latch or X-Or to set the solo mode.<br>• Latch mode allows you to enable multiple solos, and latch them on or off by clicking Solo buttons.<br>• X-Or is “Solo Exclusive” mode, and only one element can be soloed at a time. Each successive Solo button click disables the previous Solo button. |
| Universe View | Shows a visual overview of your session. Click in the Universe view to move the playhead to different locations in the session. |
| Mixdown | Click to open the Mixdown pane, where you can mix down a stereo track of your session, individual tracks, and stems.<br>Key command: Shift+Command+B. |

# Using LUNA with Core Audio

LUNA can run on native computer hardware with Core Audio. You can configure one or more Core Audio devices to provide LUNA's audio inputs and outputs.

## Why use LUNA in Core Audio mode or Apollo mode?

If you have an Apollo, LUNA in Apollo mode will still give you the lowest latency for recording inputs and recording through plug-ins. However, there are many scenarios where it is convenient to use Core Audio mode. For example:

- Using LUNA with a Thunderbolt or USB audio interface, or with built-in audio
- Using LUNA with an Apollo, while controlling plug-ins and routing in Apollo's Console
- Mixing or recording on the go with a bus-powered device like a Universal Audio Volt
- Recording and monitoring through native plug-ins
- Other configurations that are not possible with Apollo mode, including hybrid devices with multiple Core Audio devices

This table details the differences when LUNA is running in Apollo mode and Core Audio mode.

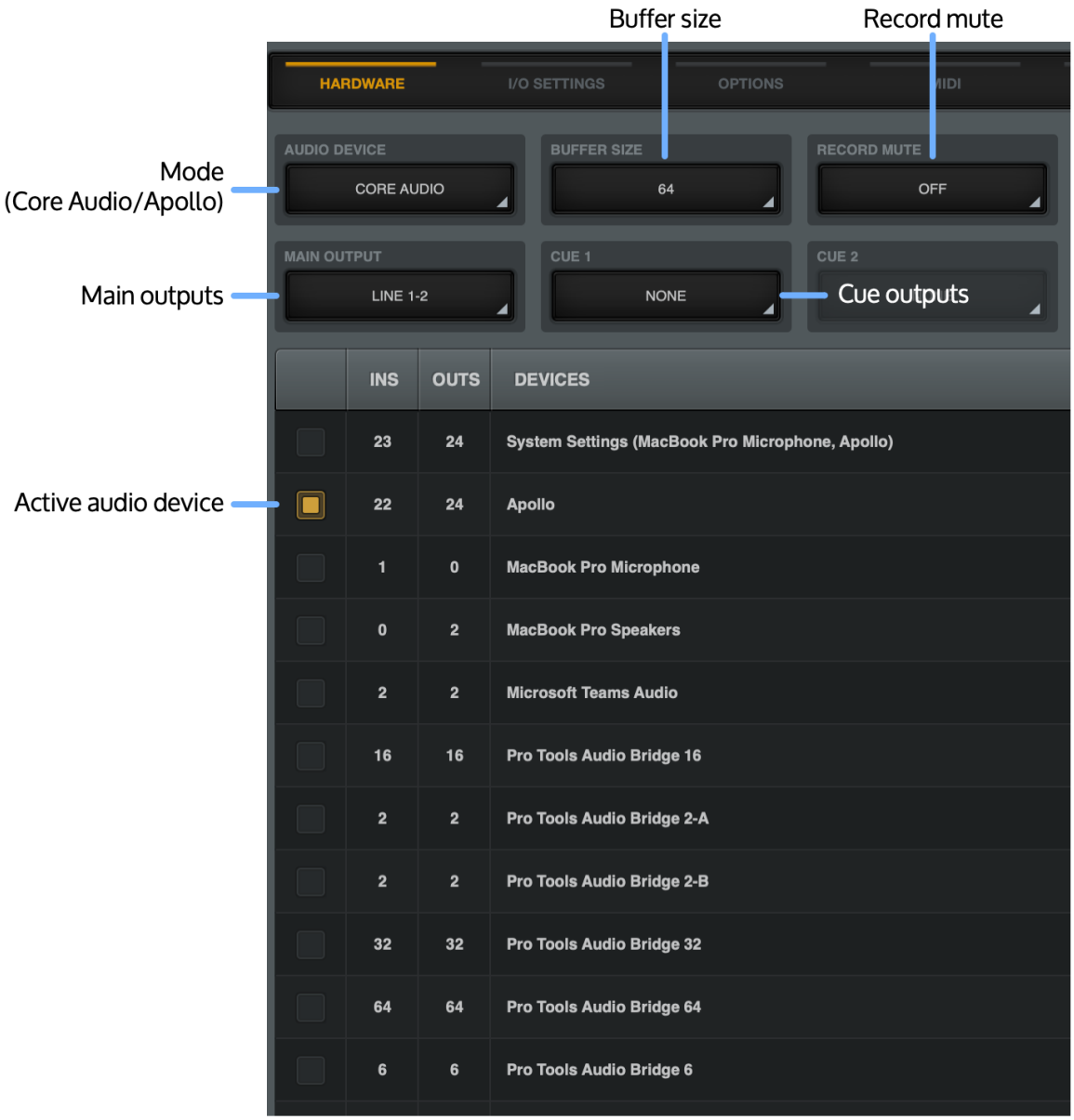
| Feature | Apollo mode | Core Audio mode |
|---|---|---|
| **ARM (Accelerated Realtime Monitoring)** | Realtime UAD Processing available in Unison and REC FX inserts. | Realtime UAD Processing in Apollo Console only. ARM features unavailable in Core Audio mode. |
| **Unison inserts** | Unison inserts available in LUNA. | Unison inserts available in Apollo Console. |
| **UAD Record FX inserts** | On an ARM-enabled audio track, effects are recorded (printed) when inserted in one of the RECORD FX inserts. | To record (print) through UAD plug-ins, use Apollo Console's UAD REC option. |
| **ARM-enabled bus tracks** | Two ARM-enabled, assignable bus tracks available. | No ARM buses. Hardware-accelerated sends and buses available in Apollo Console. |
| **Converting between Native and DSP plug-ins** | Native (UADx) plug-ins automatically convert to DSP (UAD-2) plug-ins when a track is record- or input-enabled in ARM mode, and vice versa. | Native and DSP plug-ins do not automatically convert. |

| | | |
|---|---|---|
| **Inactive plug-ins in ARM mode** | Audio Units plug-ins (and native UAD plugins with no DSP counterpart) inactive when a track is record- or input-enabled in ARM mode. | Audio Units and native UAD plug-ins active when a track is record- or input-enabled. |
| **Lowest possible record and monitoring latency** | In Apollo Mode with ARM enabled, record- or input-enabled tracks are always at the lowest latency, regardless of the Buffer Size setting. ARM-enabled tracks have less latency than Native tracks, at any buffer size. | For lowest possible native latency on record- or input-enabled inputs in Core Audio mode, set LUNA's Buffer Size value to 32–128 samples. A smaller buffer requires more computer resources. |
| **Multitrack and Master Tape Extensions** | Multitrack and Master Tape enabled for playback (non-ARM), but ARM-enabled tracks bypass tape extensions. | Tracks are monitored through any Multitrack and Master Tape Extensions. |
| **Summing Extensions** | Summing Extensions bypassed on ARM-enabled buses. | Summing Extensions always active. |
| **Main track plug-ins** | Tracks in ARM mode bypass Main track plug-ins. ARM-enabled tracks routed directly through hardware, bypassing Main track processing. | Tracks routed to Main track routed through Main track plug-ins and Extensions. |
| **Console Tracking Mode** | Yes | Use Apollo Console |
| **Talkback** | Talkback available directly in LUNA | Talkback available in Apollo Console |

## Configuring LUNA Core Audio hardware settings

The following settings are available on the Hardware tab in Core Audio mode.

**Important:** When you finish configuring LUNA Core Audio hardware settings, click the Apply button at the bottom of the audio devices list.




## AUDIO DEVICE

The Audio Device drop-down allows you to choose Apollo or Core Audio mode. If you have an Apollo interface connected, you can choose either Apollo mode or Core Audio mode. If you do not have an Apollo connected, you can only choose Core Audio mode. Core Audio mode uses Core Audio drivers to enable input and output routing for your devices.

You can also set Apollo or Core Audio mode from the Audio Device menu at the bottom of the LUNA window, in the Info section. If the Info section is not visible, choose View > Section > Info from the LUNA menus.

## BUFFER SIZE

Set your buffer size according to your current LUNA working mode. Buffer size can be set from 32 samples to 2048 samples.

- Small buffer sizes (32–128 samples) are great for recording live instruments and playing live virtual instruments
- Medium buffer sizes (256-512 samples) are good for most mixing, and for recording if your hardware offers direct hardware monitoring
- Large buffer sizes (1024–2048) are good for larger mixes with more plug-ins and LUNA Extensions, and for recording if your hardware offers direct hardware monitoring

You can also set the buffer size from the Buffer Size menu at the bottom of the LUNA window, in the Info section. If the info section is not visible, choose View > Section > Info from the LUNA menus.

## RECORD MUTE

Record Mute automatically mutes your input in the LUNA outputs when the track is record-enabled or input-enabled. This is useful if you are using a built-in mic for recording and monitoring with built-in speakers (for example, the built-in MacBook Pro microphone and speakers) and you don't want to create feedback. You can also mute the input manually in your software to prevent feedback, but this setting simplifies that workflow.

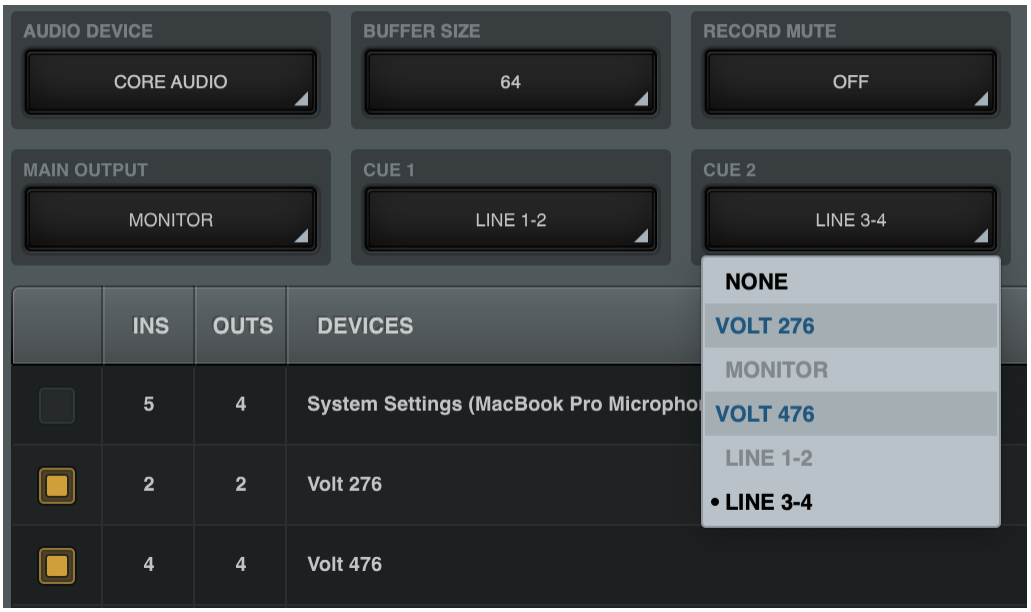
## MAIN OUTPUTS

Choose a Main output pair for LUNA with this setting. The signal to these outputs is controlled by the LUNA Monitor volume knob.

## CUES

Choose a Cue output pair for LUNA with this setting. After you configure Cue outputs, they appear in the LUNA mixer, and you can send separate cue mixes to those outputs. More cues are available when you connect multiple devices, or have more pairs of available outputs.

In the following example, the Volt 276 monitor outputs are configured as the main outputs, and two cue buses are configured on Volt 476 Line outputs 1-2 and 3-4.

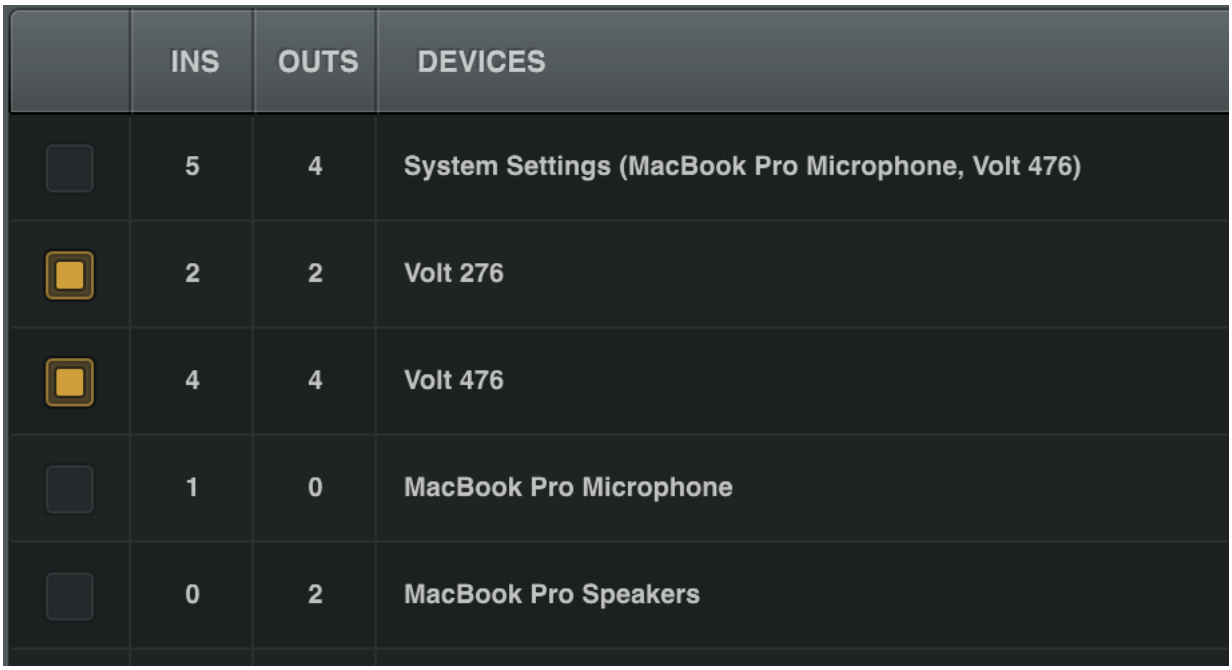



## DEVICES LIST

Enable and disable your audio devices from this list. You can enable or disable multiple audio devices and Core Audio will aggregate them automatically.

To enable devices

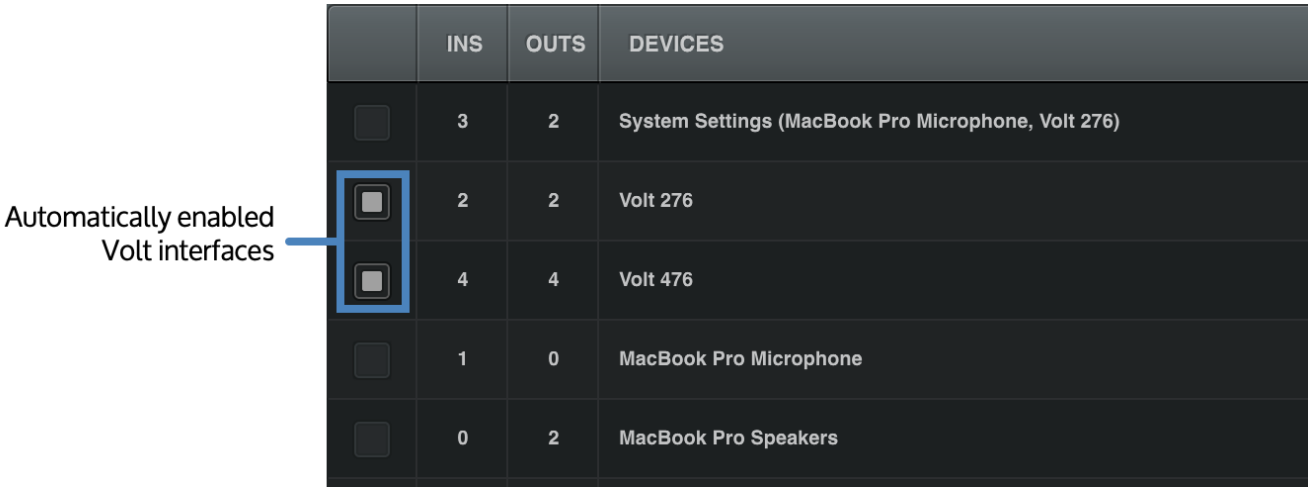
1. Start LUNA.
2. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, then click Settings, or choose LUNA > Preferences from the app menu.
3. In the Hardware panel, select the devices you want to enable by clicking their boxes. Enabled devices are highlighted orange.
4. Click Apply.



| | INS | OUTS | DEVICES |
|---|---|---|---|
| ☐ | 5 | 4 | System Settings (MacBook Pro Microphone, Volt 476) |
| ☑ | 2 | 2 | Volt 276 |
| ☑ | 4 | 4 | Volt 476 |
| ☐ | 1 | 0 | MacBook Pro Microphone |
| ☐ | 0 | 2 | MacBook Pro Speakers |

Device Notes

- You can configure LUNA to use the System Settings option, which specifies that LUNA uses the settings configured for macOS Sound settings. When this option is selected, you cannot select multiple audio devices.
- If you do not select an audio device, any connected Volt or Apollo interfaces are automatically selected. Automatically selected devices appear highlighted in white.



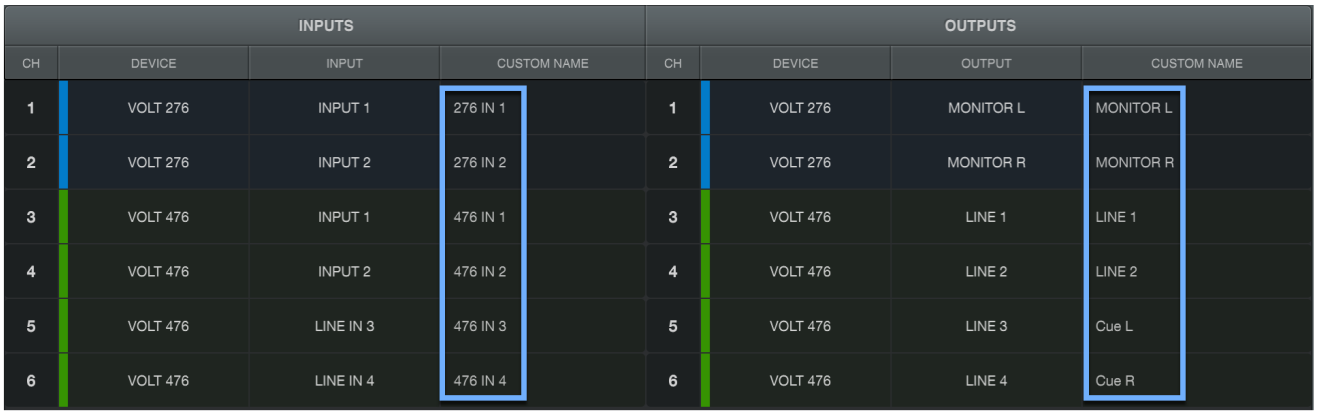

| | INS | OUTS | DEVICES |
|---|---|---|---|
| ☐ | 3 | 2 | System Settings (MacBook Pro Microphone, Volt 276) |
| ☑ | 2 | 2 | Volt 276 |
| ☑ | 4 | 4 | Volt 476 |
| ☐ | 1 | 0 | MacBook Pro Microphone |
| ☐ | 0 | 2 | MacBook Pro Speakers |

# Renaming Core Audio Inputs and Outputs

On the I/O Settings screen, you can rename inputs and outputs.

### TO RENAME CORE AUDIO INPUTS AND OUTPUTS

1. Start LUNA.
2. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, then clicking Settings, or choose LUNA > Preferences from the app menu.
3. Click the I/O Settings tab.
4. Click and type in the Custom Name field for any input or output to rename it, then press Return.



| INPUTS | | | | OUTPUTS | | | |
|---|---|---|---|---|---|---|---|
| CH | DEVICE | INPUT | CUSTOM NAME | CH | DEVICE | OUTPUT | CUSTOM NAME |
| 1 | VOLT 276 | INPUT 1 | 276 IN 1 | 1 | VOLT 276 | MONITOR L | MONITOR L |
| 2 | VOLT 276 | INPUT 2 | 276 IN 2 | 2 | VOLT 276 | MONITOR R | MONITOR R |
| 3 | VOLT 476 | INPUT 1 | 476 IN 1 | 3 | VOLT 476 | LINE 1 | LINE 1 |
| 4 | VOLT 476 | INPUT 2 | 476 IN 2 | 4 | VOLT 476 | LINE 2 | LINE 2 |
| 5 | VOLT 476 | LINE IN 3 | 476 IN 3 | 5 | VOLT 476 | LINE 3 | Cue L |
| 6 | VOLT 476 | LINE IN 4 | 476 IN 4 | 6 | VOLT 476 | LINE 4 | Cue R |

# Using LUNA in Core Audio mode with Apollo

If you start LUNA without an Apollo connected, LUNA automatically starts in Core Audio mode. If you have an Apollo connected, but want to use LUNA in Core Audio mode, follow this procedure.

**Note:** You can only switch between Core Audio and Apollo mode when playback is stopped.

### TO ENABLE LUNA CORE AUDIO MODE

1. Start LUNA.
2. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
3. From the Audio Device drop-down, choose Core Audio.
4. Click Apply.
5. Configure your hardware settings on the Hardware tab.

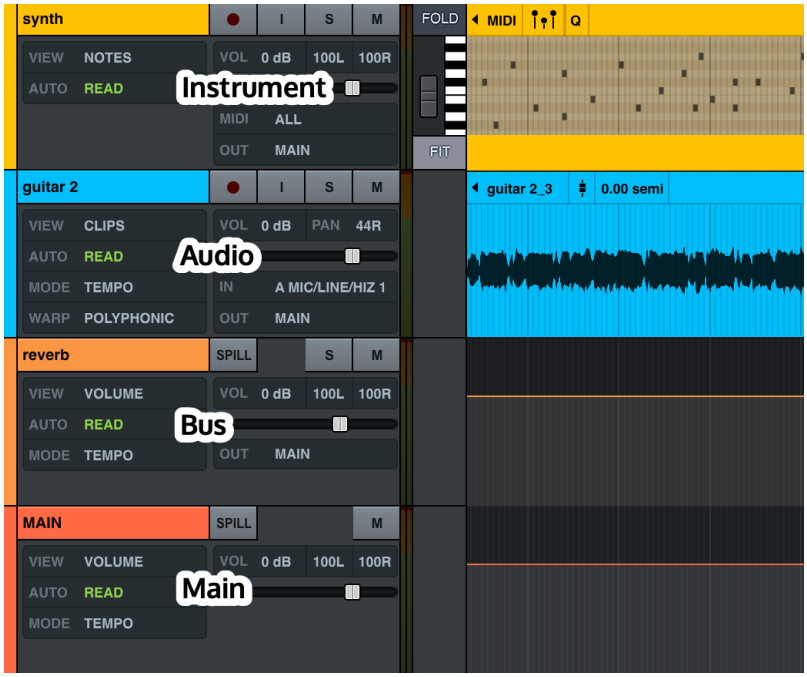
# Working with Tracks

A LUNA session consists of tracks. A track contains audio or MIDI information, and audio and MIDI control automation information. LUNA has four track types:

- On *audio tracks* you can record audio, and arrange audio files that you import or drag to the timeline.
- On *instrument tracks*, you can record MIDI from external controllers or LUNA's internal keyboard, and arrange MIDI files that you import or drag to the timeline. Instrument tracks can play sound from a UAD Instrument or an Audio Unit (AU) instrument plug-in.
- On *Bus tracks*, you can sum (mix) audio sources in the session, route audio for Aux-style plug-in processing, and use the Neve and API Summing LUNA Extensions to add punch and warmth to audio sources in your session.
- On the *Main track*, you can mix all the audio, instrument, and bus tracks together to create a stereo mix. The Main track is the only default track in a LUNA session.

When you create tracks, you can choose the track type, stereo or mono format, the number of tracks to add, track names, a UAD Instrument or other instrument plug-in (on an instrument track), optional Neve or API Summing (on a bus track), and optional API Vision Console Emulation extensions for all types of tracks.

When you create a new track, a channel strip is also created. The new track appears in the Tracks Browser, the Timeline, and the Mixer.




**3 Tracks in the Timeline**

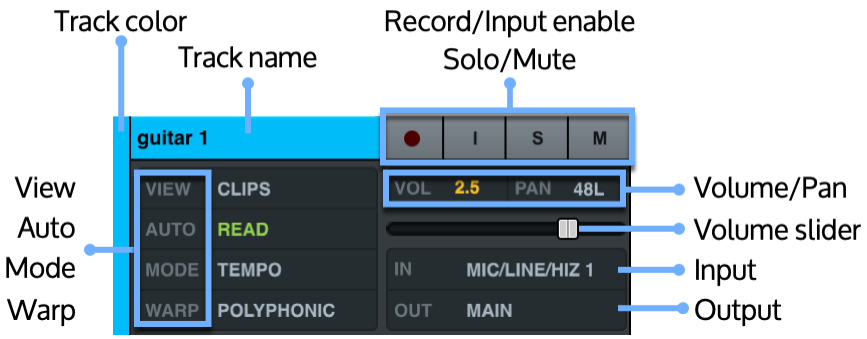
**4 Tracks in the Mixer**

## Track controls

In LUNA, you can use many of the same track controls in multiple views.

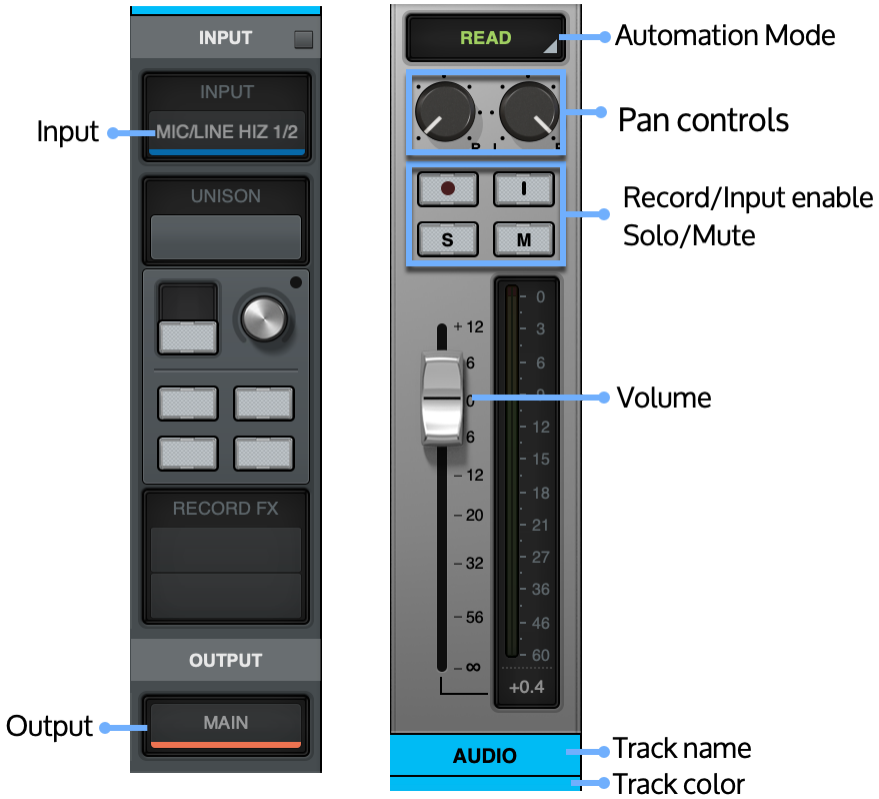
For example, audio tracks in the Timeline have the following controls in the Track Controls area.

Audio Track controls (Timeline)




Audio tracks in the Mixer and focused in the Timeline have the following controls.

Audio Track controls (Mixer/Focus)




You can make many of the same adjustments in both views. For example, in both Timeline and the Mixer/Focus channel, you can:

- Assign inputs and outputs
- Adjust volume and panning
- Set the track automation mode
- Enable Record and Input monitoring
- Solo and mute tracks
- Change the track name
- Change the track color

However, there are some adjustments you can only make in the Timeline or Mixer/Focus view.

In **Timeline View only**, you can:

- Configure the Warp algorithm
- Set a track to Time or Tempo mode
- Edit audio and MIDI, create fades, and other editing tasks

In Mixer/Focus track view only, you can:

- Configure plug-ins
- Add UAD Instruments
- Add Audio Unit instruments
- Configure the LUNA Extensions for Tape, Master Tape, API Summing, and Neve Summing
- Configure API Vision Console Emulation extensions

**Note:** As with audio tracks, you can configure many settings for instrument tracks, buses, and the Main track in both the Timeline track controls and in the Mixer/Focus channel.

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## Selecting tracks

To select a track, click the track name in the Mixer, Timeline, or Tracks browser.

- To select multiple contiguous tracks, Shift-click the track names on the first and last track you want to select.
- To select multiple non-contiguous tracks, Command-click the track names.
- To select all tracks, Option-click a track name.

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## Applying changes to multiple tracks with Selection Grouping

LUNA includes a track grouping feature that allows you to change controls on multiple selected tracks without defining a specific Track Group. To enable or disable selection grouping, select or deselect Mixing > Selection Grouping from the LUNA menus, or press Control+G to toggle selection grouping. To enable or disable all track groups, press Shift+Command+G. To create a group, press Command+G.

The following items can be adjusted when selection grouping is enabled.

- Volume
- Pan
- Track View
- Automation Mode
- Track Follows Mode
- Warp Algorithm
- Track input
- Record Enable (only for tracks that have a unique Input assigned)
- Input Enable (only for tracks that have a unique Input assigned)
- Solo
- Mute
- Tape machine and tape settings

- API and Neve Summing assignments and settings
- API Vision Console Emulation Extension assignment and settings
- Inserts
- Send assignments and controls
- Track outputs

For more information about track groups, see “Using Track Groups.”

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# Applying changes to all tracks

To adjust items on all tracks, Option+Click the setting in the track controls or mixer channel strip. For example, Option+Click the record-enable button to record-enable all tracks that have unique input assignments.

**Note:** When you Option+Click a control to enable or disable the setting, tracks that are hidden in the Tracks Browser are not affected.

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# Creating audio tracks

You use audio tracks to record audio and to place imported audio files within a LUNA session. Audio is recorded in 24-bit depth at the current audio interface hardware sample rate. LUNA can import WAV, AIFF, AAC, FLAC, ALAC, and MP3 audio that has a valid sample rate, and play it back at the correct pitch.

## CREATING AN EMPTY AUDIO TRACK

To create an empty audio track:

1. In the Tracks Focus Browser, select Audio in the Create New Tracks dialog (Track > New Tracks or Shift+Command+N), or click the plus (+) next to Tracks and choose Audio.
2. Choose the number of tracks to create and the format (MONO or STEREO). You can optionally type a name for the track or tracks here if desired.
3. Select a tape machine to assign to the track or tracks, if desired.

4. If you have optional API Vision Console Emulation, you can select API Vision or API 2500 from the Console row.
5. Click OK to create the tracks, or Cancel to stop track creation.

Track creation tips

- You can open the Create New Tracks dialog by selecting the menu item Track > New Tracks, or typing Command+Shift+N.
- You can open multiple Create New Tracks dialogs in the Tracks Focus Browser, allowing you to create multiple types and formats of tracks at the same time.
- If you create multiple tracks, the tracks are created with the name you specify, and a number is appended and incremented for each track. For example, if you create four tracks called Vox, the tracks Vox 1, Vox 2, Vox 3, and Vox 4 are created.
- In the Create New Tracks dialog, press Command+↑ or Command+↓ to cycle through track types.
- In the Create New Tracks dialog, press Command+← or Command+→ to cycle between Mono or Stereo track formats.
- In the Create New Tracks dialog, press Control+↑ or Control+↓ to change the number of tracks to create.

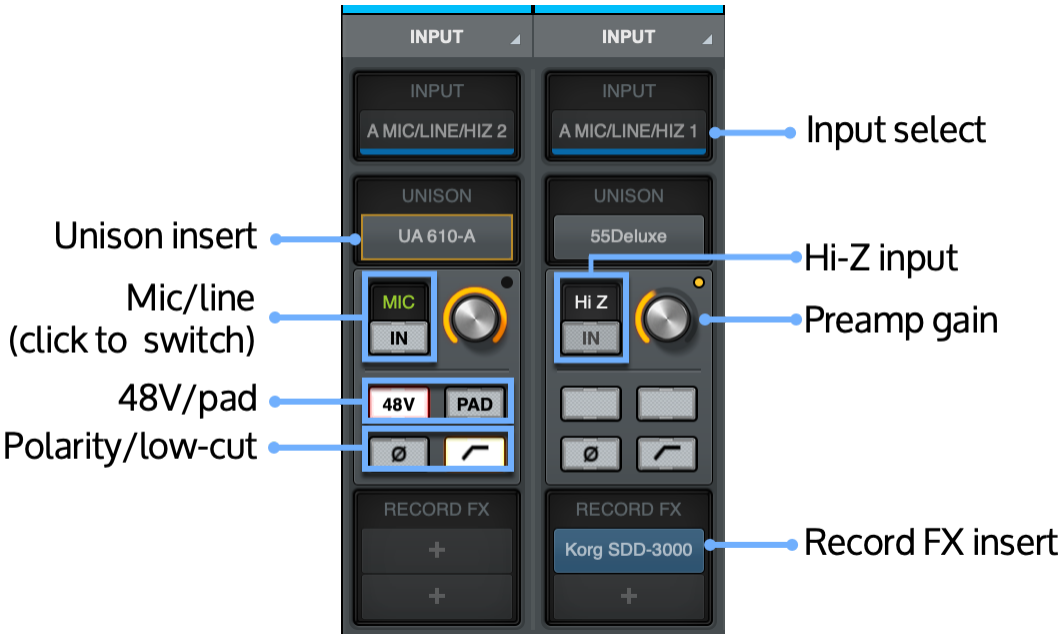
## CREATING A NEW AUDIO TRACK FROM EXISTING AUDIO

You can create a new track or tracks from one or more existing audio files.

Drag one or more audio files directly from the macOS Finder to the Tracks Focus Browser or into the empty area below any existing tracks in the Timeline. Audio tracks are created and the audio files appear as clips on the new tracks. Audio clips are located where you release your cursor when dragged to the timeline, or at the playhead when dragged to the Tracks browser.

You can also drag an audio file directly into an existing audio track. The audio file appears as an audio clip that is located where you released your cursor.

## ASSIGNING INPUTS



When you click on the input for a track, the Input Focus Browser opens, from which you can choose the input for the track. The list includes all available inputs in your system. Select an input from the Input Focus Browser. The type of input you select determines the options that appear. For example, a Unison-capable input track (Apollo mode) includes preamp controls.

**Note:** Unison insert and Record FX inserts are available in Apollo Mode only, when a track is record-enabled or input-enabled.

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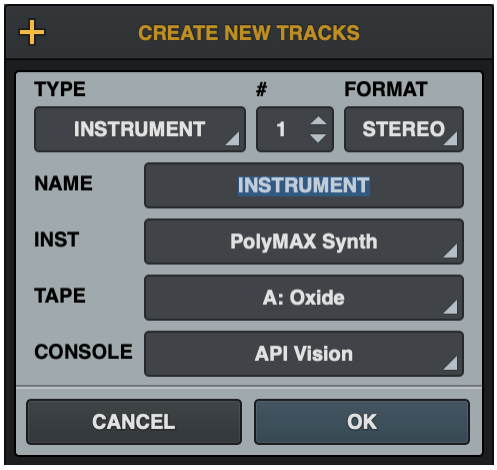
# Creating instrument tracks

You can use instrument tracks to play audio from UAD Instruments, a MIDI virtual instrument or a MIDI hardware device such as a synth or sampler. On an instrument track you can:

- Insert UAD instruments or any Audio Unit (AU) virtual instrument plug-in into an Instrument track.
- Record MIDI data from an external MIDI device.
- Import MIDI data.
- Route the MIDI output from an Instrument track to an external MIDI device.
- Route the audio from a MIDI device back to the Instrument track for monitoring.
- Edit notes directly in Notes view.

## CREATING AN EMPTY INSTRUMENT TRACK




To create an empty instrument track:

1. In the Tracks Focus Browser, select instrument in the Create New Tracks dialog, or click the plus (+) next to Tracks and choose Instrument.
2. Select the number of tracks to create, the format (Mono or Stereo), and an optional name for the track or tracks if desired.
3. From the INST drop menu, choose the UAD Instrument or Audio Unit instrument plug-in. Choose None to create a MIDI track or MIDI tracks without instruments.
4. Select a tape machine to assign to the track or tracks, if desired.

5. If you have optional API Vision Console Emulation, you can select API Vision or API 2500 from the Console row.
6. Click OK to create the tracks, or Cancel to stop track creation.

Track creation tips

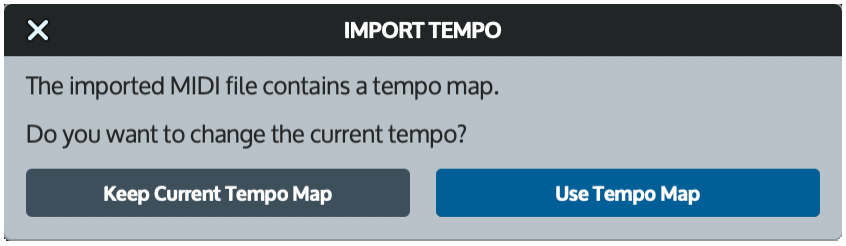
- You can open the New Track dialog by selecting the menu item Track > New Tracks, or typing Command+Shift+N.
- You can open multiple New Tracks dialogs in the Tracks Focus Browser, allowing you to create multiple types and formats of tracks at the same time.
- If you create multiple tracks, the tracks are created with the name you specify, and a number is appended and incremented for each track. For example, if you create four tracks called Synth, the tracks Synth 1, Synth 2, Synth 3, and Synth 4 are created.

### CREATING A NEW INSTRUMENT TRACK FROM EXISTING MIDI

You can create a new MIDI track or tracks from one or more existing MIDI (.mid) files by dragging the file(s) directly from the macOS Finder to the Tracks Focus Browser, or to the empty area below any existing tracks in the Timeline.

Dragging MIDI files to the Tracks Focus Browser or to the empty area below the tracks in the Timeline creates one or more new instrument tracks containing new MIDI clips, located at the start of the session. You can also drag a MIDI clip from the macOS Finder or a plug-in directly onto an existing instrument track.

**Note:** You are prompted to either use the tempo map from the MIDI file, or to keep the current (session) tempo map.




## Using Bus tracks

You can use bus tracks to route audio through the mix system. A bus track can carry more than one signal. Use a bus to submix, or for any purpose that requires the grouping or routing of audio streams. You can create a bus track on its own, and send audio to it from one or more track Sends, or you can assign the Output of one or more tracks directly to a bus. You can manually create bus tracks and assign sends or track outputs to the bus, or you can automatically create a bus that is assigned to selected tracks, as either a send or output bus.

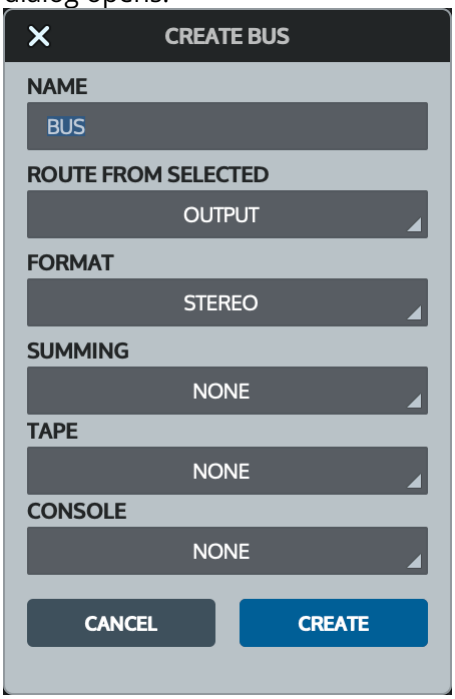
For more information on mixing with bus sends, see “Using Sends.”

Use a bus:

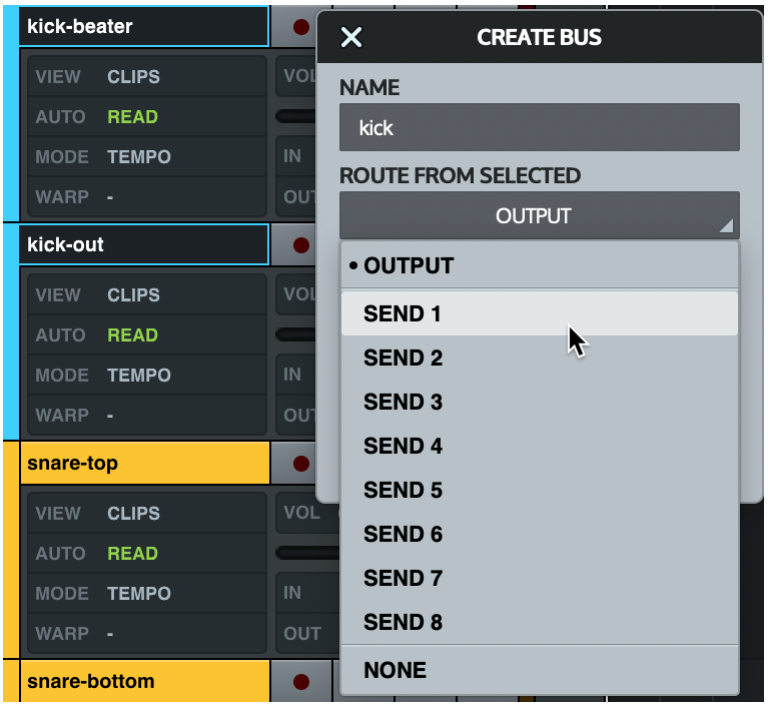
- to combine multiple signals that you want to submix or create “stems” (for example, a submix of the rhythm guitars or background vocals in a session), and to optionally add Neve Summing or API Summing.
- to combine multiple signals to effect with a plug-in (for example, as a reverb bus for several vocal tracks).
- for other mix purposes, such as parallel compression of drums.
- to route audio to separate outputs.

## TO CREATE A BUS TRACK FROM SPECIFIC TRACKS

1. Select the track or tracks which you want to send or route directly to a bus. You can route audio, instrument, and other bus tracks to a bus.
2. Type Shift+Command+B or choose Mixing > Create Bus from the LUNA menus. The Create Bus dialog opens.




3. Type a name for the bus.
4. In the Route From Selected pulldown, select the track source for the bus. For example, if you want to route the selected track outputs directly to the bus, select Output. To use a send to route the tracks to the bus, select a send.

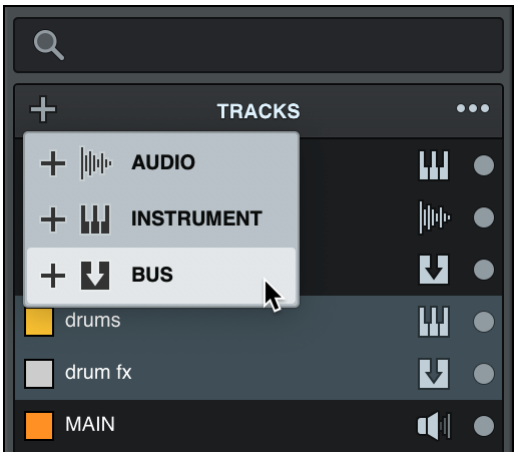



5. If you have an optional API or Neve Summing LUNA Extension, you can select it from the Summing list. You can enable or disable summing after you create the track or tracks.
6. If you have optional ATR-102 Master Tape, you can select it from the Tape list, if desired.
7. If you have optional API Vision Console Emulation, you can select API 2500 or API Vision from the Console list.
8. Click Create. The bus is created, with the routing you specified.

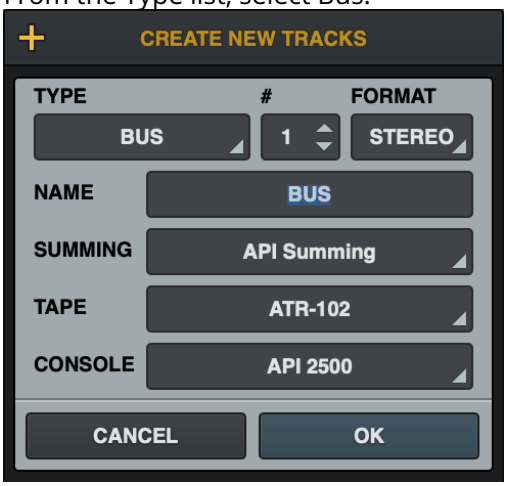
**Note:** If you assign the bus source to a send that is already in use for the selected tracks, that send assignment is overwritten with the new bus assignment. If you assign the bus source to Output, the selected tracks' outputs are routed to the bus. Note that you can manually route the output of one or more tracks to multiple buses.

## TO CREATE A BUS TRACK ON ITS OWN

1. In the Tracks browser, click the plus (+) next to Tracks.




2. From the Type list, select Bus.




3. Select the number of buses to create and the format (Mono or Stereo), and type a name for the bus or buses.
4. If you have the optional Neve or API Summing LUNA Extension, you can select it here. You can enable or disable Neve Summing or API Summing after you create the bus or buses.
5. If you have optional ATR-102 Master Tape, you can select it from the Tape list, if desired.
6. If you have optional API Vision Console Emulation, you can select API 2500 or API Vision from the Console row.
7. Click OK to create the bus or buses.

## BUS INPUTS AND BUS ROUTING OVERVIEW

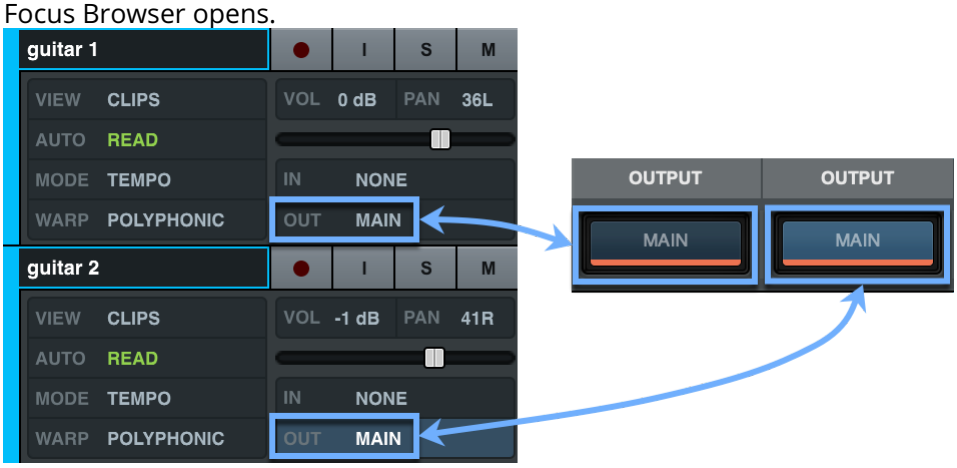
Once you have created a bus, you can route (send) audio to it. There are two methods for busing:

- Direct busing routes the output of a bus or track directly to a bus. In this scenario, the bus functions as the track's output, and the bus then outputs either to another bus, a physical or virtual output or output pair, or the Main track. Use output busing to submix or to create stems. For example, you can route drums, instruments, and vocals all to separate buses to control levels, adjust effects, and apply Neve Summing, then either route those to the Main track or their own physical outputs.
- Send busing sends audio from the track to a bus, without changing the output of the track. Send busing is useful when you want to effect the audio and mix it back in to the main mix in a

controllable way. For example, you can send drums to a compressor on a bus and mix the compressed drums with the main drum tracks (parallel compression), or send instruments and vocals to a 100% wet reverb bus, and mix the reverb bus in with the existing tracks.

To route audio directly to an existing bus

1. Select the track or tracks you want to route directly to the bus.
2. Click the Out in the Timeline or the Output in the Mixer or on the Focus channel. The Output Focus Browser opens.

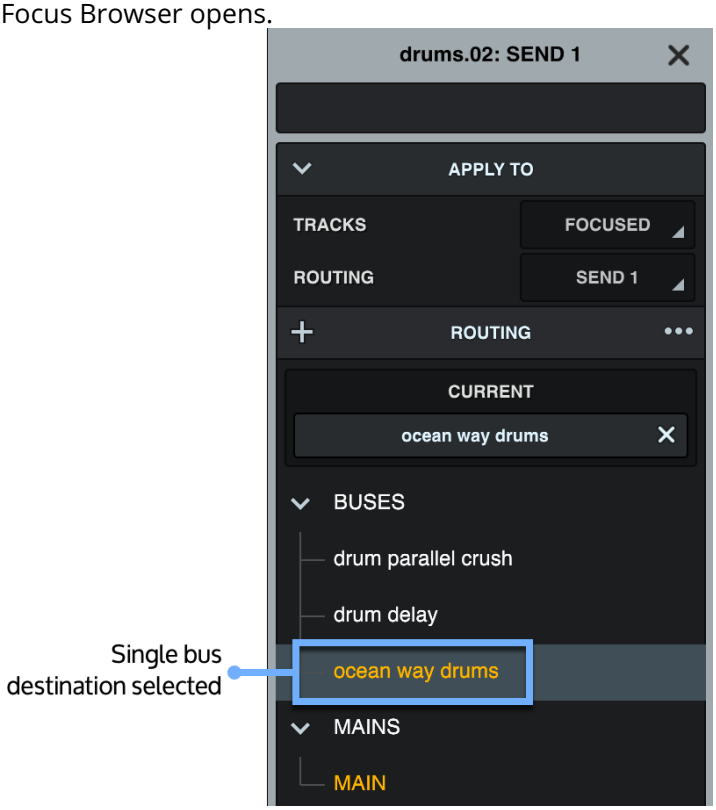



3. Choose the bus to which you want to route the output of the track or tracks.

The selected track or tracks are now routed to the bus outputs.The fader and pan controls on the bus track now control overall mix characteristics of the tracks, and you can assign plug-ins and Neve Summing to the bus to affect all source tracks.

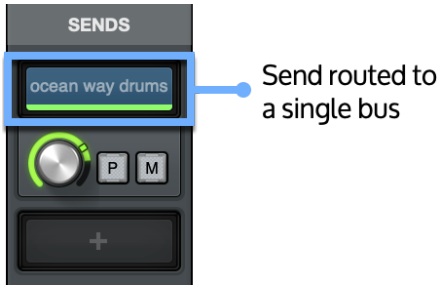
To route audio to an existing bus using a send

1. Select the track or tracks you want to send to the bus.
2. Click an available Send slot in the Mixer or on the Focus channel for a track. The Send Routing Focus Browser opens.



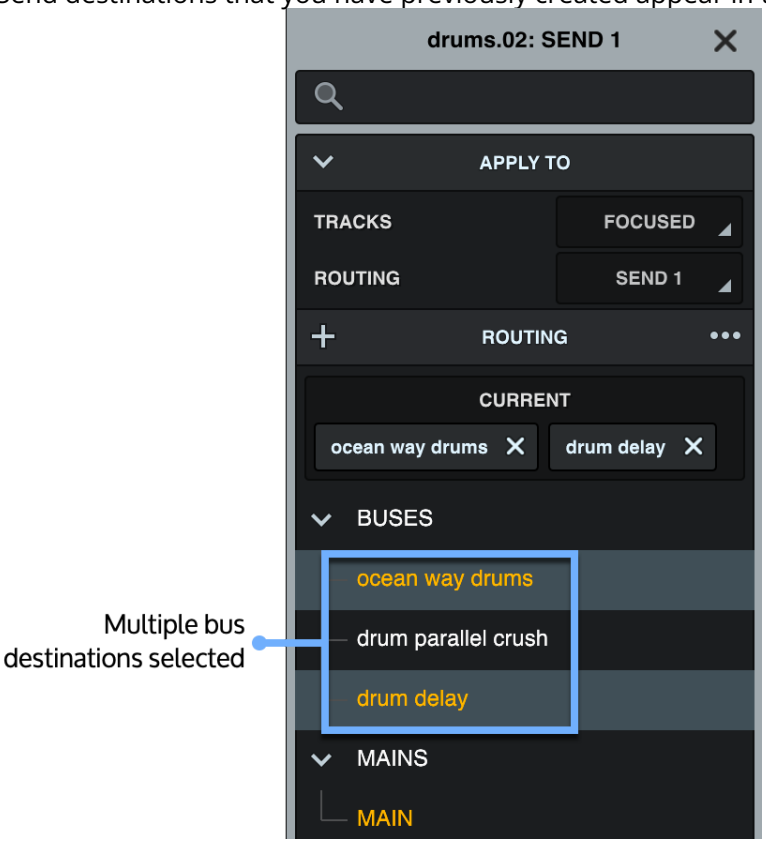

3. Select the destination bus for the send. Send destinations that you have previously created appear in the Focus Browser under Buses.
4. The selected track or track sends are now routed to the bus.

When a send is routed to a single bus, the destination bus name is listed in the Sends mixer row.



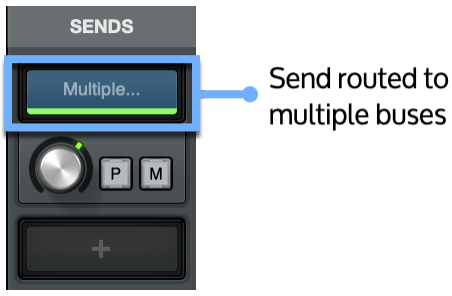
To route audio to multiple existing buses using a send

1. Select the track or tracks you want to send to the bus.
2. Click an available Send slot in the Mixer or on the Focus channel for a track. The Send Routing Focus Browser opens.
3. Command-click multiple non-contiguous destination buses to route the audio to those sends. Send destinations that you have previously created appear in the Focus Browser under Buses.




4. The selected track or track sends are now routed to the selected buses.

When a send is routed to multiple buses, the destination in the Sends mixer row is listed as Multiple.



### CONTROLLING SEND AUDIO

You can control the send level with the Bus level control. The fader and pan controls on the bus track now control the overall characteristics of the bus track audio, and you can assign plug-ins and Summing to the bus to affect the audio from the send.

### USING ACCELERATED REALTIME MONITORING (ARM) WITH BUS TRACKS (APOLLO MODE ONLY)

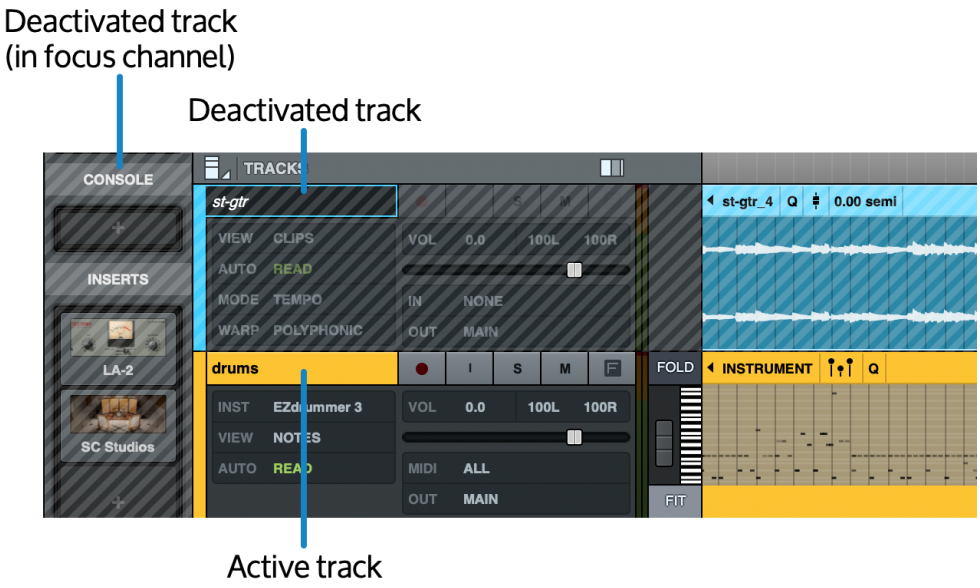
When you use Accelerated Realtime Monitoring (ARM), you can configure two bus tracks to work in ARM mode. ARM allows you to use Realtime UAD Processing on these two buses, while monitoring and/or recording with indiscernible latency.

To set ARM Mode for a bus track, enable ARM, then click the ARM button on the bus track, and select either Aux 1 or Aux 2. When LUNA is in ARM mode, all bus tracks that do not use one of the two ARM-enabled aux buses will incur some latency when processing audio.

---

## Deactivating tracks

You can deactivate tracks in LUNA. A deactivated track does not play back audio, and does not consume any CPU or DSP resources. You can deactivate audio, instrument and bus tracks. You cannot deactivate the Main track. You cannot change controls on a deactivated track. Deactivated tracks appear in the Timeline and Mixer view with diagonal marks through them to indicate that they are deactivated.




### DEACTIVATE TRACKS

- To deactivate a single track In the Timeline or Mixer view, Control-click or right-click on the track name area, and choose Deactivate “track name”.

- To deactivate multiple tracks, select multiple tracks or a track group, then Control-click or right-click on a track name, and choose Deactivate Selected Tracks.

### ACTIVATE DEACTIVATED TRACKS

- To activate a single deactivated track In the Timeline or Mixer view, Control-click or right-click on the track name of a deactivated track, and choose Activate “track name”.
- To activate multiple deactivated tracks, select multiple deactivated tracks, then Control-click or right-click on a track name, and choose Activate Selected Tracks.

---

## Using the Main Track

The Main track is the master fader or stereo output bus channel for your LUNA session. All audio that is routed to Main runs through this bus, and is summed for listening and mixdown purposes. By default, all audio, Instrument, and bus tracks are routed to the Main track.

You cannot delete the Main track, and you cannot create a new Main track. However, you can route audio to other outputs instead of the Main track.

The Main track is where you assign your master track Insert plug-ins. You can also enable API Summing or Neve Summing on the Main track.

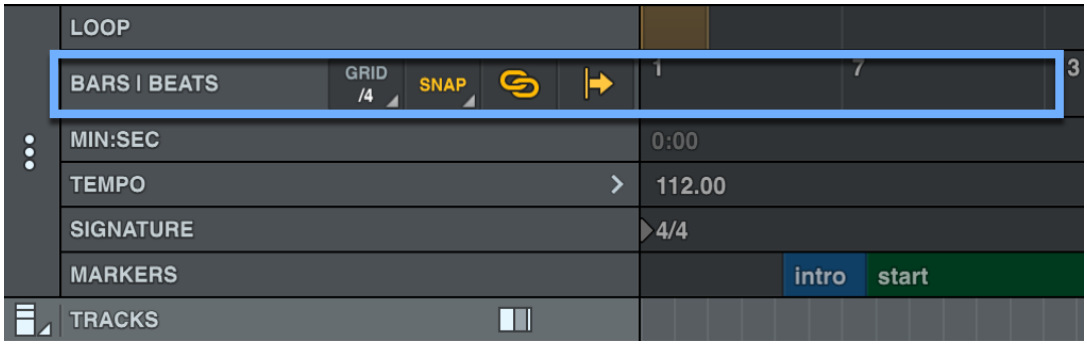
# Working in the Timeline Display

## Using rulers

Rulers allow you to track timeline data and add markers, time signatures, and tempo changes to the timeline display. You can also make selections, loop, and make selections on all tracks.

### WORKING WITH THE BARS AND BEATS RULER

In the Bars and Beats ruler, you can place the playhead, set the Grid resolution, enable Snap, link Edit and Play selections, make selections, and enable automatic scrolling.

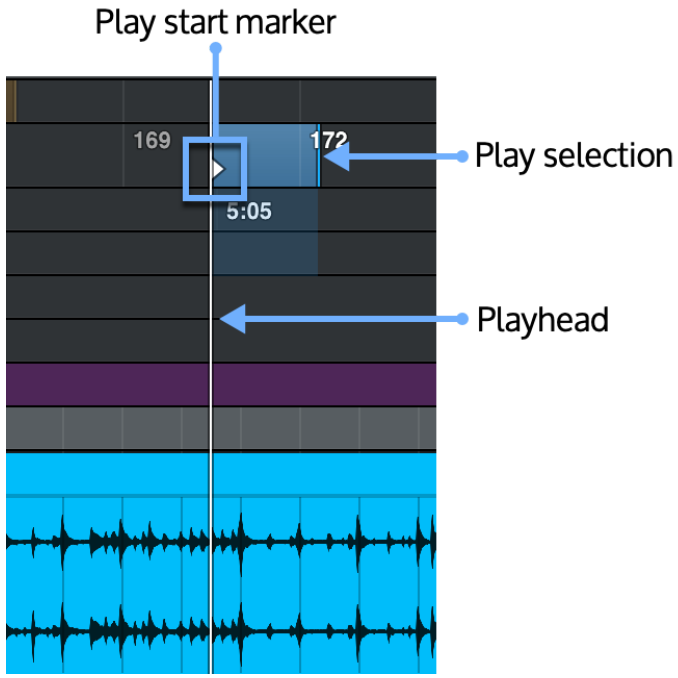


### Zooming with the Bars and Beats ruler

Click in the Bars and Beats ruler and drag up or down to zoom audio horizontally. The session zooms with the playhead centered on the screen (once the zoom level is high enough). Drag down to zoom in, and drag up to zoom out.

### Playhead, play selection, and play start

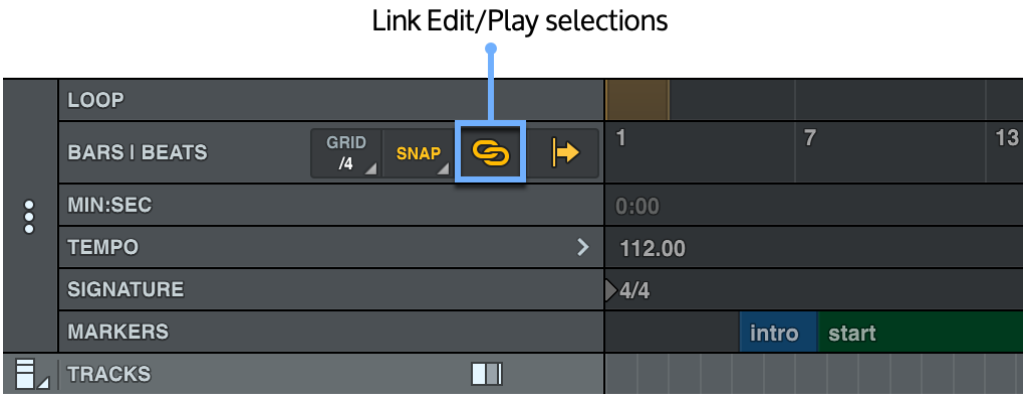
When the transport is stopped or playing, click on the Bars and Beats ruler to immediately move the playhead to another location. Playback immediately restarts at the spot you click if the transport is playing. Any selection you make on the Bars and Beats ruler immediately plays if the transport is playing and stops at the end of the selection, or plays and then loops if Loop Playback/Record is enabled. Clicking or selecting on the Bars and Beats ruler overrides selections in the Timeline and on the Loop ruler, regardless of the Link Edit and Play Selections setting. Even if Snap is not enabled, clicking on a bar number on the Bars and Beats ruler moves the playhead to that exact position.




### Link Edit and Play Selections

Enable Link Edit and Play selections to simplify editing and auditioning audio and MIDI. This setting enables you to listen to the selection you are working on at all times. When you make a selection in the Timeline, the same selection is made on the Bars and Beats ruler, and vice versa. When Link Edit and Play selections is disabled, you can edit audio and MIDI on the Timeline, while playing from a location or selection on the Bars and Beats ruler or the Loop ruler, without affecting the selection or start point.

To enable Link Edit and Play selections, from the LUNA menus, choose Navigation > Link Edit/Play Selections, or click the Link Edit/Play Selection icon on the Bars and Beats ruler.

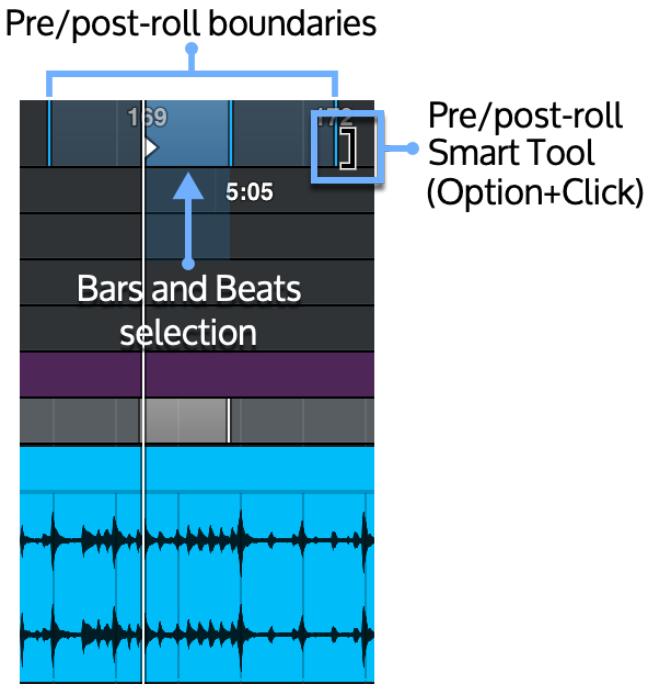



Pre-roll and post-roll

Pre-roll and post-roll specify time selections that play back before (pre-roll) and after (post-roll) a selection. Pre-roll plays when you press play, before the playhead or a selection; post-roll plays only after reaching the end of a selection. Pre-roll and post-roll can be useful to hear a selection in context, or to provide a lead-in and lead-out when punch-in recording.

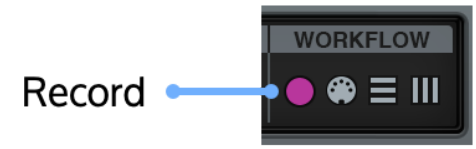
To set pre or post-roll on the Bars and Beats ruler:

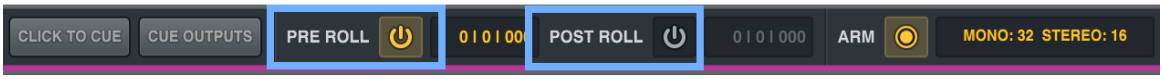
1. Option+Click on the Bars and Beats ruler to the left of a selection or the playhead to use the pre/post-roll Editing Tool to make a pre-roll selection.
2. Option+Click on the Bars and Beats ruler to the right of a selection to make a post-roll selection.
3. Click on the pre-roll/post-roll boundary and drag to change the pre-roll or post-roll length.



To set a specific length for pre-roll and post-roll:

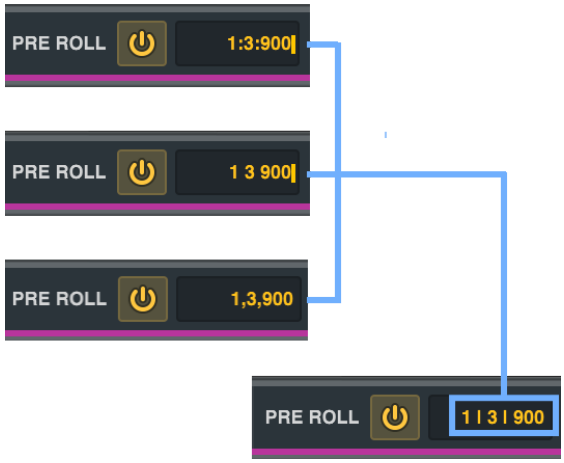
1. Enable the Record workflow.



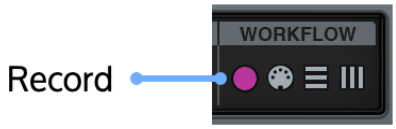




2. Click the power buttons to enable pre-roll, post-roll, or both.
3. Next to the Pre/Post-Roll buttons, type the amount of pre-roll or post-roll, and press Return.

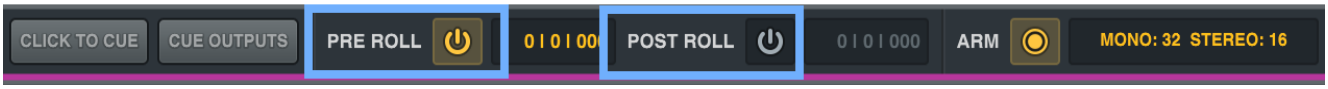
Regardless of the Counter units setting, pre-roll and post-roll are always specified in Bars and Beats. In the text entry field you can specify bars, bars and beats, or bars, beats and ticks with a separator (space, comma, semicolon, colon, period, or |). For example, you can type 1 3 480, 1:3:480, 1.3.480, or 1,3,480, then press Return, to specify 1 bar, 3 beats, and 480 ticks. You can type 2 to specify 2|0|000, or 3:1 to specify 3|1|000.




- Pre-roll plays when you start playback or recording. Pre-roll only plays the first time a selection is played, and does not play when a selection loops.
- Post-roll plays only when a selection is made, and the selection is not looped, after the playhead reaches the end of the selection.
- Post-roll does not play when a selection loops, or when the playhead is placed without a selection.
- The pre/post-roll selections remain active on either side of the selection or playhead, even if you change the selection length or deselect.
- You can enable or disable pre/post-roll with the menu items Transport > Pre-Roll and Transport > Post-Roll. You can Toggle the state of both pre-roll and post-roll with the menu item Transport > Pre/Post-Roll, or Command+K.
- You can enable or disable pre-roll and post-roll individually with options in the Record workflow. For more information about workflows, see “Using Workflows.”




**5 Enable the Record workflow**



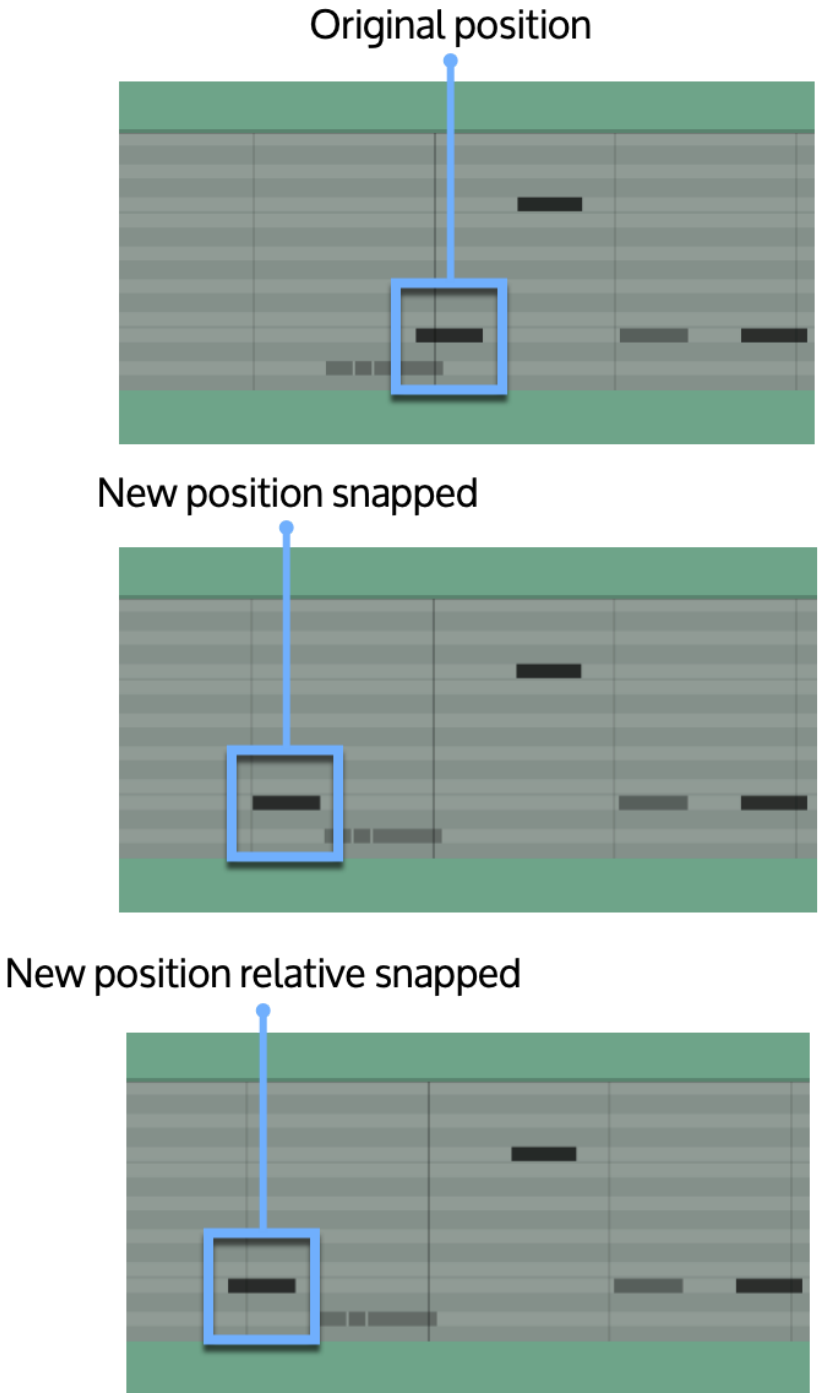

**6 Enable or disable pre/post-roll**

Grid, Snap, and Relative Snap

Grid resolution determines how finely items are selected and snapped when Snap is enabled. Grid resolution also specifies the default duration of a MIDI note and the resolution at which automation breakpoints are added, whether Snap is enabled or disabled.

When Snap is enabled, items snap to the grid, based on the grid resolution. Snap mode snaps items exactly to the grid: if a note is slightly ahead of, or behind a beat, when you drag that note to a new location in Snap mode, the start of the note snaps to the nearest grid line. Snap mode applies to MIDI and audio edits and selections and automation breakpoints.

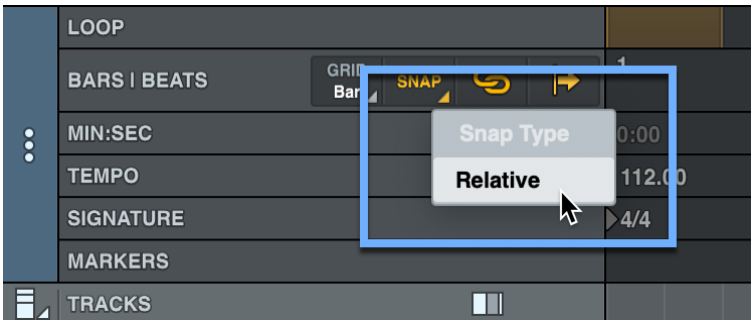
When Relative Snap mode is enabled, MIDI notes snap to the grid, while maintaining their previous time relationships (offsets) to grid markers. If a MIDI note is offset from a grid line, and you drag it to another grid line, the note remains the same distance offset from the new grid line. Relative Snap mode applies to MIDI and audio edits and selections and automation breakpoints.




To set the Grid resolution and enable Snap:

1. On the Bars and Beats ruler, click Grid. From the menu, select the grid resolution. You can select Bar, Beat, a note from 1/2 to 1/64th, and Dotted or Triplet resolution.
2. To enable Snap, click Snap. Snap is enabled when it is highlighted.

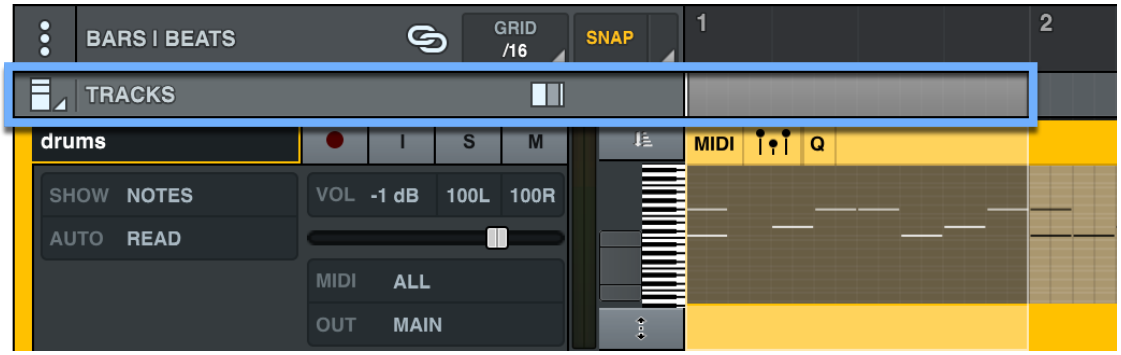
3. To enable Relative Snap mode, click the lower right corner of the Snap control, and choose Relative. To disable Relative Snap mode, deselect Relative from the same menu.




## WORKING WITH THE ALL TRACKS RULER

In the All Tracks ruler, you can set the size for all tracks, show or hide track versions, and make selections across all tracks in the session. When you make a selection on the All Tracks ruler, all tracks are selected, so if you make volume or pan changes, make edits, or add Tape or plug-ins, LUNA will make those changes to all applicable tracks.

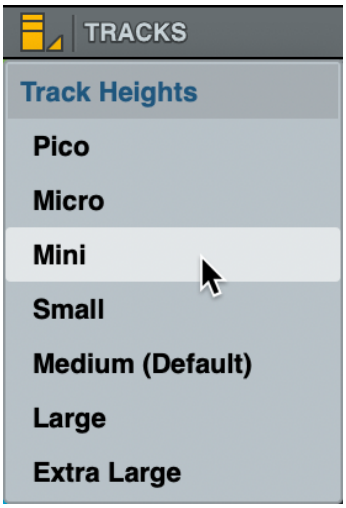
**Note:** All tracks are selected when you use the All Tracks ruler. Be sure to deselect tracks that you don't want to affect before you make any non-global changes.




The All Tracks Ruler also includes the Track Heights control and the Versions panel toggle.

### Resize all track heights

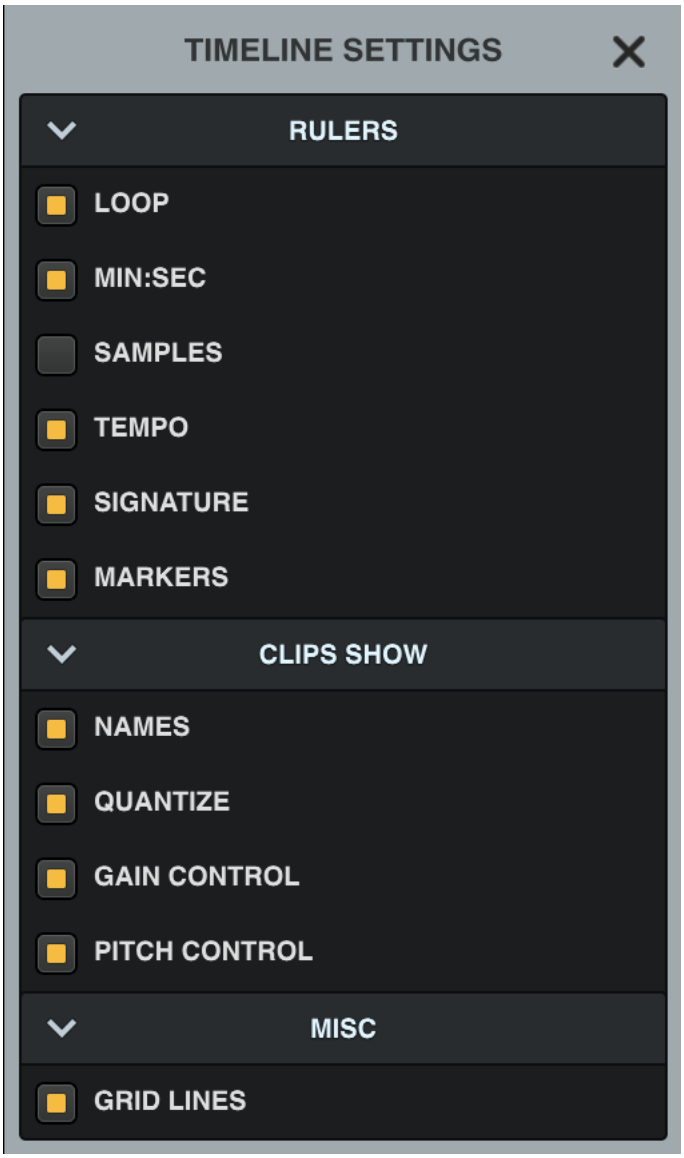
Click the Resize Tracks control and choose a track height to resize all tracks in the session to one vertical height. To resize and zoom individual tracks, see "Resizing and zooming the audio track."




Show track versions

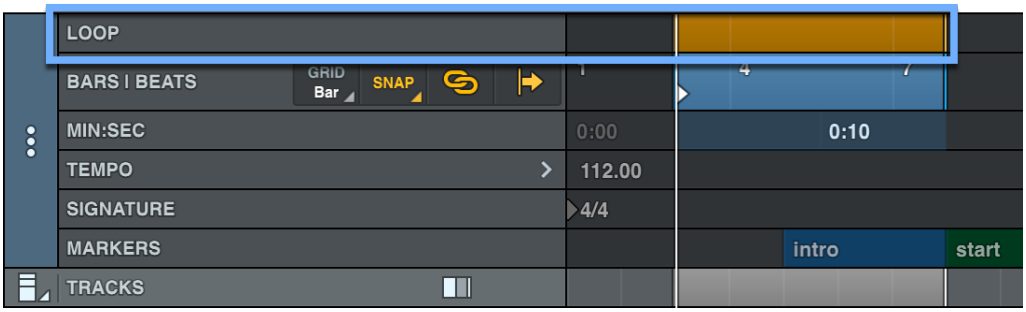
Click the Versions panel toggle to show track versions. The initial version and any version you create or duplicate is labeled with a V (for example V1 and V2). Any track version automatically created by loop recording is labeled with a T (for example, T3 and T4). This allows you to easily distinguish between versions you have manually created and versions that are automatically generated.

To change the visible items in Timeline View, use View > Timeline Settings from the menu. The options appear in the Contextual Browser at the left of the LUNA window. An item is visible when its box is active. Note that by default, the Samples ruler is not shown.



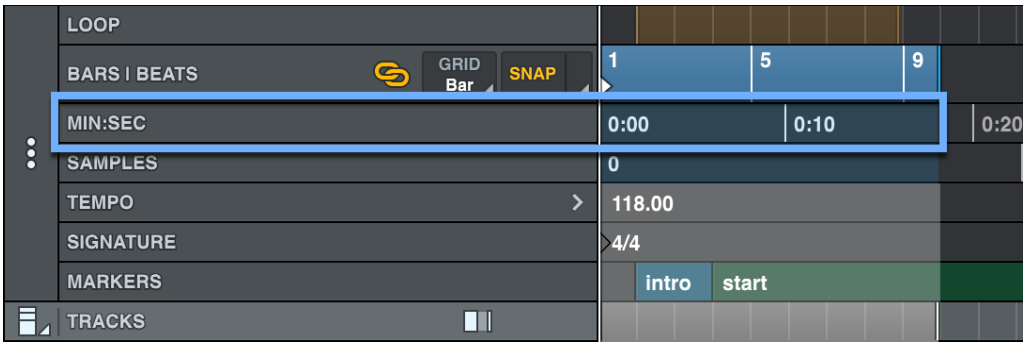

## LOOP RULER

Select View > Timeline Settings > Loop to show the Loop ruler. In the Loop ruler you can select a loop, and move the loop location and change the duration. To enable or disable loop playback, click the Loop Record/Playback button on the transport, or type Control+L. When you enable Loop playback, the current selection (if any) becomes the loop.



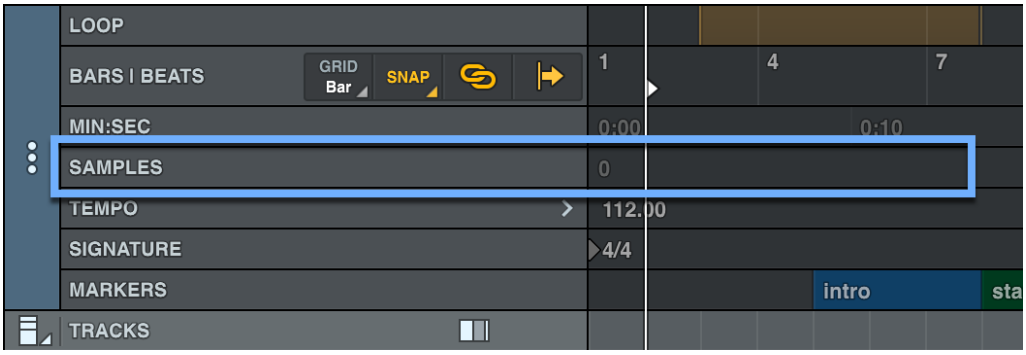

## MINUTES AND SECONDS RULER

Select View > Timeline Settings > Min:Sec to show the Minutes and Seconds ruler. This shows the actual time scale for the session.




## SAMPLES RULER

Select View > Timeline Settings> Samples to show the Samples ruler. This shows the time scale of the session in number of samples.

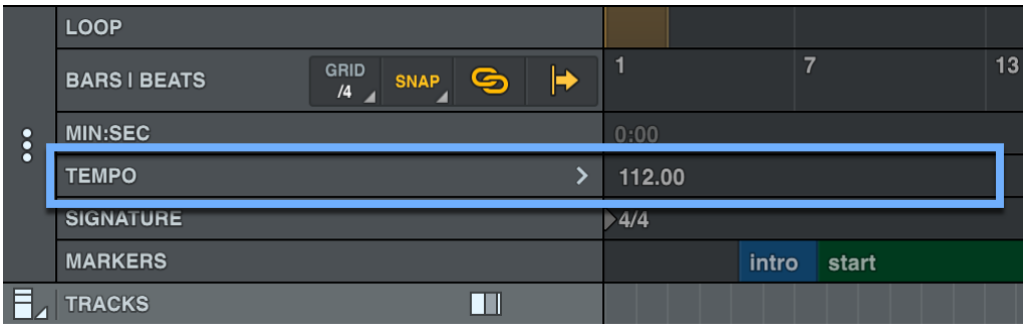



## TEMPO RULER

Select View > Timeline Settings > Tempo to show the Tempo ruler. This shows the tempo of the session on the timeline.

The Tempo ruler has special functions, as you can use it to change the tempo of the session, or add instant or gradual tempo changes. To make tempo changes, see “Setting the tempo and making tempo changes.” You can also derive tempo changes over time from pre-existing material using the Align Bar workflow. See “Using Align Bar to derive tempo from audio tracks.”

**Note:** Changing the tempo of the session, or a section of the session, will cause MIDI data, and audio tracks that are in Track Follows Tempo mode to conform to those tempo changes by stretching or contracting.

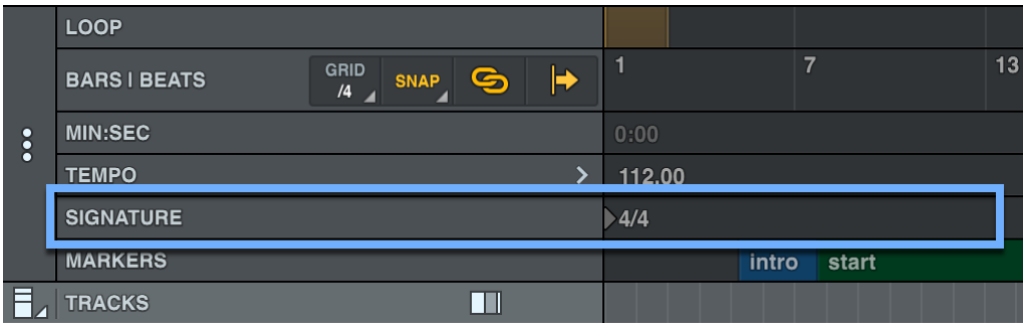



## SIGNATURE RULER

Select Signature to show the Time Signature ruler. This shows the time signature of the session on the timeline.

The Time Signature ruler has special functions, as you can use it to change the time signature of the session. See “Setting the time signature and making meter changes.”

**Note:** Time signature changes do not change the audio or MIDI data in the session, but merely change the grid, counters, and click behavior.

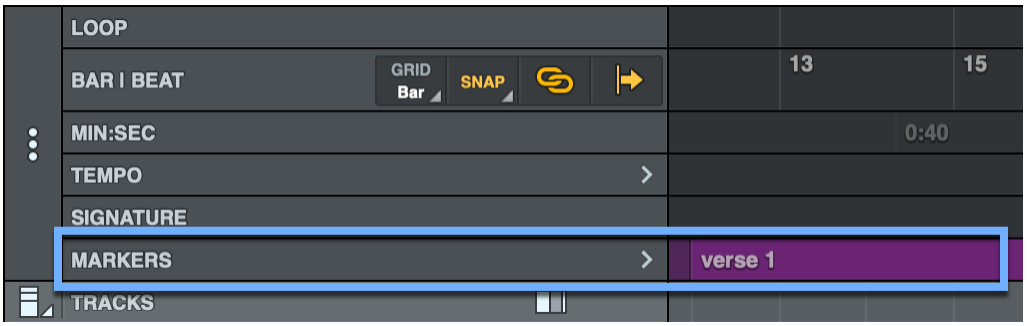



## MARKERS RULER

Select Markers to show the Markers ruler. Markers provide a visual reference to locations in the session. For example, you might mark a chorus or verse, or a tempo or meter change. You can resize the marker ruler vertically to easily see section changes.

The Markers ruler has special functions, and you can add, delete, move, name, and color markers for usability. See “Using Markers.”

**Note:** Marker location is associated with the tempo information of the session. When you change tempo, all markers within the area affected by the tempo change move to reflect the new locations that the tempo change causes.

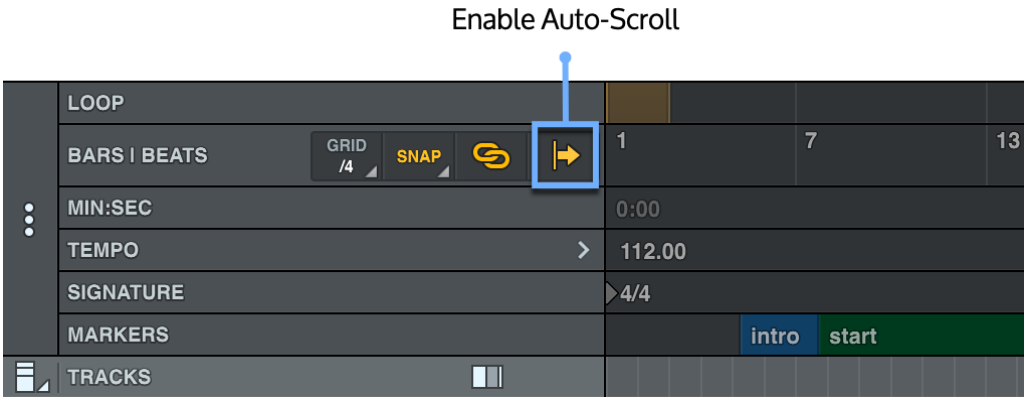



## Automatically scrolling the timeline

To scroll the timeline automatically, press Shift+A, or choose Navigation > Auto-Scroll. Auto-Scroll moves one viewable timeline screen or "page" at a time, and also auto-scrolls with loops, if the loop extends beyond the length of a screen. With auto-scrolling enabled the display jumps to the playhead location when you start playback. If you manually scroll the timeline during playback or record while Auto-Scroll is enabled, Auto-Scroll is temporarily disabled until you stop and start again. You can press Shift+A to restart auto-scrolling during playback or record.

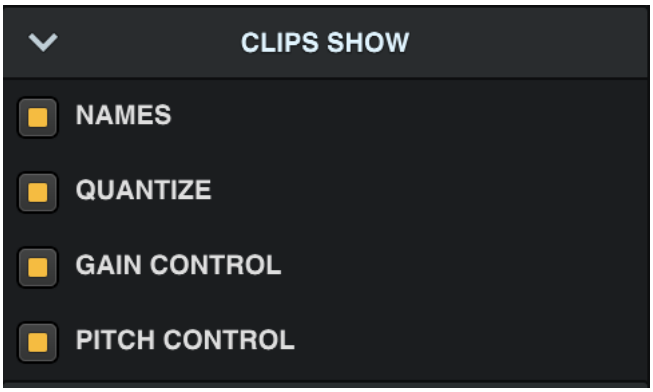
### ENABLING OR DISABLING AUTOMATIC SCROLLING

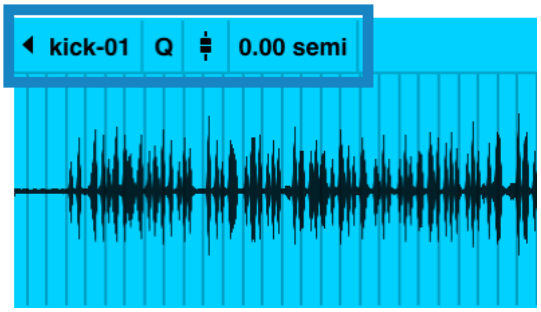
On the Bars and Beats ruler control area, click the Auto Scroll button to enable or disable automatic timeline scrolling.




## Showing items in Clips

With Timeline Settings, you can specify the items that are shown on audio clips, by selecting or deselecting items under Clips Show.




## SETTING CLIP NAMES

In the Timeline Settings browser, under Clips Show, select Names to show clip Names at the top of audio clips. You can double-click a clip name to change it.

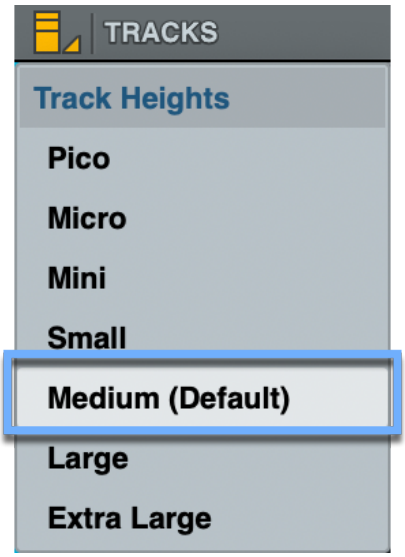
## SHOWING THE CLIP QUANTIZE CONTROL

In the Timeline Settings browser, under Clips Show, select Quantize to show the Quantize button on audio clips. See “Quantizing Audio” for more information.

## USING THE CLIP GAIN CONTROL

In the Timeline Settings browser, under Clips Show, select Gain Control to show the gain control at the top of each clip. Hover the mouse cursor over the gain control icon at the top of an audio clip to show the Gain Control Editing Tool. Move the slider up and down to increase or reduce the gain of a clip, without altering the gain of other clips on the track. Clip gain allows a wide range of adjustment, from -144 dB to +48 dB. As you adjust clip gain, the waveform display shows the resulting changes to the audio level. If you select multiple clips and adjust the gain slider on one clip, the same amount of gain change is applied to all selected clips.

**Note:** Tracks must be at the Medium (Default) size or larger to see the clip gain control on the track.




### USING THE CLIP PITCH CONTROL

In the Timeline Settings browser, under Clips Show, select Pitch Control to show the pitch control at the top of an audio clip. Hover the mouse cursor over the pitch control icon at the top of an audio clip to show the Pitch Control Editing Tool. You can move this slider up and down to raise or lower the pitch of a clip by tenths of a semitone. If you select multiple clips and adjust the pitch slider on one clip, the pitch change is applied to all selected clips. To enter a pitch change value in semitones, double-click the Pitch control and type a number (for example, 5 to raise the pitch by five semitones, or -12 to lower the pitch an octave).

---

## Showing Grid Lines

In Timeline Settings, select Grid Lines to show grid lines in the timeline. Grid lines provide a visual reference for bars, beats, and subdivisions, depending on the subdivision settings you specify.

---

## Duplicating tracks

You can duplicate a track or tracks with or without content.

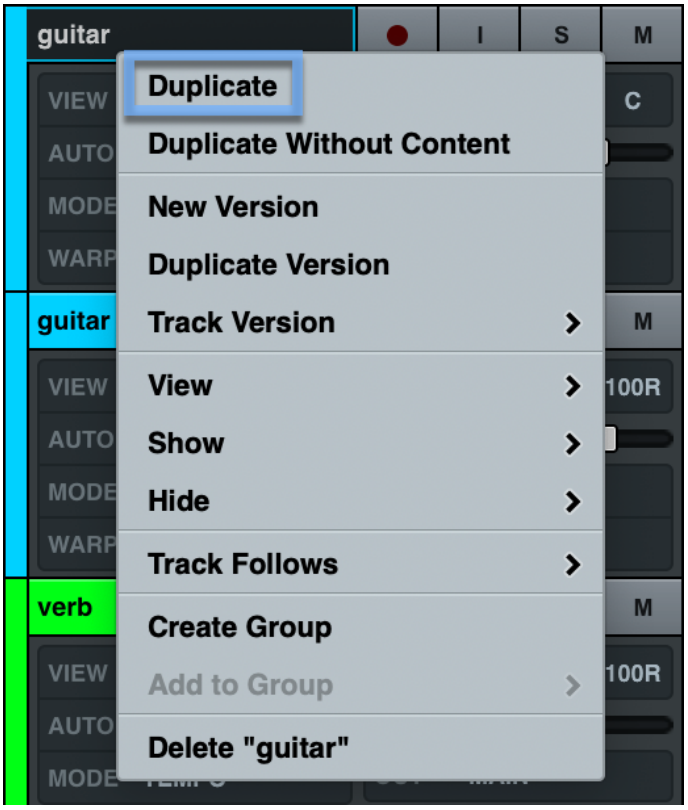
**Note:** You can duplicate tracks in Edit or Mix view.

- Duplicate a track with content to copy the track and all audio clips, MIDI clips, track inputs, gain settings, Unison inserts, other inserts, and send and cue routing. This command also copies track versions.
- Duplicate a track without content to duplicate the track inputs, gain settings, Unison inserts, other inserts, sends, and cue routing, without duplicating existing audio or MIDI clips or track versions.

- When you duplicate a send without content, the send routing is copied, effectively creating a doubled bus. Duplicate a send without content to copy just the inserts without the send routing.

## TO DUPLICATE A TRACK WITH CONTENT

1. Select a track by clicking the track name. You can select multiple tracks with Selection Grouping, or by selecting a track in an enabled group.
2. Right-click or Control-click and select Duplicate.



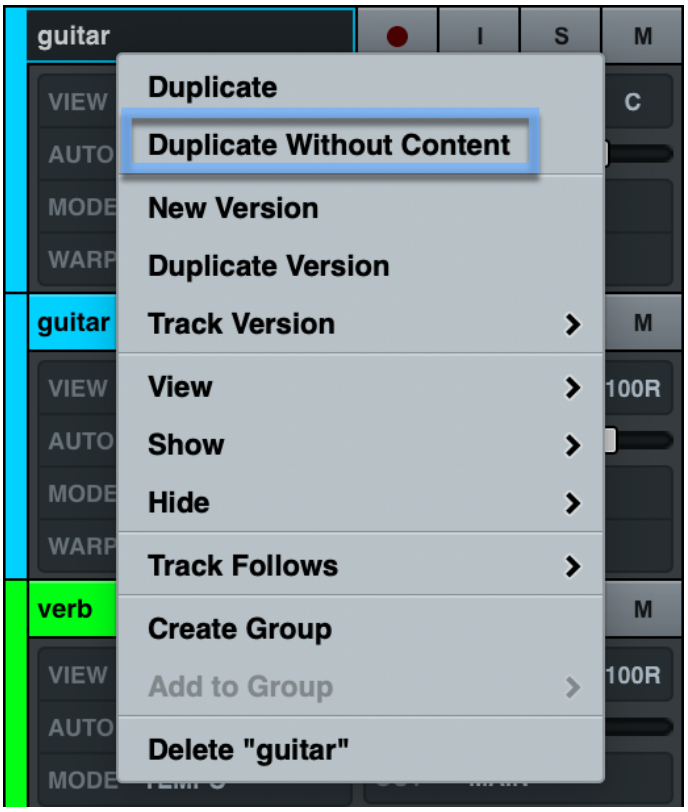

The tracks are duplicated with the current content.

Other methods to duplicate tracks with content

- With a menu command: Duplicate a track or tracks with content with the Menu command Track > Duplicate.
- With a key command: Duplicate a track or tracks with content with the key command Shift+Option+D.
- By drag and drop: Hold Shift + Option and click, drag, and drop a track or tracks to duplicate the track without content.

## TO DUPLICATE A TRACK WITHOUT DUPLICATING CONTENT

1. Select a track by clicking the track name. You can select multiple tracks with Selection Grouping, or by selecting a track in an enabled group.
2. Right-click or Control-click and select Duplicate Without Content.




The tracks are duplicated without the current content.

Other methods to duplicate tracks without content

- With a menu command: Duplicate a track or tracks without content with the Menu command Track > Duplicate Without Content.
- With a key command: Duplicate a track or tracks without content with the key command Shift+Option+D.
- By dragging and dropping: Hold Shift + Option and click, drag, and drop a track or tracks to duplicate the track without content.

# Using Align Bar and Align Grid to derive tempo from audio tracks

If you have imported audio tracks, or recorded audio tracks without a click, you can use Align Bar and Align Grid to derive tempos from those tracks. This is useful, for example, when you have a live drum recording or band recording that you now want to edit or overdub with other tracks, and you want a click, or you want tempo information for MIDI instruments or effects.

Align Bar and Align Grid work to set the tempo for a session with many tracks, but you should use one or two mono or stereo audio tracks as a time reference. It is also best if the tracks you are using for a time reference have strong rhythmic information and strong transients. For example, a kick and snare drum track that hit on particular beats of every bar are ideal time source.

## CHOOSING ALIGN BAR OR ALIGN GRID

Align Bar and Align Grid essentially do the same thing: they place tempo markers at transients to help define the tempo of a piece. However, Align Grid assumes that every tempo marker you place is a Bar line (for example, 2|1|0 or 24|1|0). Align Grid uses the current grid, and assumes that the tempo marker you have placed is at the closest grid value. So Align Grid can place a tempo marker at 20|3|0 if your grid resolution is quarter notes, or 66|2|320 if your grid resolution is 1/4 note triplets.

**Note:** Align Bar and Align Grid add tempo markers to the session. Make sure your audio tracks are set to Track Follows Time mode. Any tracks that are set to Track Follows Tempo mode will be time stretched or time compressed as you align bars and align to the grid.

To set tempo using Align Bar and Align Grid:

1. Identify the first bar line of your music source. Place the playhead in an audio file that contains transient information that is aligned with the tempo of the song (for example, a kick drum track), and press the Tab key to locate the first transient. You can also locate the first bar line manually.
2. Choose Edit > Set Bar One.
3. Press Tab until you reach the transient for the bar you want to mark (or press Option+Tab to tab backwards through transients). When you find the bar you want to mark, press Shift+Option+Command+I or choose Edit > Align Bar. The Align Bar popover opens, with a bar number that LUNA estimates.

4. Type or accept the bar number in the box and press Return or click OK. A tempo marker is added and the audio visually adjusts on the timeline.
5. Continue to add bar markers, if needed, by pressing Tab until you find the beginning of a bar, and pressing Shift+Option+Command+I or choosing Edit > Align Bar.
6. To add Grid markers, set the Grid to a workable increment (for example quarter notes).
7. Tab to a transient that is on the grid, and press Option+command+I or choose Edit > Align Grid.

You can continue to add tempo markers in this way for as many bars as you want, with granularity as fine as a single grid increment.

**Note:** The tracks visually appear to stretch and contract as you add tempo markers, but the audio remains unchanged as long as the tracks are set to Track Follows Time mode.

# Importing Session Data

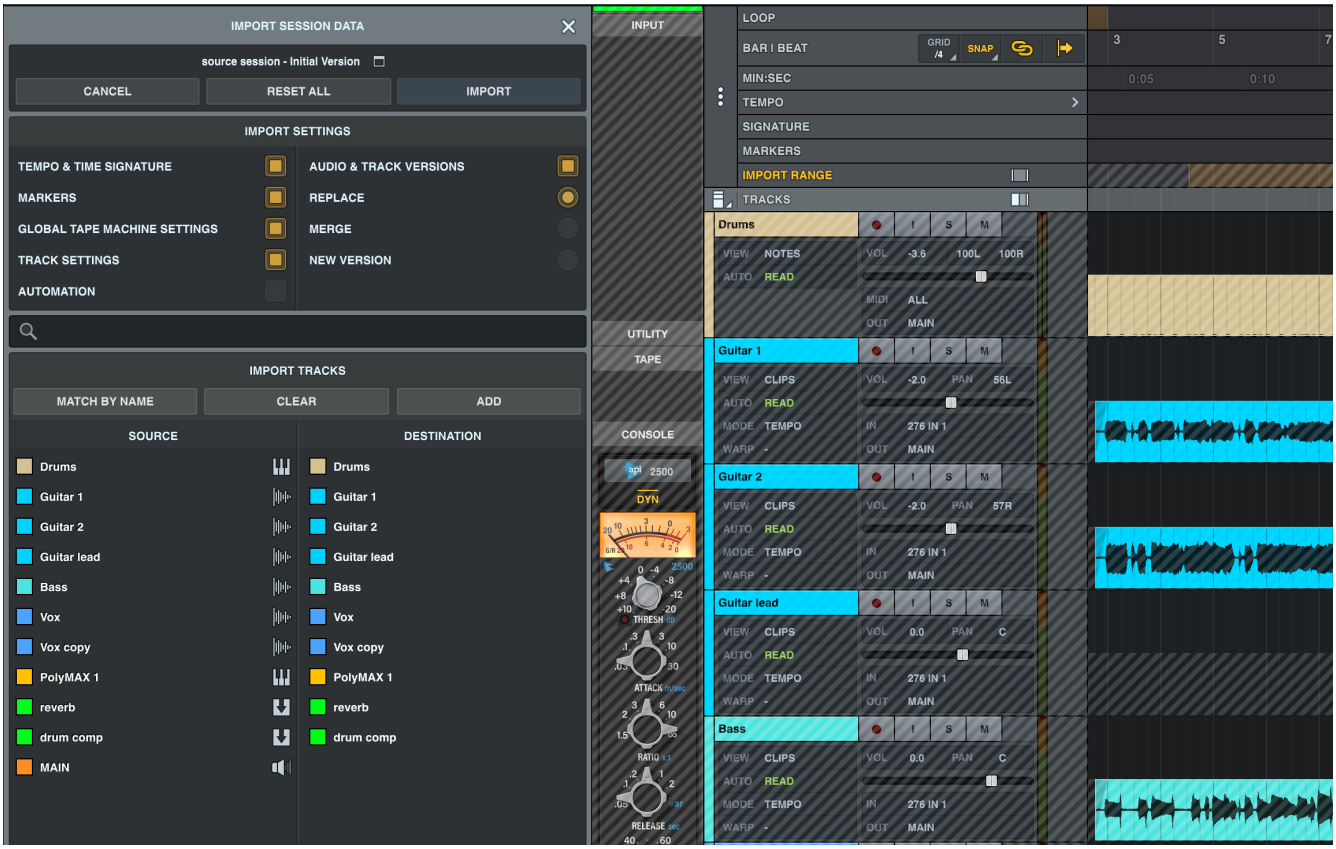
You can import session data from a LUNA session into the currently open session. This allows you to copy audio and MIDI, plug-ins, instruments, and buses from one session file to another, with flexible import options.

**Note:** You can import session data while in either Timeline view or Mixer view. Both views show a preview of the imported track data before you import. However, if you are importing tracks with audio and MIDI data, it is probably more useful to import in Timeline view, so you can see audio and MIDI clip previews.

## About importing session data

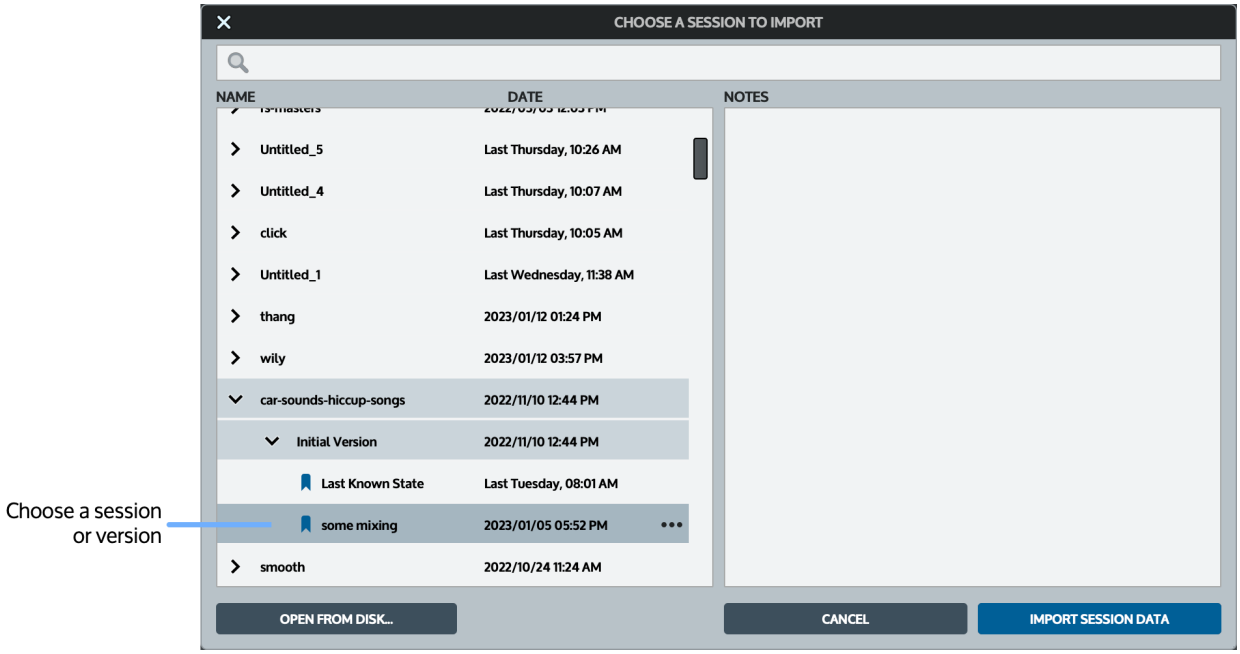
The basic steps for importing session data are as follows.

- Open a session (this is the *destination* session).
- Choose File > Import Session or Option + I, and choose the session file from which to import session data. This is the *source* session.
- Choose tracks to import, and match tracks with existing destination tracks if required.
- Configure import settings. The data to be imported is shown as an overlay on your existing session's tracks.
- Click Import near the top of the browser to import session data.

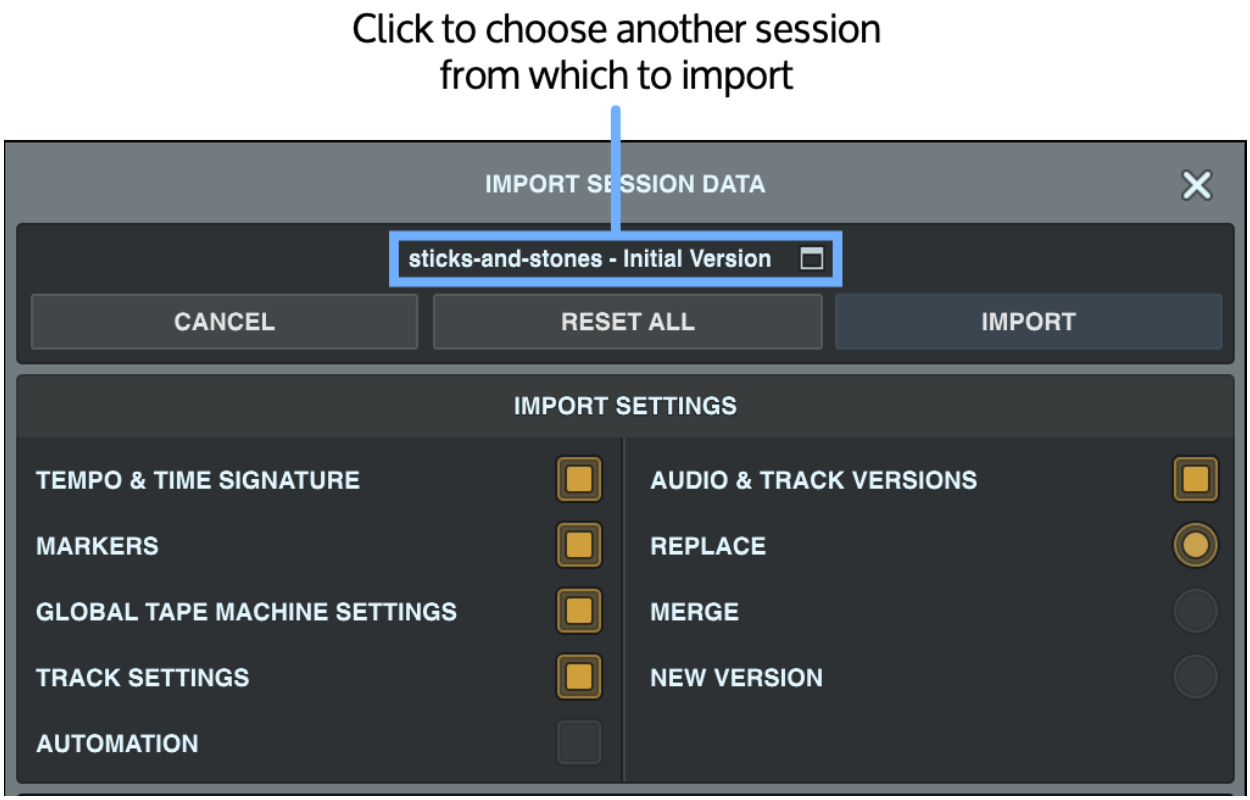


# Choosing a session from which to import data

- From the LUNA menus, choose File > Import Session or press Option + I, and choose the session from which to import session data.
- You can expand a session in the list to see session versions, by clicking the > symbol to the left of session and/or version names.




- Click Open From Disk... to choose a session that is not in LUNA's Recent list.
- When you have selected a session, click Import Session Data. The source session tracks are populated in the Import Session Data browser.
- After you have opened a session from which to import session data, you can switch to a different source session. At the top of the Import Session Data browser, click the session name.



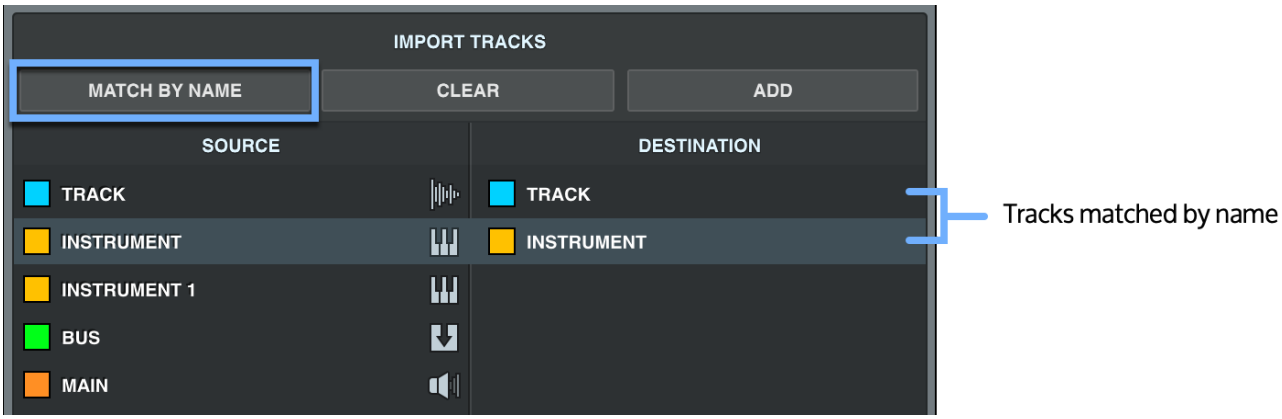

## Configuring which tracks to import

The Import Session Data browser provides several options for how to add and match tracks from the source session to the destination session. You import tracks and session data in the Import Tracks area of the Import Session Data browser, which opens after you choose a session from which to import session data.

You can import audio tracks, instrument tracks, bus tracks, and the main track from another session. When you import tracks, you can choose to create new tracks or import into existing tracks, on a track-by-track basis, for any combination of selected tracks, or for all tracks. The Main track plug-ins, extensions, and automation data can be replaced, but you cannot add another Main track.

### MATCH BY NAME

Click Match by Name to automatically add any tracks from the source session to the destination session, if the track names match.

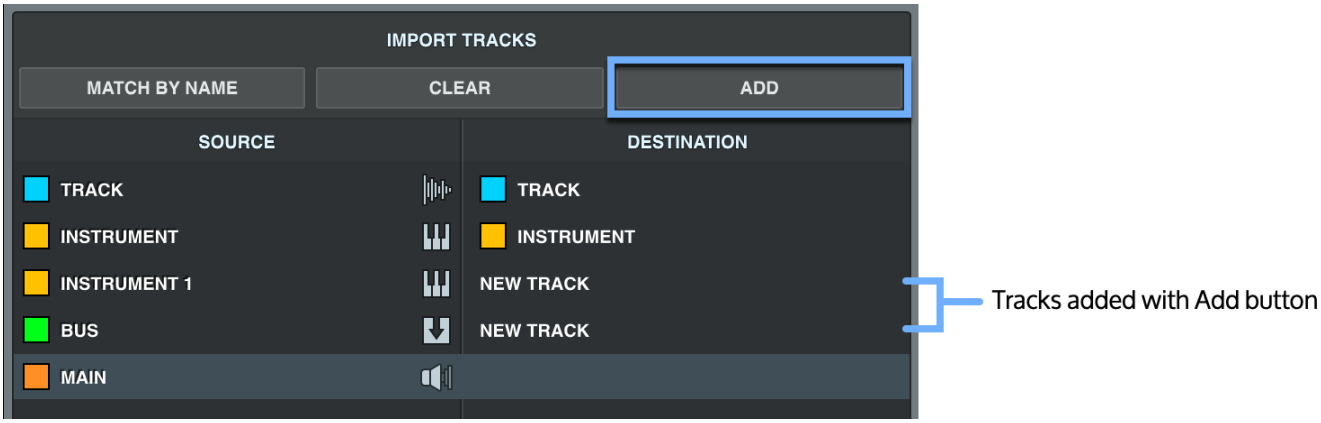



## CLEAR

Click Clear to clear any added tracks before you complete the import.

## ADD

Click Add to add any unmatched import tracks to the session. Unmatched tracks are added as New tracks. The Main track is not automatically included in this import.




## MANUALLY MATCHING AND IMPORTING TRACKS

Select one or more tracks in the Import Tracks browser, and hover your mouse over a track in the Import Tracks browser to see the New Track and Match options.

### New Track

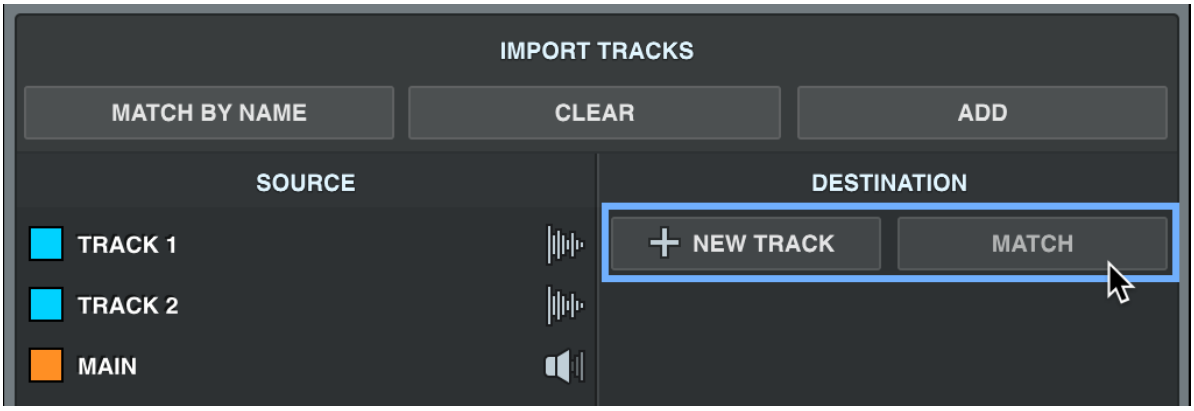
New track adds the imported track as a new track. Click New Track to add the track or tracks to the import list as New Track.

### Match

Match allows you to choose a track to match to the selected track, then imports track data that you specify to that track.

To match tracks in the import track browser

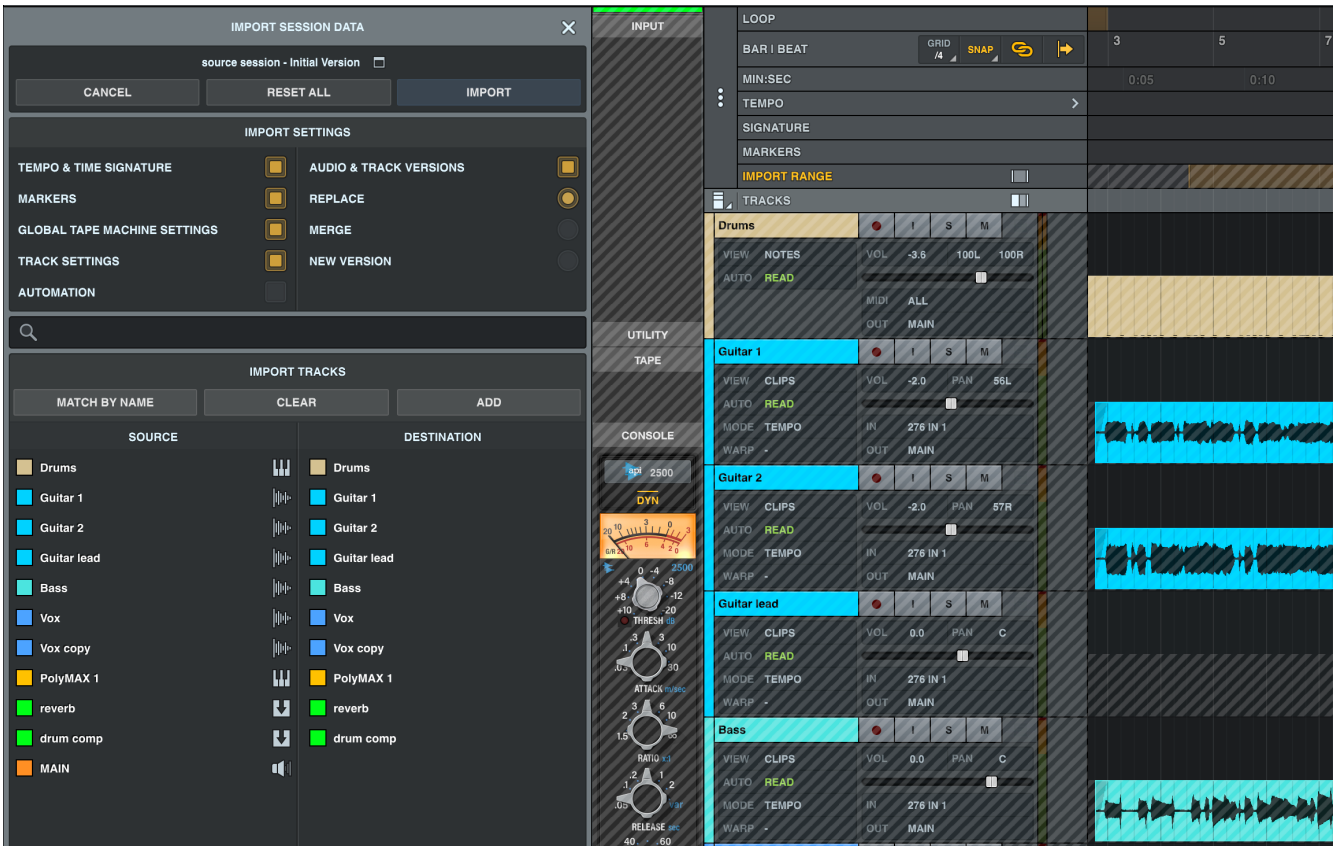
1. After you choose a session to import and open the session in the Import Session Data browser, select the tracks in the destination (current) session to which you want to import the session data.
2. Select the source tracks you want to import to the selected tracks in the Import Tracks browser.
3. Hover over a selected track in the Destination column and choose Match.




   If a track is available with the same name or track format, the destination track name is added to the import list. If no track matches the track name or format, or there are not enough remaining tracks to match, the track is not added to the list, and the text “Bus/Track Mismatch” or “Select Track in Timeline” is displayed.
4. Select tracks in the timeline to which you want to match the tracks in the browser that display “Select Track in Timeline” or “Bus/Track Mismatch.” Those tracks are added to the Import Tracks browser as they are selected. Note that tracks that do not match by name are matched to tracks of the same type and format, if available.

A preview of your matched tracks is shown in the timeline.

When you have finished matching and adding tracks, click Import at the top of the browser.




*Matching and previewing tracks to import*

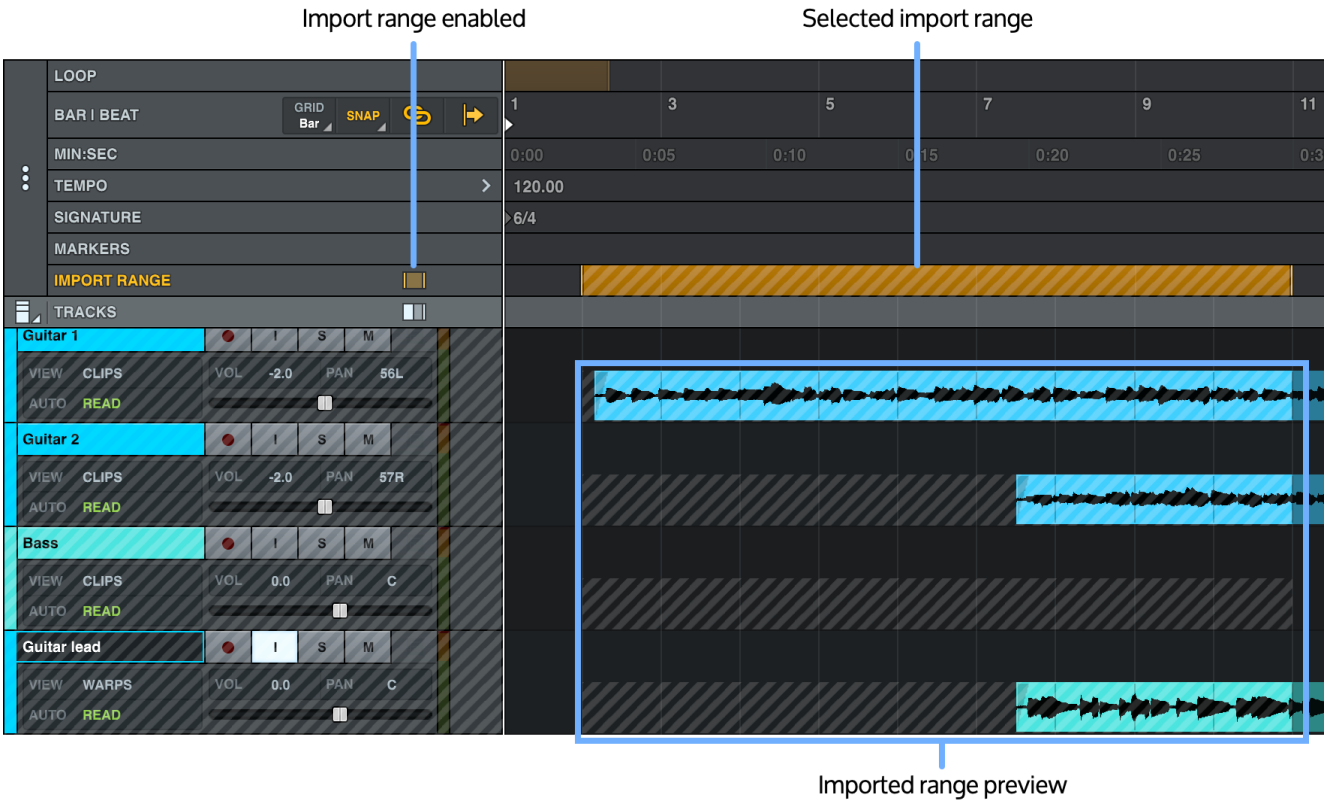
## SELECTING A SESSION IMPORT RANGE

You can select a range (duration) of the source session to import to the destination session.

To select a range to import

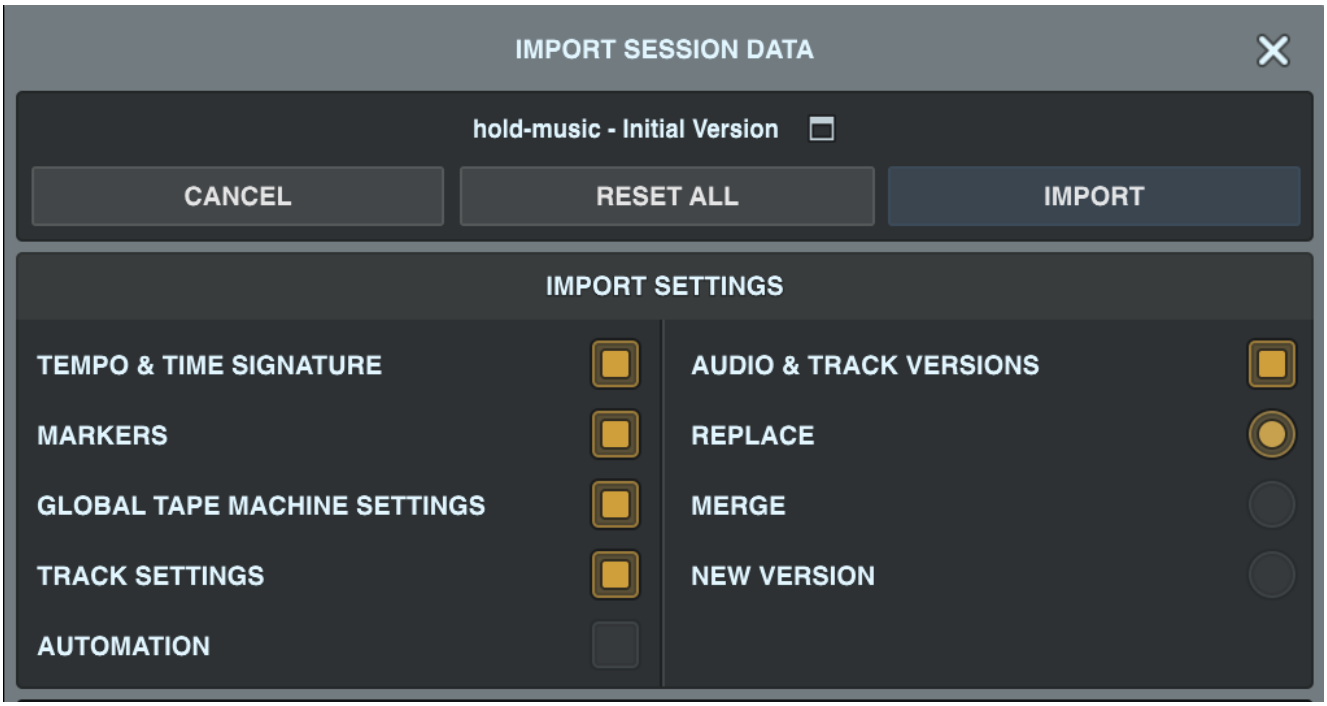
1. After you configure your session import tracks, select a range on the Import Range ruler. You can drag the ruler and expand or contract either end of the ruler by clicking and dragging.
2. Enable the import range by clicking the icon to the right of the Import Range label.

The import preview now highlights the range you are importing. Complete your import when you the range and import settings are correct.




## Configuring import settings

Configure Import Settings in the Import Session Data browser to choose what session data LUNA imports from the source session to the destination session.




## TEMPO & TIME SIGNATURE

Choose this option to import the tempo and time signature from the imported session data. This overrides the settings in your current session.

## MARKERS

Choose this option to import markers from the imported session. This replaces the markers in your current session with the markers from the imported session.

## GLOBAL TAPE MACHINE SETTINGS

Choose this option to import global tape machine settings from the imported session. This replaces the tape machine settings for machines A–D with the settings from the source session, including any empty tape machine slots.

## TRACK SETTINGS

Choose this option to import all track settings from the imported session. Track settings include everything that is not audio, MIDI, automation, or playlist data:

- Inputs
- Volume
- Panning
- Plug-ins and instruments
- LUNA Extensions
- Sends

- Utility row settings
- Outputs
- Track color

### AUTOMATION

Choose this option to import automation on tracks imported into the session. This will copy the automation onto newly created tracks, and replace the automation on existing destination tracks in your current session.

### AUDIO & TRACK VERSIONS

Choose this option to import audio, MIDI, and versions on audio or MIDI tracks, including audio on frozen tracks.

Replace / Merge / New Version

These mutually exclusive options control how audio and MIDI data is imported into the new tracks.

- **Replace** — replaces any existing audio or MIDI data on a track with the source data
- **Merge** — merges any existing audio or MIDI data on a track with the audio or MIDI from the imported track
- **New Version** — adds audio or MIDI data to the track on a new version

# Recording Audio

With LUNA's Accelerated Realtime Monitoring (ARM), you can easily record and monitor multiple audio and instrument tracks with no discernible latency. On tracks that are record-enabled or input-enabled, you can monitor with UAD plug-ins, and you can monitor two ARM AUX-enabled buses that are in the record path (buses that are receiving audio from a record or input-enabled track). While recording, you can monitor tracks that are not record-enabled or input-enabled with UAD plug-ins, LUNA Tape emulation, and Audio Unit plug-ins, and monitor buses with UAD plug-ins and API or Neve Summing. All latencies are automatically delay-compensated by LUNA, and track counts are limited only by the capabilities of your computer.

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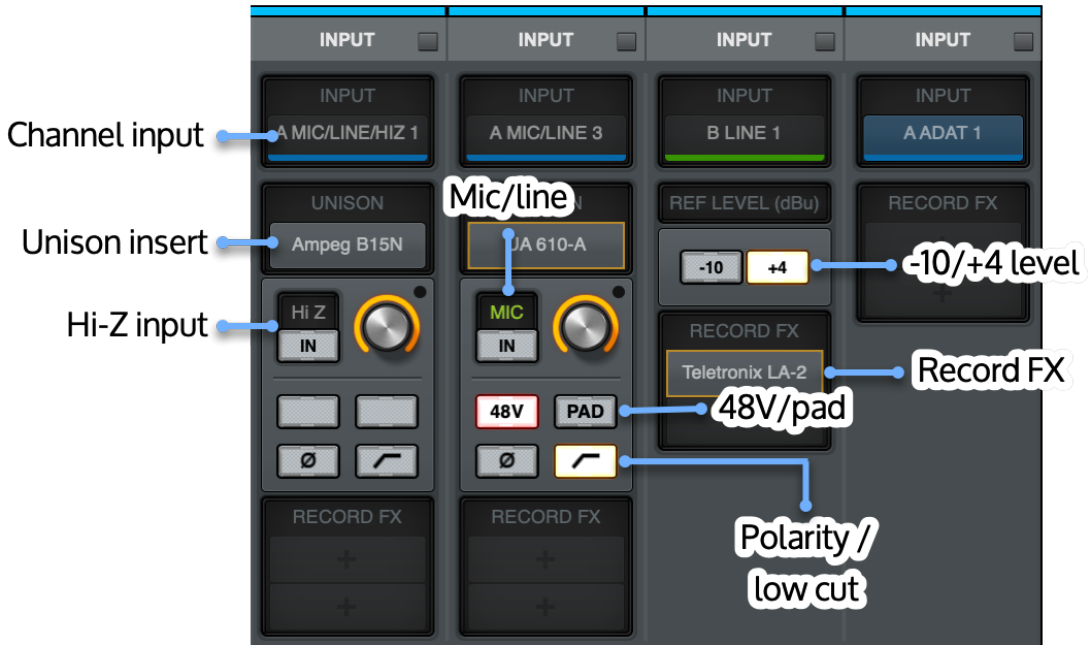
## Recording audio tracks




## TO PREPARE AN AUDIO TRACK FOR RECORDING:

1. On the audio track, click on the Input row in the Mixer channel or on the Focus channel. The Input Focus Browser opens.
2. Choose the Input to which your source is connected. To switch between Mic and Line inputs, click the Mic/Line switch.
3. Click the Record enable button on the track, or press Shift+R.
   **Note:** If no tracks are record-enabled, when you press Record or Command+Spacebar, any currently selected tracks are record-enabled, and audio or MIDI is recorded on those tracks.

## CONFIGURING TRACK INPUT OPTIONS

Preamp controls correspond to the equivalent preamp controls on the Apollo hardware. Adjusting Apollo's hardware preamp options updates LUNA, and vice versa.

Some preamp hardware controls (Gain, Low Cut, 48V, Pad, and Polarity) are Unison parameters that interact with Unison plug-ins placed in the Unison insert.

**Note:** You can only adjust preamp controls and Unison plug-in parameters when a track is record-enabled or input-enabled.

### Preamp Inputs

Each of Apollo's preamp channels have multiple analog inputs (mic, line, Hi-Z) that can be selected with the preamp controls.

Click to switch between mic and line inputs manually in LUNA or on the Apollo hardware. Channels are automatically switched to Hi-Z inputs when a 1⁄4" mono (tip-sleeve) cable is connected to Apollo's Hi-Z input jack.

### Line inputs

Analog line inputs without mic preamps are available on some Apollo models. These line inputs may have a reference level switch instead of preamp controls.

### Digital inputs

Digital inputs work like analog inputs, except they don't have the extra preamp and reference level settings that may be available on the analog inputs.

### Virtual inputs

Virtual input channels do not reflect Apollo hardware inputs. Instead, they receive digital signals from the computer system via Apollo's device drivers, enabling Realtime UAD Processing on digital audio signals that may be present in the system. On macOS, you can route digital signals to virtual inputs with the Audio MIDI Setup utility.

### Low Cut

When enabled, the channel's input signal passes through a low cut (high pass) filter. The filter has a cutoff frequency of 75 Hz with a slope of 12 dB per octave by default, though the filter can change when a Unison plug-in is active in the channel. The Low Cut filter affects the Mic, Line, and Hi-Z inputs. Low Cut is typically used to eliminate rumble and other unwanted low frequencies from the input signal.

**Note:** The default low cut filter slope and frequency can change if a Unison plug-in is active in the channel. The input scaling and fader taper can also change if you use a Unison plug-in.

### 48V

Enable the 48V control to supply 48 volts of phantom power to the equipment connected to the Apollo channel's Mic input. The indicator light is red when enabled. Many modern condenser microphones require 48V phantom power to operate. This option can only be activated when the Mic/Line switch is set to Mic.

Activate 48V phantom power only with compatible equipment such as phantom-powered microphones. Incompatible equipment, such as some ribbon microphones, may be damaged by the applied voltage. There is a delay and audio is muted when changing the 48V state, to minimize the clicks and pops that are inherent when engaging phantom power. The 48V LED on the Apollo flashes during this delay.

Caution: To avoid potential equipment damage, disable +48V phantom power on the channel before connecting or disconnecting its XLR input.

### Pad

Enable the PAD control to attenuate the microphone input signal level by 20 dB. The indicator light turns yellow when enabled. Pad does not affect the Line or Hi-Z inputs. Pad is used to reduce signal levels when overload distortion is present at low preamp gain levels, such as when particularly sensitive microphones are used on loud instruments, or if the A/D converter is clipping.

### Polarity

Enable the polarity switch to invert the channel's signal. The indicator light turns yellow when enabled. Polarity affects the Mic, Line, and Hi-Z inputs.

**Tip:** Polarity inversion can help reduce phase cancellations when more than one microphone is used to record a single source.

## RECORDING AUDIO INPUTS

Audio can be recorded with or without UAD plug-in processing.

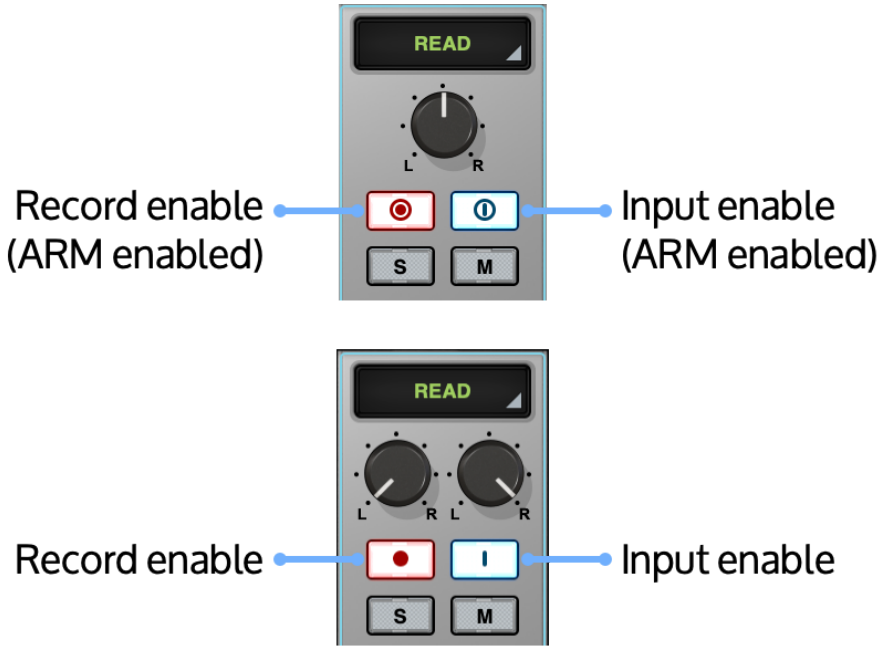
Unison technology is activated when a Unison-enabled UAD plug-in is loaded in the dedicated Unison insert located above the preamp options. The Unison insert is only available on preamp channels.

Audio on preamp channels is processed by the Unison insert before the Record FX inserts. Unison and Record FX plug-in processing is always recorded.

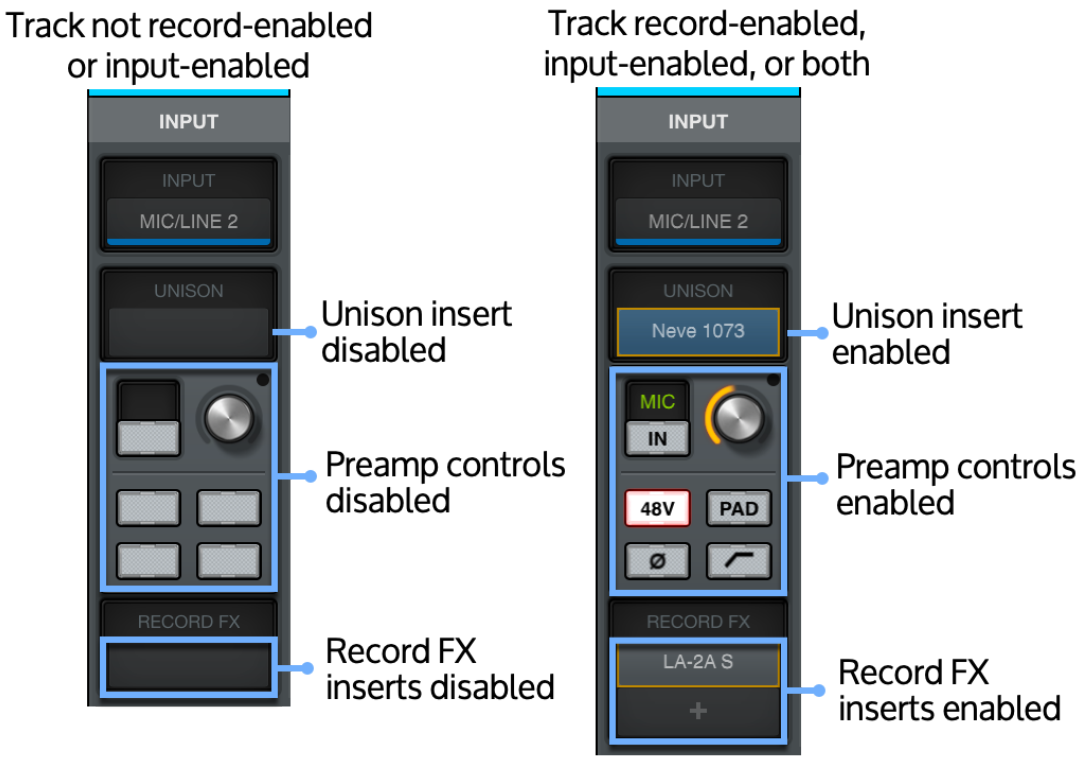
**Tip:** You can monitor through UAD plug-ins without recording their processing by placing them in the standard inserts.

### Record enabling and Input enabling tracks

Record and/or Input enable tracks to monitor track inputs according to your workflow needs.




When you record-enable or input-enable a Unison-capable track, the Unison insert and Record FX inserts are made available, and the channel preamp controls become active.




Record enabled

When an audio track is Record enabled, you can monitor the input to the track while the transport is stopped and while the transport is playing and record-ready. When an audio track is record-enabled, and the transport is playing but not recording, audio from the input is muted, and audio clips on the track are played through LUNA. When the transport is recording, all Record enabled tracks are recorded to disk.

Tips

- You can record-enable one or more selected tracks by pressing Shift+R.
- If no tracks are record-enabled, when you press Record or Command+Spacebar, any currently selected tracks are record-enabled, and audio or MIDI is recorded on those tracks.

Input enabled

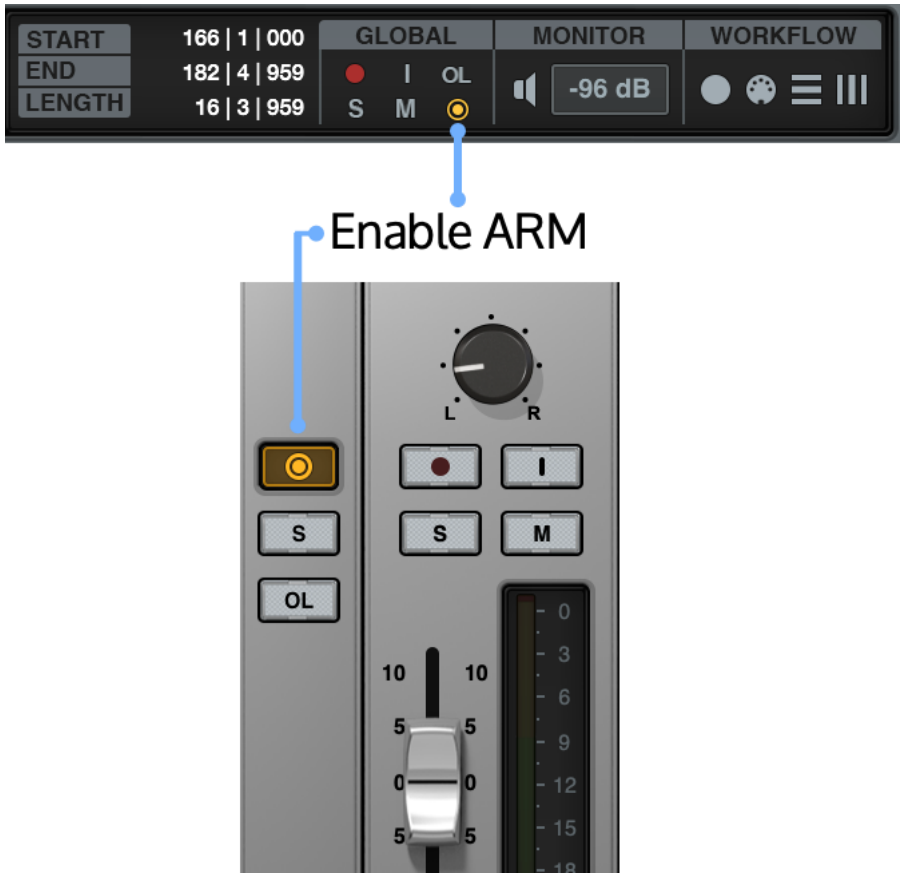
When an audio track is input-enabled, you can monitor the input to the track at all times, whether the transport is stopped, playing, or recording. When an audio track is input-enabled, the audio clips on the track do not play through the LUNA mixer. When a track is both record-enabled and input-enabled, the track is monitored at all times, but the track is recorded to disk when the transport is recording.

Input enable tips:

- You can input-enable all record-enabled tracks automatically by pressing Option+K.
- You can input-enable one or more selected tracks by pressing Shift+T.

To record audio:

1. In the Tracks browser, click the plus (+) next to Create New Tracks.
2. From the Type drop menu, choose Audio. Choose the number of tracks to create, the format (Mono or Stereo), and type a name for the track or tracks.
3. Click OK to create the tracks, or Cancel to stop track creation.
4. Click the ARM button in Global Controls, or choose Transport > Accelerated Realtime Monitoring to enable ARM.



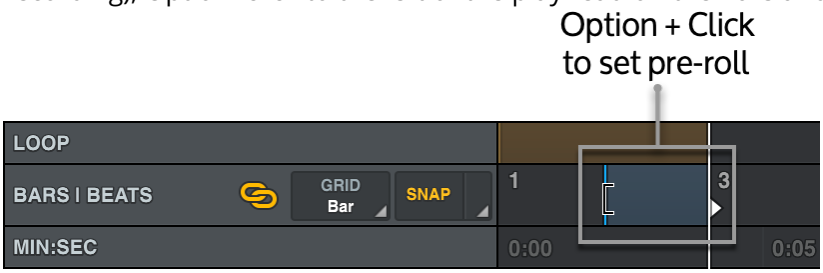

5. On the audio track in the Focus channel or Mixer, click the Input mixer row. The Input browser opens.
6. Choose the input to which your source is connected.
7. Click the Record enable button in the track or Focus channel (Timeline view) or in the channel (Mixer view) or press Shift+R to record enable the audio source. If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.
8. If you want to use a Unison plug-in click the Unison insert and choose the plug-in.
9. Adjust the settings for the Unison plug-in. Some Unison plug-in settings can be adjusted from Apollo hardware. All settings can be adjusted from the plug-in and LUNA channel controls.
10. To record with Record FX, insert up to four UAD plug-ins in the channel's Record FX inserts.
11. Adjust the audio settings until the audio levels are correct. You want to record with enough headroom so the recording track doesn't clip.
12. Click Record in the transport or press Command + Spacebar to record audio.
13. Click Stop or press the Spacebar to stop recording.

To listen back to the recording, press Play or the Spacebar.

**Note:** You can listen to the recorded track if the track is record-enabled, but not if the track is input-enabled.

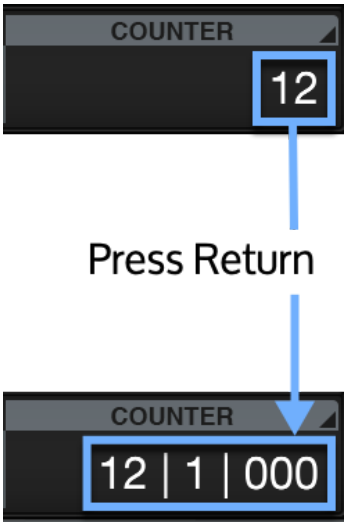
To record starting at a specific point on the timeline:

1. Switch to Timeline view.
2. Click on a location in the Timeline where you want to begin recording. Click above the center of an audio track, or in any of the rulers.
3. To use Pre-roll (listen to the existing track for a specified period of time before you start recording), Option+click to the left of the playhead on the Bars and Beats ruler.



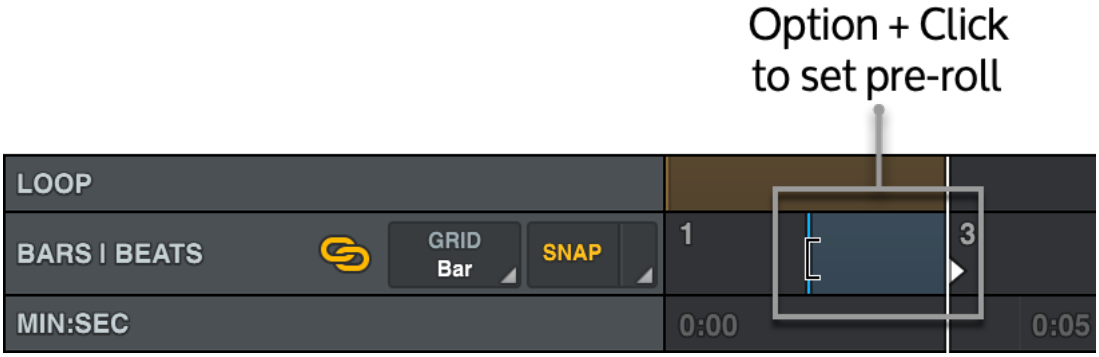

4. Click the ARM button in Global Controls, or choose Transport > Accelerated Realtime Monitoring to enable ARM.
5. Record-enable track(s), and input-enable if necessary.
6. Click Record or press Command+Spacebar.
7. Click Stop or the Spacebar to stop recording.

You can also move the playhead to a specific time by typing a time in the Counter field, and pressing Return. For example, in Bars and Beats mode, type 122 to move the playhead to 122|0|000, or type 122|2 to move the playhead to 122|2|000.



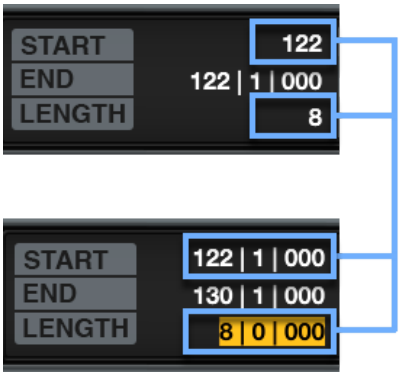
To record in a selection on the timeline (punch-in recording):

1. Switch to Timeline view.
2. Click on a location in the Timeline where you want to begin recording, and drag to the right or the left to select the range to record. Click and drag above the center of an audio track, or in any of the rulers.
3. To adjust the selection length, move the playhead to a position to the right or left of the center of the selection and Shift+Click. Note that you can lengthen or shorten a selection with this method.
4. To use Pre-roll (listen to the existing track for a specified period of time before you start recording), Option+click to the left of the playhead on the Bars and Beats ruler.




5. Click the ARM button in Global Controls, or choose Transport > Accelerated Realtime Monitoring to enable ARM.
6. Record-enable track(s), and input-enable if necessary. If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.
7. Click Record in the transport or press Command+Spacebar.
8. Click Stop or the Spacebar to stop recording.

You can also make a selection by typing a start time in the Start time field, and either a length in the Length field, or a stop time in the End field, then pressing Enter. These fields are located to the right of the Transport. For example, in Bars and Beats mode, type 122 in the start field and 8 in the Length field to select 8 bars from 122|1|000 to 130|1|000.

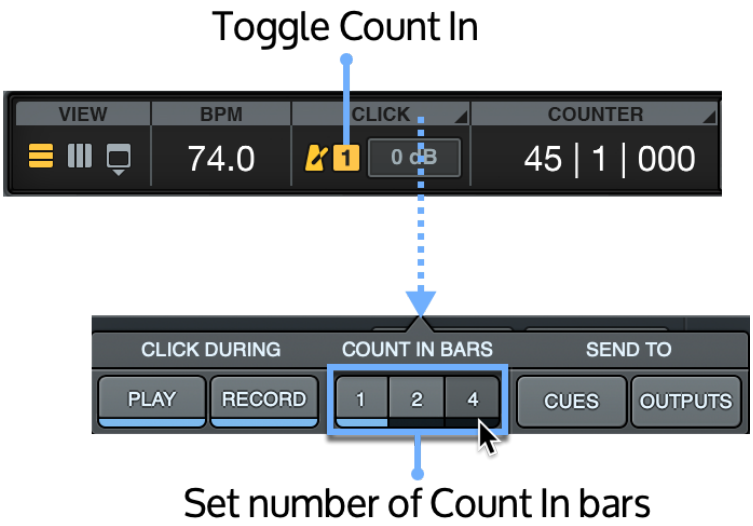


Using Count In

You can use Count In to play 1, 2, or 4 bars of clicks before recording starts. There is no session playback during Count In. Count In bars only play when the Record button is enabled in the transport.

To enable or disable Count In:

1. Click the Count In icon (a 1, 2, or 4 next to the metronome), or press Shift+K or 8 on the Numeric Keypad to toggle Count In on or off
2. To set the number of bars of Count In, click at the top of the click ruler to open Click options. Under Count In Bars, click the number of bars of Count In.




### STOP RECORDING AND DISCARD RECORDED FILES

To stop any in-progress recordings and immediately delete the audio or MIDI, press Command + Shift + . [period], or select Transport > Discard Recording while recording. The session continues playback, but the audio or MIDI you are recording is removed from the timeline and deleted from the session file.

When you discard a recording during loop recording, only the most recent take is removed from the timeline and deleted from the session file. Files being recorded are moved to the macOS Trash. There is no undo for Discard Recording.

---

## Loop Playback and Recording

In loop playback/record mode, you play or record over a selection repeatedly. Use loop playback to audition a section repeatedly, when editing or adjusting levels or plug-ins. Use loop recording to build up or replace a MIDI performance with successive takes, or to record multiple takes on audio tracks. You can enable Loop by making a selection on any ruler or in the timeline, or with the special-use Loop Ruler.

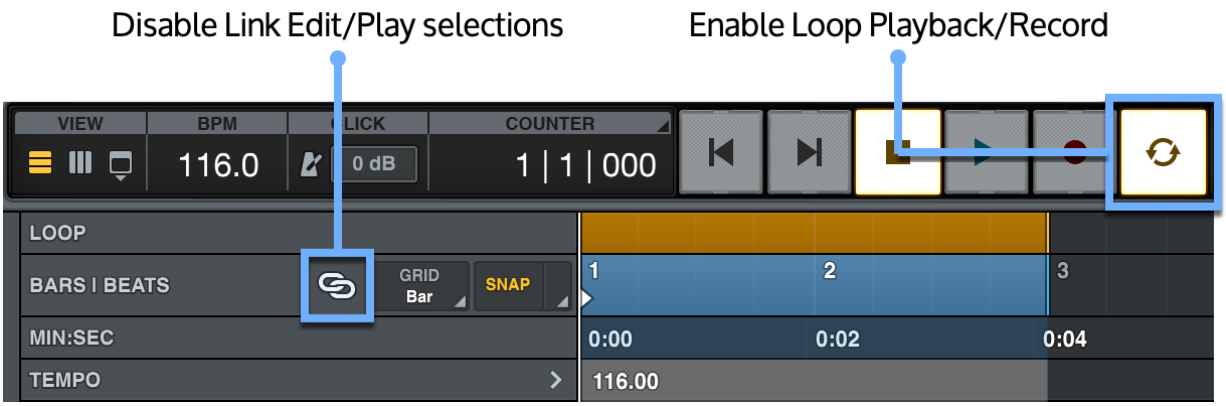
You can make a selection on the Loop ruler to continuously loop a section of the session, while making edits to audio or MIDI data, without changing the original selection or moving the playhead. The Loop ruler appears in orange in Timeline view at the top of the track area. A selection on the Loop ruler is only active when Loop Playback/Record is enabled.

## LOOP PLAYBACK BEHAVIOR

A selection on the Loop ruler continues to loop during playback. You can make selections on the Timeline, and edit audio and MIDI tracks, and the Loop ruler continues to play the same loop. However, if you make a selection on the Bar and Beats ruler, that selection overrides the Loop ruler selection. When you stop and start playback, playback starts from the selection on the Loop ruler, unless the selection has been overridden by a selection on the Bars and beats ruler. When Link Edit/Play Selections is active, after the transport stops, playback starts from the timeline selection or playhead location, even if there is a Loop ruler selection.

## LOOP RECORD BEHAVIOR

A selection on the Loop ruler continues to loop during record. The selection continues to loop and record over that selection, even if you make a different selection on the Bars and Beats ruler or in the timeline, until the transport stops.




To loop playback while editing audio or MIDI:

1. Disable Link Edit/Play selections on the Bars and Beats ruler.
2. Enable Loop Playback/Record on the Transport (Ctrl+L).
3. Select a range in the Loop ruler. This range indicates the start and end of the section to loop. You can click and drag on either end of the loop selection to extend or shorten the selection.
4. Click Play on the Transport or press the Spacebar.

The section you selected plays back. While the looped selection is playing you can select, edit, copy, paste, or delete data from any audio or Instrument tracks in the timeline, and make any other adjustment, without the loop stopping or changing. When you complete edits for a section, you can click and drag the loop to a different position in the timeline, or edit the length of the loop. Loop playback continues as you adjust the loop.

After you make changes to a loop, Loop playback resumes, based on the Update Playback setting.

| Setting | Playback behavior after the loop changes |
|---|---|
| Transport > Update Playback > Instantly | Playback immediately restarts from the beginning of the new loop selection. |
| Transport > Update Playback > At Next Bar | Playback continues to the end of the next bar, then restarts from the beginning of the new loop selection. |
| Transport > Update Playback > At Loop End | Playback continues to the end of the loop that was previously defined, then restarts from the beginning of the new loop selection. |

Loop recording and Versions and Takes

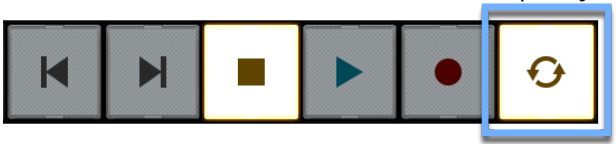
When you loop record, you replace a section of a track that you select with one or more recording passes, or "takes." When LUNA reaches the end of the selection, the transport returns back to the start of the selection, and records again. Each loop record pass is saved as a Version labeled with a T (for Take). The first recording on a track is labeled with a V, as are all other Versions created by adding or duplicating Versions. Takes are labeled with a T to indicate that they were automatically created by the loop record process.To show recorded Versions and Takes, click the Versions button at the top of the Tracks area.

**Note:** If the track height is too small to show the Versions list, the name of the current version appears in the Versions area, and you can click on the name to open a list of Versions and perform Version operations.

A Take is not always a complete track. Therefore, when you switch from a Version to a Take, you will not see the entire track, but only the section that was loop-recorded.

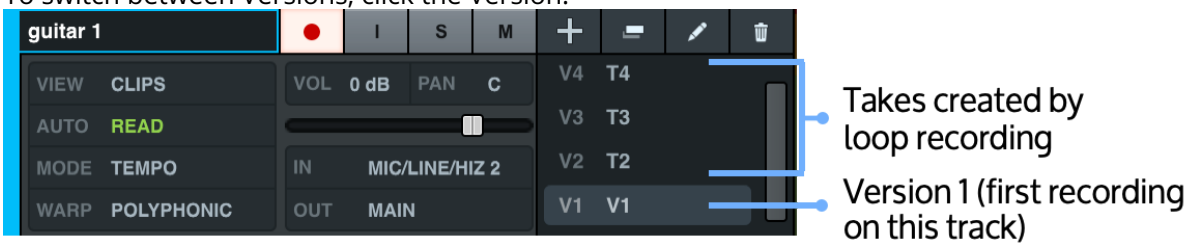
To loop record:

1. Make an audio selection and click the Loop Play / Record button or press Control+L.



2. Record your source.
3. Click the Versions icon to show track Versions.

4. To switch between Versions, click the Version.




To assemble different clips together using Versions, see “Comping Tracks with Versions.”

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# Tracking multiple audio sources

Features for recording multiple audio sources in LUNA include:

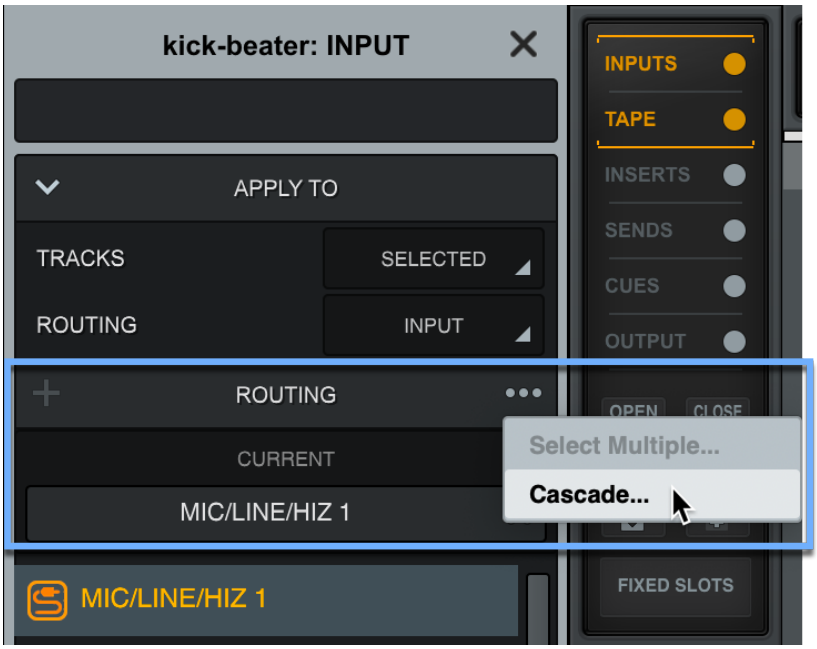
- Setting up audio tracks for multiple inputs at once by assigning cascading inputs.
- Using cues to send a click and custom mixes to different groups of performers.
- Easily copying the current mix to a cue bus.
- Punch-in recording with multiple tracks.
- Switching the transport in and out of record on the fly.

## CONFIGURING MULTIPLE TRACKS FOR RECORDING

Use Cascade mode to route multiple inputs to audio tracks quickly.

To assign multiple inputs in order to tracks:

1. Select multiple tracks in the Timeline or Mixer.
2. Click the input on the first track you want to assign. The Input browser opens.
3. Next to Routing, click the ••• options menu and select Cascade.




4. Click the first input you want to assign.

The remaining selected tracks are assigned the remaining inputs, in order.

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## Recording multiple inputs at once

To record on multiple inputs, use selection grouping to enable recording on multiple tracks. To enable selection grouping, select Mixing > Selection Grouping (Command+G).

### TO RECORD ON MULTIPLE TRACKS:

1. In the Mixer or Timeline, select multiple tracks. All tracks you record enable must be assigned with unique inputs.
2. Record-enable one track, either by clicking the record-enable button, or pressing Shift+R. All selected tracks will be record-enabled.
3. Add Unison, Record FX, and standard insert plug-ins to the tracks if needed.
4. Adjust the audio settings until the audio levels are correct. You want to record with enough headroom so the recording track doesn't clip.
5. Click Record and Play (Command+Spacebar) in the transport to record audio.
6. Click Stop or press the Spacebar to stop recording.

You can make multiple input recordings with all of the same options as a single track recording, including Unison plug-ins, Record FX plug-ins, standard insert plug-ins, and buses, as DSP is available.

## RECORDING ON MULTIPLE TRACKS

You can easily switch multiple tracks in and out of record mode while playing a session. Simply record enable the tracks you want to record, and press the Record button on the transport to toggle in and out of record. Enable ARM mode to do this seamlessly.

**Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you toggle recording.

## USING CONSOLE TRACKING MODE

Console Tracking mode allows you to use Console for live channel inputs, and prevents LUNA from automatically muting and unmuting console channels when recording. Essentially, all inputs remain live, and Console works as it previously did, while LUNA is running.

In Console Tracking Mode, UAD plug-ins do not persist in LUNA inputs as they normally do. Instead, when you record-enable a track in Console Tracking mode, the plug-ins assigned to the track in Console are loaded into the LUNA channel.

Because you always hear the channels from Console in Console Tracking Mode, you do not need to use the Input enable button on a track to monitor the audio source, as long as the source is not muted in Console. However, you still need to record-enable tracks to record audio.

To enable Console Tracking Mode:

- From the LUNA app menu, choose Transport > Console Tracking Mode.

## PUNCH-IN RECORDING WITH MULTIPLE TRACKS

You can easily punch-in record on multiple record-enabled tracks, with multiple performers. You can even record-enable input tracks while LUNA is playing or recording, which allows you to enter record mode for any input without stopping the transport.

To prepare for punch-in recording:

- If you want to record at a specific point, move the playhead to the record location, or make a selection you want to record over. Alternatively, you can play the song and punch in with the record button as needed.
- If you are not using Console Tracking Mode, make sure record-enabled tracks are not Input-enabled. This allows performers to hear the recorded tracks until recording starts, and after recording stops, and hear live input while recording.
  **Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you toggle recording.
- Set the system in ARM mode.
- Set a pre-roll for the performers. This allows the performers to play along to the music before the recording starts.

In this scenario, you can press Record and Play (Command+Spacebar) to record on multiple tracks. With the capabilities of the LUNA recording engine, you can also easily play the song and have the performers play along, and punch them in and out manually by pressing the Record button on the Transport to toggle recording on and off.

## MAKING CUE MIXES

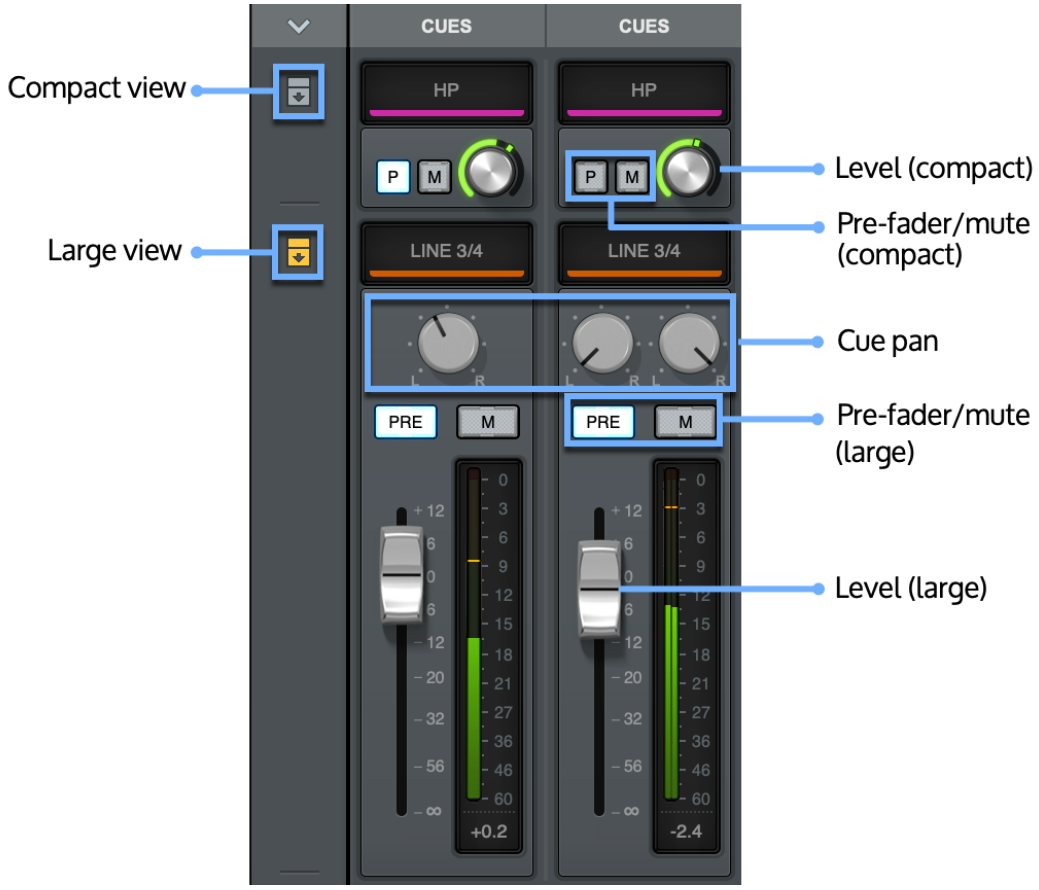
You can use up to four independent stereo Cue mixes in LUNA. You set Cue sources and assign Cue mixes to those sources, to allow performers to listen to a different mix when recording. When a hardware output pair is set to Cue (in the Cue Outputs popover), the cue source is the dedicated cue mix, determined by the settings on the Cue row in the Mixer. In this mode, the mix of the cue bus is determined by the cue send controls in the session's tracks.

Note: The number of available Cue mixes is determined by the connected UA audio interface hardware and the Cue Bus Count value in LUNA Settings.

Cue sends are pre-fader by default, though they can be configured to be post-fader. When a Cue is pre-fader, changes to levels, pan, mute and solo on the channel strip do not affect the Cue mix send for that channel.

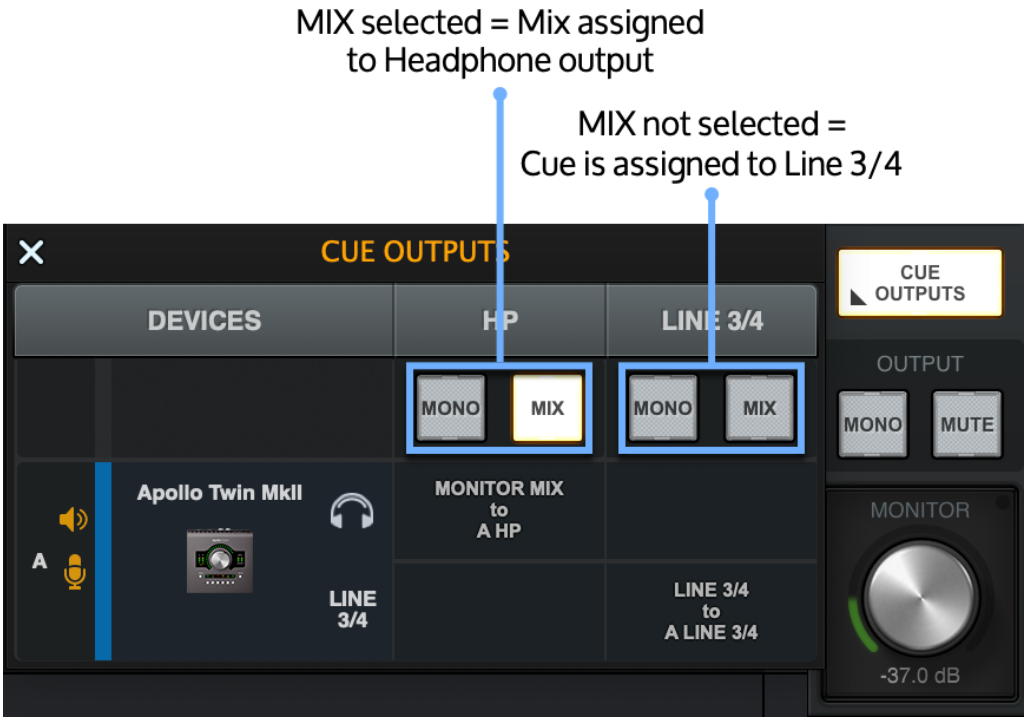
Once you assign outputs to Cues (in the Cue Outputs popover), you can set channels as pre-fader in a Cue mix, and you can use the compact or large Cue strips to set the level and pan for each track in the Cue mix, and to mute tracks in the Cue mix. To simplify setting up a Cue mix, you can easily copy the levels and pan settings from your mix to one or more Cue mixes.

Cues have a dedicated Level knob, mute and Pre-fader switch. When you expand a Cue row to Large view, the expanded Cue channel has a more accurate fader and dedicated pan controls.



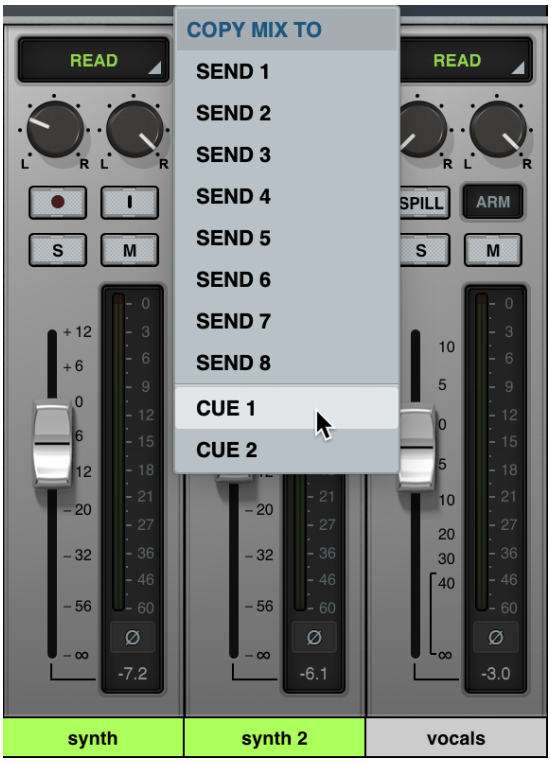
To assign a Cue to an output:

1. Choose View > Section > Monitor.
2. Click the Cue Outputs button on the Monitor column. A list of devices and available Cue outputs appears on a popover window. The left column displays connected devices, the right columns display available outputs for each Cue, and each row displays the device's current Cue output assignments.
3. If you want to make a custom mix for a Cue, deselect Mix in a column on the popover. When Mix is NOT illuminated, you create a Cue mix using the channel strip Cue sends.




To copy the main mix to a Cue:

1. In the Mixer, right-click or Control+click on an audio, Instrument, or bus track's volume fader or pan knob.
2. Select the Cue to which you want to copy the main mix.

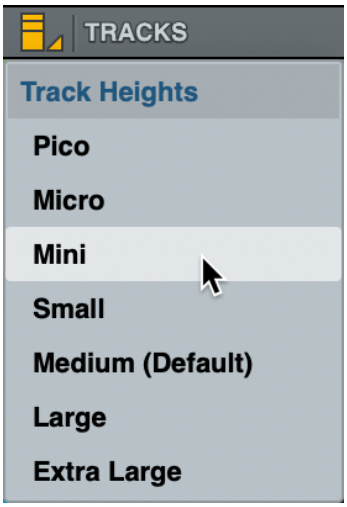



Levels and panning for all track faders are copied to the selected Cue.

# Editing Audio and using the Editing Tool

## Resizing and zooming the audio track

You can resize an audio track to simplify editing. At the top of the timeline tracks area, below the Rulers, click the Tracks icon, and choose a new track height size.

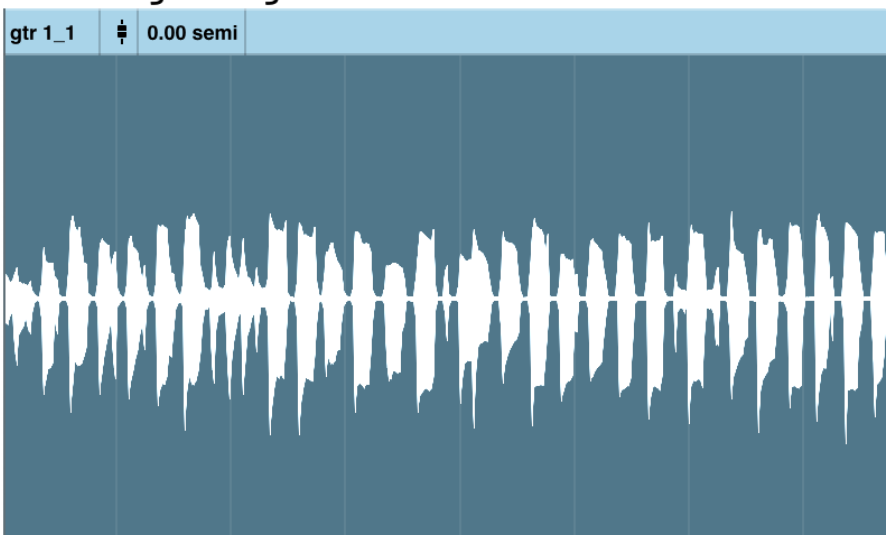


This resizes all tracks to the new size.

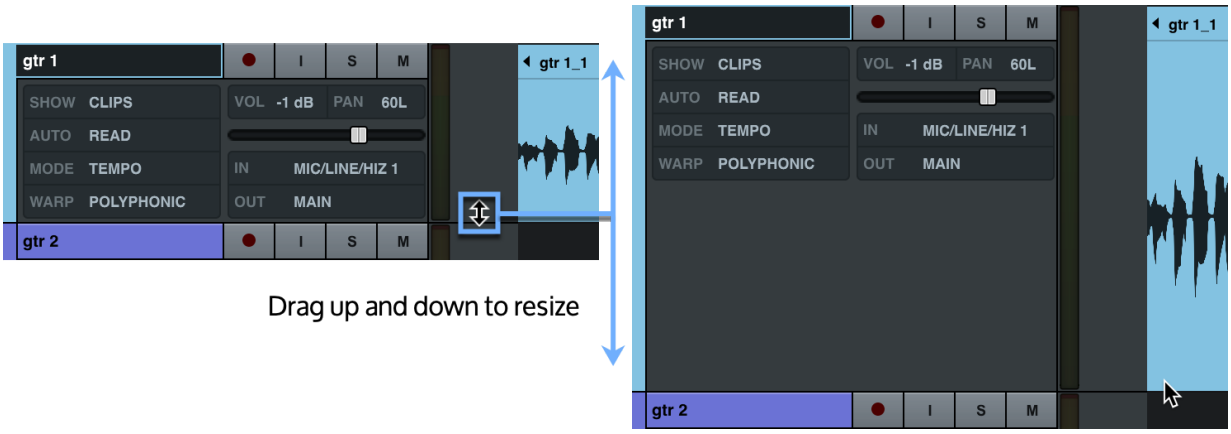
Track height: Small

Track height: Medium (Default)

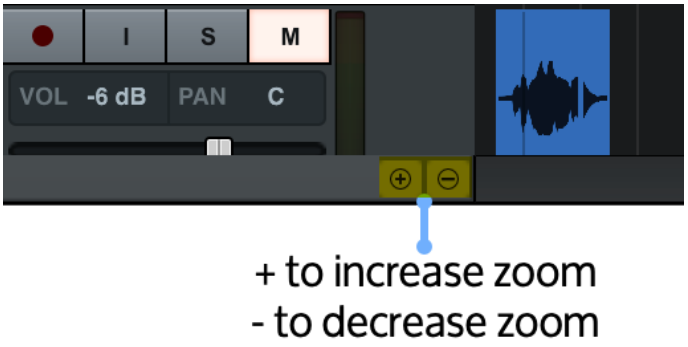
Track height: Large




- To resize selected tracks with a key command, press Control+↑ to increase track heights, or Control+↓ to decrease track heights.
- To resize all tracks with a key command, press Control+Option+↑ to increase track heights, or Control+Option+↓ to decrease track heights.
- To resize an individual track, hover over the lower edge of the Track controls area. A double arrow appears. Drag up or down to resize.

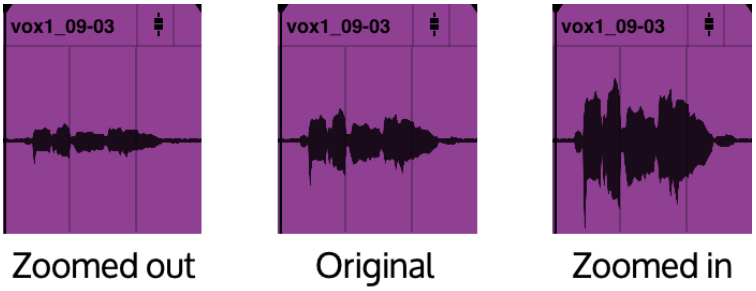



- To resize selected tracks with a key command, press Control+↑ to increase track heights, or Control+↓ to decrease track heights.
- To expand a selection to the full available editing space, press the E key (if the system is not in MIDI Keyboard Mode).
- To resize (zoom) the track horizontally, click the plus and minus buttons at the bottom of the Edit workspace (or use the keyboard shortcuts Command+[ to zoom out, and Command+] to zoom in).
- On a trackpad, you can pinch in or out to zoom the timeline horizontally.
- With a mousewheel, you can hold the Option key and scroll to zoom horizontally.




## TO VERTICALLY ZOOM (INCREASE OR DECREASE THE WAVEFORM SIZE) ON AUDIO TRACKS:

Type Command+Option+[ to zoom out (decrease waveform size). Type Command+Option+] to zoom in (increase waveform size).



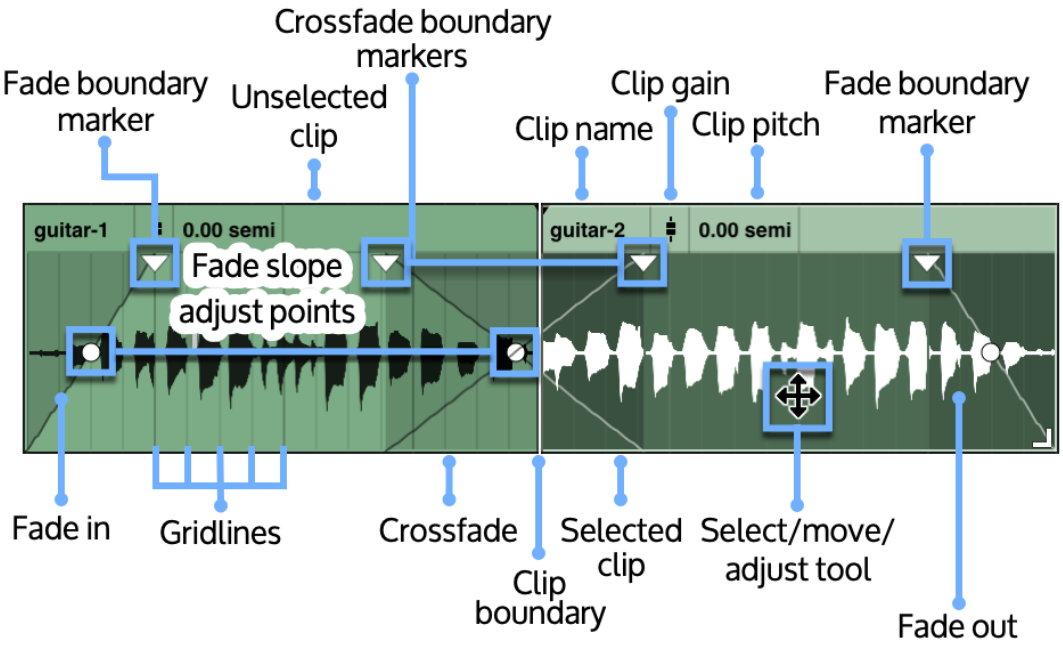
*Zooming waveforms*

# Audio clips and fades

An audio clip is a self-contained section of audio that is either recorded, imported, pasted, or duplicated on an audio track. Audio tracks can contain multiple clips, and clips can overlap or be combined or split.

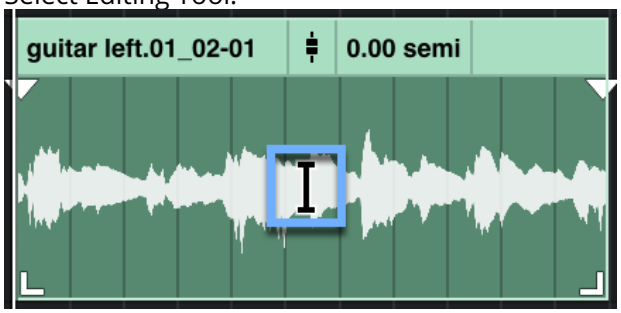
You can edit audio with the Editing Tool and key commands.

When you hover the mouse cursor over an audio or MIDI clip, it becomes the Editing Tool. Where you place the cursor, and what the editing context is, determines the Editing Tool behavior.

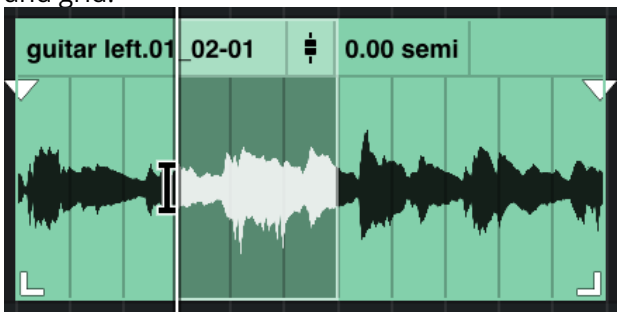



## MAKING SELECTIONS

- To select audio, hover your cursor above the vertical middle of the clip. The cursor changes to the Select Editing Tool.



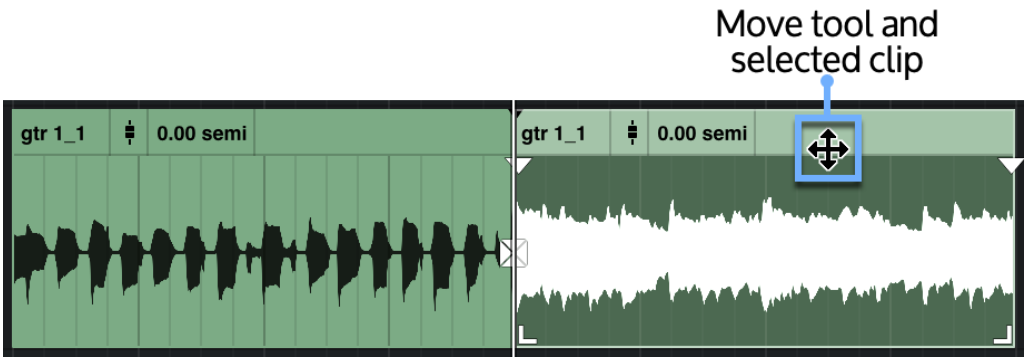
- Click and drag to the right or left to select an audio range. Selections conform to the Snap setting and grid.



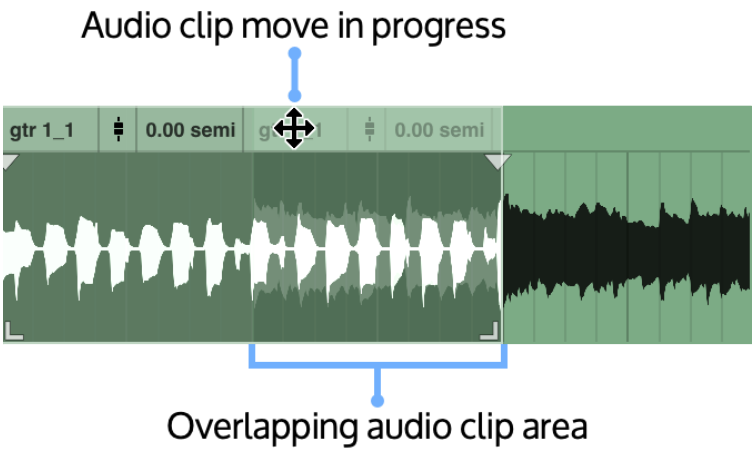

- To extend or shorten a selection, press Shift, then click the location to which you want to extend or shorten the selection.
- To make a free selection when Snap is enabled, press Command, then make the selection.
- To select on multiple tracks, press Shift to select multiple tracks, then make your selection.
- To extend a selection you have already made to more tracks, press Shift, then click on the tracks you want to add to the selection.

## MOVING A CLIP

To move a clip, hover at the top or in the lower half of a clip. The move tool appears. Click and drag the clip to a new location. You can drag a clip on the same track, or to another track, if it is the same type (audio or MIDI). If you have Snap enabled, the moved clip snaps to the grid. To move without snapping to the grid, press the Command key while you drag.




When you move an audio clip, it can overlap an existing clip. You can see this overlapping and underlying area when dragging the audio clip. When you play a section with overlapping clips, you only hear the topmost audio clip. If you later move the clip again, any underlying clips that exist are revealed. If you fade or crossfade audio, the underlying audio can be revealed or used in the fade or crossfade, depending on the length of the overlapping and underlying audio clips.




### SNAPPING TO THE CLIP START TIME OR THE PLAYHEAD

When you drag a clip to another track or on the same track, you can snap the clip to the original start time by pressing the Control key while dragging, or at any time before you release the clip.

To snap the start of a clip to the playhead location, place your playhead, then Control+Click the clip.

---

## Cutting, copying, and pasting audio

Cut audio to remove it from the timeline and place it on the clipboard, ready to be pasted. Copy audio to place it on the clipboard without removing it from the timeline. Paste audio to place the contents of the clipboard on the timeline, at the playhead.

### COPYING AND PASTING AUDIO BY DRAGGING

To quickly copy a clip and drag it to a new location, Option+Click the clip and drag it to a new location. This “copy and drag” operation retains the underlying audio structure.

### CUTTING AUDIO

To cut audio, select the audio range or clip and press Command+X. The audio range or clip is cut, and placed on  the clipboard, ready to be pasted. When you cut audio, a gap is left in the audio file from which you cut. if you selected a clip, the clip is removed from the timeline. Note that when you cut audio, you are cutting a representation of the audio, but the cut is non-destructive, and the original audio file remains unchanged. You can trim the edges of a cut selection to restore the portions of audio you have removed (see Trimming an audio clip).

### COPYING AUDIO

To copy audio, select the audio range or clip and press Command+C. The audio is copied, and placed on the clipboard, ready to be pasted.

### PASTING AUDIO

To paste audio, place the playhead or make a selection, and press Command+V. Note that the full length of the cut or copied selection is pasted, and the underlying audio and audio structure under the paste is not retained. For example, if you paste an audio selection over other layered clips and crossfades, those elements are not restored if you later move, cut, or delete the overlaying clip.

**Tip:** If you want to place an audio clip while retaining the underlying clip structure, Move the clip instead of pasting it, or copy and paste by Option+Clicking and dragging the audio.

---

## Nudging audio, MIDI, and selections

When you nudge audio or MIDI, you move it by a small amount, using key commands or menu items. You can nudge an audio clip, audio within an audio clip (adjusting the audio back and forwards without moving the clip boundaries), MIDI notes, and MIDI clips. If there is no selection, the nudge commands move the playhead. If there is a selection, but no clips or MIDI notes are selected entirely within that selection, the nudge commands move the selection area.

You can nudge by the following amounts:

- The current grid setting
- Bars, beats, or note divisions
- Time (from 1 millisecond to 1 second)
- Samples (from 1 to 10,000)
- Ticks (from 1 to 200)

### WHAT IS NUDGED?

Nudge commands nudge based on what is and is not selected. You can nudge on a single track or on multiple selected tracks.

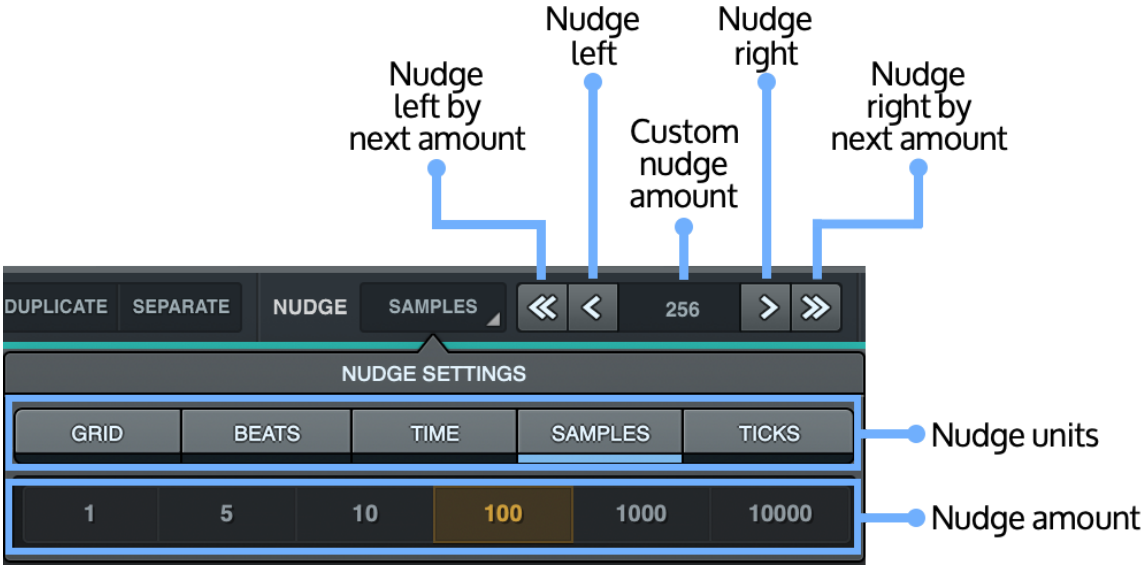
- If nothing is selected, nudge commands move the playhead.
- If a selection is made within an audio clip, and no whole clips are selected, nudge commands move the selection only.
- If an audio or MIDI clip is selected, nudge commands move the clip.
- If an area is selected containing multiple clips, nudge commands move all completely selected clips within that selection.
- If one or more MIDI notes are selected, nudge commands move the MIDI notes.

### SETTING THE NUDGE UNITS AND AMOUNT

Set the nudge units and amount on the Edit Workflow pane, or by starting the Nudge settings.

1. Open the Edit Workflow by pressing the edit workflow switch or open the Nudge Settings by choosing Edit > Nudge > Settings... from the LUNA menus.

2. To the right of Nudge, click the nudge units to open the Nudge Settings popover.



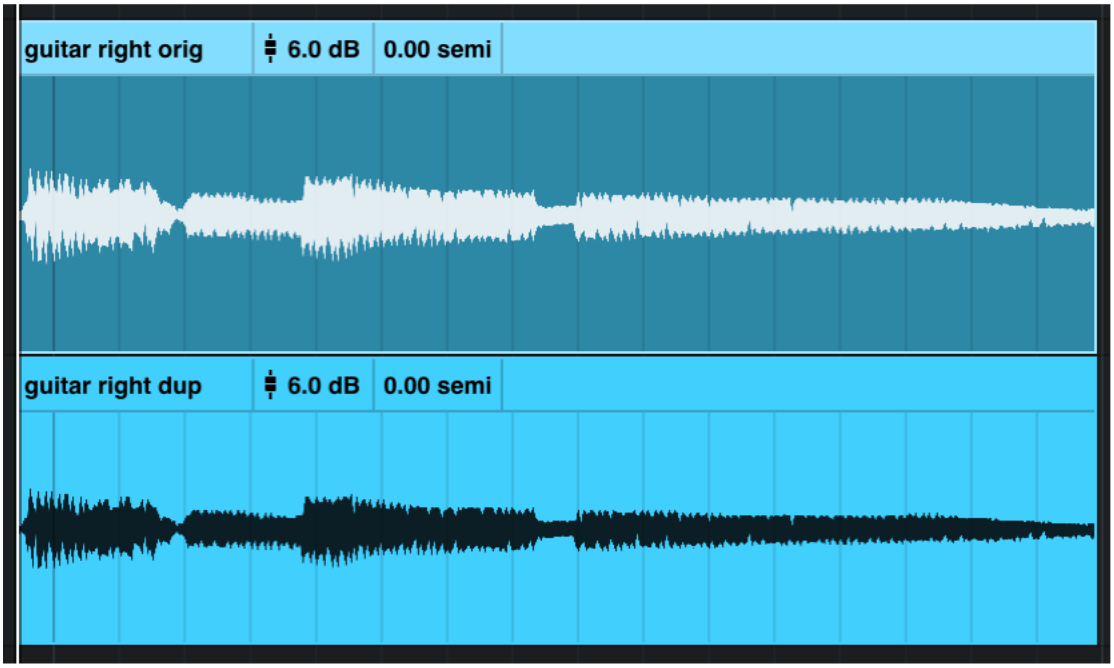

3. Click to select the nudge units (Grid, Beats, Time, Samples, or Ticks).
4. Select the nudge amount. Different selection amounts are available depending on the units you select.
5. To specify a custom amount, type the amount in the nudge amount field and press Enter.

## NUDGING A CLIP

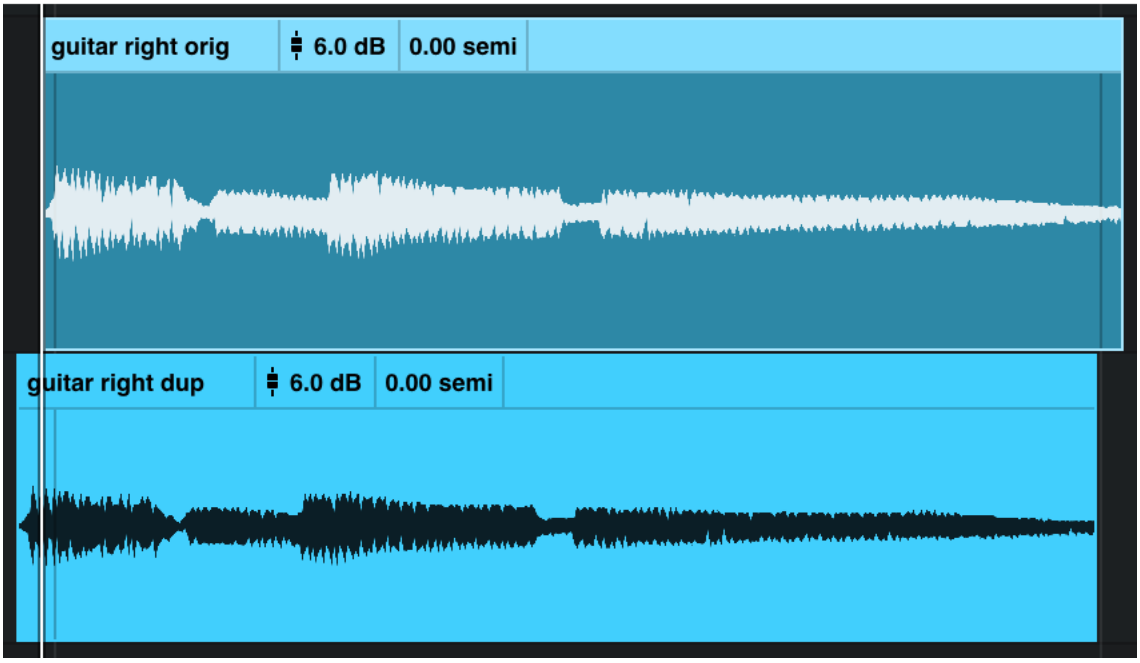
The basic keys to nudge a note, clip, the playhead, or a selection are the comma ( **,** ) and the period ( **.** ). The comma nudges to the left, or earlier in time, and the period nudges to the right, or later in time.

- To nudge left, press the period ( **,** ), select Edit > Nudge > Left, or click the **<** in the Edit workflow / Nudge settings.
- To nudge right, press the period ( **.** ), select Edit > Nudge > Right, or click the **>** in the Edit workflow / Nudge settings.
- To nudge left by the next higher nudge amount, press M, select Edit > Nudge > Left Next Amount, or click the **<<** in the Edit workflow / Nudge settings.
- To nudge right by the next higher nudge amount, press / , select Edit > Nudge > Right Next Amount, or click the **>>** in the Edit workflow / Nudge settings.

## Original clips




## Nudge clip right 2000 samples

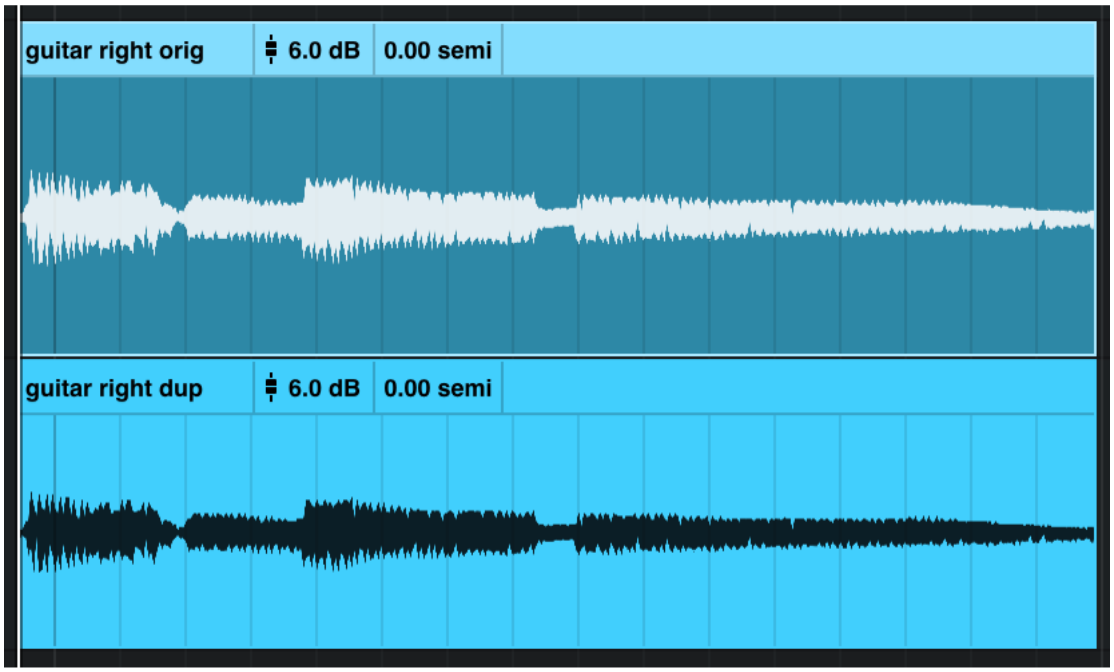


## NUDGING WITHIN AN AUDIO CLIP

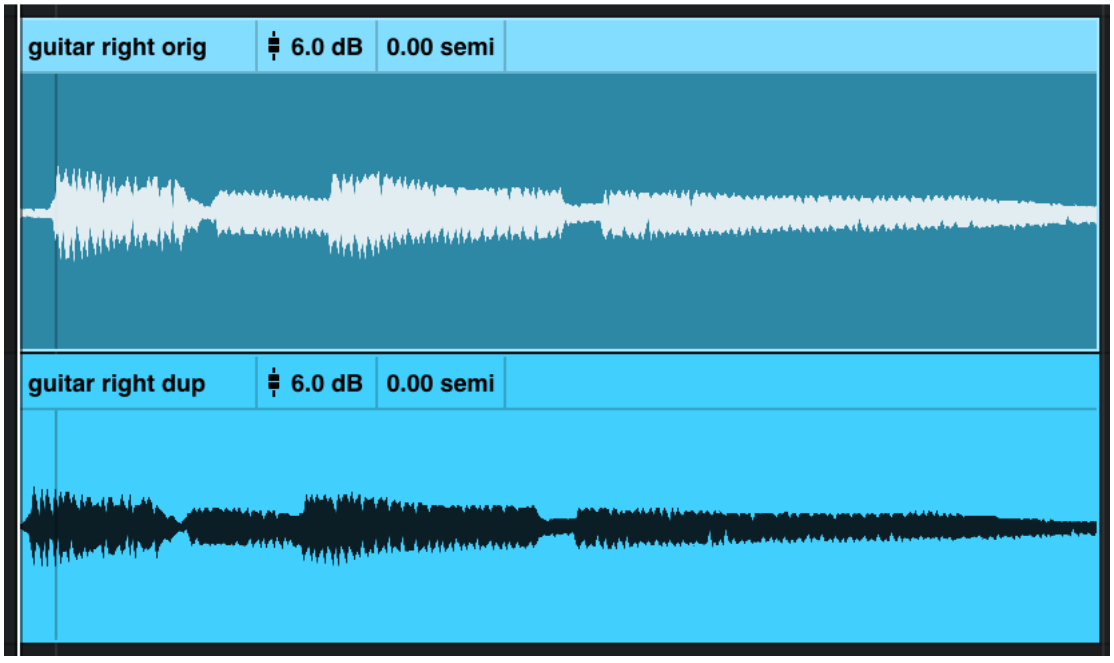
To nudge audio within an audio clip, without moving the boundaries of the audio clip, you can use the Nudge Content commands.

- To nudge content left, press Control + , or select Edit > Nudge Content > Left from the LUNA menus.
- To nudge content right, press Control + . or select Edit > Nudge Content > Right from the LUNA menus.
- To nudge content left by the next higher nudge amount, press Control + M or select Edit > Nudge Content > Left Next Amount from the LUNA menus.
- To nudge content right by the next higher nudge amount, press Control + / or select Edit > Nudge Content > Right Next Amount from the LUNA menus.

## Original clips




## Nudge Content right by 2000 samples

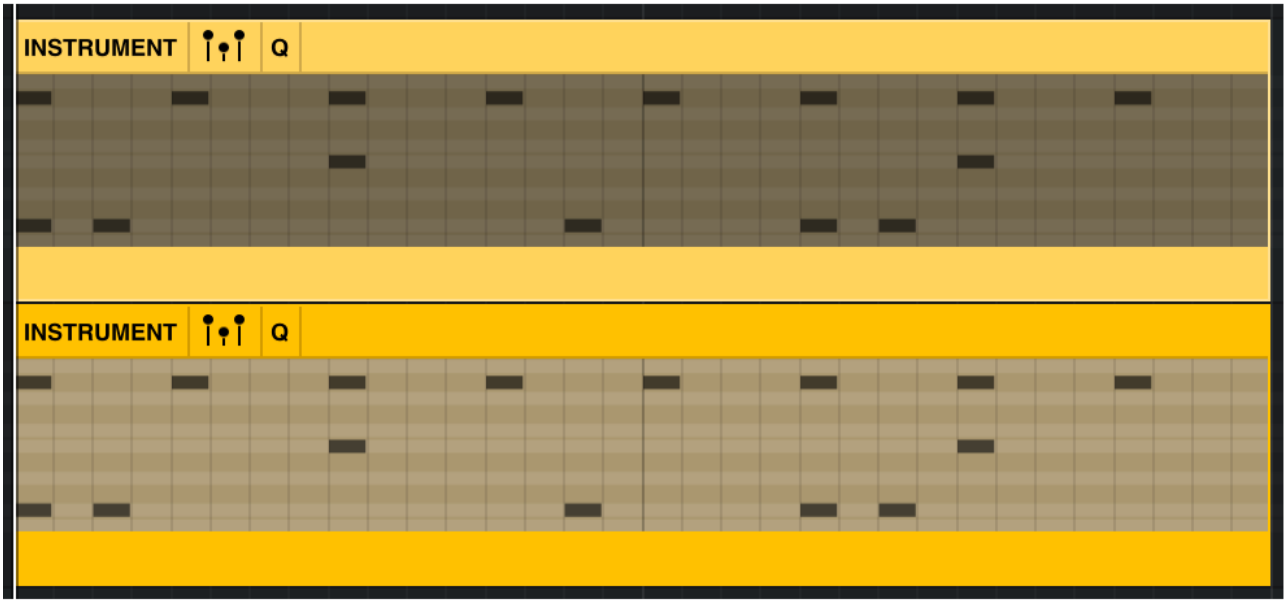


## NUDGING A MIDI CLIP OR MIDI NOTES

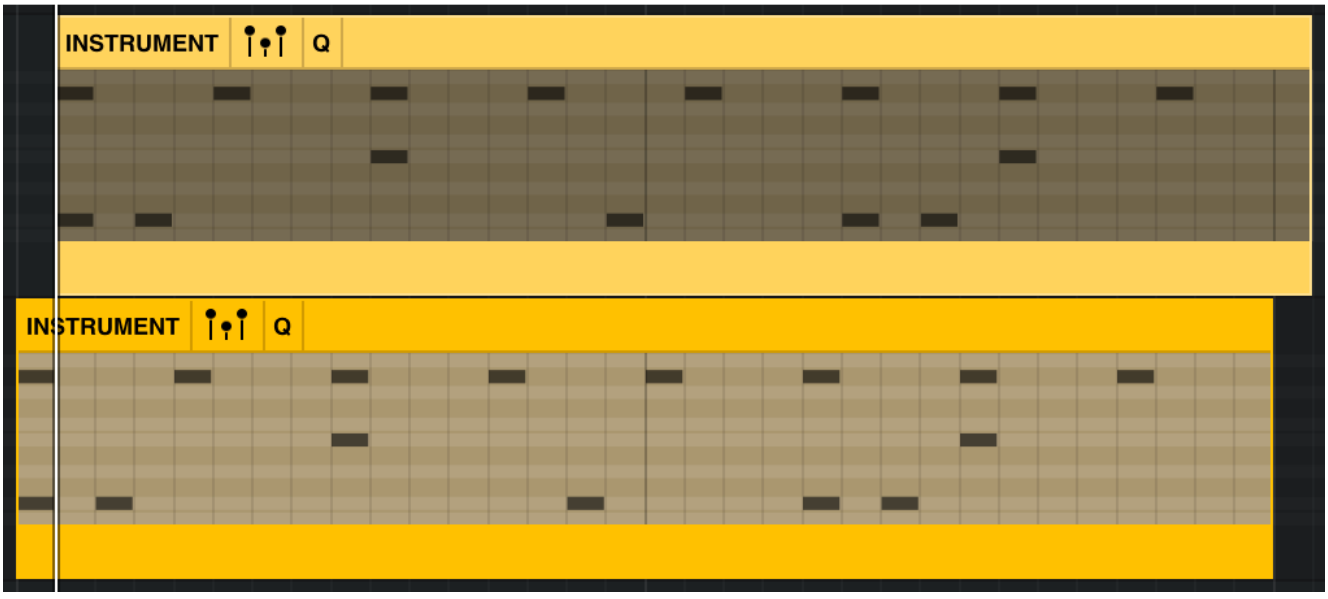
You can nudge whole MIDI clips or selected MIDI notes within one or more clips. The basic keys to nudge a clip or notes are the comma ( **,** ) and the period ( **.** ). The comma nudges to the left, or earlier in time, and the period nudges to the right, or later in time.

- To nudge left, press the comma ( **,** ), select Edit > Nudge > Left, or click the **<** in the Edit workflow / Nudge settings.
- To nudge right, press the period ( **.** ), select Edit > Nudge > Right, or click the **>** in the Edit workflow / Nudge settings.
- To nudge left by the next higher nudge amount, press M , select Edit > Nudge > Left Next Amount, or click the **<<** in the Edit workflow / Nudge settings.
- To nudge right by the next higher nudge amount, press / , select Edit > Nudge > Right Next Amount, or click the **>>** in the Edit workflow / Nudge settings.

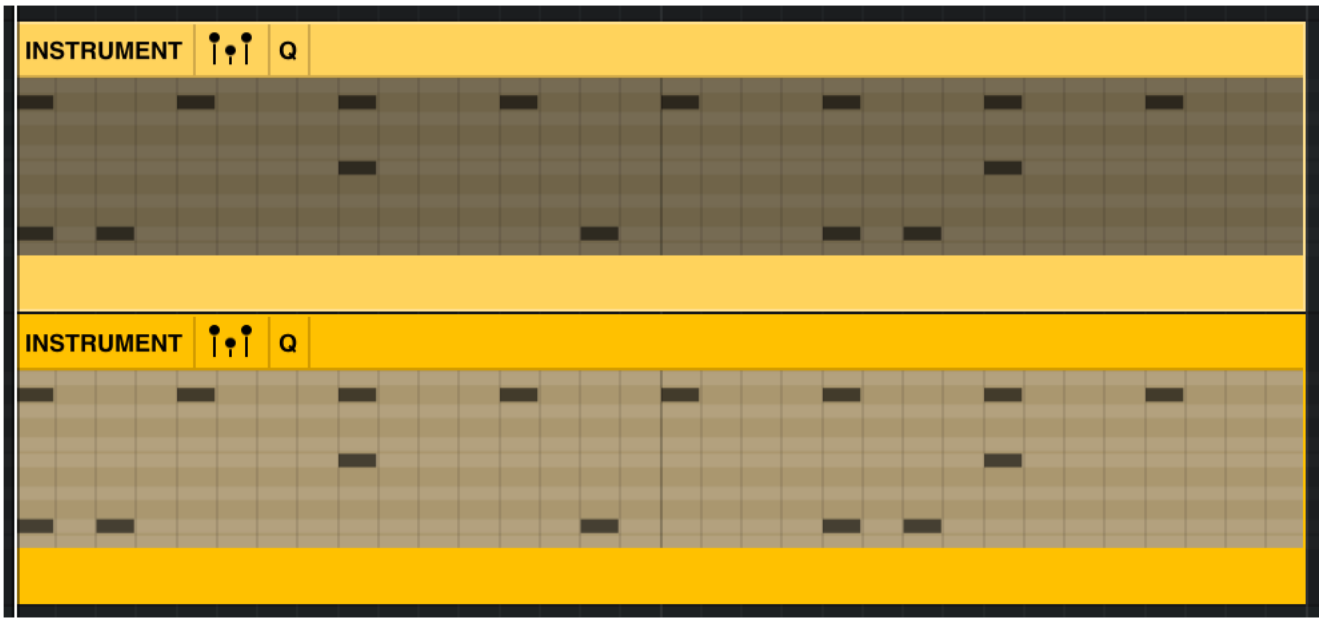
## Original clips



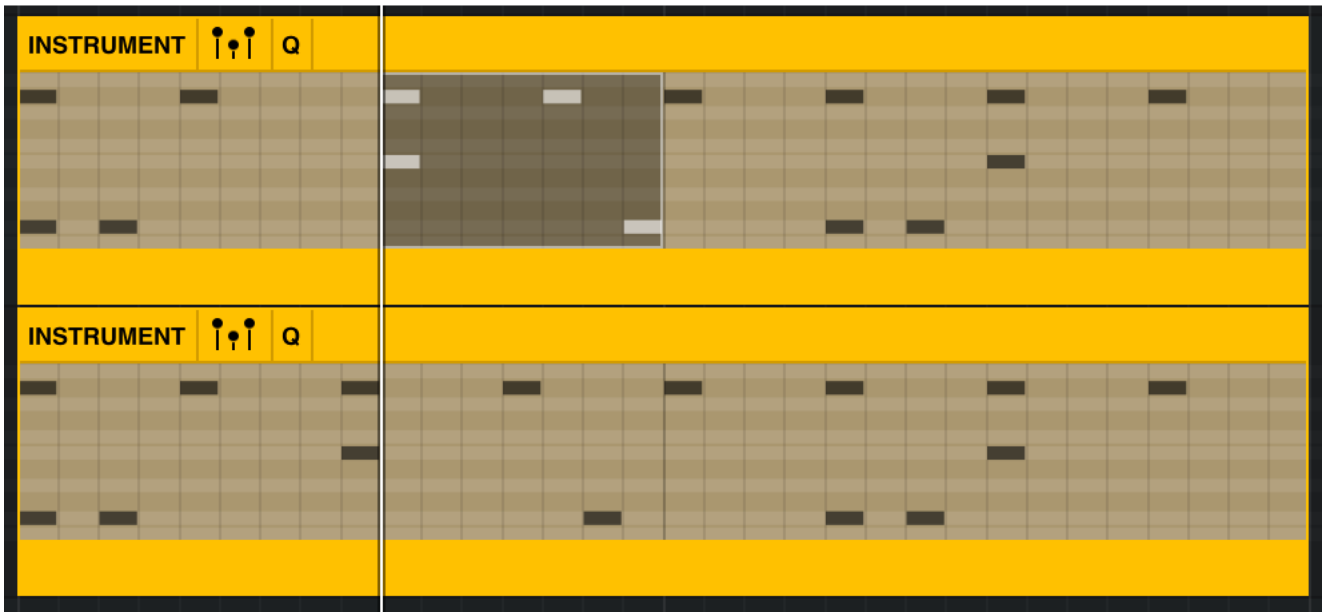

## Nudge top clip right by 1/16



## Original clips




## Nudge selected MIDI notes right by 1/16

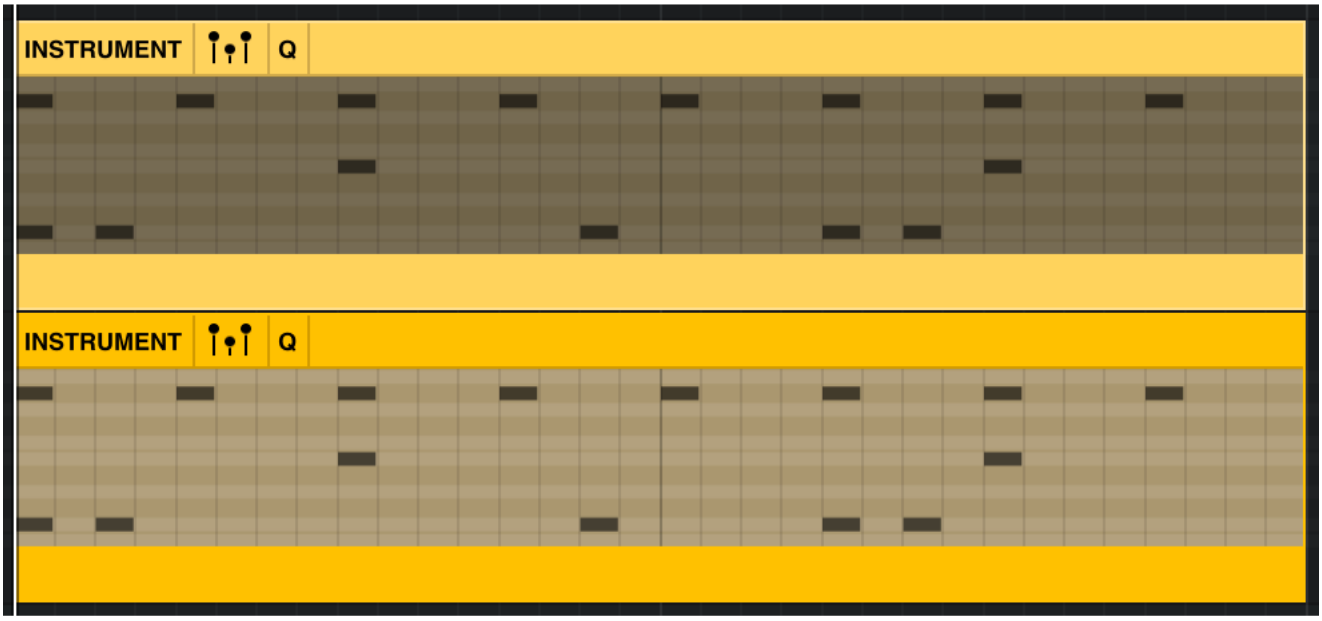


## NUDGING WITHIN A MIDI CLIP

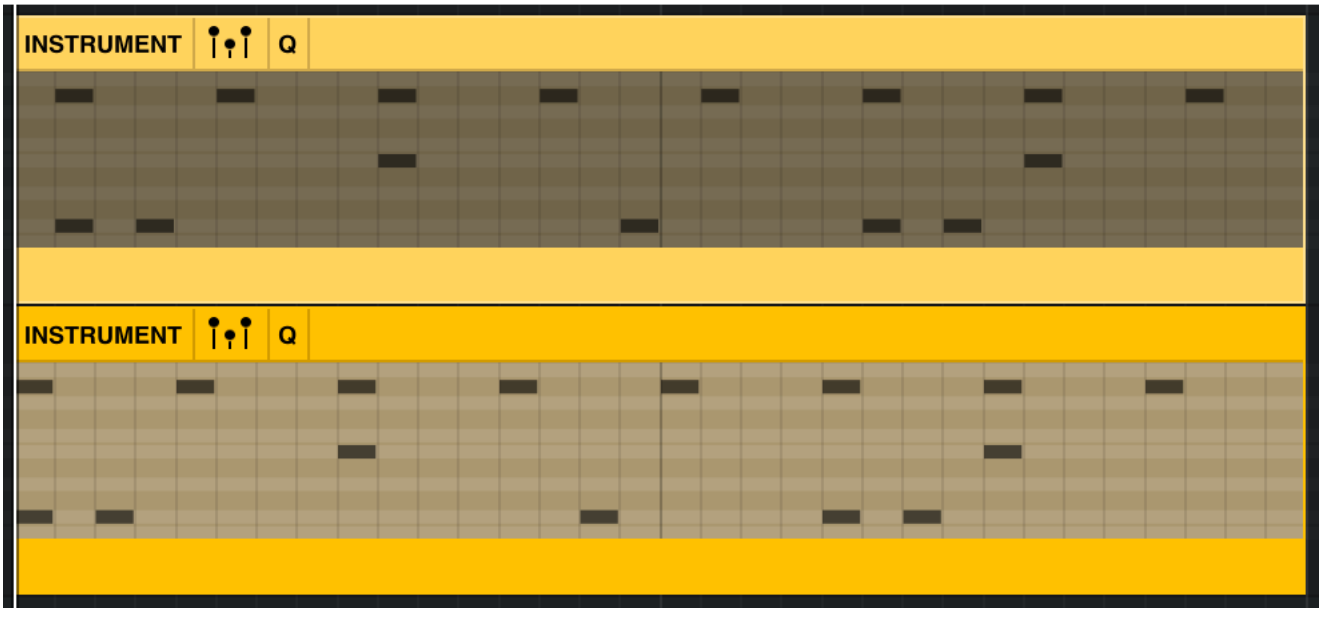
To nudge notes within a MIDI clip, without moving the boundaries of the MIDI clip, you can use the Nudge Content commands.

- To nudge content left, press Control + , or select Edit > Nudge Content > Left from the LUNA menus.
- To nudge content right, press Control + . or select Edit > Nudge Content > Right from the LUNA menus.
- To nudge content left by the next higher nudge amount, press Control + M or select Edit > Nudge Content > Left Next Amount from the LUNA menus.
- To nudge content right by the next higher nudge amount, press Control + / or select Edit > Nudge Content > Right Next Amount from the LUNA menus.

Original clips




Nudge Content top clip right by 1/16



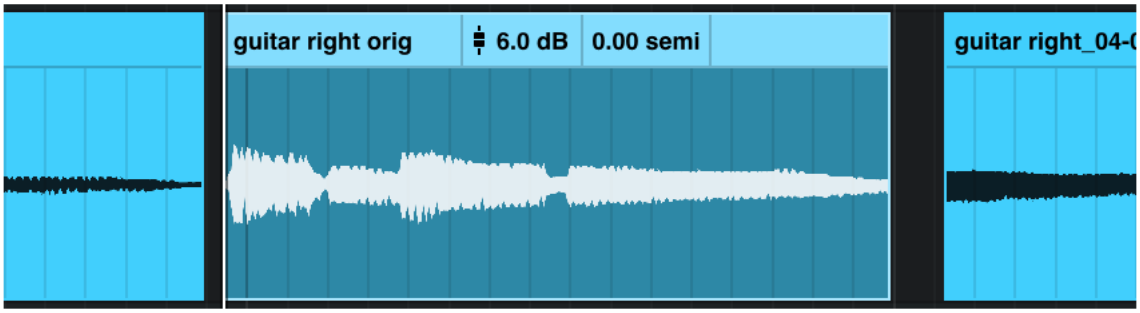

## NUDGING TO CLIP BOUNDARIES

You can nudge a clip to the next or previous clip boundary.

- To nudge a clip to the next clip boundary, press Control + Option + . or choose Edit > Nudge > To Next Clip from the LUNA menus.

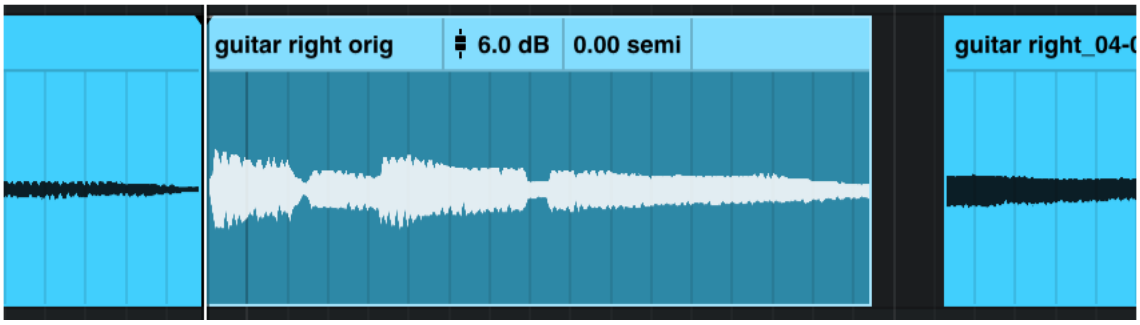
- To nudge a clip to the previous clip boundary, press Control + Option + , or choose Edit > Nudge > To Previous Clip from the LUNA menus.

Original clip location




Nudge to next clip

Nudge to previous clip



## Duplicating audio

When you duplicate audio, you copy the audio selection or clip and immediately paste it starting at the end of the current selection. Any existing audio is replaced. Duplicated audio, like pasted audio, does not retain the underlying clip structure.

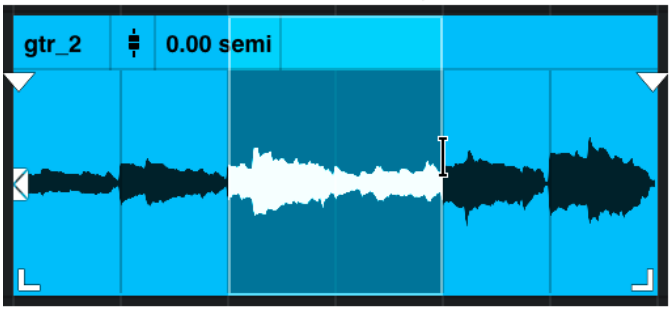
Press Command+D to duplicate audio.

---

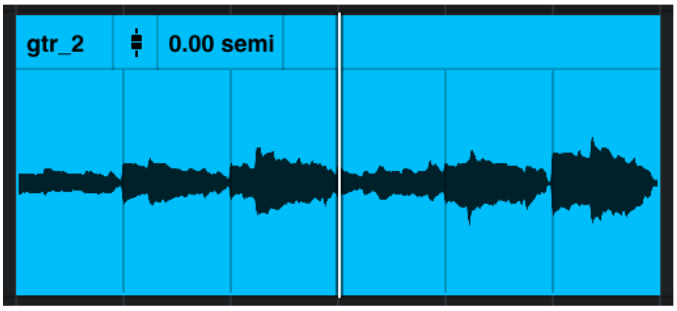
## Shifting audio

Shift editing allows you to edit audio and keep your arrangement flowing around your edits. For example, you can cut or paste audio or MIDI, and have the audio on one or more tracks shift back or forward in time to accommodate the cut or paste. You perform shift editing by pressing the Shift key with the modifier key (for example, Shift+V to shift-paste).

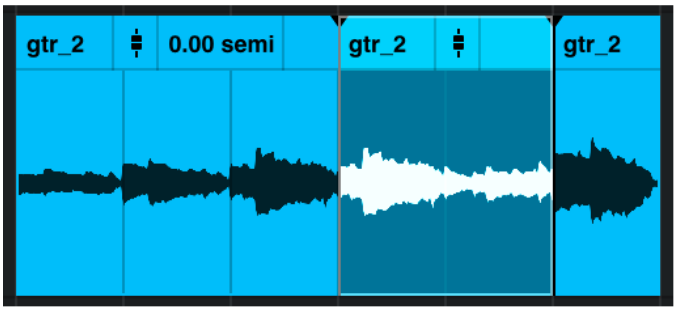
Audio selected and copied



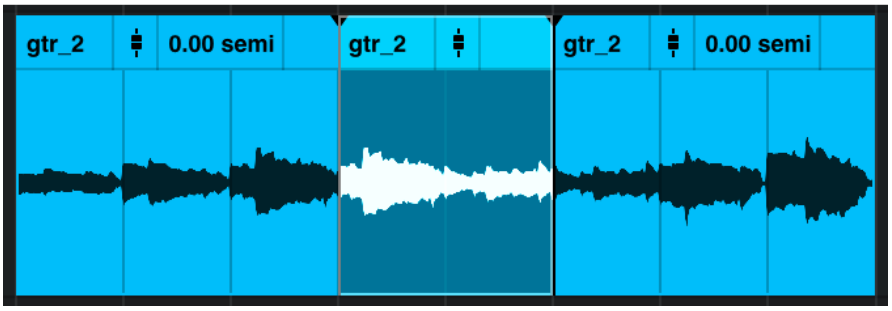

Cursor placed for paste




Paste (Ctrl+V) result




Shift-Paste (Shift+V) result




### SHIFT+X

Press Shift+X to cut the selection, and shift all the following audio or MIDI data to fill the space that is removed. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+V

Press Shift+V to paste a selection, and shift all the following audio or MIDI data to accommodate the pasted data. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+D

Press Shift+D to duplicate (copy and paste) the selection, and shift all the following audio or MIDI data to fill the space that is removed. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+I

Press Shift+I to insert space, and shift audio or MIDI data following your selection by the length of the selection. You can do this on a single track, multiple selected tracks, or all tracks.

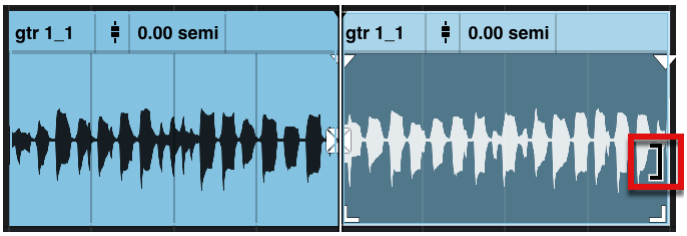
### SHIFT+DELETE

Press Shift+Delete to delete your selection and shift audio or MIDI data following your selection by the length of the selection. You can do this on a single track, multiple selected tracks, or all tracks.

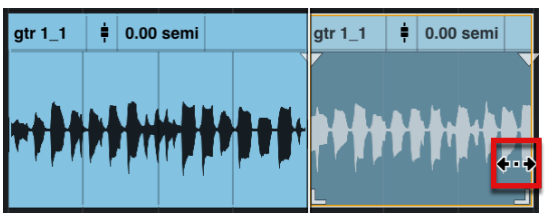
---

## Trimming an audio clip

Hover the Editing Tool near the bottom at the start or end of a clip to trim the length of the clip. Click and drag to the right from the start of the clip, or to the left from the end of the clip to trim its length. Note that trimming follows the Snap settings, unless you hold the Command key while trimming.




### *TRIM TOOL*



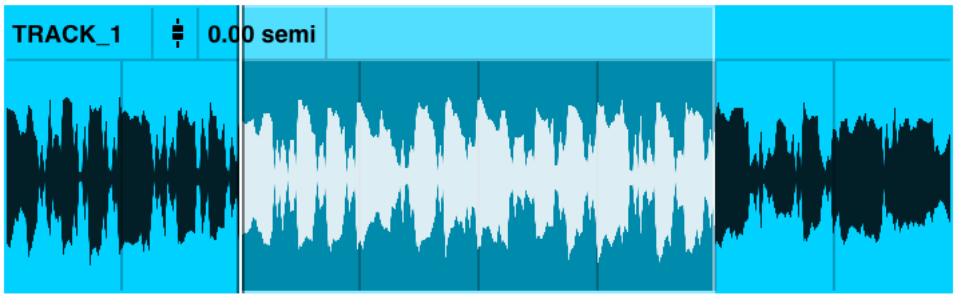
***TRIM IN PROGRESS***

## TRIMMING A CLIP WITH KEY COMMANDS

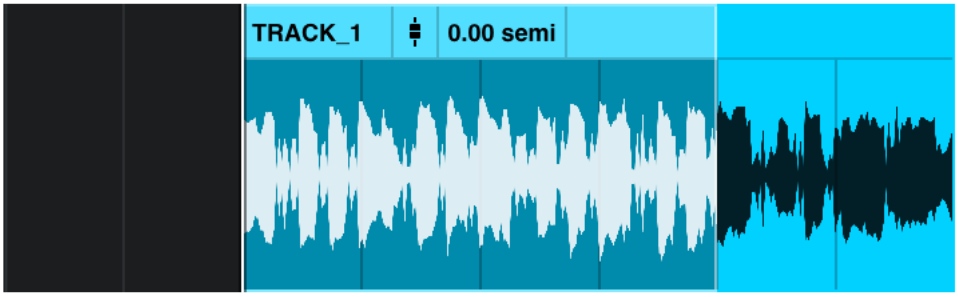
You can use key commands to trim clips.

- Press A to trim from the start of a clip to the playhead or to the start of a selection.
- Press S to trim from the playhead or the end of a selection to the end of the clip.
- With a selection made, press Command+T to trim the clip and retain only the selection.

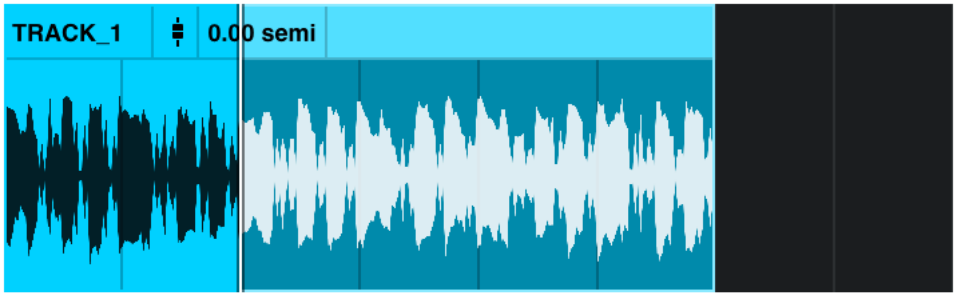
Original selection on clip



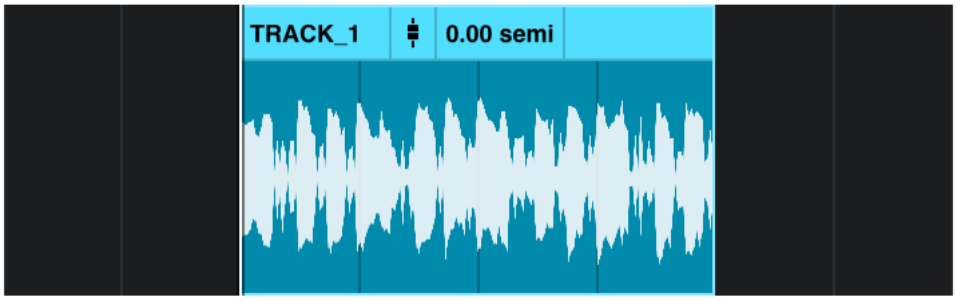

"A" key trims from clip start to playhead/selection




"S" key trims from playhead/selection to clip end

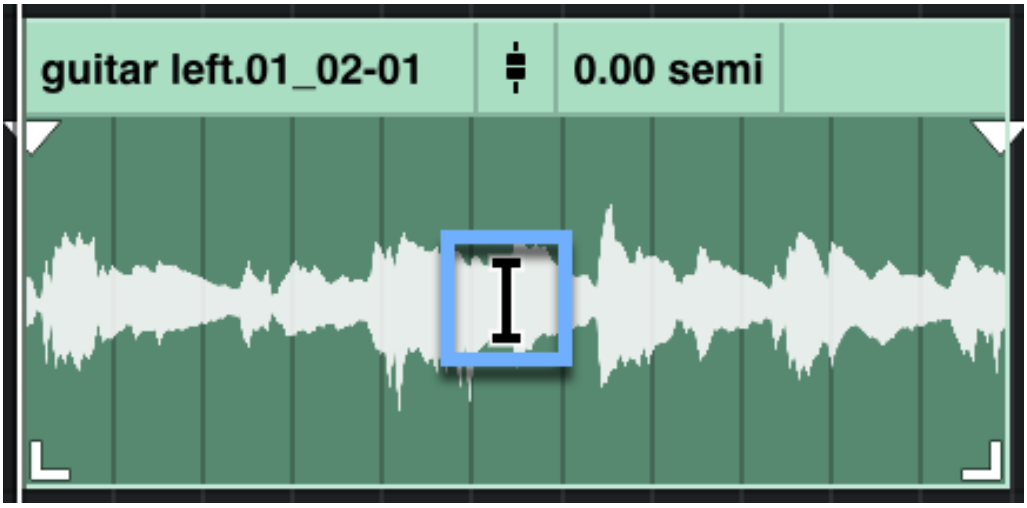



Command+T trims selection

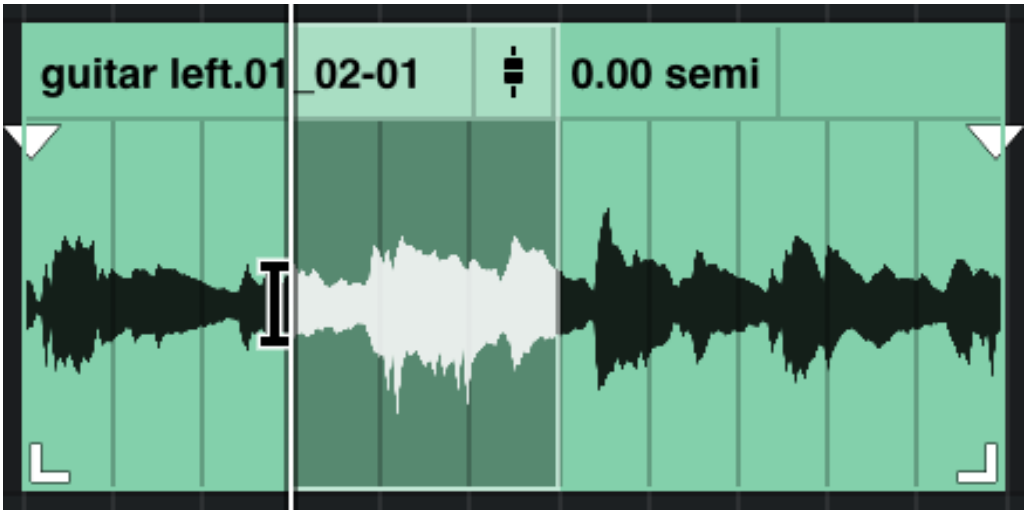


## Selecting within an audio clip

Hover just above the vertical center at the start or end of a clip to select. Note that this works anywhere in a clip, not just at the start or end. Click and drag to select. Selections follow the Snap settings, unless you hold the Command key while selecting.




***TOOL APPEARANCE***

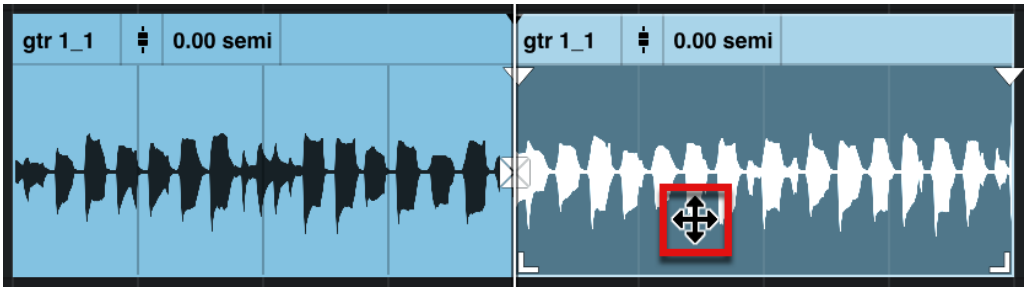



***SELECTION MADE***

## Moving or copying an audio clip

When you hover near the vertical and horizontal center, the cursor changes to the move/copy Crosshair Arrows Editing Tool. Drag the clip to a new location or a different track. Note that selections snap to the Snap settings, unless you hold the Command key while dragging.

Option+Click to create a copy of the clip that you can then drag to a new location or track.

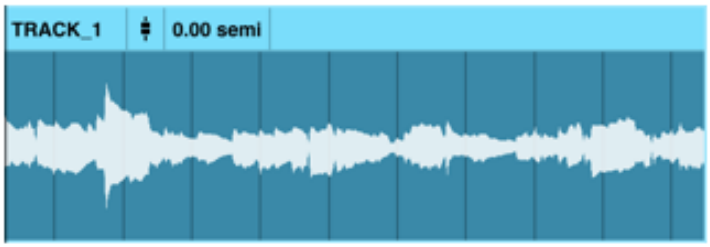



## Reversing Audio

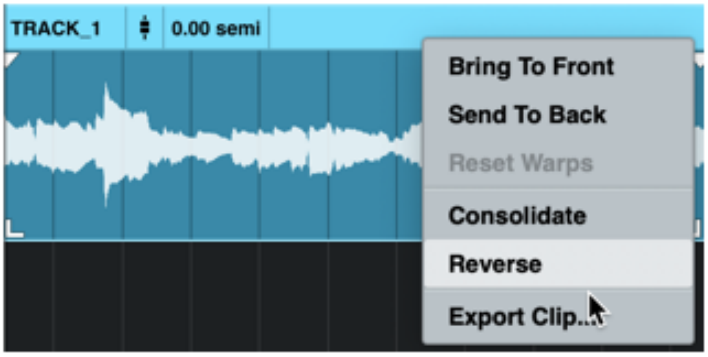
To hear one or more audio clips play backwards, select clips on one or more tracks, then select Edit > Reverse from the LUNA Menus, or press Control + Command + R. You can also right-click on a selected clip and select Reverse from the context menu. The selected audio is reversed, and new clips are created, replacing the original clips.

**Tip:** To reverse audio with a trackpad instead of a mouse, click the trackpad with two fingers and select Reverse.

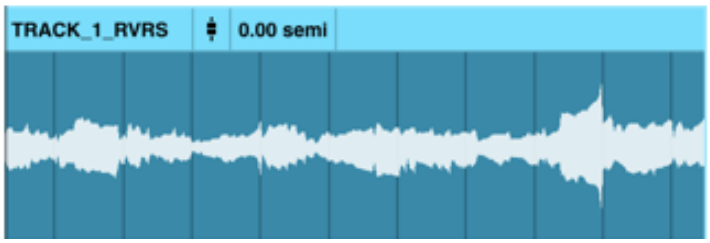
Selected audio clip




Right-click > Reverse




Reversed clip is created with RVRS appended to name




## Navigating between clip transients

An audio transient is a loud, quick sound at the beginning of a waveform. You can use transients to find audio start points. For example, the start of a beat on a drum track, the start of a picked note on a guitar tracks, or the start of a phrase on a vocal track. In LUNA, you can navigate between transients using key commands. Navigating between transients works on a single track or multiple tracks. Note that with many tracks selected, navigating between transients can move the playhead very slowly, as there are many more transients.

- Press Tab to move to the next transient.
- Press Option+Tab to move to the previous transient.
- Press Shift+Tab to select to the next transient.

- Press Shift+Option+Tab to select to the previous transient.

## Navigating between bars

You can move the playhead between bars with key commands.

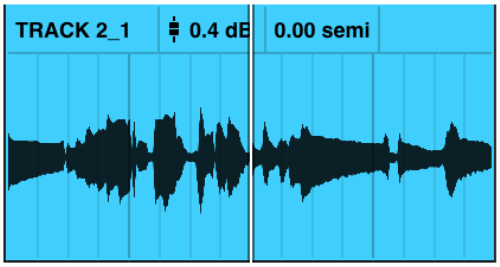
- Press ] or 2 on the Numeric Keypad to move the playhead one bar to the right.
- Press [ or 1 on the Numeric Keypad to move the playhead one bar to the left.
- Add the Shift key to extend the selection when navigating between bars.

## Separating audio clips

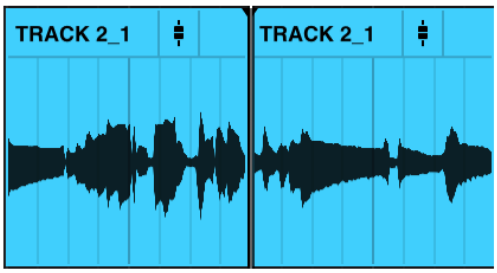
You can separate audio clips to create two or more audio clips from an existing clip.

- Separate an audio clip at the playhead with the menu command Edit > Separate Selection, or Command+E.
- Separate a selection on the current grid with the menu command Edit > Separate on Grid.

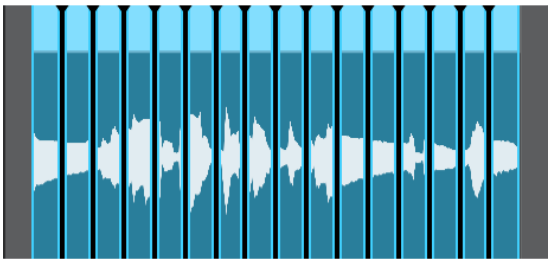
Original clip




Separate Selection

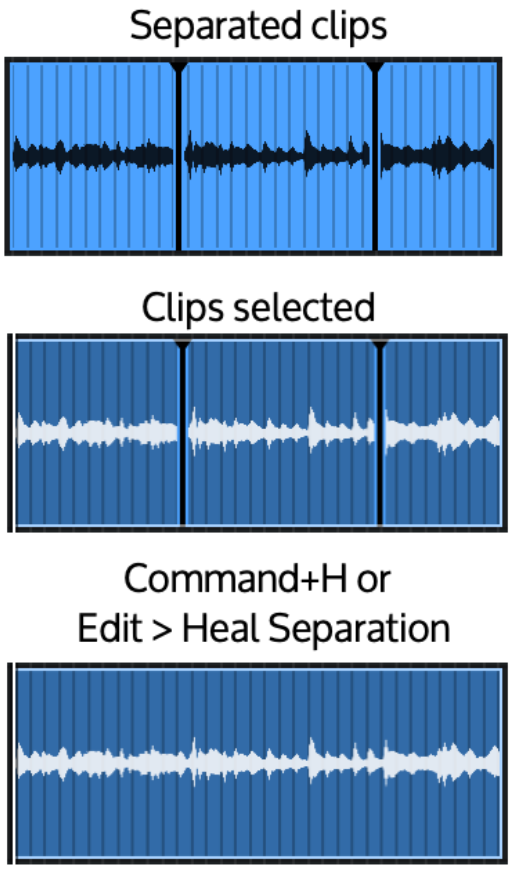



Separate on Grid



## HEALING (RECOMBINING) SEPARATED CLIPS

After you separate clips, you can press Command+H or choose Edit > Heal Separation to recombine separated clips. The Heal Separation command works on two or more clips. Separated clips can only be recombined if the clips are arranged as they were originally. If you have rearranged clips, Heal Separation does not work. If you have made changes to separated clips with warps, clip gain, or clip pitch, those changes are discarded when the clips are healed. With clips you have rearranged that you want to combine, Consolidate clips.

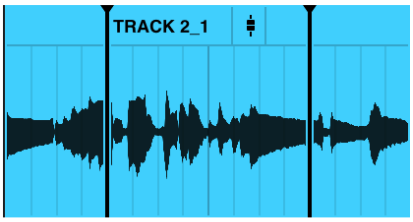



## Consolidating audio clips

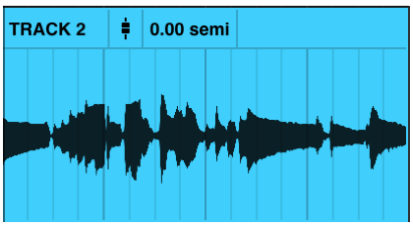
You can combine two or more selected clips together by consolidating clips. You can also consolidate clips with spaces between them. When you consolidate such files, LUNA adds silence for the length of the space in the consolidated audio file.

- To consolidate, select one or more clips, and choose the menu item Edit > Consolidate, or Option+Shift+3.

Separated Clips

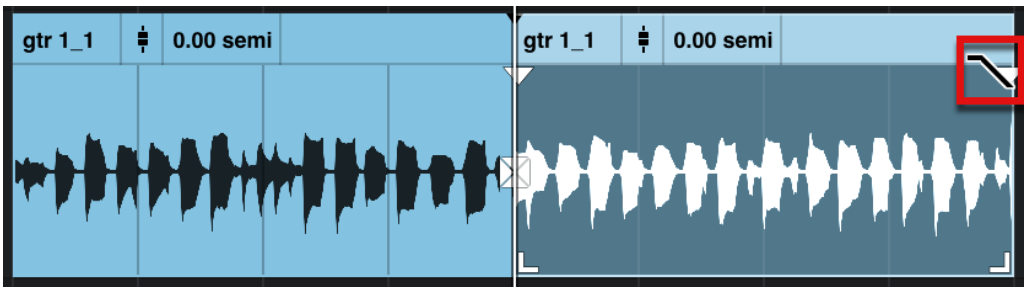



Consolidated Clip




## Working with fades on audio clips with the Editing Tool

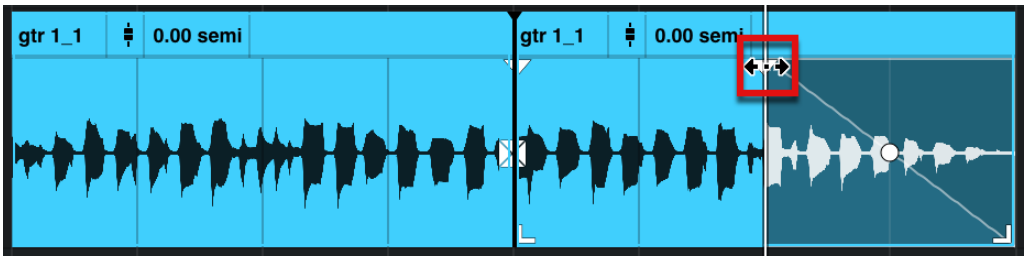
Hover near the top at the start or end of an audio clip to show the Fade Editing Tool.




### CREATING A FADE

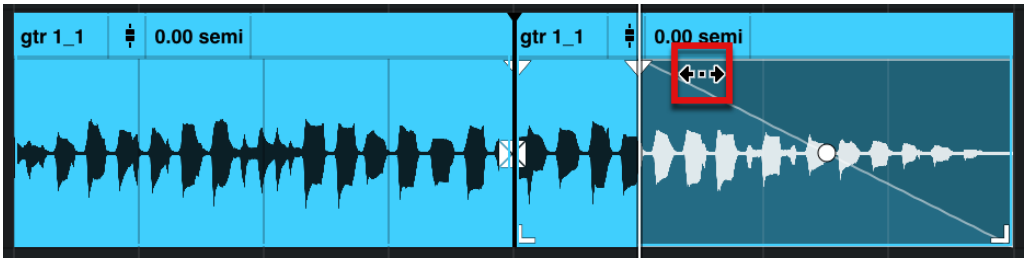
Click and drag to the right from the beginning of the clip or to the left from the end of the clip to create a fade in or out. Fades follow the snap settings, unless you hold the Command key while dragging.

**Note:** When you trim a clip that has a fade applied, the original fade length is preserved.



## EDITING THE LENGTH OF A FADE

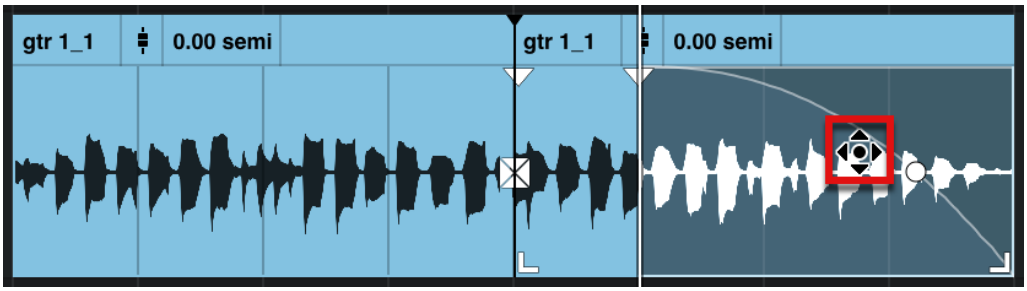
Hover over the fade boundary marker. The Fade Editing Tool appears. You can click and drag a fade to change its length. Fade length adjustments follow the snap settings, unless you click the Command key while dragging.




## EDITING THE SLOPE OF AN AUDIO FADE

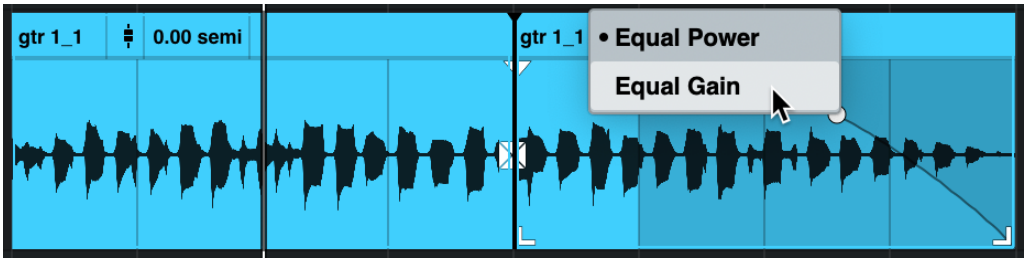
Hover over the fade slope adjust point at the center of the fade. The Fade Slope Editing Tool appears, indicating you can adjust the fade slope.

Click and drag with the Fade Slope Editing Tool to adjust the fade slope. Drag up or down to adjust the slope of the fade to be more or less gradual. Drag towards the clip boundary or fade boundary to change how quickly the fade slopes in or out. Option+Click on a fade to reset to the original fade.



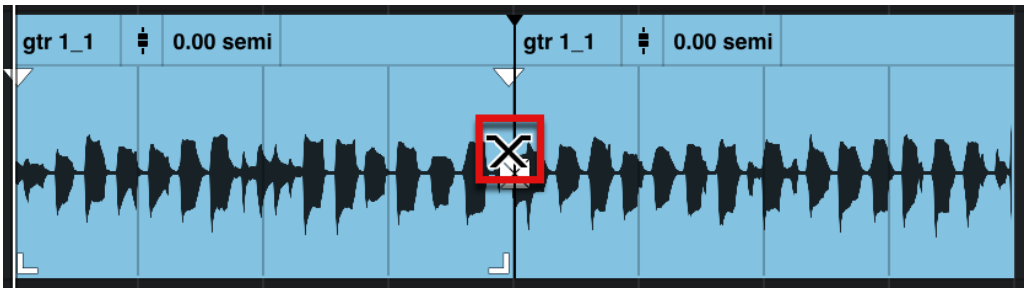

Right-click or Control+Click on a Fade to switch between Equal Power and Equal Gain mode.

**Tip:** Equal Power is a logarithmic fade, where equal gain is a linear fade. These options are not critical for fading in and out, because you can easily adjust the fade shape manually.

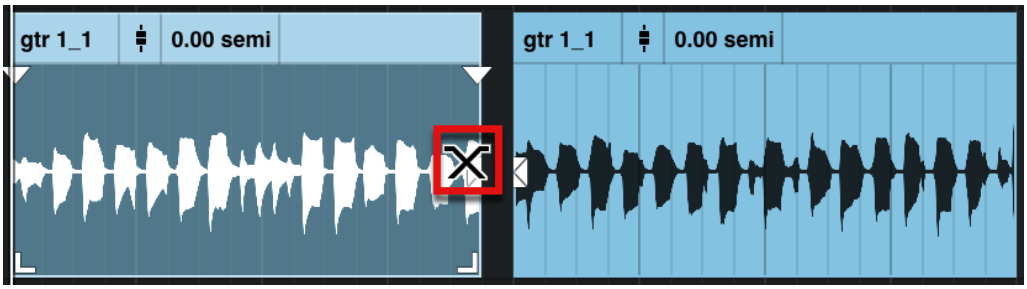


# Crossfading between audio clips with the Editing Tool

Crossfades can be created between material where two clips meet. Do this to blend or smooth the transition between edits or clips. To see the Crossfade Editing Tool, hover your cursor over the vertical center of the boundary where two clips meet, or on the vertical center of the edge of one clip if you are crossfading across a gap. In addition, if there is sufficient material to the right of the left clip, and to the left of the right clip, crossfades can be created across a gap. Such a crossfade reveals trimmed audio to accommodate the crossfade. It is also possible to create a crossfade where only one of the two clips has material. In this case, the crossfade is adjusted to accommodate the clip that does not have material available. You can adjust the start, end, and center point of the crossfade after the crossfade is created, and you can adjust the crossfade slope.

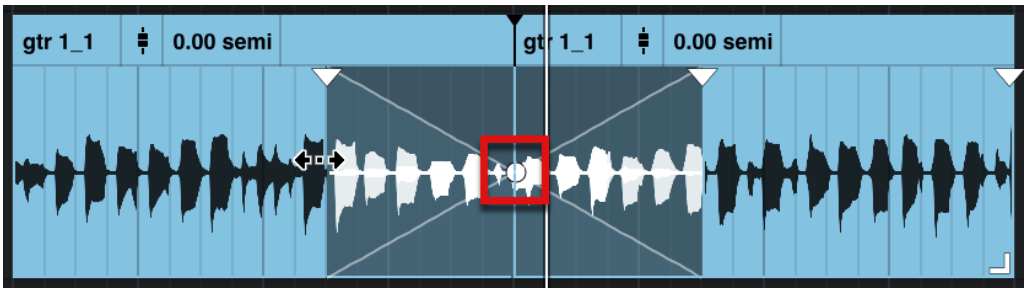



### *CROSSFADE TOOL AT CLIP BOUNDARY*

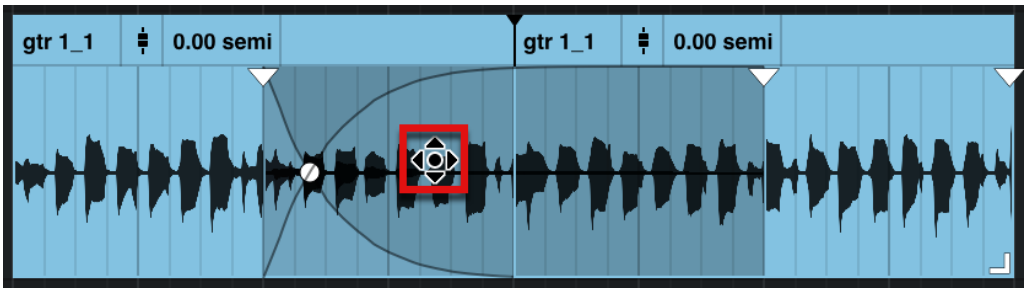



### *CROSSFADE TOOL AT CLIP EDGE (CROSSFADING ACROSS A GAP)*

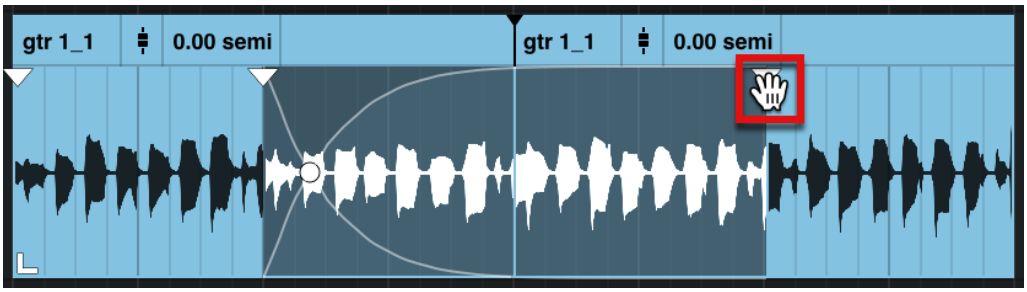
Drag the crossfade tool across the clip boundary or across the gap to crossfade between the clips. Crossfade adjustments follow the snap settings, unless you click the Command key while dragging.

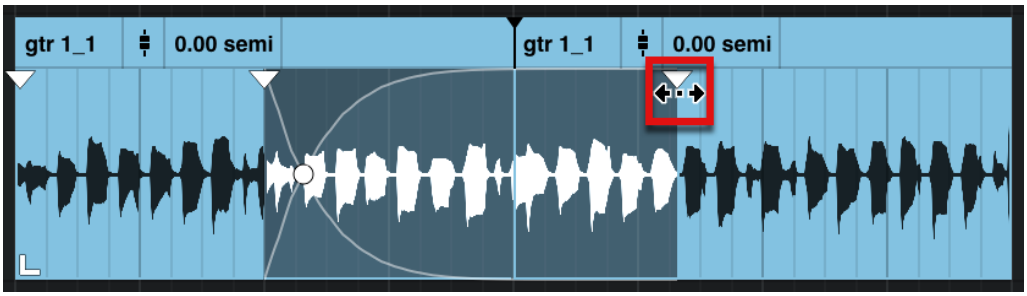



To adjust where the crossfade is centered, click and drag from the crossfade slope adjust point. Option+Click the crossfade slope adjust point to reset the crossfade to default.

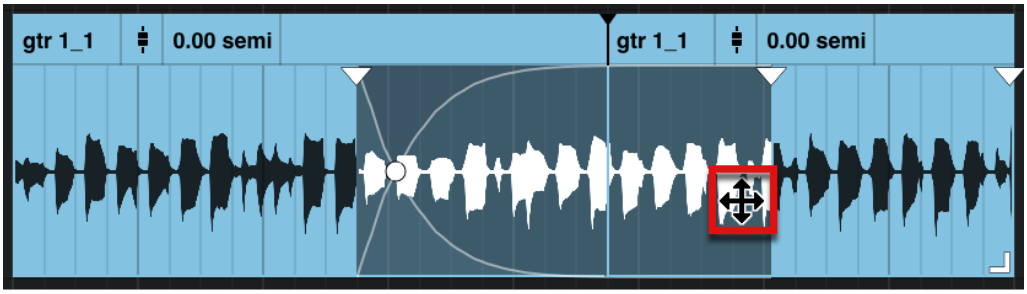



To lengthen or shorten one end of an existing crossfade, hover your cursor over an edge of the crossfade. The crossfade boundary markers (white inverted triangles) appear at the upper edge of each side of the crossfade. Click the marker you want to adjust. The hand cursor appears. Drag to shorten or lengthen a crossfade edge.



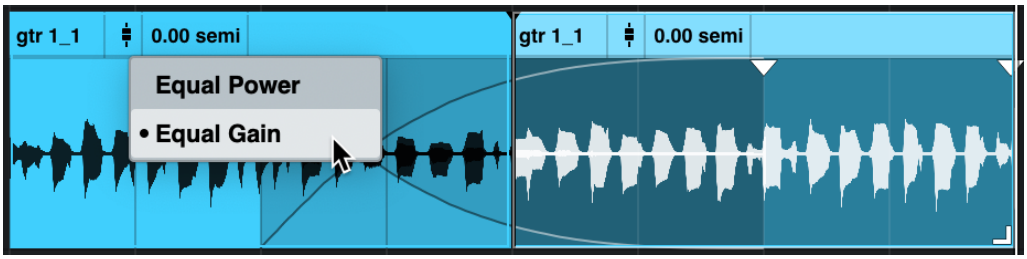

To move or delete a crossfade, click in the lower half of the crossfade to select the crossfade. Drag the crossfade to move it. Note that you can only drag a crossfade as long as there is audio material underlying the fade being crossfaded. Crossfades snap to the Snap settings. To move the crossfade freely when Snap is enabled, click the Command key while dragging.




To delete a crossfade, click in the lower half of the crossfade to select the crossfade, then press the Delete key.

To switch Equal Power and Equal Gain mode for the crossfade, Right-click or Control+click in the center of the crossfade, and choose the mode.

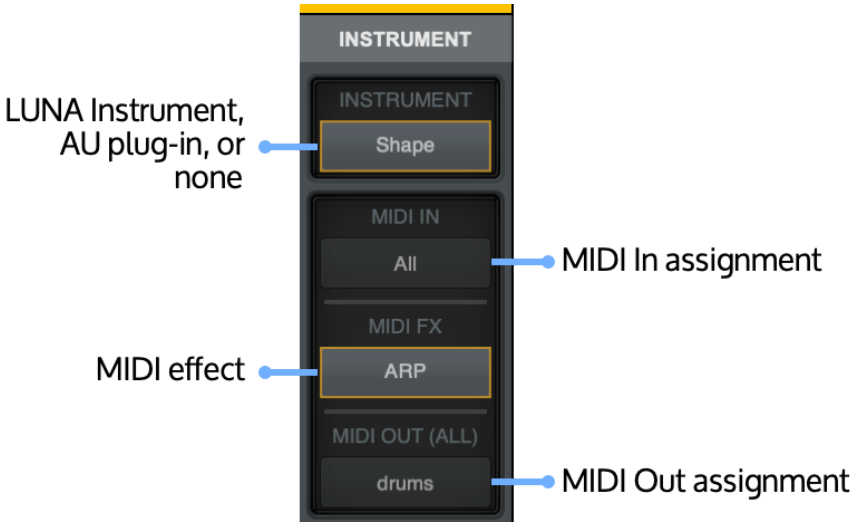
**Tip:** Equal Gain is the default mode, and is recommended for phase-coherent material, for example when fading between clips from the same guitar track or drum track. Equal Power mode works better for material that is less similar, dissimilar, or not phase-coherent, for example two different vocalists or two different guitar recordings.




# Playing a Virtual Instrument and Recording MIDI

## Instrument Track overview

An instrument track can combine a UAD Instrument or Audio Unit instrument plug-in and MIDI data. You can record MIDI on an instrument track. An instrument track can record MIDI data alone with no audio or Instrument plug-in. LUNA uses a MIDI resolution of 960 pulses-per-quarter note (PPQ or PPQN).



# Creating an instrument track

You record MIDI data, instantiate UAD Instruments, and use other instrument plug-ins on an instrument track.

**Tip:** To instantly create a stereo instrument track with Shape instantiated, choose Track > New Instrument, or press Shift+Command+I.

### TO CREATE AN INSTRUMENT TRACK:

1. In the Tracks browser, click the plus (+) next to Tracks and choose Instrument from the contextual menu. If the Create New Tracks dialog is already open, choose Instrument from the Type drop menu.
2. Type the number of tracks to create, choose the format (Mono or Stereo), and type a name for the track or tracks.
3. From the INST drop menu, choose a UAD Instrument, an Audio Unit instrument plug-in, or choose None to record MIDI alone or to use an external MIDI instrument.
4. To use the optional API Vision Console on this track, select API Vision from the Console menu.
5. Click OK to create the tracks, or Cancel to stop track creation.

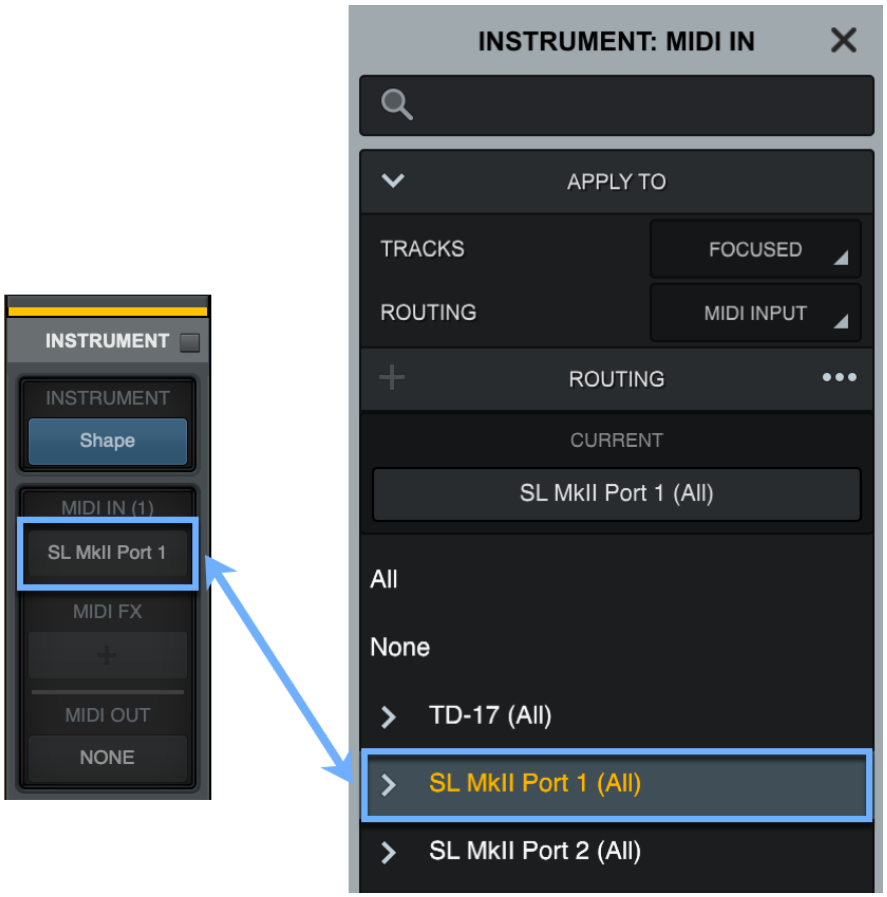
---

# Choosing a MIDI controller

LUNA will accept MIDI input from all MIDI devices that are recognized by the macOS Audio MIDI Setup app. If you have multiple MIDI devices, you can choose which MIDI input the instrument track will use to trigger the instrument.

On an instrument track in the Mixer or on an instrument track Focused in the Timeline, click the MIDI In row, and choose the MIDI Input to use for the instrument. Press Esc or click the close button to close the MIDI In browser.

**Note:** A track that is Input enabled responds to an assigned MIDI controller only when the track is selected. However, record-enabled tracks respond to assigned MIDI controllers when the tracks are not selected.




## USING MIDI KEYBOARD MODE TO INPUT MIDI

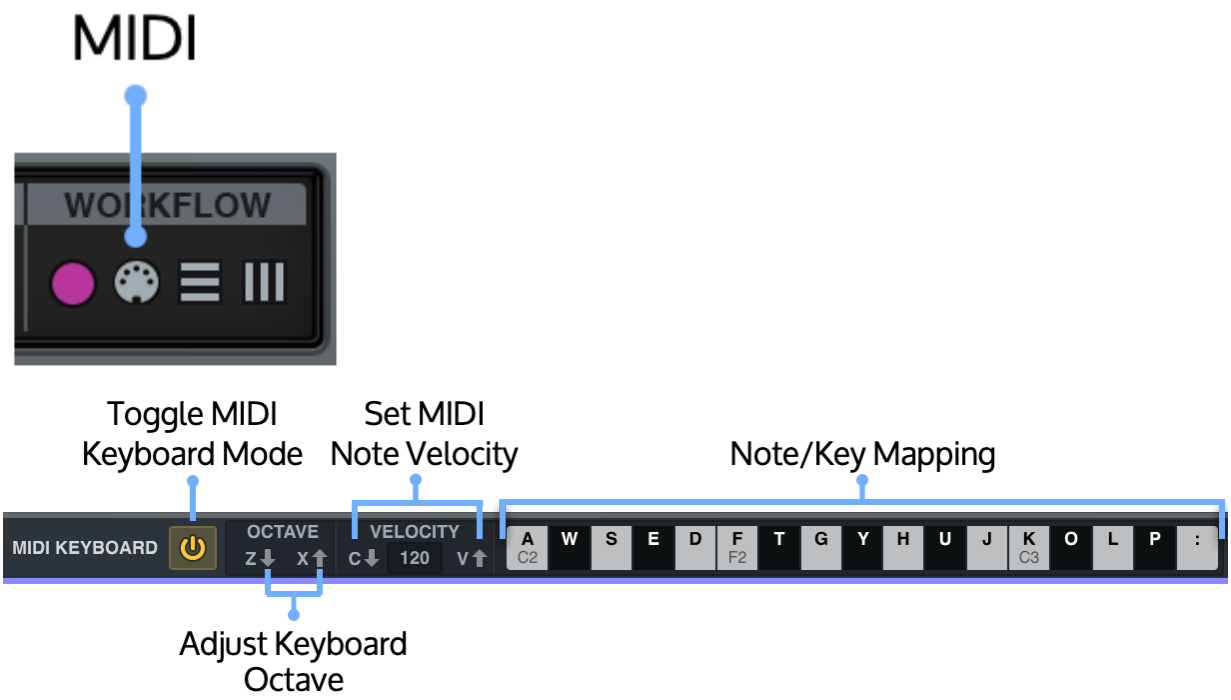
If you don't have an external MIDI controller, or you prefer to use the computer keyboard to input MIDI notes, you can use MIDI Keyboard Mode. MIDI Keyboard Mode maps MIDI notes (1-⅓ octave from C to E) to keys on the computer keyboard, which you can use to perform MIDI recording.

When you enable MIDI Keyboard Mode, you can enter MIDI notes when monitoring or recording by pressing keys on the computer keyboard. MIDI Keyboard Mode provides the ability to change the octave of the keyboard and to set a velocity level for MIDI notes you input with the computer keyboard.

**Note**: Any single-key commands that use one of the notes on the MIDI keyboard will not work when MIDI Keyboard Mode is enabled. For example, "E" (Frame Selection) and "F" (Create a Fade) are not supported when MIDI Keyboard Mode is enabled. When available, use the modifier-key version of such a key command (for example, Command+F to create a fade). There is no modifier key for the "E" command.

To enable or disable MIDI Keyboard Mode:

- Press Option+Command+M, or
- Choose View > MIDI Keyboard Mode, or
- Click the MIDI icon under Workflows at the top of the screen to enable the MIDI Workflow, then toggle MIDI Keyboard Mode (for more information about workflows, see "Using Workflows").




To play notes with MIDI Keyboard Mode:

- Press the keys as indicated in the MIDI Keyboard map in the workflow bar at the top of the screen.
- To change the octave over which the keys send MIDI notes, press Z on the computer keyboard to lower the range one octave. Press X to raise the range one octave. You can also click the Up and Down arrows under Octave in the Workflow area at the top of the screen.
- To set the MIDI Note velocity that each key press sends, press C on the computer keyboard to decrease the velocity, or D to increase the velocity. You can also click the Up and Down arrows under Velocity in the Workflow area at the top of the screen, to raise or lower the velocity one step at a time.

## MIDI MERGE OR MIDI REPLACE

Before you record, decide whether you want to use MIDI Merge or MIDI Replace.

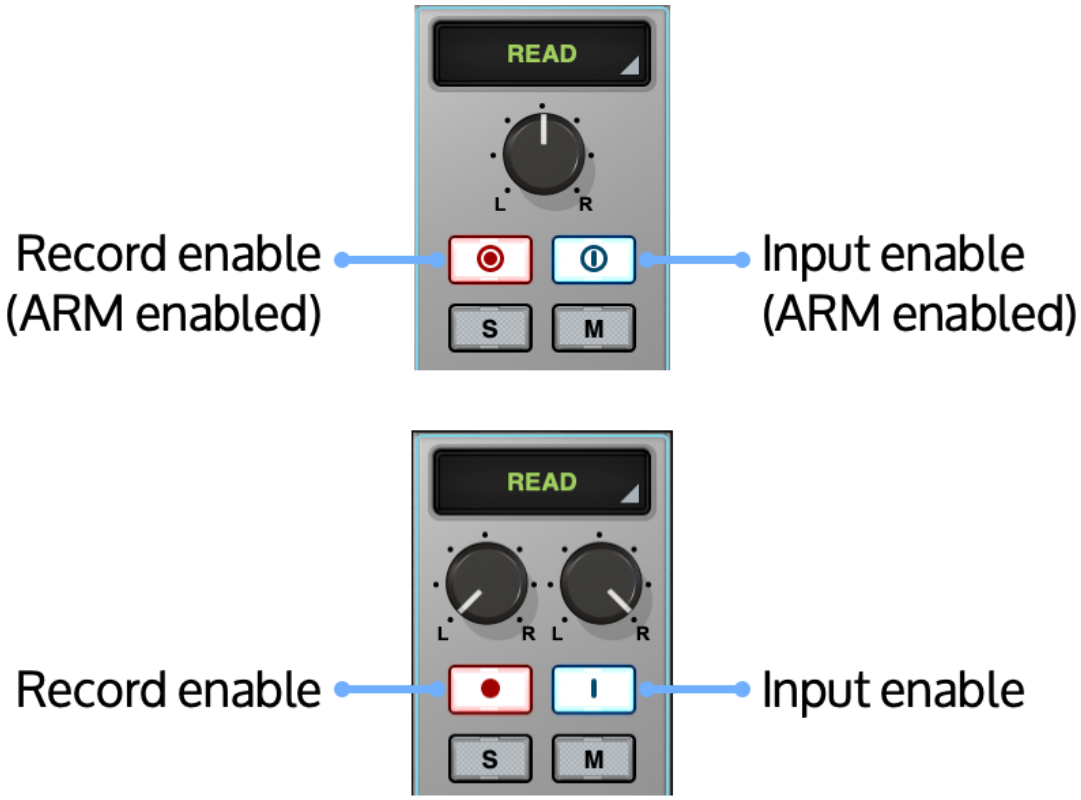
- With MIDI Merge (select Transport > MIDI Merge or 9 on the Numeric Keypad), the MIDI notes you play are combined with the existing notes over which you record. MIDI Merge is useful, for example, if you want to build up a track like a drum part by playing in separate drums on successive record passes.
- With MIDI Replace (deselect Transport > MIDI Merge or 9 on the Numeric Keypad), the MIDI notes you play replace those in the selection over which you record. MIDI Replace is useful when you want to correct a part, or play a part differently, without keeping the previous part.

# Recording on an instrument track

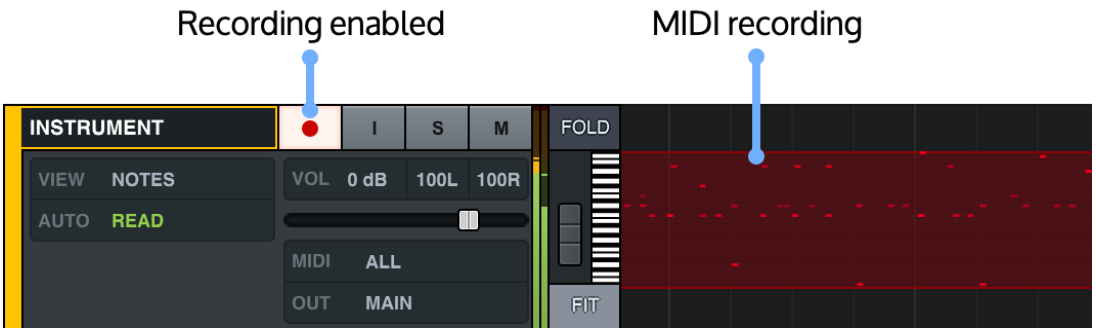
When you record on an instrument track, ARM mode is not required to get the fastest response from UAD Instruments or third-party Audio Unit instruments, because the buffer is set by the system buffer size. However, if you use UAD plug-ins to process audio on the instrument track or on a bus, you should enable ARM mode to get the lowest possible latency. In ARM mode, you cannot use Audio Unit insert effect plug-ins on any record-enabled track.

## TO RECORD ON AN INSTRUMENT TRACK:

1. In the Tracks browser, click the plus (**+**) next to Tracks and choose Instrument. If the Create New Tracks dialog is open, from the Type drop menu, choose Instrument.
2. Type the number of tracks to create, choose the format (Mono or Stereo), and type a name for the track or tracks.
3. From the INST drop menu, choose a UAD Instrument, an Audio Unit instrument plug-in, or choose None to record MIDI alone.
4. Click OK to create the tracks, or Cancel to stop track creation.
5. In the Focus channel or Mixer, click the Input mixer row. The Input browser opens.
6. Choose the MIDI input to which your controller is connected. MIDI devices recognized in the macOS Audio MIDI Setup app are available here. You can also play and record MIDI notes using the computer keyboard. Select View > MIDI Keyboard Mode from the menus, or press Option+Command+M to use the computer keyboard to input MIDI notes with the keyboard.
7. Click the input-enable button (Shift+T) or click the record-enable button (Shift+R) on the track or Focus channel (Timeline view) or on the channel (Mixer view). Input-enabling a track allows you to monitor the Instrument or audio source when the Instrument, plug-in, or device is triggered with the MIDI Input source. Record-enabling a track allows you to record MIDI data to the instrument track, when you click Record on the transport, or press Command+Spacebar.
   **Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.




8. If you are using UAD plug-ins in the Record FX or standard inserts on the instrument track, enable ARM mode for the lowest possible latency.
9. Choose whether to use MIDI Merge or MIDI Replace.
10. Click Record on the transport or Command+Spacebar to record MIDI.
11. Click Stop or press the Spacebar to stop recording.




## Recording MIDI and playing back audio from an external MIDI instrument

You can record MIDI from an external MIDI instrument, while monitoring the audio from that device or another device. By sending the MIDI output from an instrument track to an external MIDI hardware device,

for example a synth or a drum module, you can monitor or record the audio from this device on an available audio input.

## TO TRIGGER AND RECORD MIDI AND MONITOR OR RECORD AUDIO FROM A MIDI SOUND GENERATOR:

With this task, you send MIDI data from an instrument track to an external MIDI device, and monitor or record the audio output from that device on a separate audio track. Use this task to record a synth or sound module to an audio track, while retaining the ability to edit the original MIDI performance data.

Before you do this task, create a mono or stereo audio track, and connect the synth or sound module to an Apollo hardware input or stereo input pair.

1. In the Tracks browser, Timeline, or Mixer, select the instrument track on which you have recorded MIDI.
2. In the Mixer channel or Focus channel for the track, click the MIDI Out mixer row. The MIDI Out browser opens.
3. Choose the MIDI Output to which you want to send MIDI data. MIDI devices recognized in the macOS Audio MIDI Setup app are available here, as are all instrument tracks in your session. Choose the MIDI device that you have connected as the audio generator.
4. On the audio track, click on the Input slot, then from the Input browser, choose the Apollo hardware input or stereo input pair to which the device is connected.
5. Press the Input-enable button (Shift+T) to monitor the audio source when the instrument is triggered with the MIDI output.
6. Press the Record-enable button (Shift+R) on the instrument track to record MIDI data. Press the Record-enable button (Shift+R) on the audio track to enable audio recording.
   **Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.
7. If you are using UAD plug-ins in the Record FX or standard inserts on the instrument track, enable ARM mode for the lowest possible latency.
8. Select the range you want to record, or place the playhead where you want to start recording.
9. Press Record or Command + Spacebar.

Audio generated by the synth or sound module is recorded to the audio track and the MIDI source data is recorded to the instrument track.

**Note:** If the external MIDI controller is the same device as the MIDI sound generator (if it's a MIDI keyboard controller with built-in sounds), be sure to disable the MIDI keyboard's "MIDI Local Control" setting to prevent doubled MIDI notes.

## PLAYING BACK AN INSTRUMENT TRACK

To play back an instrument track:

- Place the playhead or make a selection, and press Play on the transport, or press the Spacebar.
- MIDI notes, program changes, and continuous controllers (CCs) are played from the playhead, even if the playhead starts after the MIDI events occur. Like audio and track automation, MIDI data values at the current play position are played correctly. This type of MIDI playback is called MIDI Chase, Note Chasing, or MIDI Note Chasing.

# Overdubbing and Looping on an Instrument Track

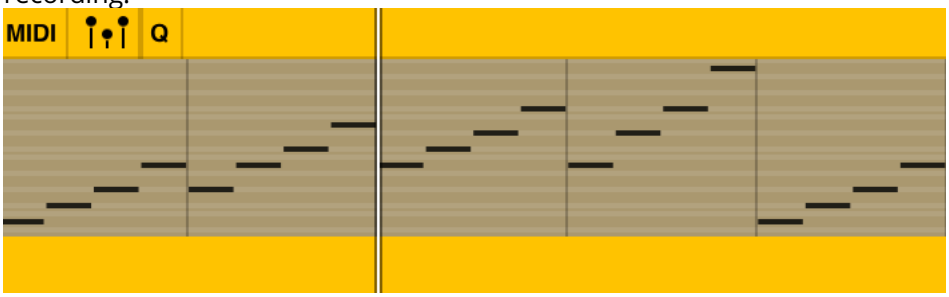
You can overdub directly on a MIDI clip, starting wherever you place the playhead, or in a range that you select. You also have the option to loop record, which creates separate Versions (which are labeled as Takes when loop recording) for each complete loop recording pass.

Before you record, decide whether you want to use MIDI Merge or MIDI Replace.

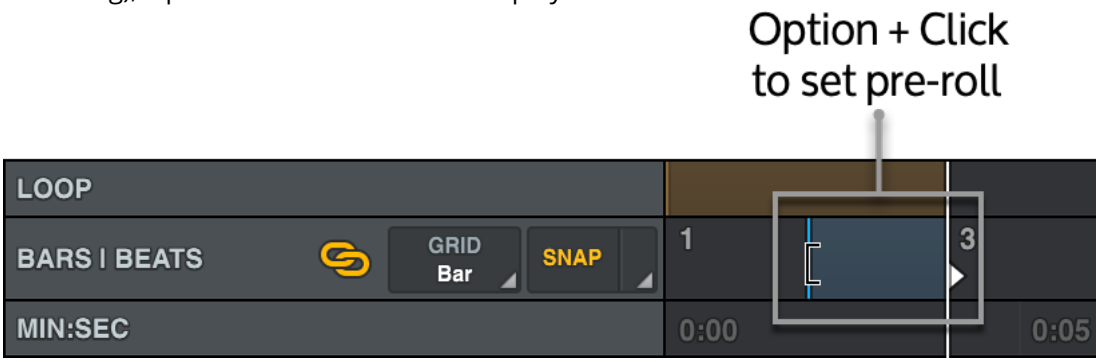
- With MIDI Merge (select Transport > MIDI Merge), the MIDI notes you play are combined with the existing notes over which you record. MIDI Merge is useful, for example, if you want to build up a track like a drum part by playing in separate drums on successive record passes.
- With MIDI Replace (deselect Transport > MIDI Merge), the MIDI notes you play replace those in the selection over which you record. MIDI Replace is useful when you want to correct a part, or play a part differently, without keeping the previous part.

## TO RECORD OVER EXISTING MIDI WITHOUT A SELECTION:

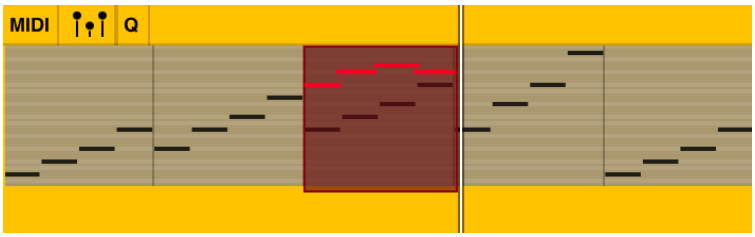
1. Click within the track or in a ruler above the tracks to place the playhead where you want to start recording.




2. To use Pre-roll (listen to the existing track for a specified period of time before you start recording), Option+click to the left of the playhead on the Bars and Beats ruler.

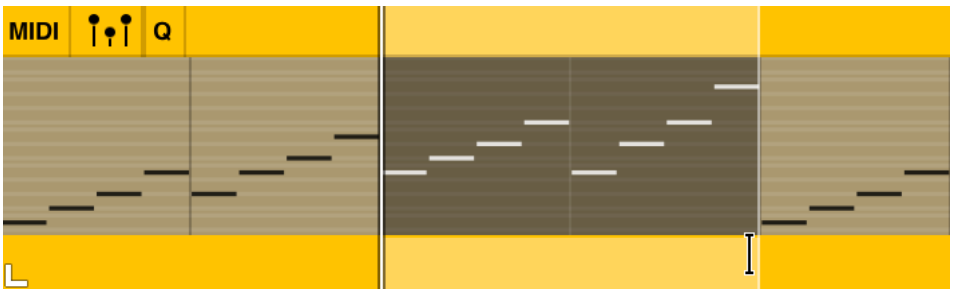



3. Record-enable the MIDI track.
   **Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.
4. Press Record (Command+Spacebar), and begin playing. MIDI records from the playhead. If you set a pre-roll amount, the system plays the pre-roll section before recording starts.
5. Click Stop or press the Spacebar to stop recording.

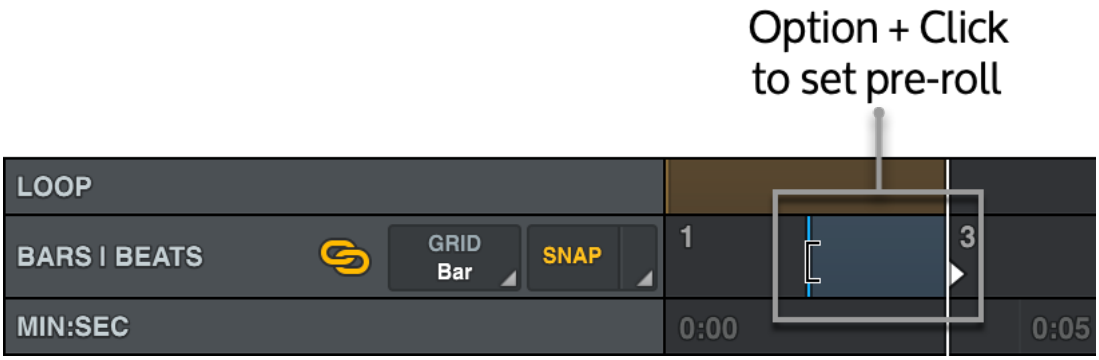



## TO RECORD OVER A MIDI SELECTION:

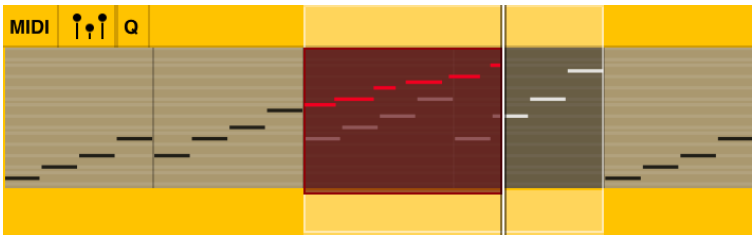
1. Hovering the cursor over the bottom solid-colored border of the audio clip, click and drag to make a selection. The selection snaps to the grid, if Snap is enabled.




2. To use Pre-roll (listen to the existing track for a specified period of time before you start recording) Option+Click to the left of the playhead on the Bars and Beats ruler. To set post-roll, Option+Click to the right of the selection on the Bars and Beats ruler.




3. Record-enable the track.
   **Note:** If you do not record-enable one or more tracks, any selected tracks are recorded when you start recording.
4. Press Record (Command+Spacebar), and play your MIDI controller or the computer keyboard. MIDI records from the start of the selection, and stops recording at the end of the selection. If you set a pre-roll amount, the system plays the pre-roll selection before recording starts. If you set a post-roll amount, the system plays the post-roll selection after recording completes.




The MIDI you record is either merged with the existing MIDI, or replaces it, depending on whether MIDI Merge is enabled.

---

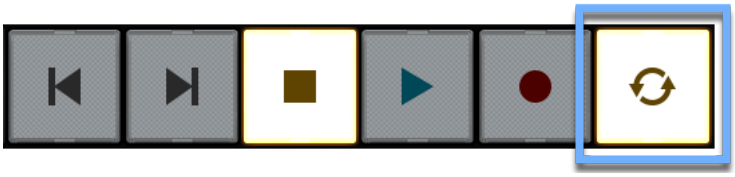
# Loop recording MIDI

When you loop record, you either replace a section of a track that you select with one or more recorded takes, or you record multiple merged passes. When LUNA reaches the end of the selection, the transport returns back to the start of the selection, and records again. Each complete record pass is saved as a Take. To show recorded Takes, click the Versions button at the top of the Tracks area.

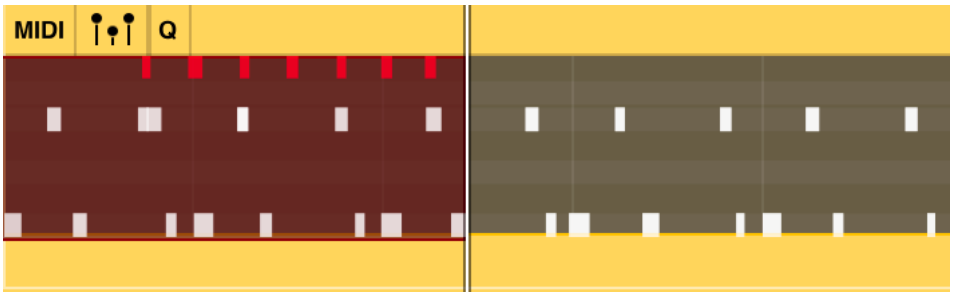
On a MIDI track, takes are separate from track versions. You can switch between Takes of one clip, and the selected track version and any other clips associated with it remain.

### TO LOOP RECORD (WITH MIDI MERGE):

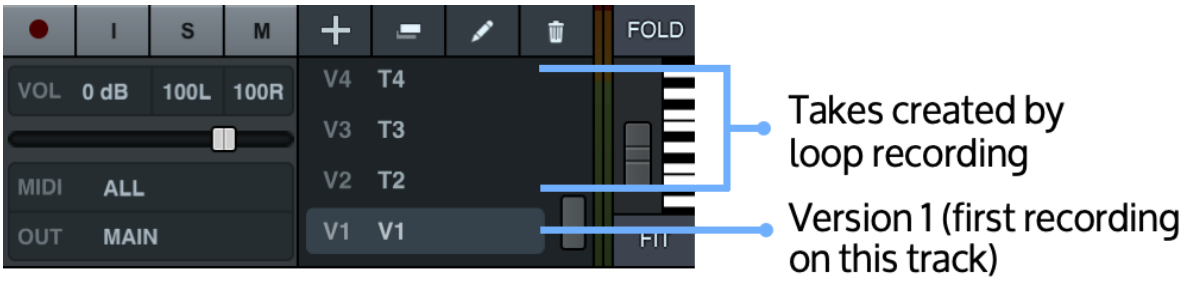
1. Select Transport > MIDI Merge.
2. Make a MIDI selection and click the Loop Play / Record button.



3. Record your source. As the loop plays, you can record additional notes with each pass.

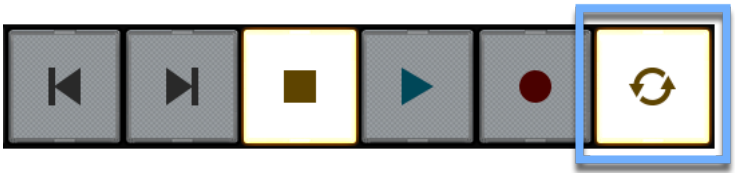


4. To switch between Versions or Takes, click the Version or Take.

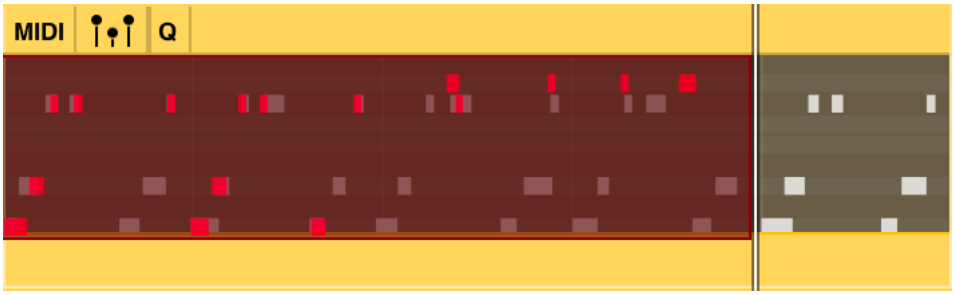



## TO LOOP RECORD (WITH MIDI REPLACE):

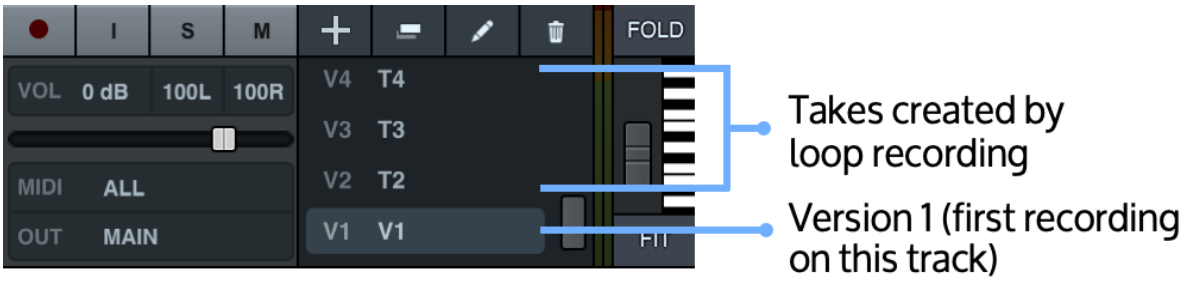
1. Deselect Transport > MIDI Merge.
2. Make a MIDI selection and click the Loop Play / Record button.



3. Record your source. As the loop plays, you replace the previous recording with each pass.




4. To switch between Versions and Takes, click the Version or Take.



# Working with MIDI on Instrument Tracks

## Editing MIDI

MIDI has some special editing functions because you can work with MIDI both as clips and as individual notes. Clips can be edited, copied and moved as individual objects that contain groups of notes. In Notes view, there are additional note-level selection and editing features.

---

## Working with clips on a MIDI track

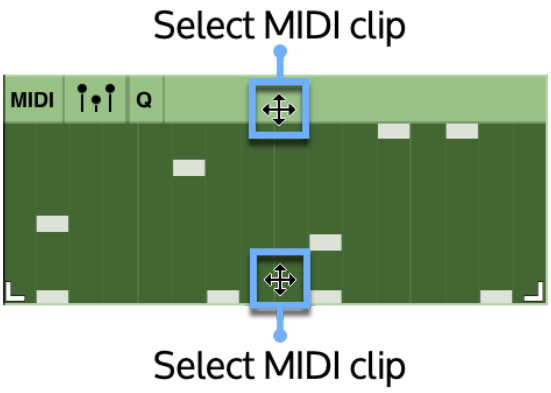
The two main editing views on a MIDI (Instrument) track are Clips and Notes.

**Note:** For clip editing functions (except for making selections), Clips and Notes view behave the same, so Notes view is used for some examples in this section.

### SELECTING MIDI IN CLIPS VIEW

To select a clip, click near the vertical top or bottom of the clip.

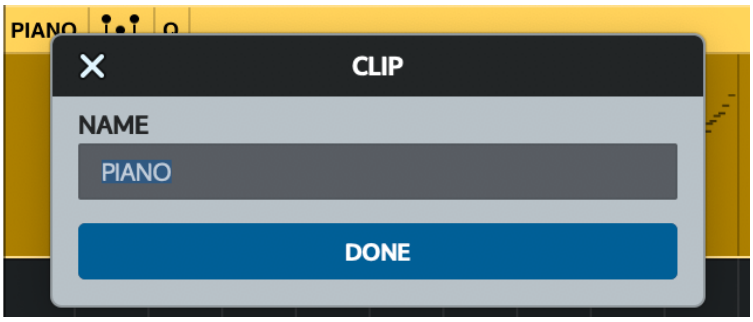
**Note:** In Notes view, you can only select a MIDI clip from the top of the clip.




To select a range in a MIDI clip, hover your mouse above the vertical middle of the clip. The selection cursor appears. Click and drag to the left or right to make a selection.

### RENAMING A MIDI CLIP

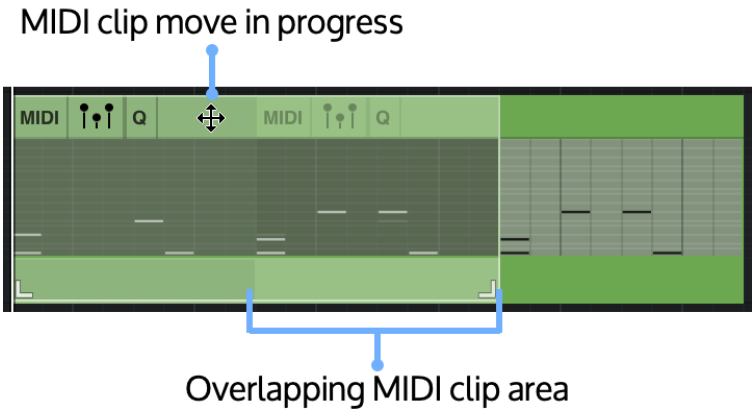
Double-click in the top bar of a MIDI clip anywhere except on the CC view or Quantize button to rename the MIDI clip. A popover opens. Type the new clip name, then click Done.




## MOVING MIDI CLIPS

To move a clip, hover at the top of the clip. The move tool appears. Click and drag the clip to a new location. You can drag a clip on the same track, or to another track, if it is the same type (audio or MIDI). If you have Snap enabled, the moved clip snaps to the grid. To move without snapping to the grid, press the Command key while you drag.

When you move a MIDI clip, it can overlap an existing clip. You can see the overlapping area when dragging the clip. The overlapping MIDI area is played, while any underlying notes are not. If you later move the clip again, any underlying clips that exist are revealed.

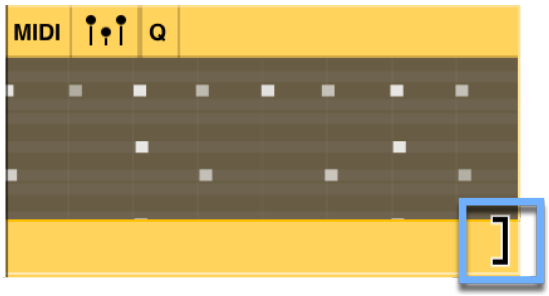



## TRIMMING MIDI CLIPS

Trim a MIDI clip to either make it smaller or to extend the MIDI clip. This is useful because if you want to add more MIDI notes before or after an existing passage, you must extend the MIDI clip to contain that data. Alternatively, you can shorten a MIDI clip to hide notes at the beginning or end of a clip. Those notes are still available if you later trim the MIDI clip out to show them.

To trim a MIDI clip:

- Hover near the bottom at the start or end of a MIDI clip. The Trim Editing Tool appears.
- Click and drag to shorten or lengthen the MIDI clip.



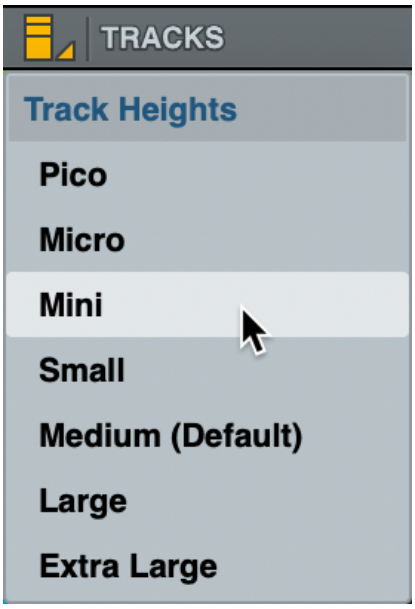

*MIDI clip showing Trim Editing Tool*

*MIDI clip extended with Trim Editing Tool*

## Resizing the MIDI track

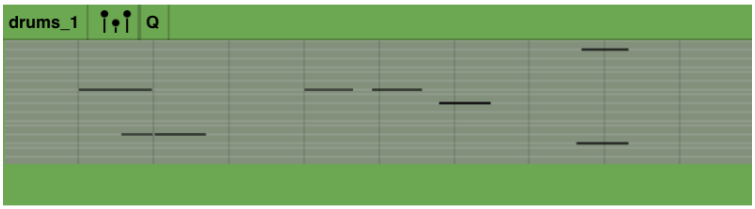
Before you add and edit MIDI notes, or cut, copy or paste MIDI data, you will likely want to resize the MIDI track. There are several ways to do this.

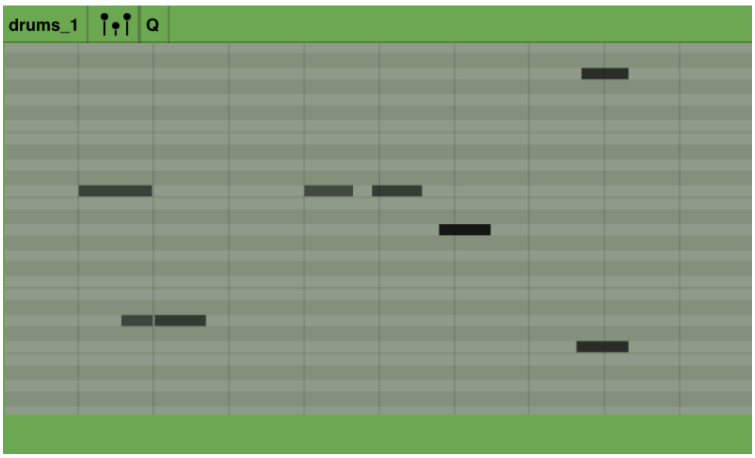
- At the top of the Edit workspace, click the Tracks icon, and choose a new track height size. This resizes **all tracks** to the new size.

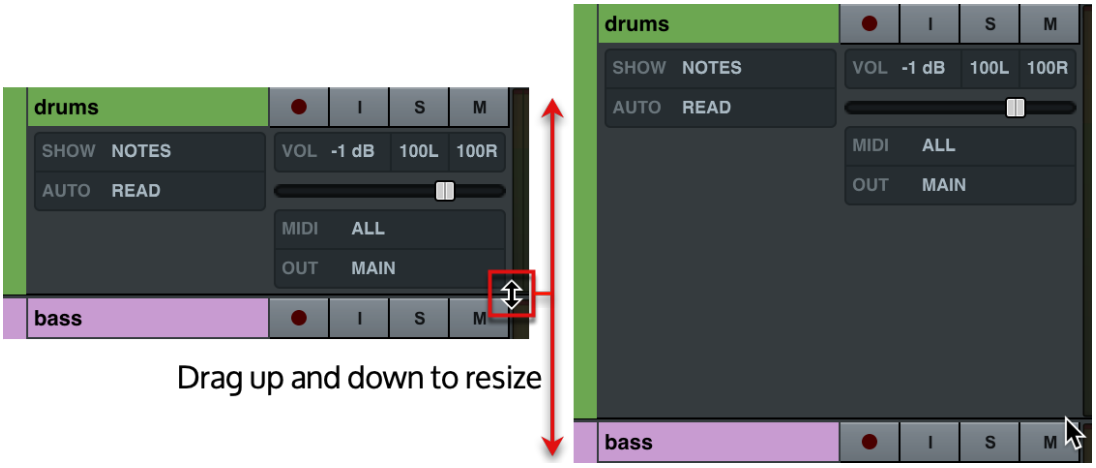



Track height: Small

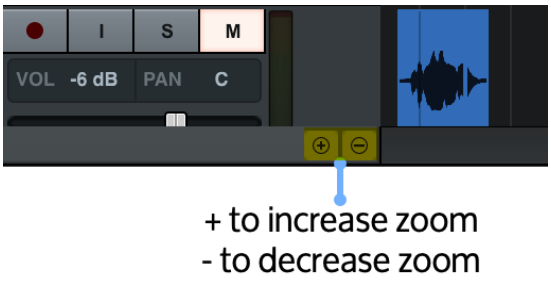
Track height: Medium (Default)




Track height: Large

- Drag up or down from the lower edge of the Track controls area to resize the track.This resizes just one track.



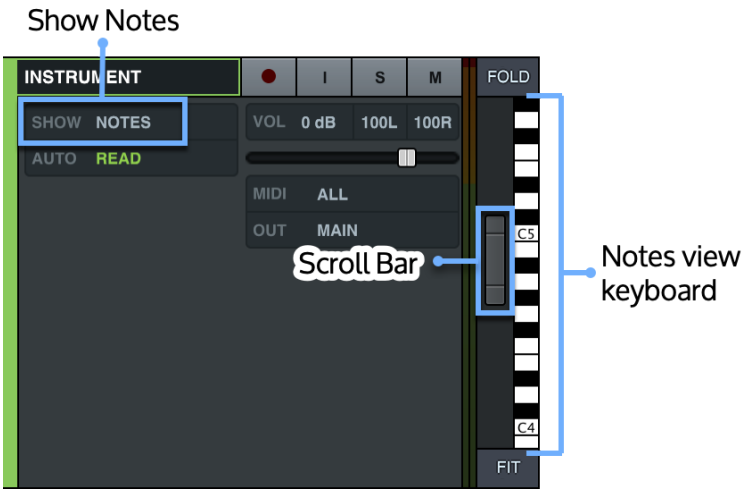

- To expand the track to the full available editing space, press the E key.
- To resize the track horizontally, click the plus and minus buttons at the bottom of the Edit workspace (or use the keyboard shortcuts Command+[ to zoom out, and Command+] to zoom in). With a mousewheel or trackpad, you can hold the Option key and scroll to zoom horizontally. You can pinch to zoom in or out on a trackpad.




## Showing MIDI notes

You can vertically resize the MIDI notes on an instrument track to make them easier to edit and work with.

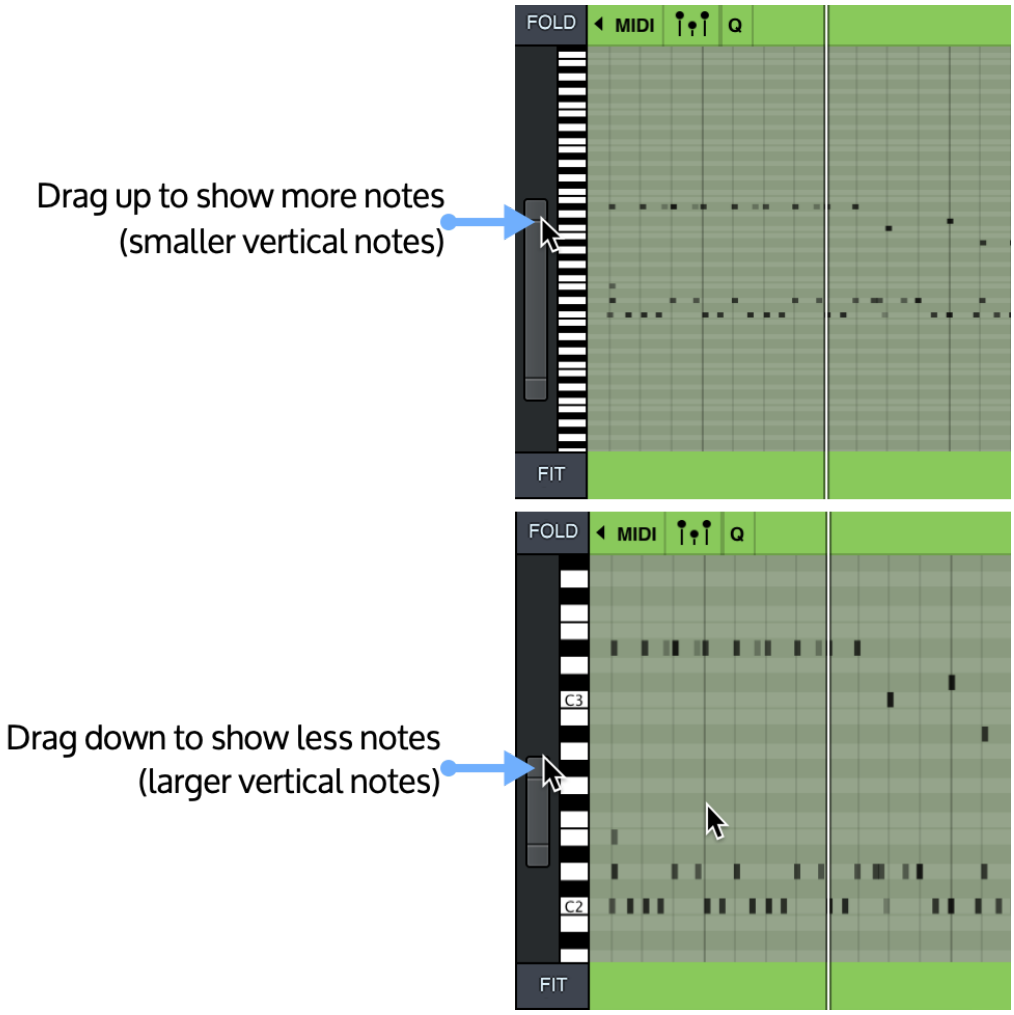
To do this, set the instrument track to MIDI Notes view. On the instrument track, click where it says Show, and from the View browser, choose Notes. The Show area on the instrument track indicates that you are in Notes view, and the keyboard and piano roll appear to the right of the track controls.

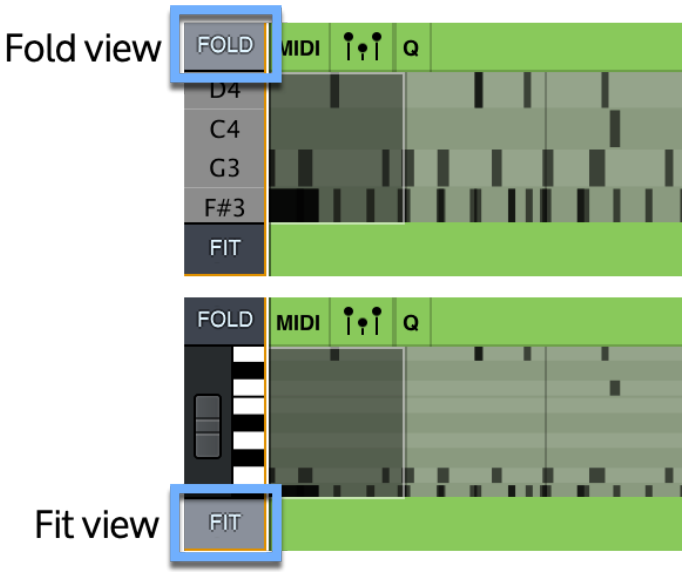



At the left of the MIDI track is a scroll bar. You can use the scroll bar to move up and down in the piano roll, and to resize the notes in the piano roll vertically.

## TO RESIZE THE MIDI NOTES ON THE PIANO ROLL:

- Click and drag up or down at the top or bottom of the scroll bar.
- Drag up to make notes smaller vertically.
- Drag down to make notes larger vertically.
- Click Fold at the top of the Notes view keyboard to show only the notes used on the clip, with note names.
- Click Fit at the bottom the Note view keyboard to fit the range of notes on the piano roll to the height of the track.

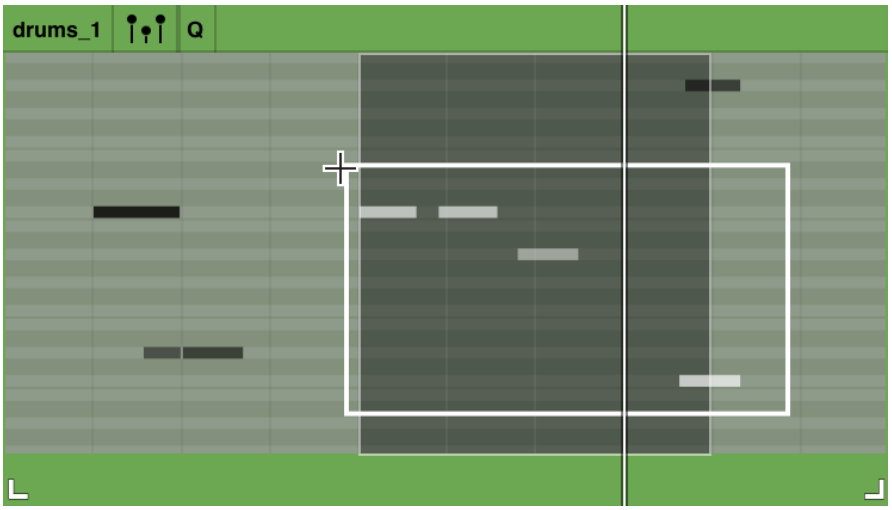

Drag up to show more notes
(smaller vertical notes)
FOLD
MIDI
Q
FIT
Drag down to show less notes
(larger vertical notes)
FOLD
MIDI
Q
C3
C2
FIT


Fold view
FOLD
MIDI
Q
D4
C4
G3
F#3
FIT
FOLD
MIDI
Q
Fit view
FIT

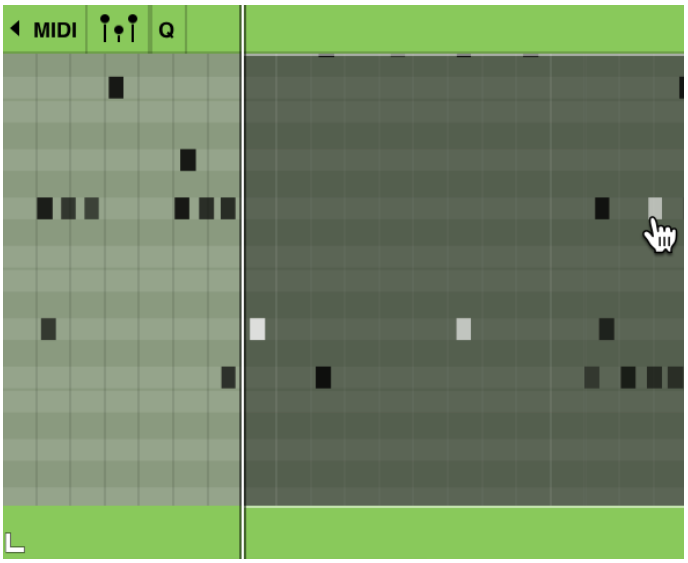
# Selecting MIDI notes

There are several ways to select multiple MIDI notes:

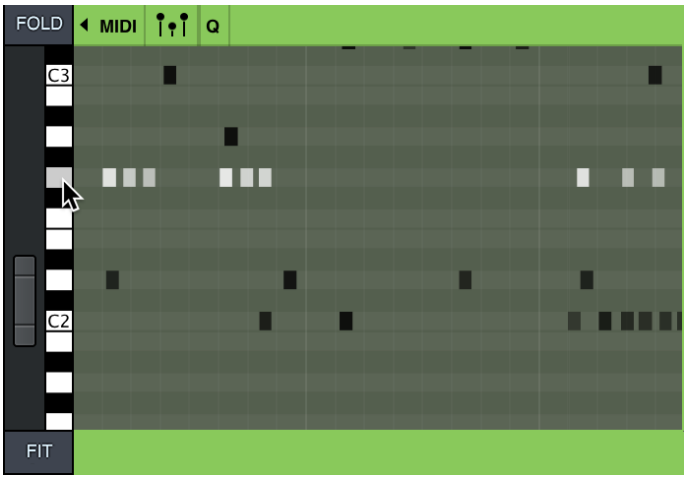
- Click and drag a selection rectangle around the notes (rubber banding).
- Shift+Click on multiple notes. You can select contiguous or non-contiguous notes.
- Click a note on the Notes view keyboard at the left edge of the track to select all instances of that note. This selects all notes on the track, not just in a clip.
- Shift+Click different notes on the Notes view keyboard at the left edge of the track to select all instances of multiple notes.




***SELECT WITH A SELECTION RECTANGLE***



***SHIFT-CLICK TO SELECT MULTIPLE CONTIGUOUS OR NON-CONTIGUOUS NOTES***




***SELECT FROM THE NOTES VIEW KEYBOARD***

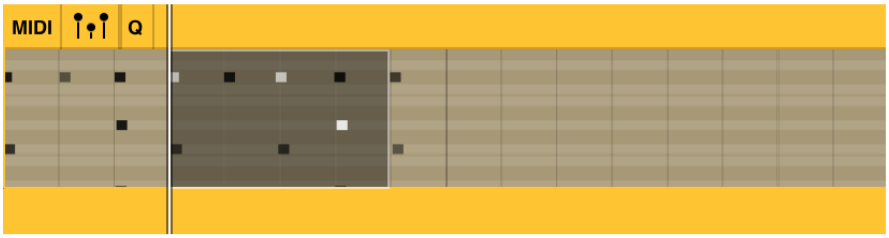
---

## Cutting, copying, and pasting MIDI notes

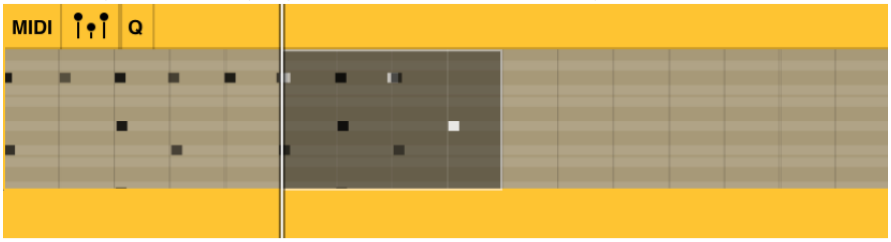
Cutting, copying, and pasting MIDI works differently from editing audio, because you can select non-contiguous MIDI notes, and the paste operation respects the structure of the cut or copied data. If you paste within an existing clip, the notes are pasted within the boundaries of the clip. If you paste MIDI notes on the timeline outside a MIDI clip, a new MIDI clip is created.

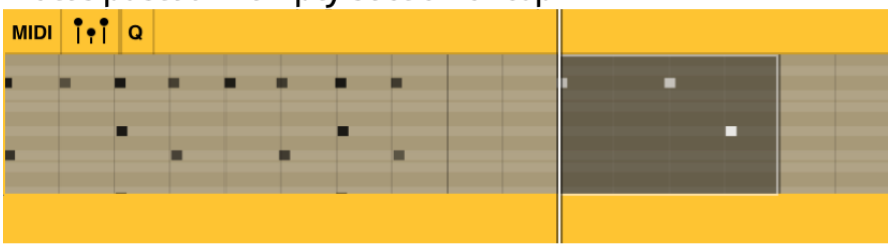
MIDI notes are selected, cut, copied, and pasted with the same time relationships and durations as the selection. MIDI selections conform to the grid if Snap is enabled.

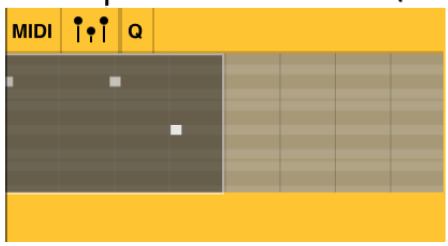
Clip with multiple non-contiguous notes selected




Notes pasted in populated section of clip




Notes pasted in empty section of clip

Notes pasted on Timeline (creates new clip)




## TO CUT AND PASTE MIDI NOTES:

1. Select MIDI notes to cut. You can select a range with the Select Editing Tool, draw a selection with the selection rectangle, select contiguous or non-contiguous notes by shift-clicking individual notes, or select specific notes from the Notes View Keyboard.
2. Press Command+X or X (if MIDI Keyboard Mode is not enabled) to cut notes. The MIDI notes are removed from the clip and copied to the clipboard.
3. Place the playhead at a location in the Timeline or in another MIDI clip and paste the MIDI notes with Command+V or V (if MIDI Keyboard Mode is not enabled).

### TO COPY AND PASTE MIDI NOTES:

1. Select MIDI notes to copy. You can select a range with the Select Editing Tool, draw a selection with the selection rectangle, select contiguous or non-contiguous notes by shift-clicking individual notes, or select specific notes from the Notes View Keyboard.
2. Press Command+C or C (if MIDI Keyboard Mode is not enabled) to copy notes. The MIDI notes are copied to the clipboard.
3. Place the playhead at a location in the Timeline or in another MIDI clip and paste the MIDI notes with Command+V or V (if MIDI Keyboard Mode is not enabled)

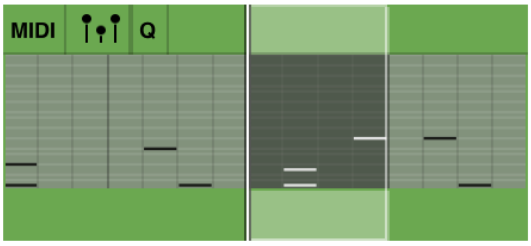
---

## Shift-editing MIDI clips

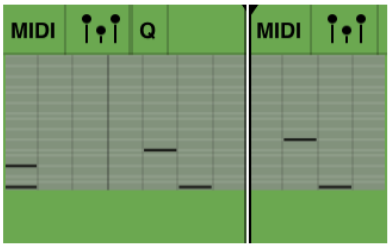
The shift workflow allows you to edit MIDI and keep your arrangement flowing around your edits. For example, you can cut or paste MIDI, and have the MIDI clips on one or more tracks shift back or forward in time to accommodate the cut or paste.

**Note:** The Shift-editing workflow works only with a time selection on a clip (for example, a whole clip, or a selection made with the Select Editing Tool). You cannot Shift edit with single notes, rectangular selections, non-contiguous notes, or note selections made with the Notes View Keyboard.

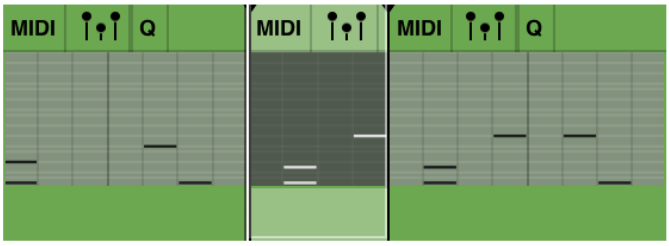
One bar selected



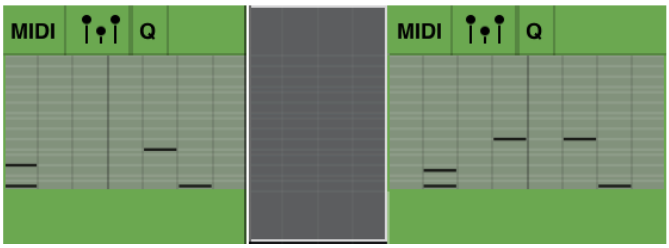

Shift+X cuts bar and shifts audio to fill space




Shift+V pastes bar and shifts audio to fit




Shift+I inserts one bar of space and shifts audio to fit




### SHIFT+X

Use Shift+X to cut the selection to the clipboard, and shift all the following MIDI data to fill the space that is removed. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+V

Use Shift+V to paste a selection, and shift all the following MIDI data to accommodate the pasted data. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+D

Use Shift+D to duplicate (copy and paste) the selection, and shift all the following MIDI data to fill the space that is removed. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+I

Use Shift+I to insert space, and shift MIDI data following your selection by the length of the selection. You can do this on a single track, multiple selected tracks, or all tracks.

### SHIFT+DELETE

Shift+Delete deletes the selection, and shifts all the following MIDI data to fill the removed space.

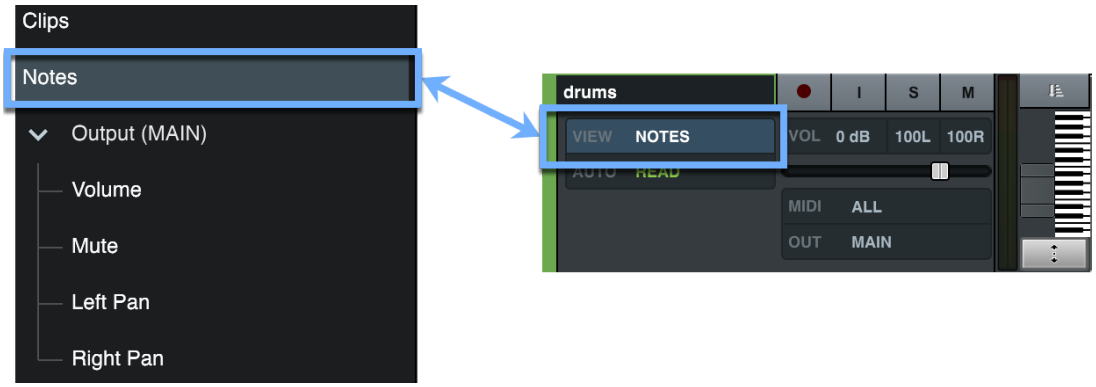
---

## Editing MIDI with the Editing Tool

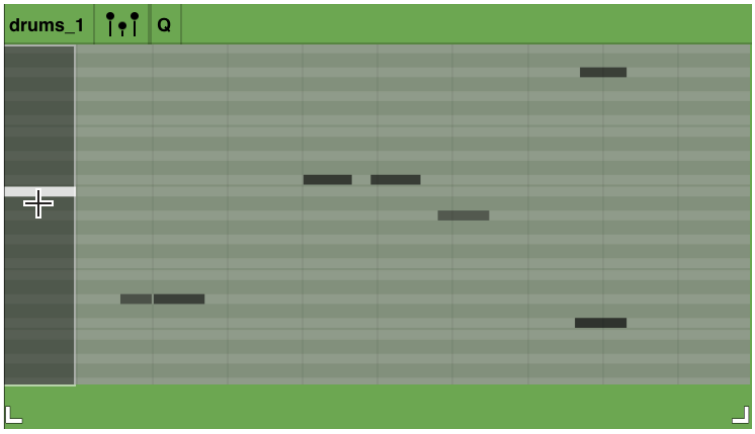
You can record MIDI from a MIDI controller to an instrument track, and you can add or edit MIDI notes and controller values with MIDI on an instrument track manually, using the Editing Tool. Set the Grid settings to specify the default note length. When you add a MIDI note, the default note length is the Grid setting. Notes you add snap to the grid if Snap is enabled.

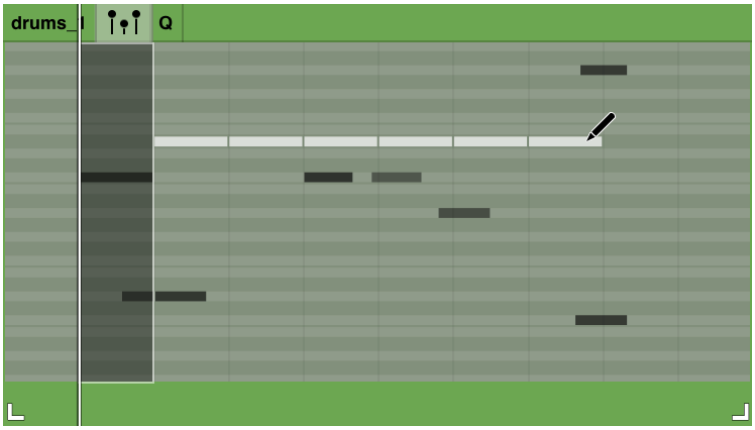
### ADDING AND EDITING MIDI NOTES ON AN INSTRUMENT TRACK

To work with notes in a MIDI clip or on an instrument track, click View on the track, and choose Notes in the Browser to set the track to MIDI Notes view.

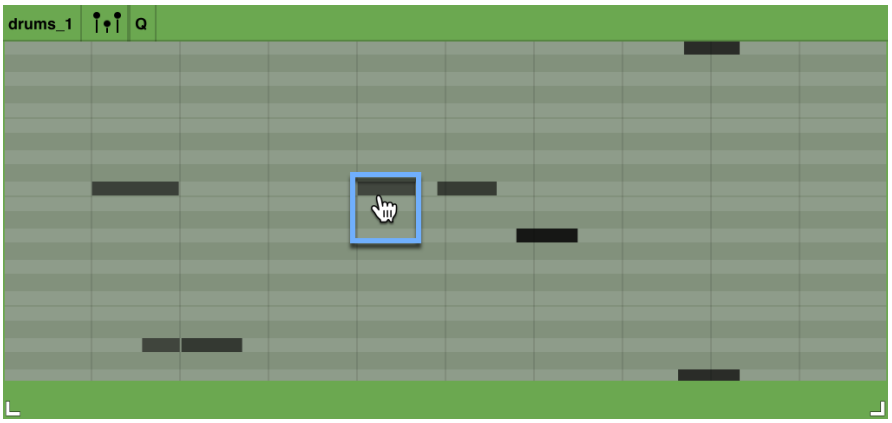


To add a MIDI note to an instrument track:

- Hover over a note location. The MIDI Note Editing Tool (a plus symbol) appears. Double-click on the location where you want to add the note. The note is added.

- To add multiple notes, press Control and click and drag from left to right across the track. The MIDI Pencil Editing Tool appears and draws notes across the track. MIDI notes of the duration determined by the Grid size are added, on the pitch where you release the click.




- To delete a MIDI note, hover over the note. The MIDI Hand Editing Tool appears. Double-click the note to delete it.

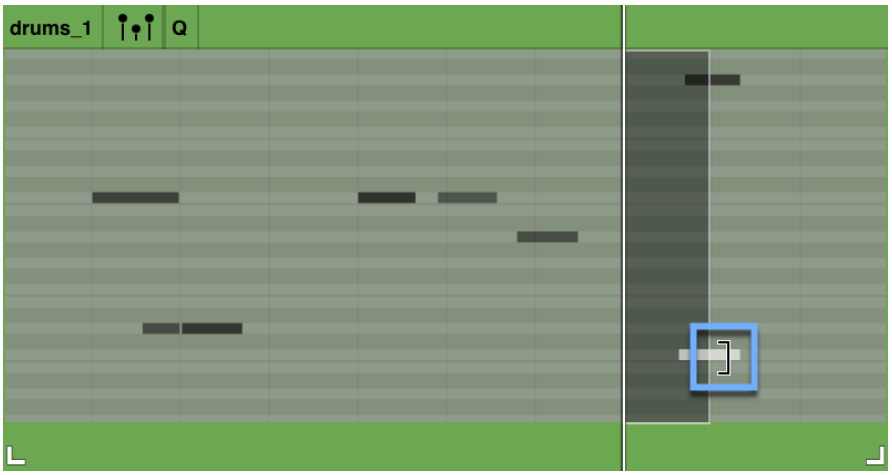



To move a MIDI note:

- Hover over the note. The MIDI Hand Editing Tool appears. Click on the note and drag it up or down to change the MIDI note, and left or right to change the time location. As you move the note up and down, the different notes are triggered on the Instrument plug-in. MIDI notes will snap to the grid if Snap is enabled.

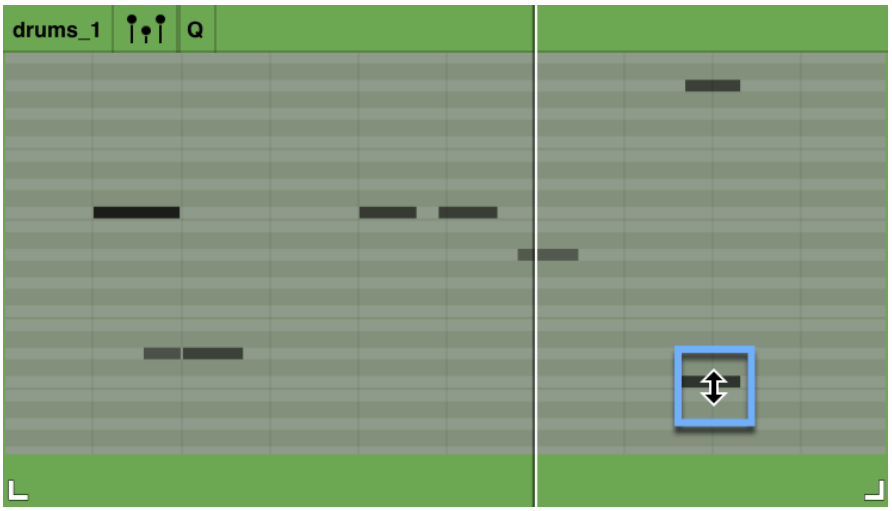
To trim a MIDI note:

- Hover near the edge of a MIDI note. The MIDI Trim Editing Tool appears. Click on the left or right edge of the note and drag to trim the note. MIDI note edges will snap to the grid if Snap is enabled. To ignore the Grid when trimming, press Command after you start to trim.

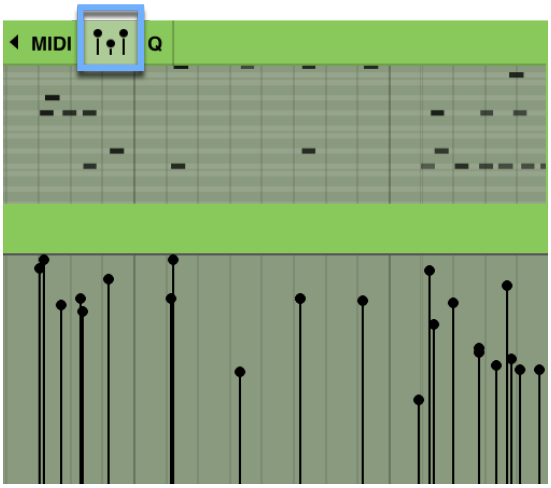



To change the velocity of a MIDI note, do one of the following:

- Press Command and hover over a note. The MIDI Velocity Editing Tool appears. Command+Click on the note and drag up or down to increase or decrease the note velocity. The relative transparency of the note indicates the velocity. Notes become less opaque and more transparent as velocity decreases, and more opaque and less transparent as velocity increases.

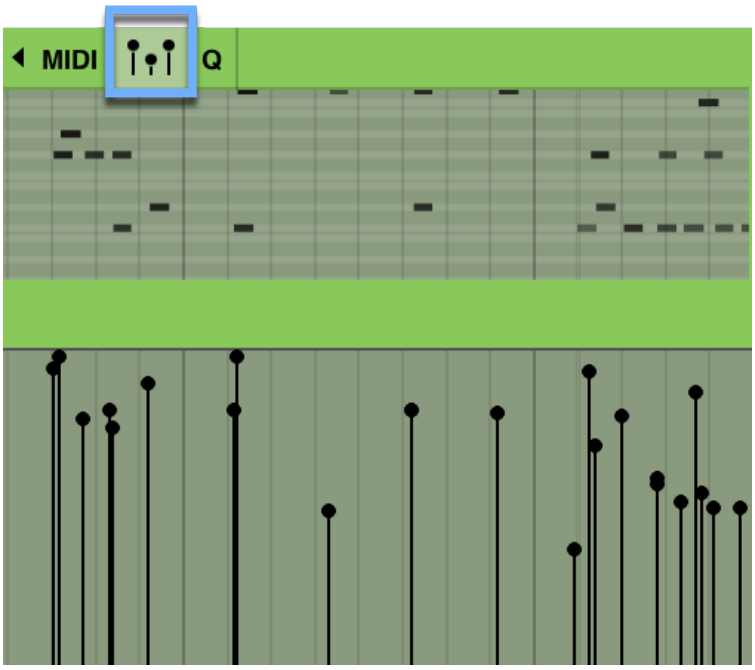



- Show the MIDI CC sliders (set to Velocity by default), and click and drag on a velocity stalk to edit velocity for a note. You can click the note to highlight the note's velocity stalk. If you select multiple notes, Option+Click and drag to edit multiple velocity stalks. Shift-click to select multiple velocity stalks.



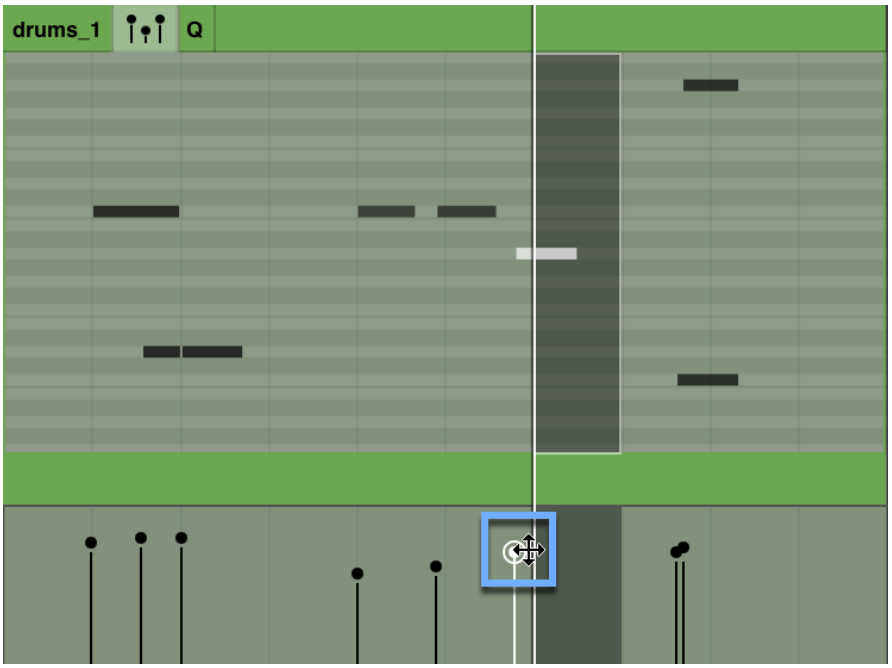

To show the MIDI CC track for an instrument track:

- Click the MIDI CC icon at the top of the track, next to the track name.



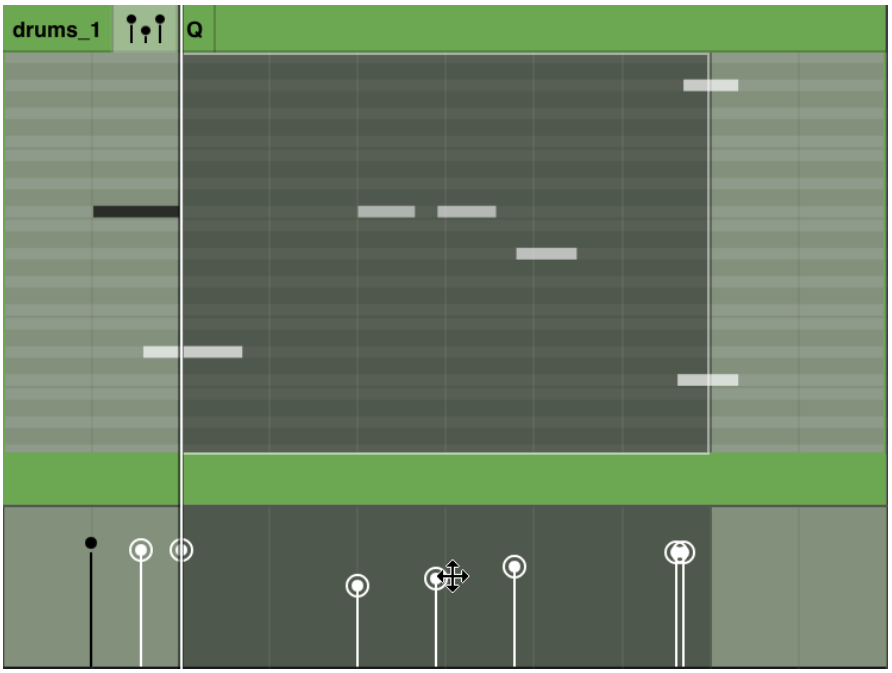

To edit the velocity of a MIDI note on the velocity track:

- Click on the velocity stalk and drag it up or down.



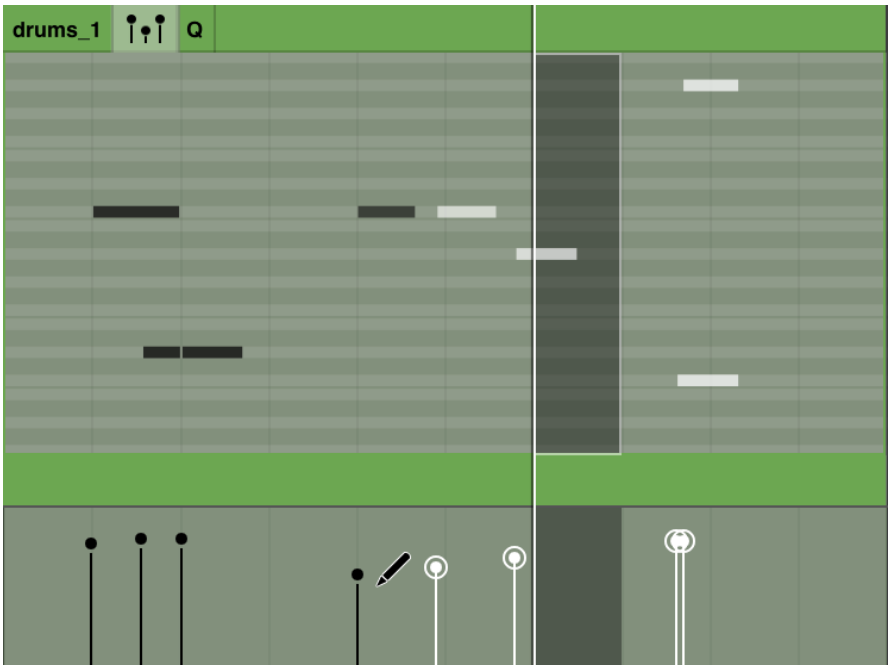
To edit the velocity for multiple MIDI notes:

1. Select multiple notes on the timeline, or select multiple velocity stalks on the velocity track. Shift-click to select multiple non-contiguous velocity stalks.
2. Option+Click on a note velocity stalk and drag up or down. All selected note velocities are adjusted relative to each other.




To draw MIDI note velocities:

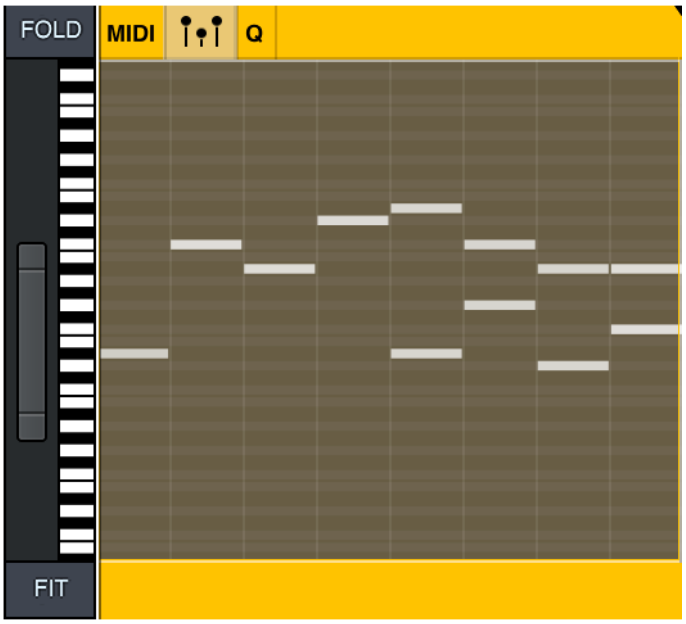
1. Press Control on the velocity track. The cursor changes to a pencil.
2. Draw velocities across the velocity track. Note that if you have made a selection, you can only draw velocities on selected notes.



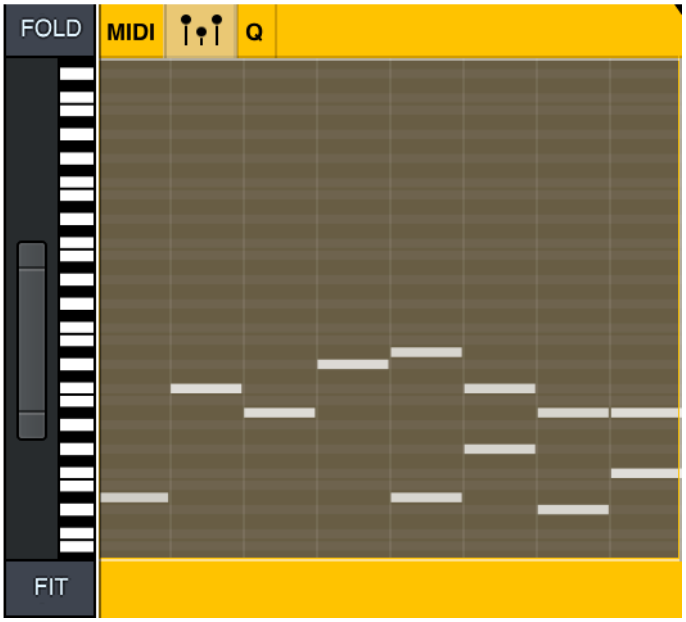

## Transposing MIDI notes

- To transpose one or more selected MIDI notes up one semitone, press ↑.
- To transpose one or more selected MIDI notes down one semitone, press ↓.
- To transpose one or more selected MIDI notes up an octave, press Shift+↑.
- To transpose one or more selected MIDI notes down an octave, press Shift+↓.

Original notes selected




Shift + ↓ shifts notes down an octave




## Quantizing MIDI notes

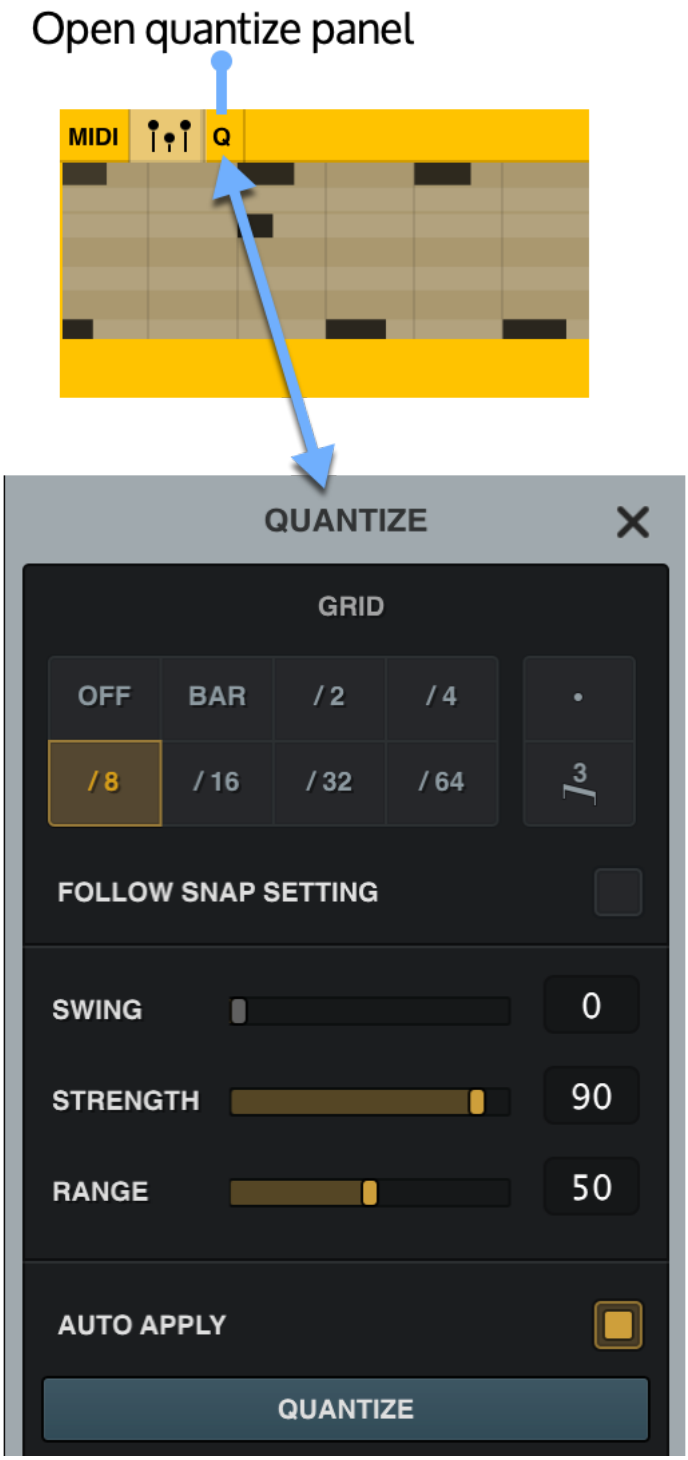
You can quantize MIDI notes, selections, or clips to any grid increment, and add swing.

The following parameters are supported.

| Setting | Description |
|---|---|
| Grid | Quantize notes to the selected Grid setting, from BAR (whole notes) to /64 (64th notes). You can also select Dotted values, Triplet values, or both. |
| Follow Snap Setting | Quantize notes to the Snap Grid setting. |
| Swing | Shifts every other Grid boundary by the percentage specified, from 0-100. Swing of 0% does not shift notes, while 100% swing shifts 2/3 of the way to the next grid line. |
| Strength | Set the strength at which the quantize settings are applied. At 50%, notes are quantized halfway from their position to the grid. At 100%, notes are fully quantized to the grid. |
| Range | Sets the range at which notes to be quantized are detected. The default setting of 100% detects notes at 100% of the grid value with half to the left and half to the right of the grid.<br>For example, if the grid is set to 1/4 note, a 100% range detects notes within 1/8 note to the left and 1/8 note to the right of the grid line. A setting of 50% with a 1/4 note grid detects notes 1/16 note to the left and 1/16 note to the right of the grid line. |
| Auto Apply | Auto Apply to adjust the quantize settings and see and hear the results in near real time. If Auto Apply is not set, you must click Quantize to see and hear the quantize results. |

## TO QUANTIZE MIDI NOTES:

1. Select a MIDI note or notes, or a MIDI clip.
2. Press Shift+Command+U to open the quantize panel. You can also press the Q in the header of an audio clip, though this will change your selection unless you have enabled a track group.




3. To preview your Quantize choices in near real time, select Auto Apply.
4. Choose a grid value to which to quantize notes. You can select from BAR (whole notes) to 64th notes, and dotted or triplet modifiers.
5. To follow the Snap grid setting, click Follow Snap Setting.
6. To adjust the amount of swing from 0 to 100%, move the Swing slider.

7. To adjust quantize strength, move the Strength slider from 0 to 100%.
8. To adjust the quantize detection range, move the Range slider from 0 to 100%.
9. Click Quantize to apply your settings.

**Note:** If Auto Apply is enabled, any setting you change will update your selection.

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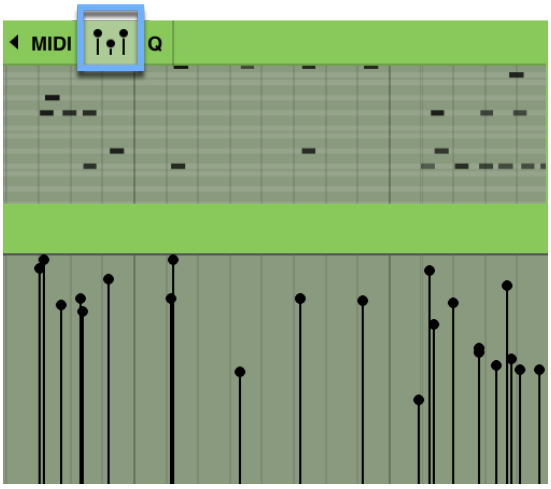
# Editing MIDI Continuous Controllers

You can show MIDI Continuous Controller (CC) lanes and edit automation.

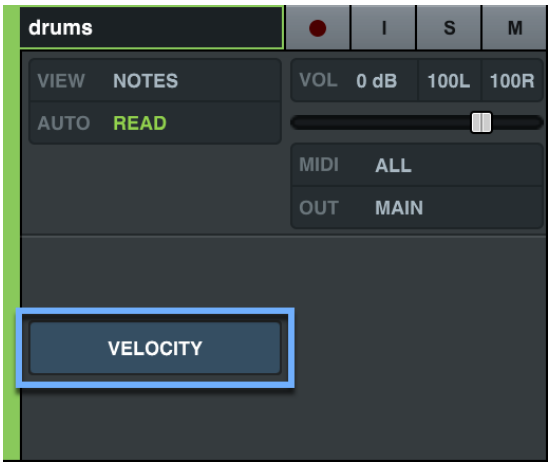
To show MIDI Continuous Controllers, click the MIDI CC button on a MIDI clip.




By default, MIDI CC view shows Velocity and the velocity sliders.

### TO SHOW A MIDI CC CONTROLLER LANE:

1. Click the MIDI CC button on the MIDI clip.
2. Click on the Velocity button on the track control area to open the MIDI CC browser. The MIDI CC browser lists all the MIDI CCs.
3. Choose a MIDI CC controller. The automation lane for the controller is displayed.




To write automation for a CC, see “To write MIDI CC automation.”

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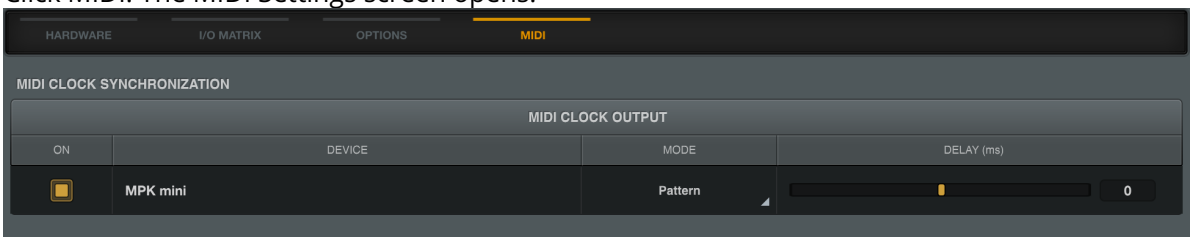
# Sending MIDI Clock to devices

You can configure LUNA to send MIDI Clock position and timing information to connected MIDI devices.

### TO SEND MIDI CLOCK TO A DEVICE:

1. In LUNA, click the UA logo at the top left of the screen, or select LUNA > Preferences from the application menus.
2. Click MIDI. The MIDI Settings screen opens.




3. To enable MIDI Clock for a device, click the box next to the device name.
4. Select the Clock mode (Song or Pattern).
5. If necessary, you can configure an offset, from -200 to +200 milliseconds, by typing a number or moving the Delay slider.
   In most instances, this setting is not required. However, if you find that your device is not in sync or out of phase with LUNA playback, small adjustments to the MIDI clock timing sent to the device may correct this issue.

## MIDI CLOCK MODES

You can set the MIDI clock output to Song mode or Pattern mode. If you are working with a pattern-based generator (for example, a drum machine that triggers loops or sequences), Pattern mode will provide the best experience. If the device should be syncing for the duration of the song, Song mode will provide the best experience.

### Song Mode MIDI messages

In Song mode, LUNA sends MIDI messages to the device according to the following table.

| Action | MIDI Messages | Additional info |
|---|---|---|
| Start play in LUNA | • Song position pointer<br>• START<br>• CLOCK (ongoing) | CLOCK is sent until stop |
| Stop play in LUNA | • STOP<br>• Song position pointer | |
| Click on the Bars and Beats ruler during playback | • STOP<br>• Song position pointer<br>• CONTINUE<br>• CLOCK (ongoing) | CLOCK is sent until stop |
| Loop reaches the end and restarts | • STOP<br>• Song position pointer<br>• CONTINUE<br>• CLOCK (ongoing) | CLOCK is sent until stop |

### Pattern Mode MIDI messages

In Pattern mode, LUNA sends MIDI messages to the device according to the following table.

| Action | MIDI Messages | Additional info |
|---|---|---|
| Start play in LUNA, not on a bar | • Song position pointer (0)<br>• When LUNA reaches a bar, START<br>• CLOCK (ongoing) | CLOCK is sent until stop |
| Start play in LUNA on a bar | • START<br>• CLOCK (ongoing) | Clock is sent until stop |

| | | |
|---|---|---|
| Stop play in LUNA | • STOP | |
| Click on the Bars and Beats ruler during playback | • CLOCK (ongoing) | CLOCK is sent until stop |
| Loop reaches the end and restarts | No messages | |

# Working with Audio in the Timeline

## Track Modes: Time and Tempo

Audio tracks can be in one of two Track modes: Time or Tempo.

- A track in Time mode maintains its original playback time, regardless of changes in the tempo of the session. All audio clips on the track, and elements associated with those clips, maintain their original time duration, including start and end points, edits, fades, and automation.
- A track in Tempo mode adjusts to the tempo of the session and any session tempo changes. An audio clip that is configured in Tempo mode will adjust shorter or longer, if the session tempo is adjusted. All audio clips on the track, and elements associated with those clips, scale to the new tempo. Clip start and end points, duration, edits, fades, and automation all scale to the new tempo.

| Time mode | Tempo mode |
|---|---|
| Default for imported audio files that have no embedded tempo value, and audio tracks created as a result of AAF import. | Default for all newly created audio tracks and imported audio files that have an embedded tempo value. |
| Clips start and end on a time value. | Clips start and end on a tick value. |
| Fade ins start on a time value at the clip start, and end on a tick value relative to the clip start time. Fade outs start on a tick value relative to the clip end, and stop in time at the clip end. | Fades start and end on a tick value relative to the clip start and end. |
| Automation breakpoints are stored at time values. | Automation breakpoints are stored at tick values. |

| | |
|---|---|
| When an element is saved on a time value, its position remains fixed in time no matter what happens with the tempo. Tempo changes cause the element to move and change duration visually, though the sound of the element doesn't change. The time it takes to play events does not change, but the start point and visual duration on the timeline moves relative to the tempo map. | When an element is saved on a tick value its position remains fixed to a position in the tempo map. |

## CHANGING AN AUDIO TRACK FROM TEMPO TO TIME MODE

Changing an audio track from Tempo to Time mode will not change the duration of the clips on the track. If the clip has been previously time-stretched or time-compressed by a tempo change, the clip will not revert to its original duration. When you change the clip mode from Tempo to Time, two markers are added at the start and end of the clip, to mark the exact tick-based start and end of the clip. The clip will still move in time so that the start of the clip stays in the same relative spot, but the duration of the clip will no longer change with tempo changes.

## CHANGING AN AUDIO TRACK FROM TIME TO TEMPO MODE

When you change an audio track from Time to Tempo mode, the duration of the clips on the track does not immediately change. However, the clips on the track are now "anchored" to the ticks at which they are currently located. Any tempo change to the session or on the Timeline that affects a clip will time stretch or time compress the clip. Session tempo changes also affect fades, crossfades, edits, and automation breakpoints on the audio track, and such fades, crossfades, edits, and automation breakpoints are stretched or compressed with tempo changes.

### Restoring a time-stretched or compressed clip to its original duration

To restore a clip to its original duration and remove any warping, double-click the top of clip, and in the Clips window, click Reset Warps.

### Workflow: Changing the tempo of a song and conforming audio and Instrument tracks

The typical situation for this workflow is one where you have recorded some or all of the session tracks, and decide to change the tempo of the session to change the feel, for creative or other reasons.

To change session tempo, you'll need to configure your audio tracks to follow the tempo, and configure the Warp algorithm for the different types of tracks.

### Recommended warp algorithms

As a starting point, the following warp algorithms are recommended:

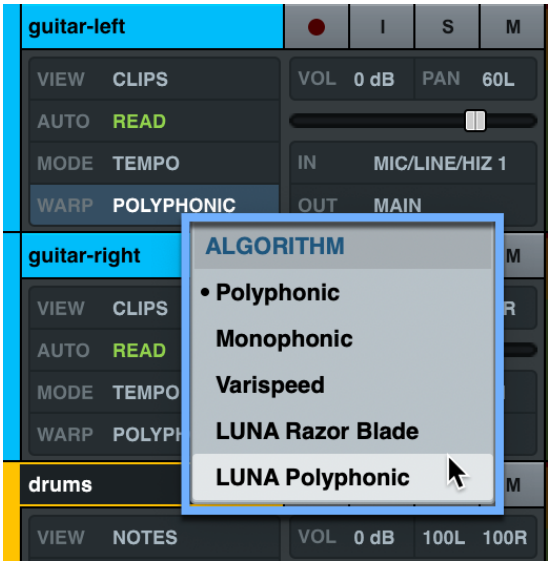
- **LUNA Razor Blade** for drum loops and multitrack drum tracks. LUNA Razor Blade will maintain the best phase coherence and the most accurate transients and tails for time-stretched or time-compressed drum tracks, though with extreme stretching or compressing, audio artifacts can occur.
- **LUNA Polyphonic** or **Polyphonic** for polyphonic material, instruments, and vocals.
- **Monophonic** for vocals or single-note lines. For example, a bass line or a monosynth without complex overtones might sound better with the Monophonic algorithm than the Polyphonic algorithm.

You can easily change Warp algorithms while material plays to audition different algorithms.

**Note:** You can apply Warp algorithms to a track and/or individually to audio clips. You can also apply different algorithms to different clips on the same track.

To configure audio tracks for tempo changes or warping:

1. In the Timeline, select all audio tracks, and click the Mode control on the track to toggle between Time and Tempo mode (Tempo is enabled on all tracks by default).
2. For each audio track or group of audio tracks, click the Warp control on the track controls, then choose an algorithm from the popover menu.




To configure an audio clip for tempo changes or warping:

1. In the Timeline, double-click the header of the audio clip for which you want to change the Warp algorithm. The Clip window opens.
2. From the Algorithm pulldown menu, choose the Warp algorithm for the clip.

3. Click Done.

You can now make a global tempo change, or any other type of tempo change, and your audio and Instrument tracks will automatically adjust to the new tempo. See “Setting the tempo and making tempo changes” for more information.

---

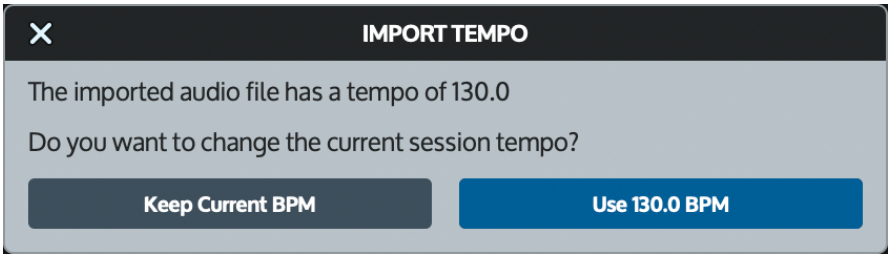
# Adding audio files and tracks

Audio files are imported differently, depending on whether they have embedded tempo information. A file with embedded tempo information (for example, an ACIDized wav file) is stretched or compressed to fit the tempo, and set in Tempo mode. A file without embedded tempo information is placed at the start of the session but the audio is not transformed in any way, and the track is set in Time mode.

## IMPORTING AN AUDIO FILE

You can import an audio file using File > Import or Command + I. A file with embedded tempo information (for example, an ACIDized wav file) is placed at the playhead, aligned to the grid, stretched or compressed to fit the tempo, and set in Tempo mode. A file without embedded tempo information is not transformed in any way, and the track is set in Time mode.

When you import audio files with embedded tempo information into an empty session, you are prompted to either keep the session at the current tempo, or adjust the session to the tempo of the audio files.



Choose whether to keep the session at the current tempo, or to use the tempo from the imported audio file.

Note that you can also choose a LUNA session to import with this command. When you import a session with File > Import or Command + I, the most recent version of the session is imported, and you can then choose import options for each track and session settings. To choose other versions when importing a session, use File > Import Session Data or Option + I. See “Importing Session Data” for more information.

### DRAGGING AN AUDIO FILE INTO THE TRACKS BROWSER

You can drag audio files into the tracks browser. Each audio file will be created as a new track. The previous rules apply; if the audio has embedded tempo information, it is stretched or compressed to the tempo of the session, and set in Tempo mode. If the audio does not have embedded tempo information, it is set in Time mode and unchanged.

### DRAGGING AN AUDIO FILE ONTO THE TIMELINE

You can drag audio files directly into the timeline. The previous rules apply; however, audio that you drag to the timeline is placed at the spot where you drop it. If you drop an audio file onto an existing track or tracks, the audio is added on that track or those tracks at the location where you dropped it. If you drop the audio into an empty part of the workspace, the audio is placed at the time location where you dropped it on a new track or tracks.

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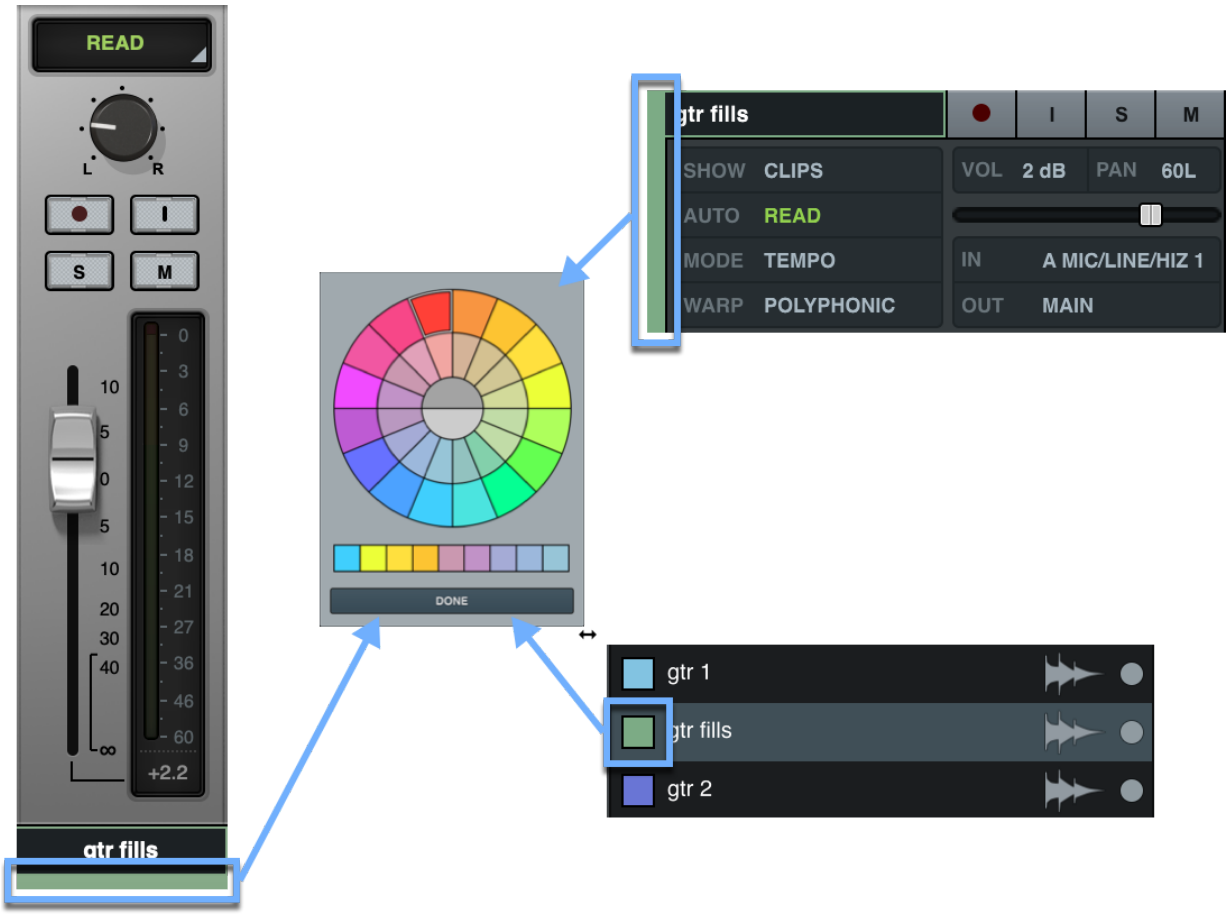
## Assigning track colors

There are three color hotspots you can click to assign track colors:

- The colored strip at the bottom of a track in the Mixer
- The colored strip at the left of a track in the Timeline
- The colored square to the left of a track name in the Tracks browser

### TO ASSIGN COLORS:

1. Click one of these locations to assign a track color. The Color browser opens, with a color wheel and a block of your recently used colors at the bottom of the color wheel.
2. On the Color wheel or in the block of used colors, click the color to use. The color is assigned to the track controls and track clips.
3. To exit the Color browser click Done or press Esc.




# Comping tracks with Versions

In LUNA, you can *comp* or create a compilation track from a recorded track to assemble a compilation of audio or MIDI on the same track or another track. The comping workflow in LUNA uses Track Versions. Track Versions are similar to what other applications may refer to as versions, playlists, or lanes.

Two methods for comping are provided here.

- **Comp to the same track:** this method for comping assembles the comp track on the original track, by switching between versions and copying and pasting sections to either an existing track version or a new track version.
- **Comp to a different track:** this method for comping requires two tracks. With this method, you can either duplicate the track you are comping from, or you can create a blank track on which to assemble the comped track.

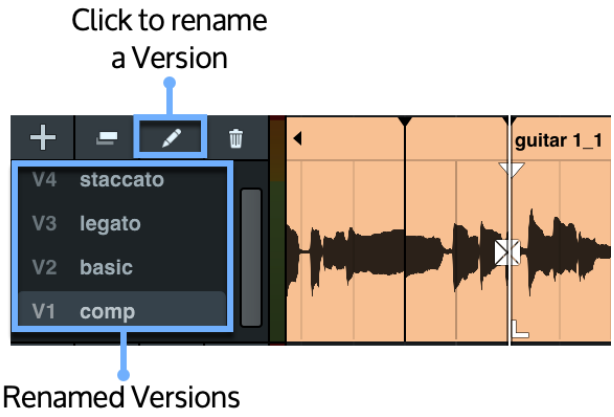
## TO PREPARE FOR COMPING:

- Record a track.
- If you want to record an entirely new version, open the Versions panel, and click the plus (**+**) to create a new Version.

- To record Takes, simply loop record over a selection. A Take is the same as a version, but the name in prepended with a T to indicate it is a Take.

## TO COMP TO A NEW OR EXISTING VERSION ON THE SAME TRACK:

1. If you want to create a new Version for the comp track, click the plus (**+**) in the Version list. Otherwise, you can easily comp to an existing version.
2. To easily recognize the comp track and any Versions or Takes, rename the Versions. Double-click each Version, or select the version and click the Pencil tool, and rename relevant Versions. For example, you might rename the comp track "comp," and give descriptive names to Takes based on their content (louder, softer, aggressive, etc.).



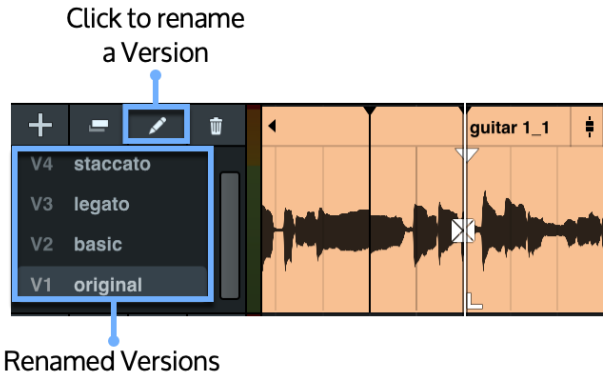

3. In the Versions list, select the Version on which you want to comp audio, or press Shift + ↓ or Shift + ↑ to navigate through the list.
4. Enable Loop playback (Control+L or the Loop mode button on the transport).
5. Select the section you want to audition and replace.
6. Press Play or the Spacebar. To move through the candidate takes and versions, press press Shift + ↓ or Shift + ↑, or click the different takes and versions on the Versions list.

7. When you find a selection you want to use on the comped track, copy the selection with Command+C, return to the main comp track with the Versions list or Shift + ↓ / Shift + ↑, and press Command+V to paste it.

Repeat this process for each phrase or selection you want to comp. In this way, you can move through a number of versions and takes, selecting phrases and assembling a final comp track.

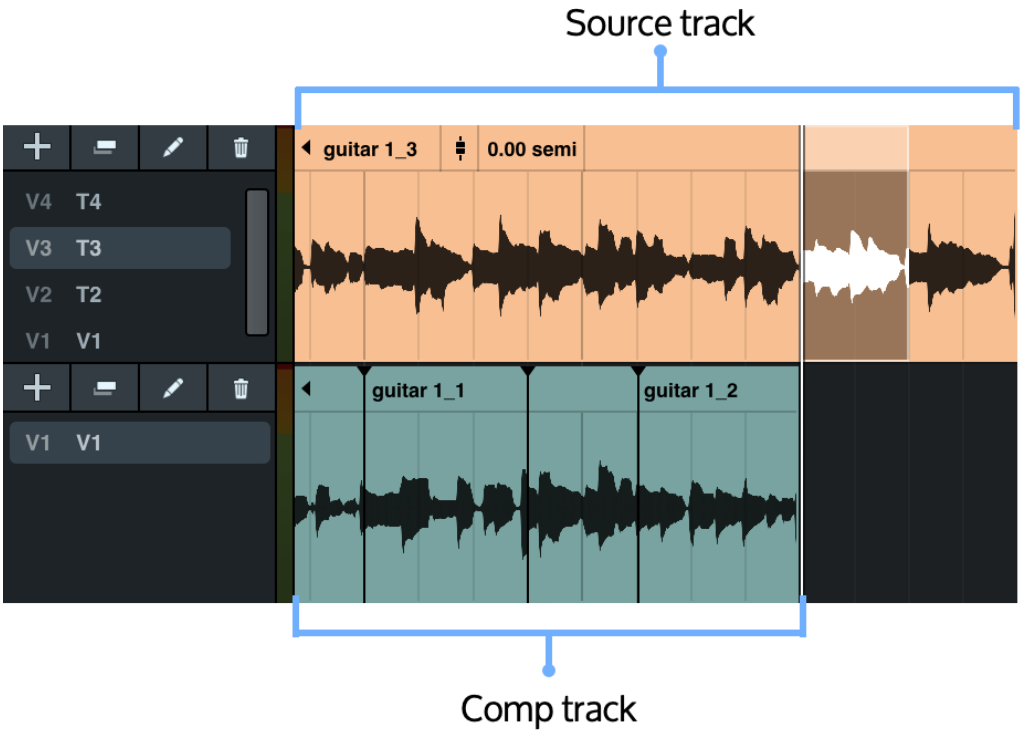
## TO COMP TO A NEW TRACK:

1. Create a new audio track and move it directly below or above the track from which you are comping.
2. To easily recognize any Versions or Takes, rename the Versions. Double-click each Version, or select the version and click the Pencil tool, and rename relevant Versions. For example, you might rename the comp track "comp", and give descriptive names to Takes based on their content (louder, softer, aggressive, etc.).

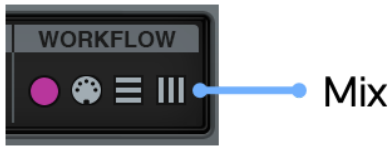



3. Enable Loop playback (Control+L or the Loop mode button on the transport).
4. Select the section you want to comp from on the source track.
5. Press Play or the Spacebar. To move through the candidate Versions, press Shift + ↓ or Shift + ↑, or click the Versions on the Versions list.
6. When you find a selection you want to use on the comped track, copy the selection with Command+C.
7. Click the track name to select the comp track, and press Command+V to paste the selection. Clicking the track name retains the location selection on the target track so the paste occurs in the right location.
   **Tip:** You can press the semicolon key ( **;** ) to move the selection down one track, or the P key to move the selection up one track.

Repeat this process for each phrase or selection you want to comp. In this way, you can move through a number of versions and takes, selecting phrases and assembling a final comped take.

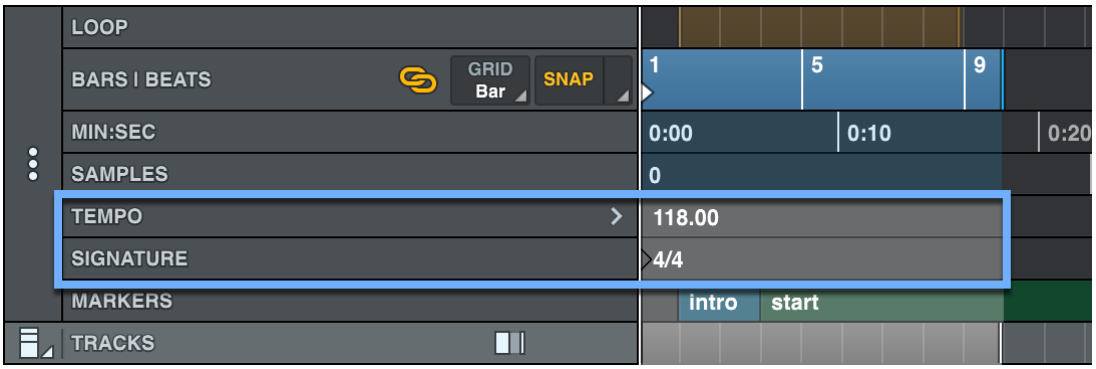



**Tip:** When comping from one track to another, you can use Solo Exclusive mode to quickly solo between your comp source and comp target track, without hearing duplicate or conflicting audio. To enable Solo Exclusive mode, toggle the Mix workflow and click the Solo Exclusive mode button. For more information about Workflows, see Using Workflows.



# Making Tempo and Time Signature Changes

You use the Tempo and Signature rulers to specify tempo and time signature, and make tempo and time signature changes.



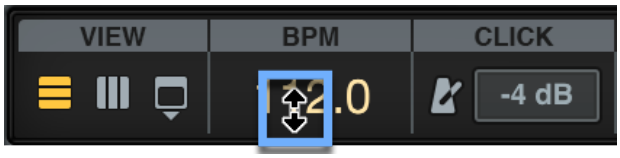

## SETTING THE TEMPO AND MAKING TEMPO CHANGES

When you change the session tempo, elements in the LUNA session that are tempo-based adjust to the new tempo. Instrument tracks are adjusted, and audio clips that are set to Tempo mode are stretched or compressed to fit the new tempo. Audio clips that are time based are not stretched or compressed, but LUNA keeps the start of each clip at the same relative point in the Timeline.

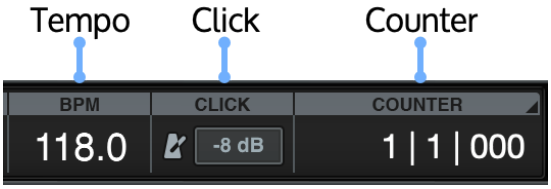
## SETTING A TEMPO

To set the overall tempo of the session:

- Hover over the Tempo control. The cursor changes to a double arrow. Click and drag up or down to adjust the tempo by 1 BPM increments. To adjust by .1 BPM increments, hold Shift while you click and drag. Release the cursor to set the Tempo. You can click and drag to change tempo while the session is playing to hear your changes in real time.




- To type the new tempo, click to select the Tempo in the control bar, type a new tempo, and press Return.

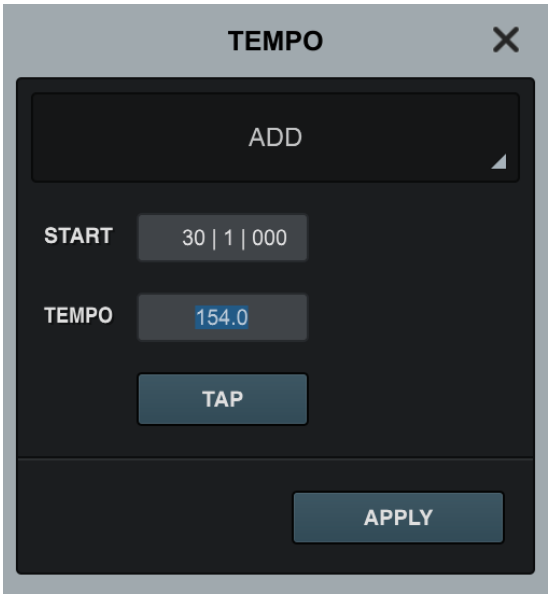


To set the session tempo by tapping:

1. In Timeline view, double-click the session tempo in the Tempo ruler.

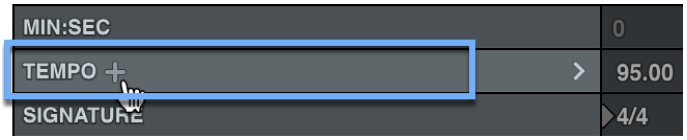
1. The Tempo browser opens. Tap the Tap button at least four times, then click Apply.

**Tip:** You can close the Tempo browser by typing the esc key.

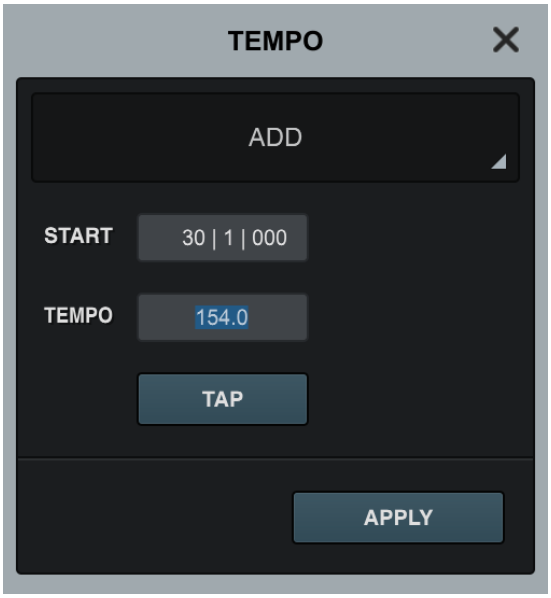



To add a tempo change:

1. Place the playhead in the timeline where you want to apply the tempo change.
2. Click on the Tempo ruler control area.



1. The Add Tempo browser opens, with the selected timeline location in the Start field. Type the Tempo or tap in a tempo with the Tap button, and click Apply.




The tempo change is added at the location specified.

### Changing tempo over time

You can use the tempo curve dialog to add a gradual tempo change.

In the tempo curve dialog, you can determine the shape of a tempo change over time, with these options:

- Start and Stop points for the Tempo curve (set by selecting a range in the Timeline).
- Tempos at the start and the end of the tempo curve. You can set tempos by tapping.
- The shape of the tempo curve, which specifies how linear or curved the tempo change is over time.
- The Grid on which the tempo curve is defined. A tempo event is added to the Tempo ruler at each grid marker, as specified.

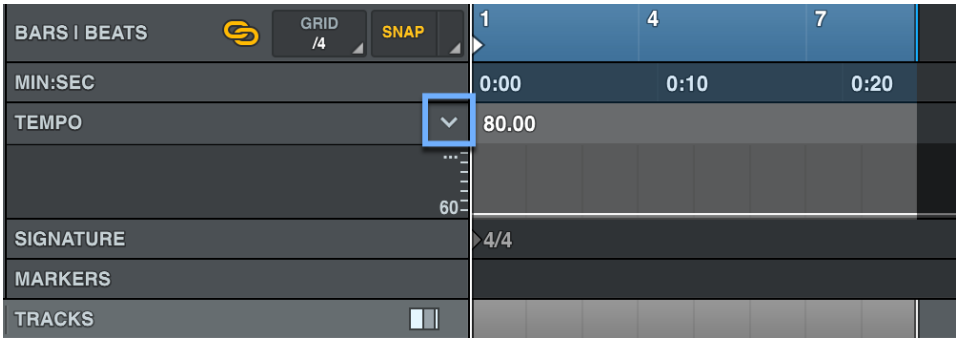
To specify a tempo change over time:

1. Select a range in the timeline to specify the start and end points of the tempo curve.
2. Click the Tempo ruler control area.
3. Set the Start and End tempo. You can select and type or Tap the tempo for each field (remember to tap at least four times).
4. Use the Shape slider to specify the curve of the tempo change. A curve of 0 is linear. A negative curve ramps up sharply, then slows towards the end of the tempo change. A positive curve starts more slowly and ramps up more quickly towards the end of the tempo change.

5. Specify the Grid for the tempo change over time. A tempo change event is added at each gridline, as specified, so the finer the grid, the less “stepped” or abrupt the tempo change might seem.
6. Click Apply to apply the tempo change. The Tempo Curve is applied.

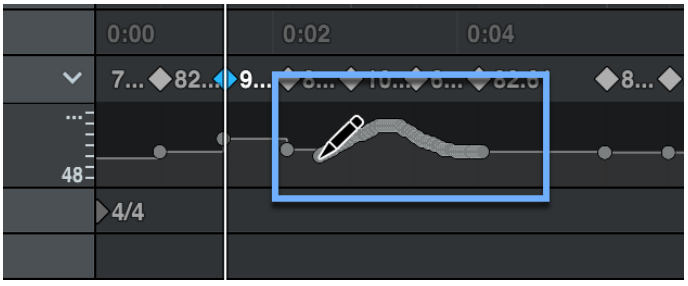
To draw (automate) a tempo change:

1. Open the tempo lane by clicking **>** on the Tempo ruler. The tempo lane opens and shows the tempo as a line.



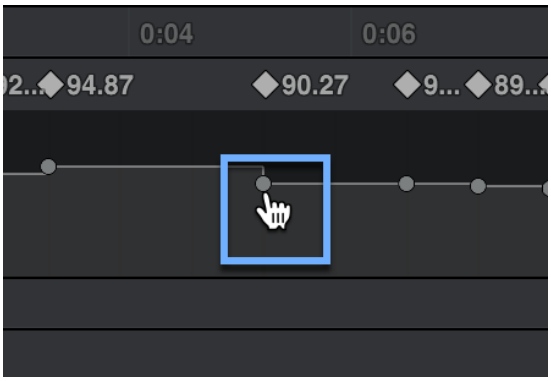

2. Control+Click to change the cursor to a pencil. With this cursor you can draw tempo events. Tempo events snap to the grid if Snap is enabled.

3. To disable snapping while drawing tempo events, press Control+Command while you draw tempo events.

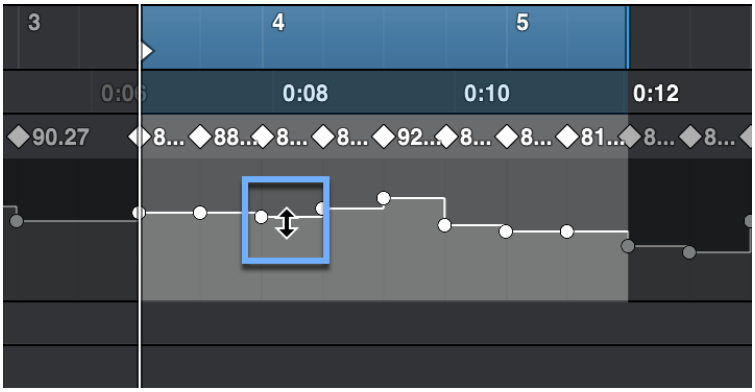



To edit tempo events (automation):

- Click and drag a tempo event up or down.




- To edit a range of events, click and drag above or below the tempo line to select a range. Click on a tempo line and drag up or down.




To delete tempo events:

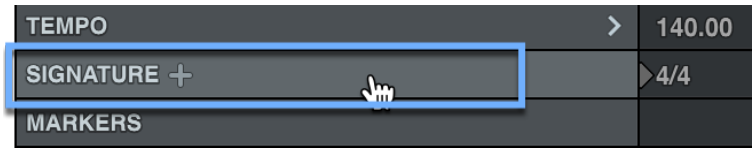
- Double-click a single tempo event to delete it.
- To delete a range of tempo events, click and drag above or below the tempo line to select a range. Press the Delete key to delete the range of tempo events.

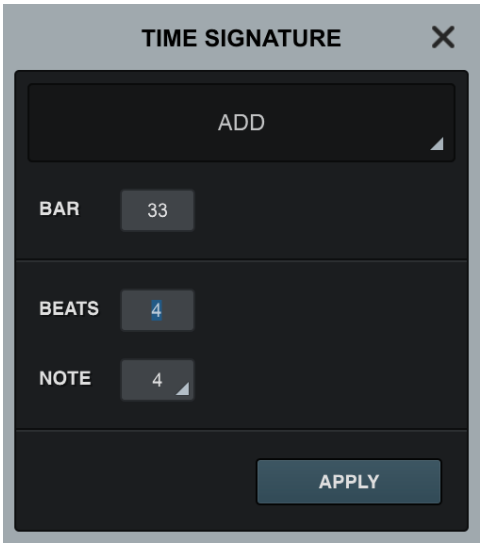
## SETTING THE TIME SIGNATURE AND MAKING METER CHANGES

When you change time signature, elements in the LUNA session do not change, but rather, the way they are counted changes. For example, if you add a change from 4 / 4 time to 3 / 4 time, bar lines will move and the click will indicate a three bar measure instead of a four bar measure. However, audio and MIDI will not move, stretch, or expand.

To set the time signature of a session:

1. Hover over the Signature ruler and click the plus (+) symbol. The Time Signature browser opens.




2. Type the bar at which you want the time signature to start.
3. Type the number of beats in a bar.
4. From the Note pull down, choose the note value that represents one beat. For example, choose 4 for a quarter note, or 8 for an eighth note.
5. Press Return or click Apply.

The Time Signature is changed on the ruler, at the bar you specify.

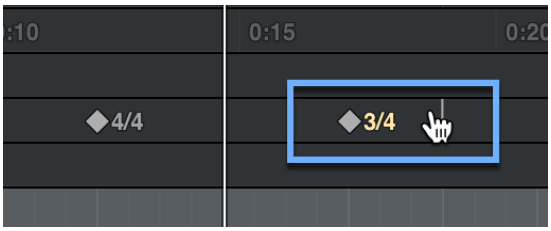
To add a time signature change:

1. Click in the session where you want the time signature change to be located.
2. Hover over the Signature ruler and click the plus (+) symbol. The Time Signature browser opens.
3. Type a bar number where you want the time signature change to start. The nearest preceding bar is automatically populated.
4. Type the number of beats in a bar.
5. From the Note pull down, choose the note value that represents one beat. For example, choose 4 for a quarter note, or 8 for an eighth note.
6. Press Return or click Apply.

The Time Signature change is added to the ruler, at the bar specified.

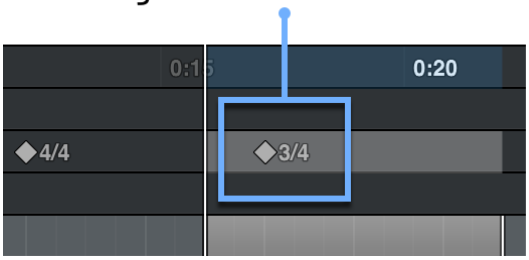
Other time signature operations

- Move a time signature marker on the Signature ruler by clicking the icon and dragging.




- Edit a time signature by double-clicking the time signature marker to open the Time Signature browser. Make your changes and press Return or click Apply.
- Delete a time signature marker by selecting the marker in the time signature ruler and pressing Delete.
- You can have the time signature markers follow your edits when arranging your session. Just be sure to select the Signature ruler along with other elements when you copy, cut, and paste elements in your session.

Time signature selected for deletion

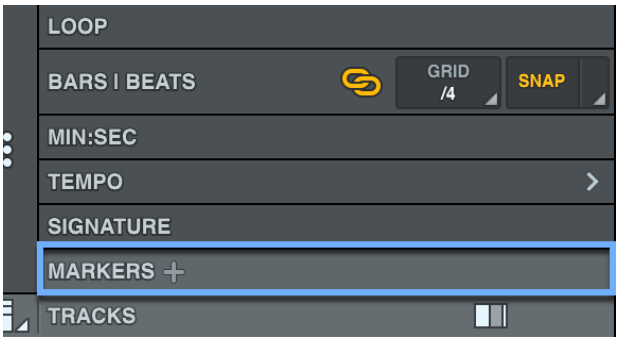



## Using Markers

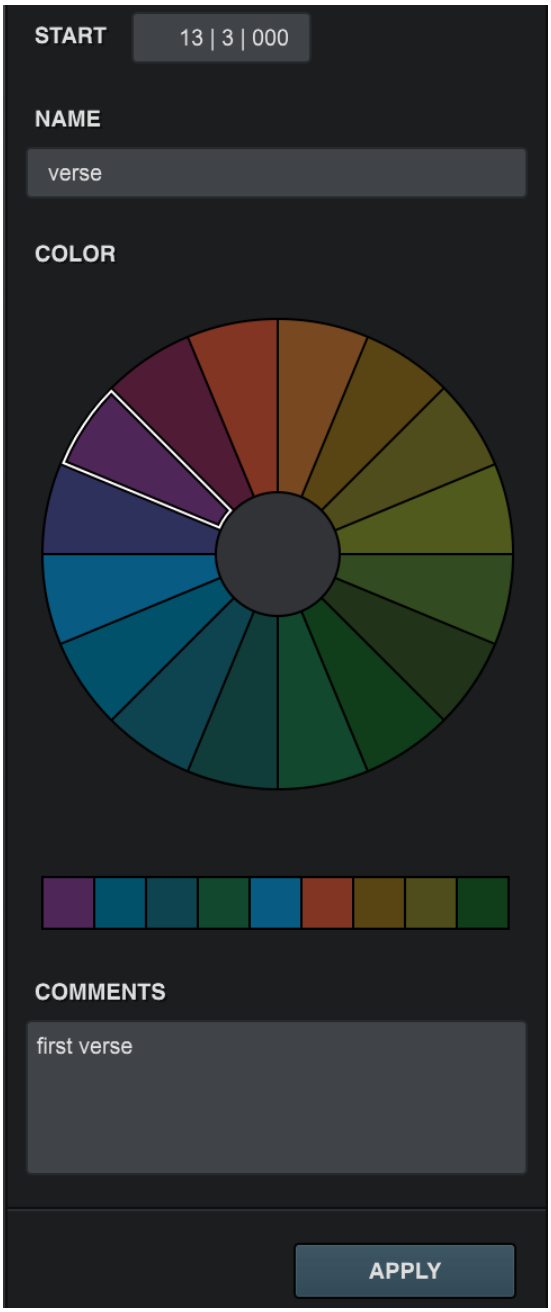
Markers are an easy and colorful way to mark locations such as verses, choruses, or any other sections in your session. You can use markers to define locations, and easily navigate between locations in your session. You can also resize the marker ruler vertically to easily see section changes.

### TO ADD A MARKER:

1. Click a location in the session or on a ruler.
2. Hover over the Markers ruler, and click anywhere on the highlighted bar, or press Enter (if you have a keyboard with a Numeric Keypad), or Function + Return.




3. In the Marker browser, specify the Start location. The location of the playhead is prefilled.
4. Type a name for the marker.
5. Choose a marker color.
6. You can add optional comments in the Comments box.
7. Press Return or click Apply to save the marker.




**Note:** To quickly add a marker as recording or playback is occurring, press Enter twice on the numeric keypad, or Function+Return, then Return. Multiple markers added this way are automatically numbered, and automatically cycle through the marker colors.

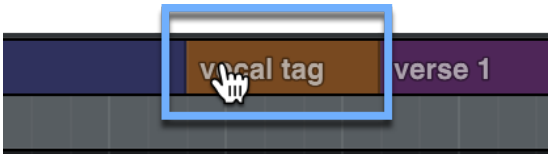
## TO EDIT A MARKER:

1. Double-click the name of a marker on the marker ruler. The Marker browser opens.
2. Edit the options for the marker, and press Return or click Apply.

The marker is updated with the options you set.

## OTHER MARKER OPERATIONS

- To move a marker, click and drag the marker.

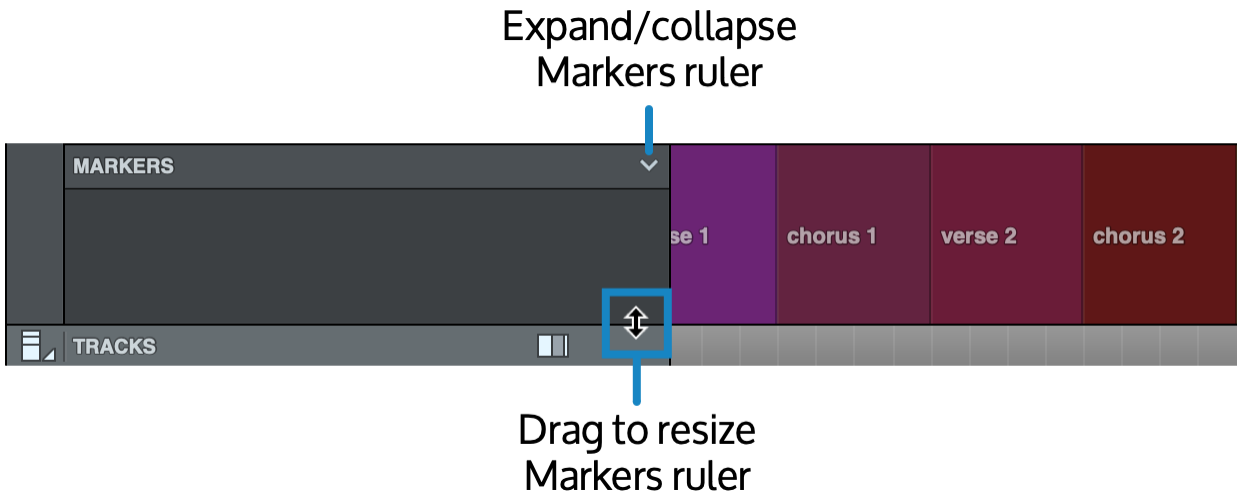



- To delete a marker, select the marker, and click Delete in the Marker browser.

- To move the playhead to a marker, click the marker name.
- To make a selection to a marker, place the playhead where you want to start the selection, then hold Shift and click the marker.
- You can copy, cut and paste markers by selecting on the Markers ruler. Make sure to select the start of the marker to copy or cut the marker..
- When you edit items on any other ruler, or audio or MIDI clips in the Timeline, you can copy, cut, paste, and delete markers along with those items by including the Markers ruler in your selection, or selecting and editing on the All Tracks ruler. Note that only markers that have their start selected are edited with other items.
- To move the playhead to the next marker, press Control+Option+'.
- To move the playhead to the previous marker, press Control+Option+L.

To resize the Markers ruler

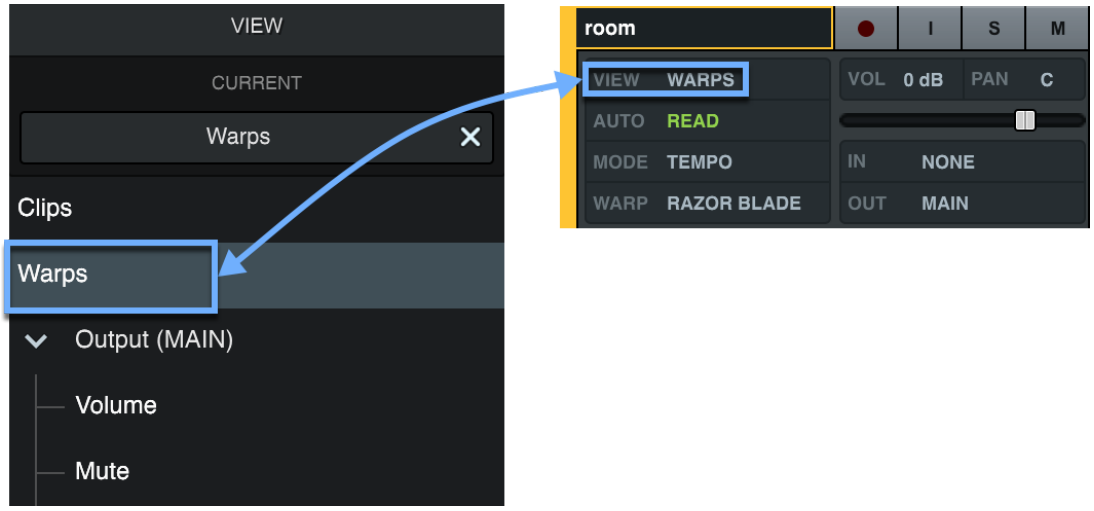
1. At the right of the Markers ruler, click the > to expand the Markers ruler.
2. Drag the bottom edge of the Markers ruler to resize the ruler.




## Warping and pitch shifting audio

You can warp a clip to change the tempo of the clip with or without changing the pitch of the clip. You can also warp audio to correct the timing within an audio clip, or to create an effect.

You warp audio in Warps view. Enter Warps view by clicking View on the Timeline track controls, and choosing Warps from the browser.




Warps view shows transient markers that are automatically generated in audio clips on a track. Warps view also allows access to the Warp Trim Editing Tool, with which you can time-stretch or time-compress a clip. You can adjust these warp markers independently or in combination, or you can add manual warp markers.

You can also pitch shift an audio clip with clip controls.

## WARP ALGORITHMS

Warp algorithms are applied when you stretch or compress Tempo-based clips by adjusting session tempo, and when you pitch shift audio using the clip pitch controls. Warp algorithms also affect how LUNA plays back warp trimmed audio, and how audio plays when you make inter-clip adjustments using warp markers. Warp algorithms are applied non-destructively during playback.

You can audition different warp algorithms by changing the warp algorithm while playing back warped or pitch-shifted material.

| Algorithm | Description |
|---|---|
| Polyphonic | The polyphonic algorithm is the default setting for tempo-based tracks. This algorithm works for most material, including complex musical material (for example, an instrument playing chords), and for multiple instruments, bands, and other complex material. This algorithm can also work for monophonic material and drums, though Razor Blade will give more accurate results on drums. |
| Monophonic | The monophonic algorithm is best suited for use on monophonic material, such as a bass line or a vocal. |
| Varispeed | The varispeed algorithm changes the pitch of source material as the tempo is changed, lowering pitch as the source is slowed, and raising pitch as the source speeds up. This can be useful for tape transport style effects or creative sound manipulation. |
| LUNA Razor Blade | The LUNA Razor Blade algorithm is a UA-designed algorithm that is specifically designed for percussion and drums, and attempts to minimize artifacts and preserve transients during warping. With LUNA Razor Blade, transients retain their original sound so drums don't lose impact when stretched or compressed. LUNA Razor Blade is also very effective when tempo-shifting or Warp trimming multitrack drums, without introducing phasing or other artifacts. |
| LUNA Polyphonic | The LUNA Polyphonic algorithm is developed by UA, and provides a more general-use warping algorithm than LUNA Razor Blade. LUNA Polyphonic does not preserve transients as accurately as LUNA Razor Blade, but sounds good on a wider range of transients and pitched instruments. For example, LUNA Polyphonic may sound better on a guitar recording with crisp staccato attack, whereas LUNA Razor Blade may sound better on a snare track. |

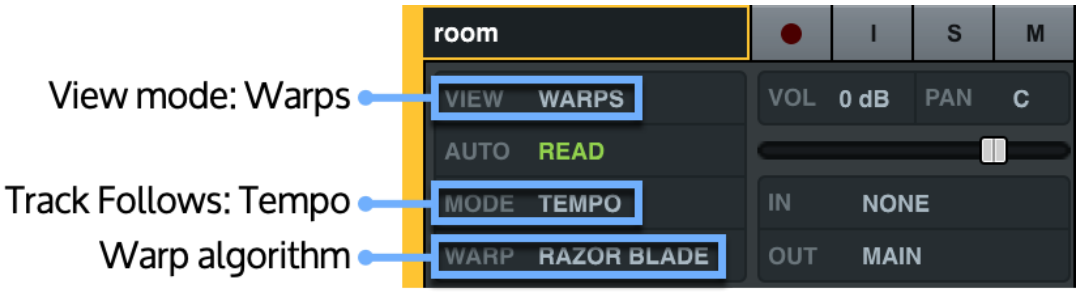
## CHANGING AUDIO PITCH OR DURATION

You can easily change the pitch of an audio clip. You can change the duration of an audio clip while retaining rhythm and pitch, or while changing the pitch and rhythm.

Configuring a track for warping or pitch shifting:

1. In Timeline view, click View Mode on the track controls, and from the View browser, choose Warps. You can click the buttons to apply the change to All tracks or selected tracks, or press Esc or click the X to exit the View browser.
2. If you are adjusting tempo and want the track to conform to tempo changes, click Mode on the track controls to toggle the track mode to Tempo.
   Note: you can apply pitch changes to clips, adjust warp markers and Warp Trim clips in Time or Tempo mode; however audio tracks will only adjust to session tempo changes in Tempo mode.
3. Click Warp on the track controls, and choose a Warp algorithm from the algorithm drop menu.

To apply these changes to multiple tracks, select multiple tracks before you make the selections.

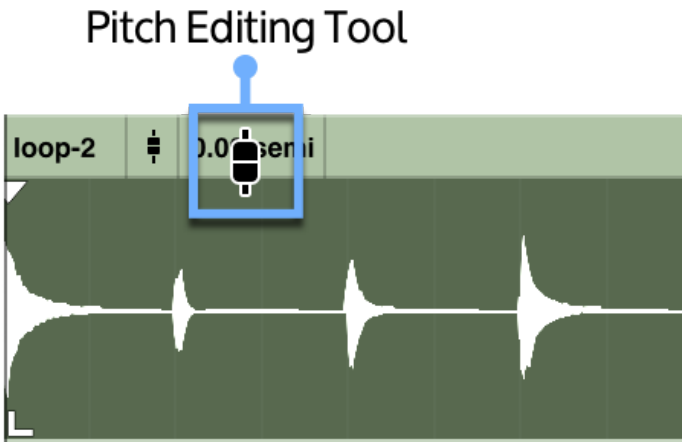



## PITCHING AN AUDIO CLIP UP OR DOWN WHILE MAINTAINING TRACK LENGTH

To pitch an audio clip up, use the pitch clip controls. You can do this with the Pitch Editing Tool or the clip controls.

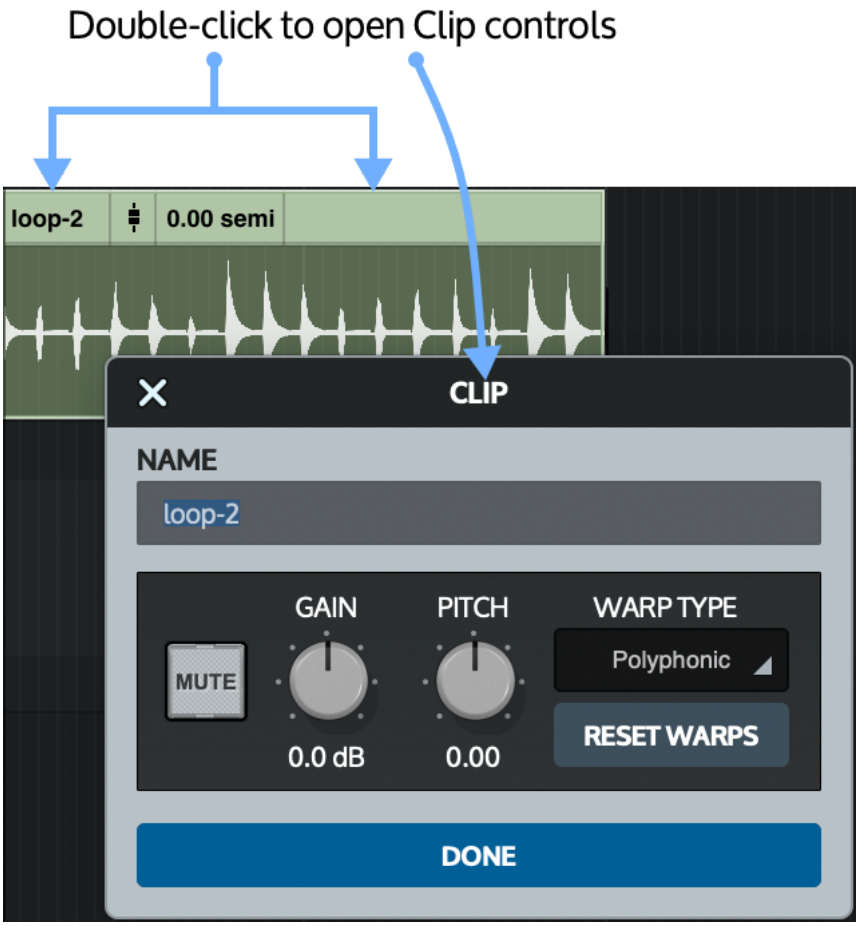
Change clip pitch using the Pitch Editing Tool:

1. Hover over the pitch control in the clip header. The Pitch Editing Tool appears.
2. Slide the control up or down to raise or lower the pitch. To type an exact value, double-click the pitch control, and type the pitch change value in semitones and cents in the popover, then press Return or click OK.




Change clip pitch using the Clip header controls:

1. Double-click the name of the clip or the empty area next to the pitch control to open the Clip controls.



2. Raise or lower the pitch with the Pitch knob. To type a value, double-click the Pitch knob and type a semitone and cent value, then click Done.

### Warp Trimming

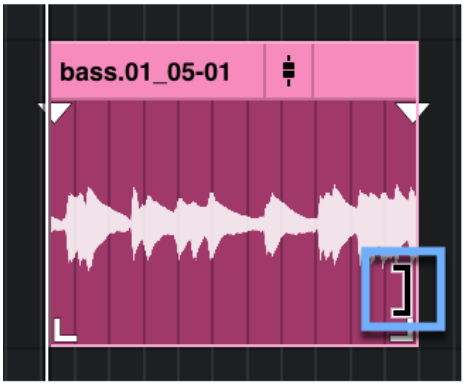
You can Warp Trim to time-stretch or time-compress a clip. With Warp Trim, you can easily conform an imported loop to a tempo, or stretch a clip to double-time or half-time. You can also warp trim clips for creative effect.

**Note:** If you set the Warp Algorithm to Varispeed, Warp Trimming changes the pitch of the clip based on the amount of time stretching or time compression.

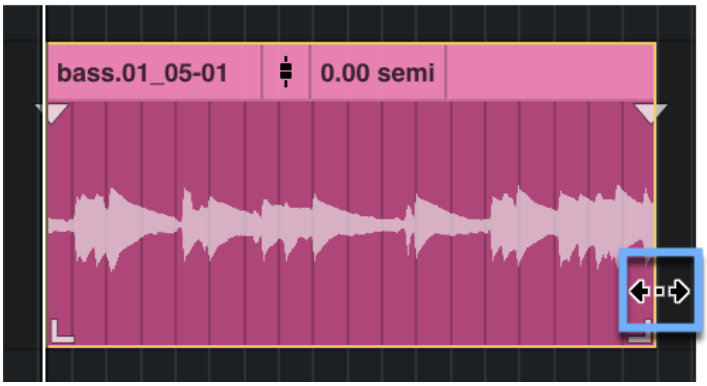
#### Warp Trimming to time-stretch or time-compress a clip in Clips view:

1. With Clips view enabled, hover the cursor at the start or end of a clip, below the vertical center. The Trim Editing Tool appears.
2. Control+click and drag to Warp Trim. Warp Trim snaps to the grid if Snap is enabled unless you hold the Command key while trimming.

Trim Editing Tool

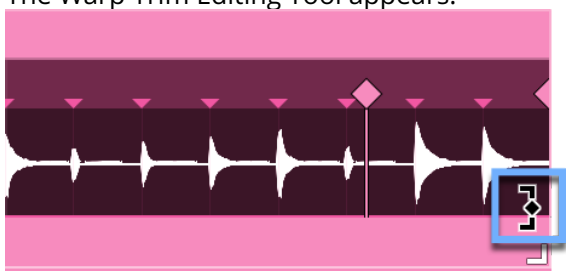



Control + Drag to Warp Trim



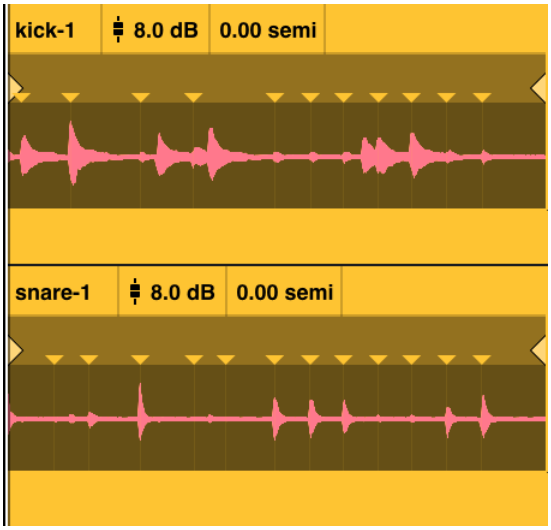
Warp Trimming to time-stretch or time-compress a clip in Warps view:

1. With Warps view enabled, hover the cursor at the start or end of a clip, below the vertical center. The Warp Trim Editing Tool appears.



2. Click and drag to Warp Trim. Warp Trim snaps to the grid if Snap is enabled unless you hold the Command key while trimming.

Depending on the algorithm, extreme Warp Trims may not play or may have undesirable audio artifacts. For UA-developed algorithms, extreme settings are indicated by the waveforms appearing red as they approach settings that may have undesirable audio artifacts, or may not play.




Warping within a clip

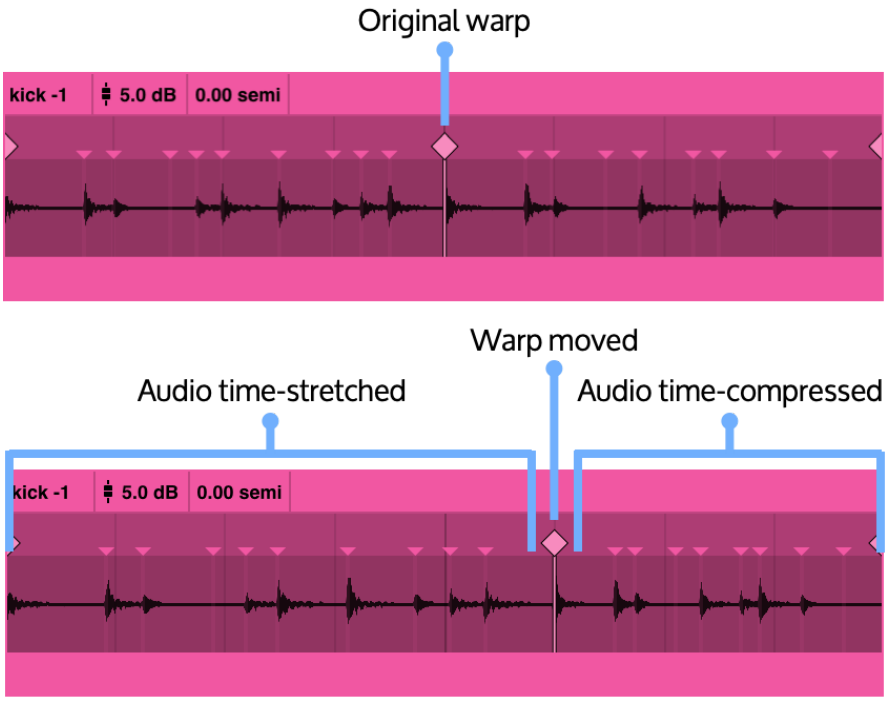
Within a clip you can easily move elements back and forth in time with warp markers. LUNA automatically adds indicators to transients in each audio clip, and you can also add arbitrary warp markers. When you add warp markers, you can then move (stretch and compress) audio before and after the warp marker.

There are three ways you can add Warp markers to a clip:

- Adding a single warp marker on a transient indicator.
- Adding a Bounded Warp (three Warp markers on three adjacent transient indicators) with the Bounded Warp Editing Tool. A bounded Warp allows you to adjust the center Warp freely, while the Warp markers to the left and right prevent the changes from affecting the rest of the clip.
- Adding an arbitrary warp marker.

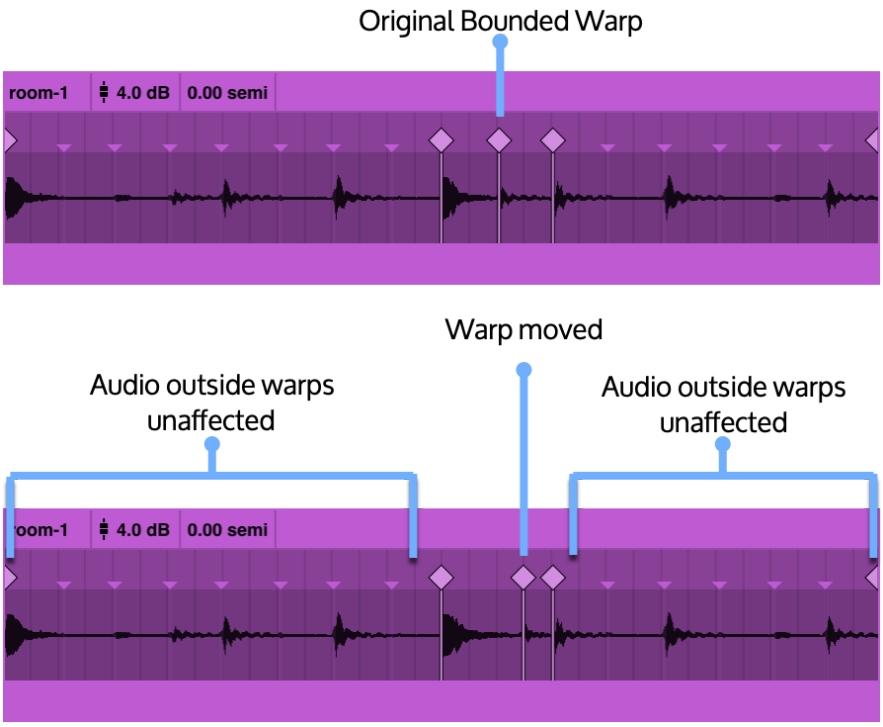
To add and adjust a single warp marker:

1. Hover the cursor over a transient indicator. The Warp Editing Tool appears.
2. Click to add a warp marker.
3. Click and drag to adjust the warp marker. The warp marker snaps to the grid if Snap is enabled.
4. To drag without snapping to the grid, press Command while you drag.



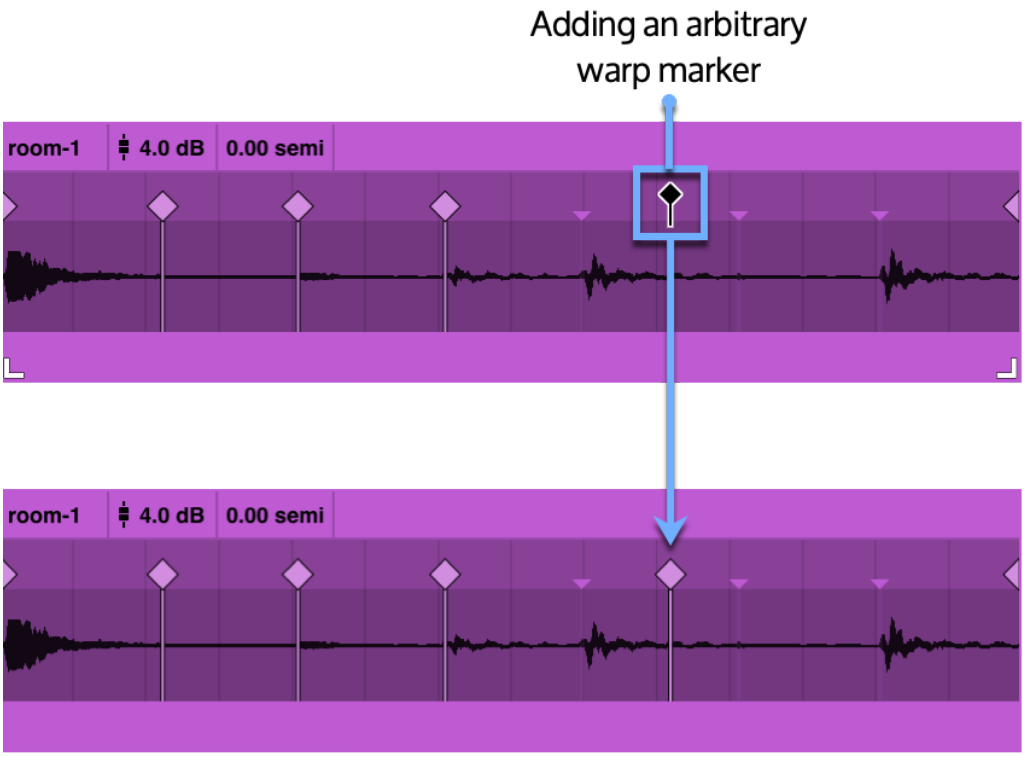

To add and adjust a Bounded Warp marker:

1. Hover the cursor below the vertical center of the clip, below a transient indicator. The Bounded Warp Editing Tool appears.
2. Click to add a Bounded Warp. A warp marker appears on the transient you hovered over, and on the transient to the left and right.
3. Click and drag to adjust the warp marker. The warp marker snaps to the grid if Snap is enabled.
4. To drag without snapping to the grid, press Command while you drag.




To add an arbitrary warp marker:

1. Hover the cursor near the top of the clip, where the transient indicators appear. You can add a warp marker anywhere (your cursor will snap to the grid if Snap is enabled).
2. Click to add a warp marker.
3. Click and drag to adjust the warp marker. The warp marker snaps to the grid if Snap is enabled.
4. To drag without snapping to the grid, press Command while you drag.



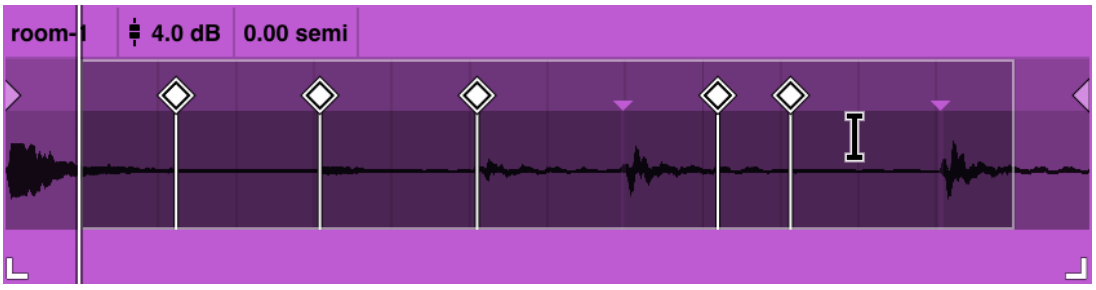

To delete warp markers:

There are several ways to delete one or more warp markers.

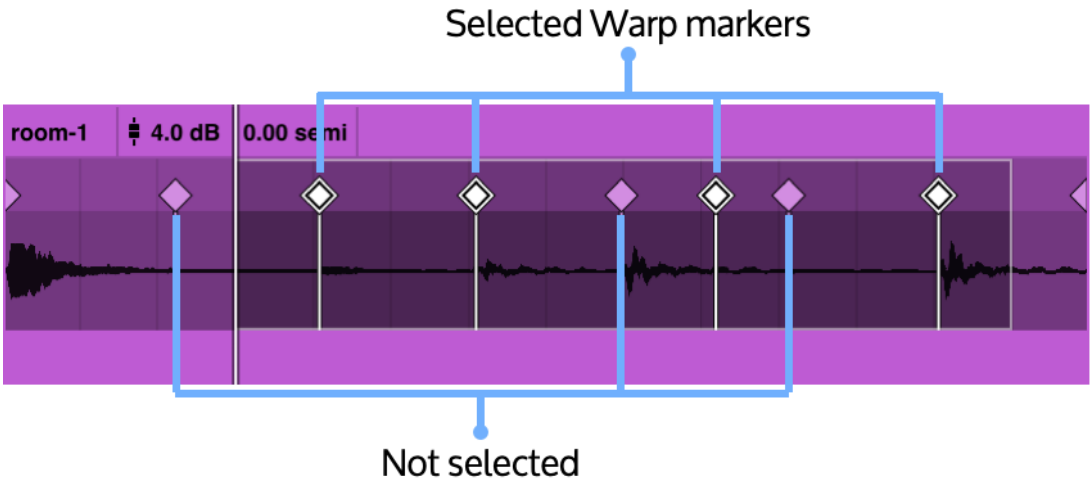
- To delete a single warp marker, double-click it, or select the warp marker and press Delete.
- To delete multiple warp markers, select multiple markers and press Delete.
- To delete all markers from a clip, double-click the top of the clip. In the Clip popover that opens, click Reset Warps. Note that this will remove all warp markers and warped audio, and also revert any Warp Trim operations.

To select and move multiple warp markers:

- Hold Shift, then click in the vertical middle of the clip and drag to select multiple contiguous warp markers. Click one warp marker and drag to adjust all selected markers.



- Hold Shift, and click and drag over only each warp marker you want to select, to select multiple non-contiguous warp markers (tip: disable Snap). Click one warp marker, and drag to adjust all selected markers.




### WARP EDITING ON MULTIPLE TRACKS

You can warp edit audio on multiple tracks, with a selection, a selection group, or a track group.

When you warp audio on multiple tracks, you can specify tracks that have group editing priority for transient detection (for example, kick and snare tracks in a drum group), so that as you tab through transients in a selection group or track group, transients on the priority tracks are detected, while transients on other tracks are ignored.

See “Setting group editing priority” to set track priority within groups for transient detection.

---

## Quantizing audio

You can quantize single or multiple audio clips and selections to any grid increment. Audio is quantized using detected transients and warp markers, which are added automatically to snap transients that are within the quantize settings to the specified grid.

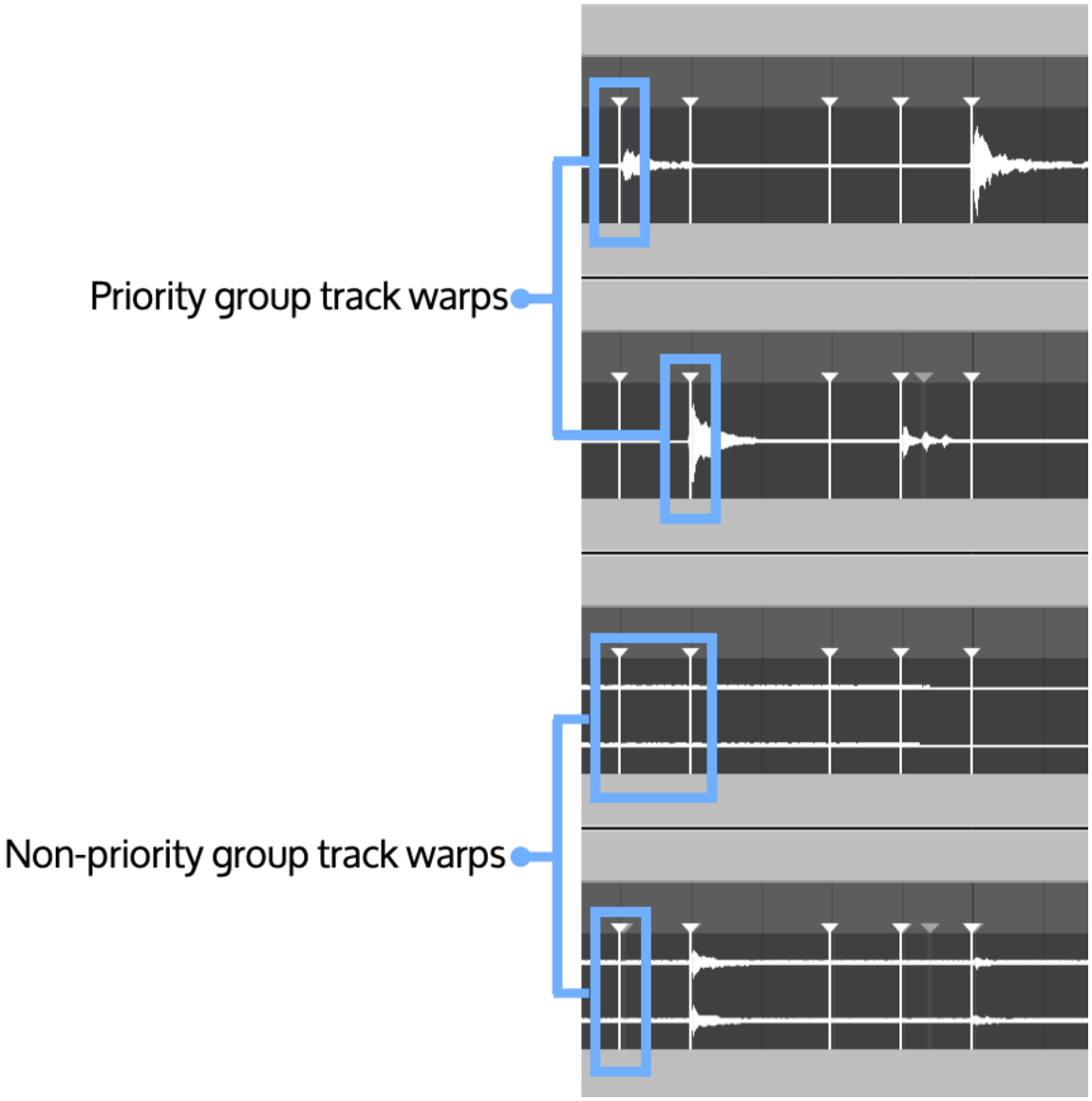
Quantize warp markers differ from warp markers that you add manually, or manual warp markers:

- Quantize warp markers are updated, moved, deleted and replaced automatically when you update or change quantize settings.
- Quantize operations will not move or delete any manual warp markers you have placed.
- If you edit a quantize warp marker, that marker then becomes a manual warp marker, and further quantize operations do not move or delete it.

### QUANTIZING MULTIPLE AUDIO TRACKS

When multiple audio tracks are quantized (through selection grouping or track groups) warp markers are added to all grouped tracks at every detected quantize point. You can specify tracks that have transient

detection and quantizing priority (for example, kick and snare tracks in a drum group) to make sure that quantizing prioritizes those tracks.




How prioritized tracks are quantized

When tracks in a group or selection group are prioritized, and selection grouping or track grouping is enabled, the quantize operation checks those tracks for transients within the range of the quantize grid first, and adds warp markers to all tracks (in a track group or selection group with the prioritized tracks) when it detects such transients on the prioritized tracks. This is useful when editing drums, for example, to prevent a secondary track (for example, a room microphone track) from overriding a snare or kick track, to prevent phasing and timing issues.

How non-prioritized tracks are quantized

When multiple tracks are selected for quantizing, selection grouping or track grouping is enabled, and a transient is detected on a prioritized track, warp markers are added to all selected tracks (in a track group or selection group with the prioritized tracks) at that transient. The quantize operation snaps all warp markers to the grid according to the quantize settings.

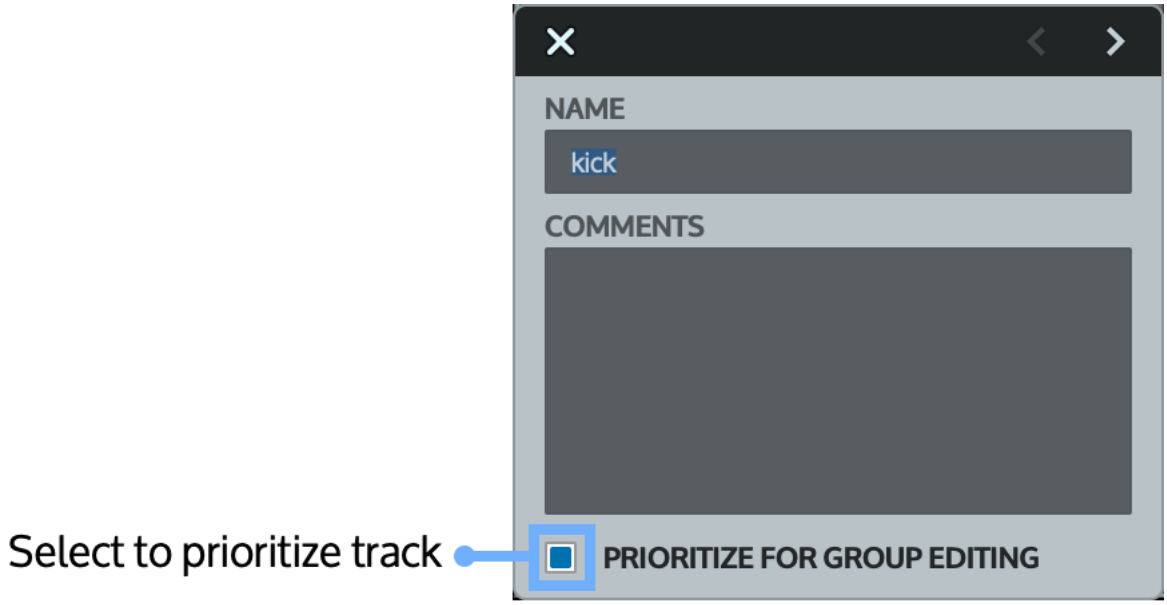
When there is no transient on a priority track within a grid value and range, transients on non-prioritized tracks are used to quantize. In that scenario, if a transient is detected within the specified grid value and range, warp markers are added to all tracks based on the non-priority track transient, and snapped to the grid according to the quantize settings.

## SETTING GROUP EDITING PRIORITY

You can set group editing priority from the track name popover, from the track group settings, or from the Quantize settings view.

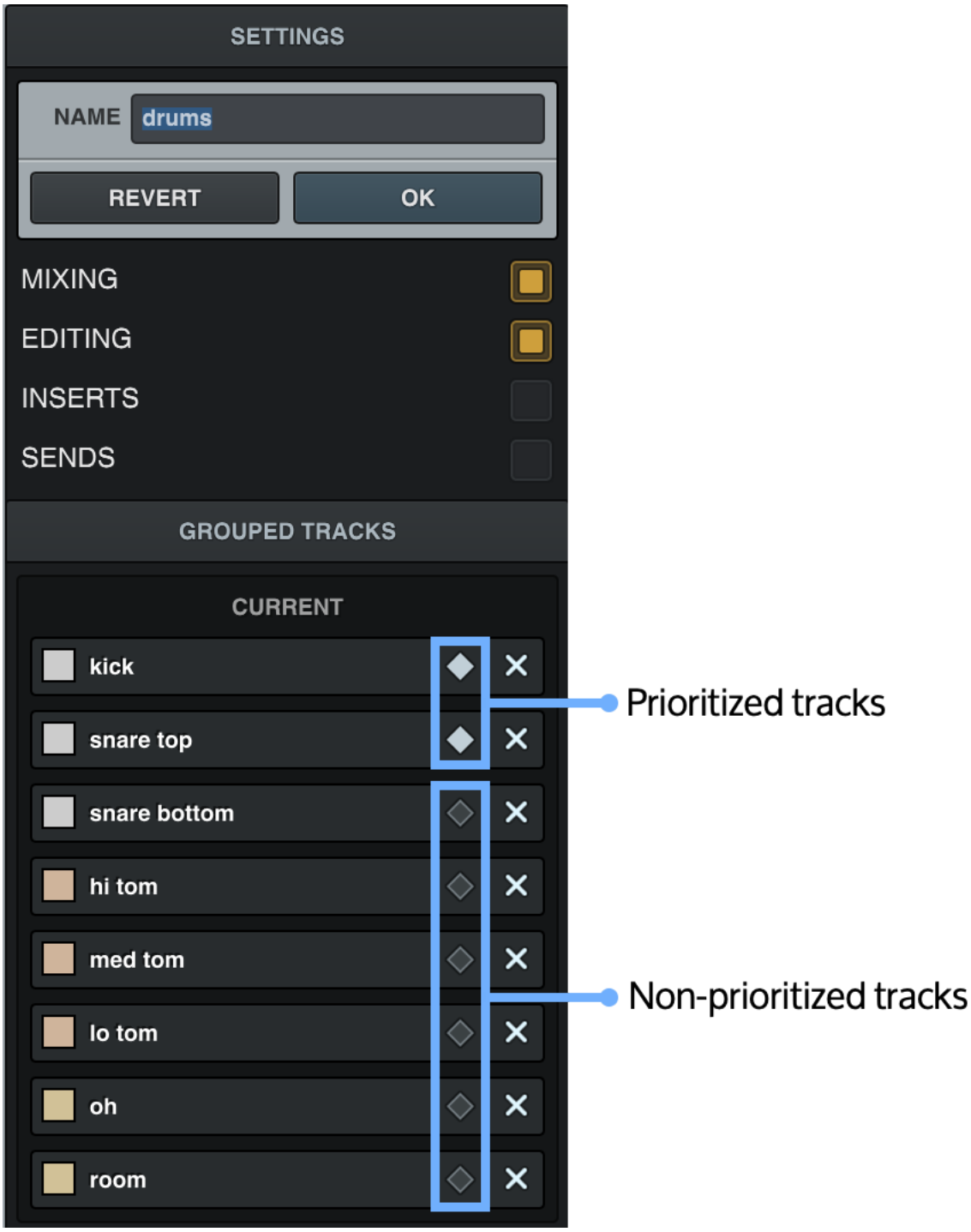
Set group editing priority from the track name popover

1. Double-click on the track name in the mixer or timeline.
2. Select Prioritize for Group Editing to prioritize the track.




Set group editing priority from the track group settings

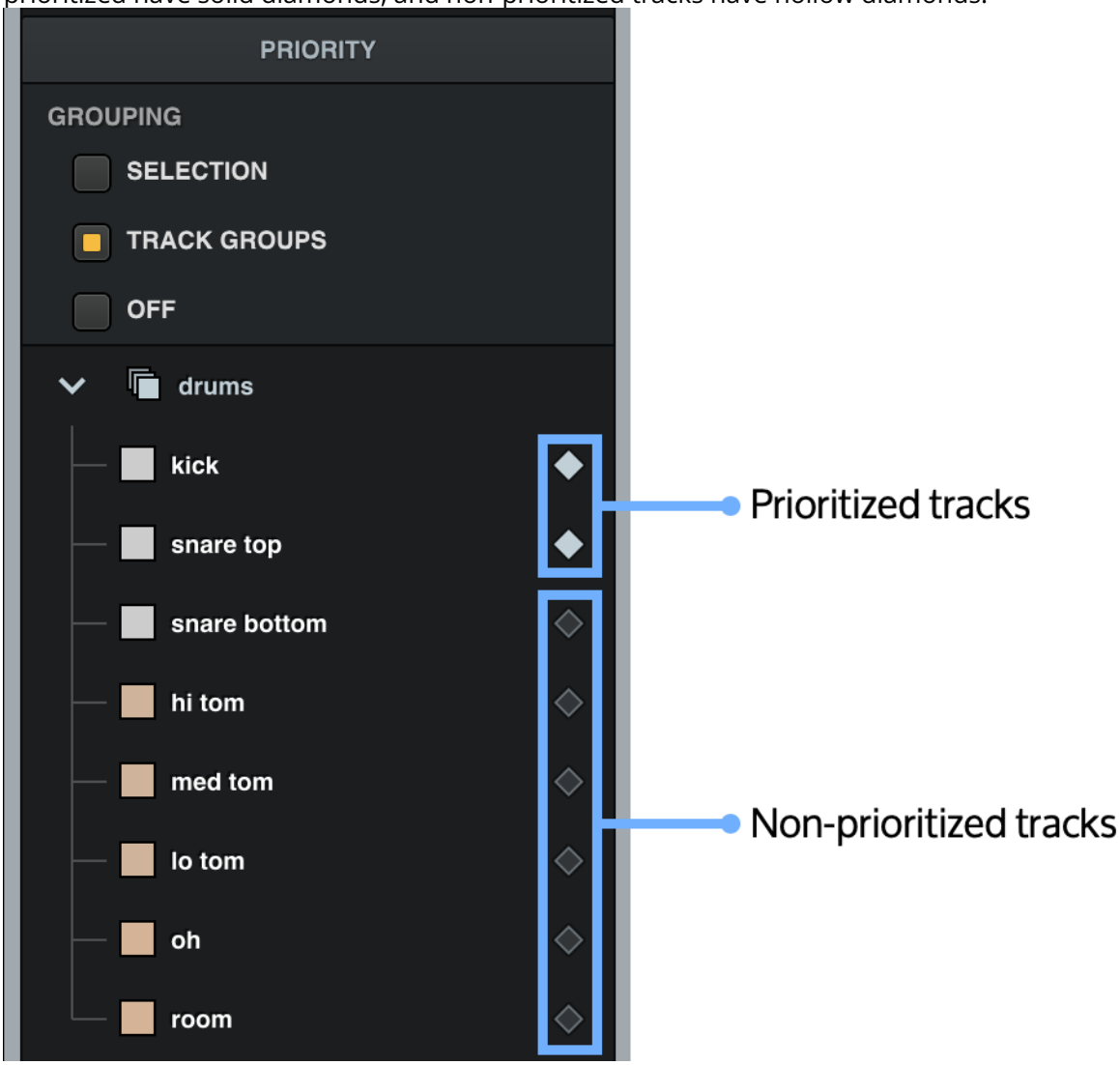
1. To edit an existing group, right-click or Control-click on the track group in the Groups list, and click Edit... To make a new track group, select the tracks you want to add to the track group, then select Track > New Track Group from the LUNA menus, or press Command+G.
2. In the grouped tracks list, click the diamond for any tracks you want to prioritize. Tracks that are prioritized have solid diamonds, and non-prioritized tracks have hollow diamonds.




3. Save the group.

Set group editing priority from the quantize settings

1. Make a selection. You can select a range of audio on one or more tracks, one or more clips, or whole tracks.
2. In the Priority section under Grouping, select whether to use selection grouping, track groups, or whether grouping is off.
3. In the tracks list, click the diamond for any tracks you want to prioritize. Tracks that are prioritized have solid diamonds, and non-prioritized tracks have hollow diamonds.

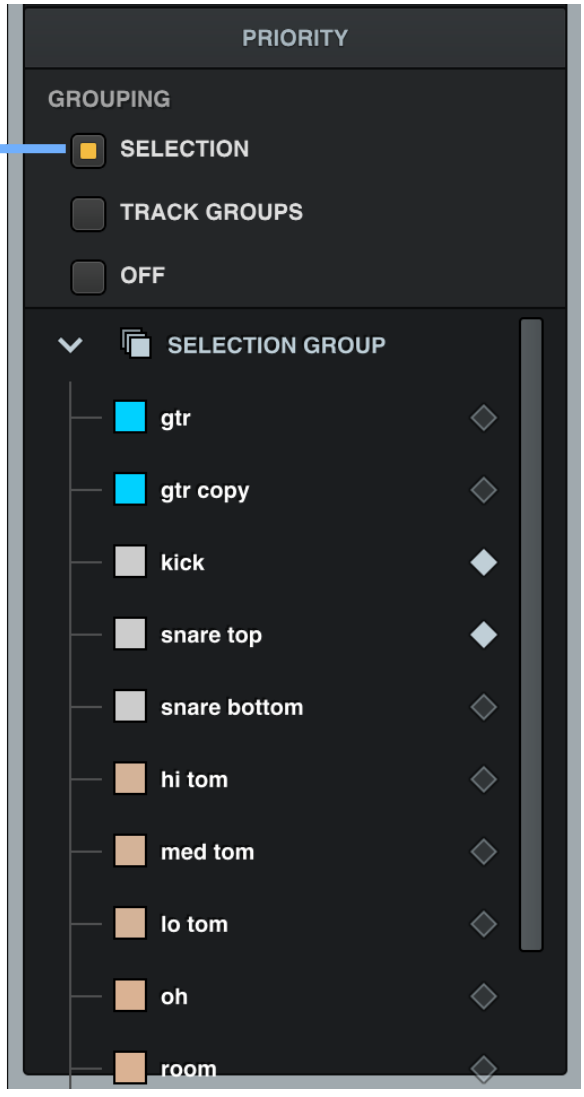


## QUANTIZE PRIORITY GROUPING

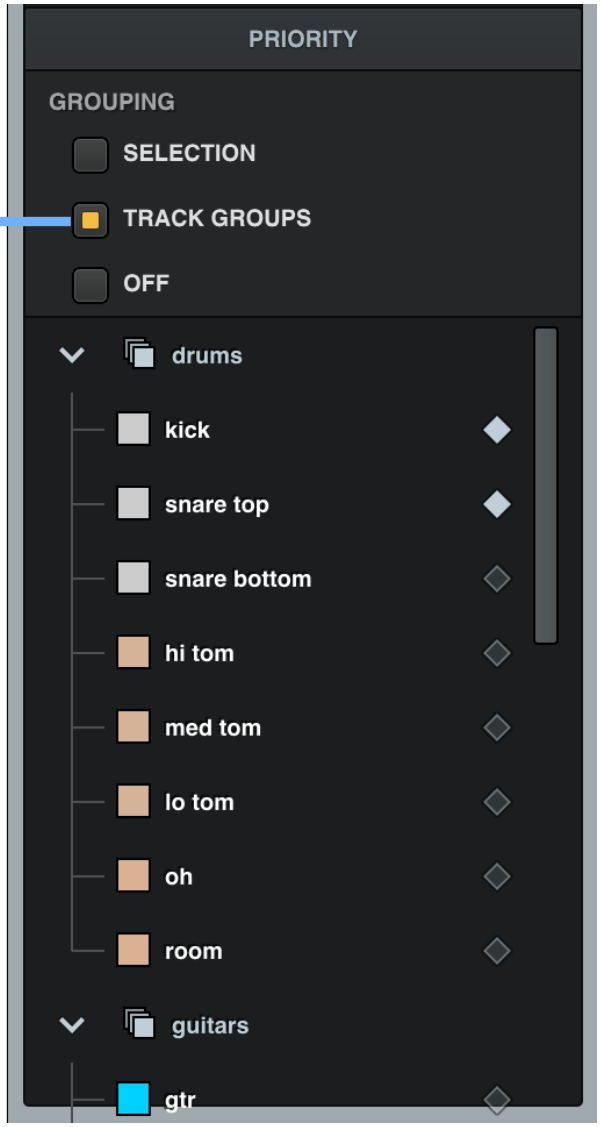
The priority grouping setting in the quantize settings determines how multiple tracks are quantized, along with prioritized tracks.

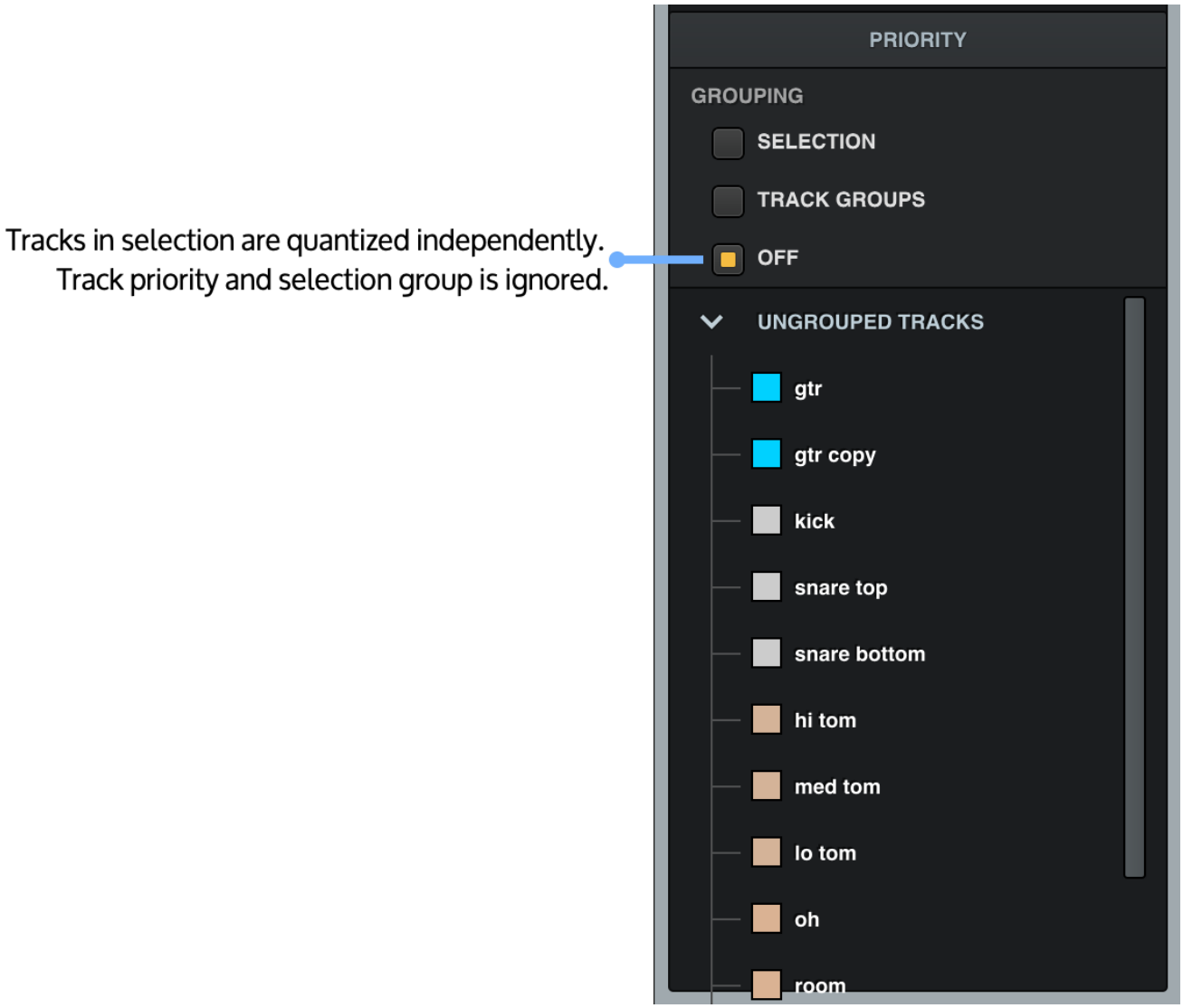
There are three options for quantize priority grouping:

- Selection: When Selection grouping is selected, All selected tracks are quantized as a selection group. Any prioritized tracks apply to all selected tracks. This option quantizes all material to any prioritized tracks, and then to the most prevalent transients (typically, drums or other constant rhythmic material)
- Track Groups: When Track Groups grouping is selected, all track groups in the selection are quantized separately. Within each track group, prioritized tracks determine how tracks are quantized. Quantize operations do not interact between track groups. This option preserves phase in groups (for example, drum tracks), while maintaining separation for material of different types.
- Off: When grouping is Off, all selected tracks are quantized independently. This option works best for material where the tracks have independent rhythmic material that should not be quantized to other tracks.



Quantize each track group in selection Independently. Prioritized tracks determine how tracks within each track group are quantized, but do not affecttracks in other track groups.






## QUANTIZE PARAMETERS

The following parameters are supported.

| Setting | Description |
|---|---|
| Grid | Quantize audio tracks to the selected Grid setting, from BAR (whole notes) to /64 (64th notes). You can also select Dotted values, Triplet values, or both. |
| Follow Snap Setting | Quantize audio tracks to the Snap Grid setting. |

| | |
|---|---|
| Swing | Shift every other Grid boundary by the percentage specified, from 0-100. Swing of 0% does not shift audio, while 100% swing shifts 2/3 of the way to the next grid line. |
| Strength | Set the strength at which the quantize settings are applied. At 50%, tracks are quantized halfway from their position to the grid. At 100%, notes are fully quantized to the grid. |
| Range | Sets the range at which transients to be quantized are detected. The default setting of 50% detects transients at 50% of the grid value with half to the left and half to the right of the grid line.<br>For example, if the grid is set to 1/4 note, a setting of a 50% range detects transients within 1/16 note to the left and 1/16 note to the right of the grid line. A setting of 100% range with a 1/4 note grid detects transients 1/8 note to the left and 1/8 note to the right of the grid line. |
| Auto Apply | Auto Apply to adjust the quantize settings and see and hear the results in near real time. If Auto Apply is not set, you must click Quantize to see and hear the quantization results. When Auto Apply is enabled, clicking a Grid value quantizes audio. To remove quantize warps, click OFF. |

## QUANTIZE EXAMPLES

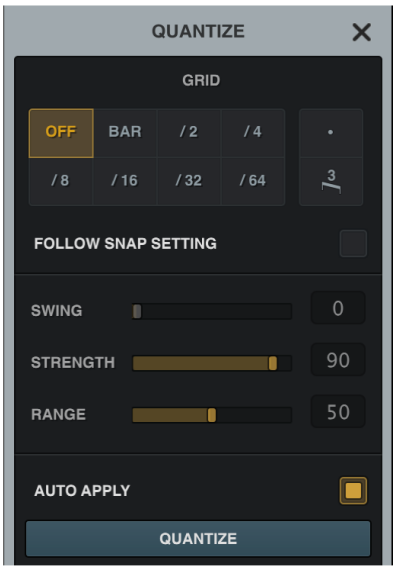
The following examples show the results for different settings when quantizing a selection with multiple drum tracks.

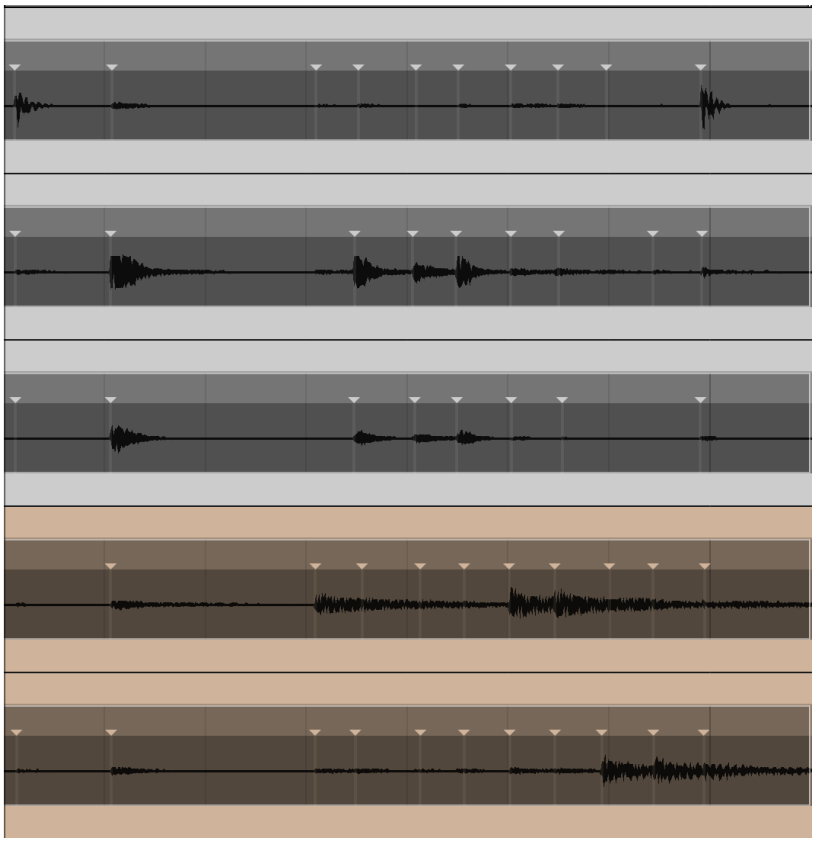
### Quantize OFF

In this example, the audio selection is not quantized. Note that Auto Apply is enabled, and OFF is selected as the Grid value.

**Quantize OFF**

Warps view shows transients but no markers are added & tracks are not quantized



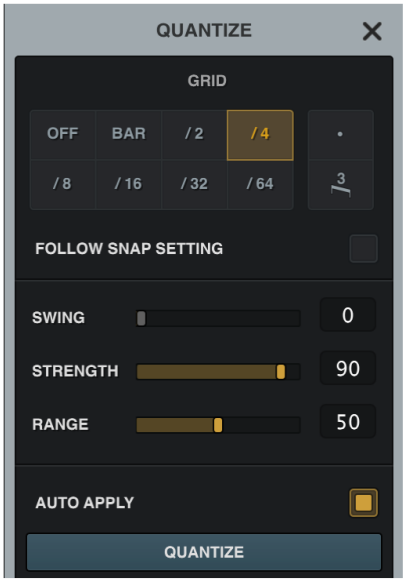



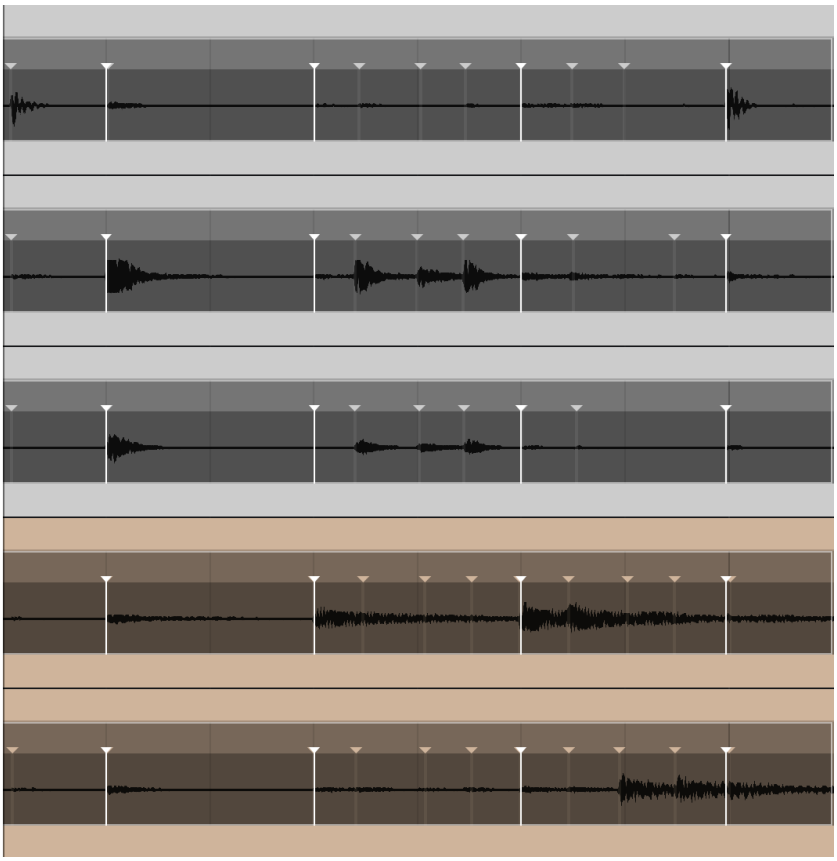
Quantize quarter notes

In this example, the audio selection is quantized to quarter notes. Note that Auto Apply is enabled, and /4 is selected as the Grid value.

**Quantize /4**

Warps view shows warp markers at quarter notes & transients are quantized according to settings



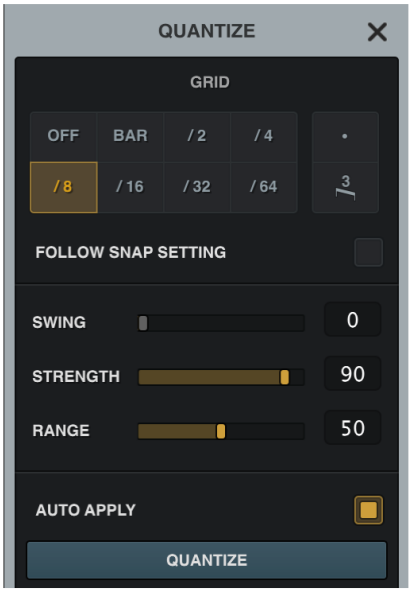



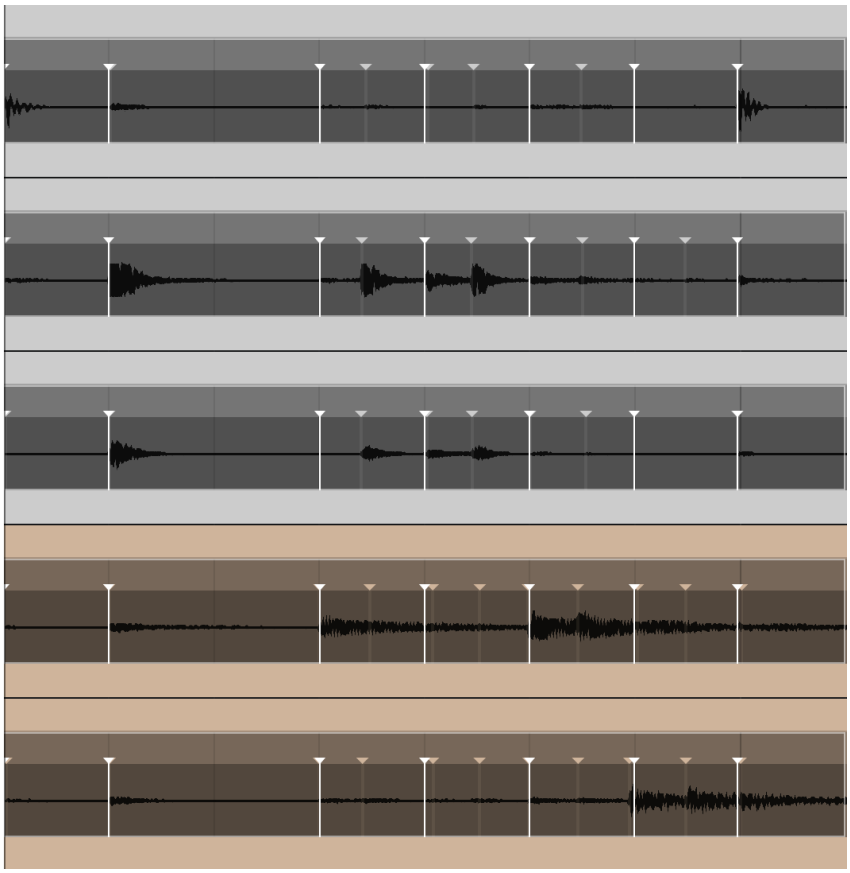
Quantize eighth notes

In this example, the audio selection is quantized to eighth notes. Note that Auto Apply is enabled, and /8 is selected as the Grid value.

**Quantize /8**

Warps view shows warp markers at eighth note transients & tracks are quantized according to settings



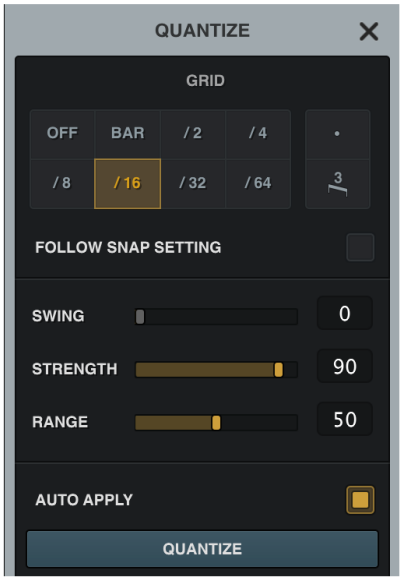



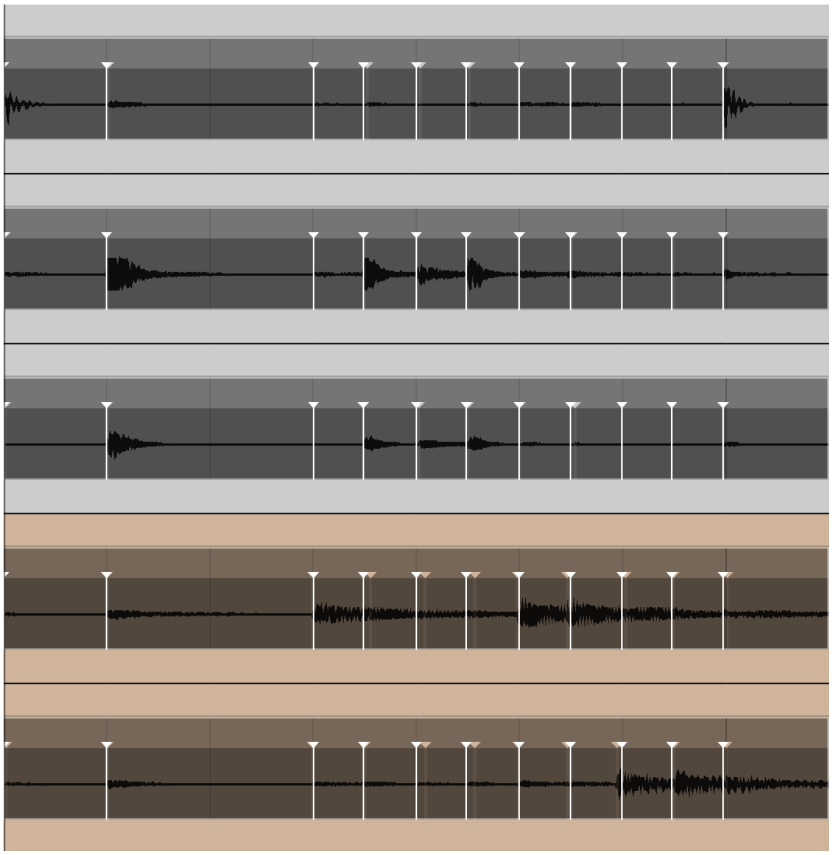
Quantize sixteenth notes

In this example, the audio selection is quantized to sixteenth notes. Note that Auto Apply is enabled, and / 16 is selected as the Grid value.

**Quantize /16**

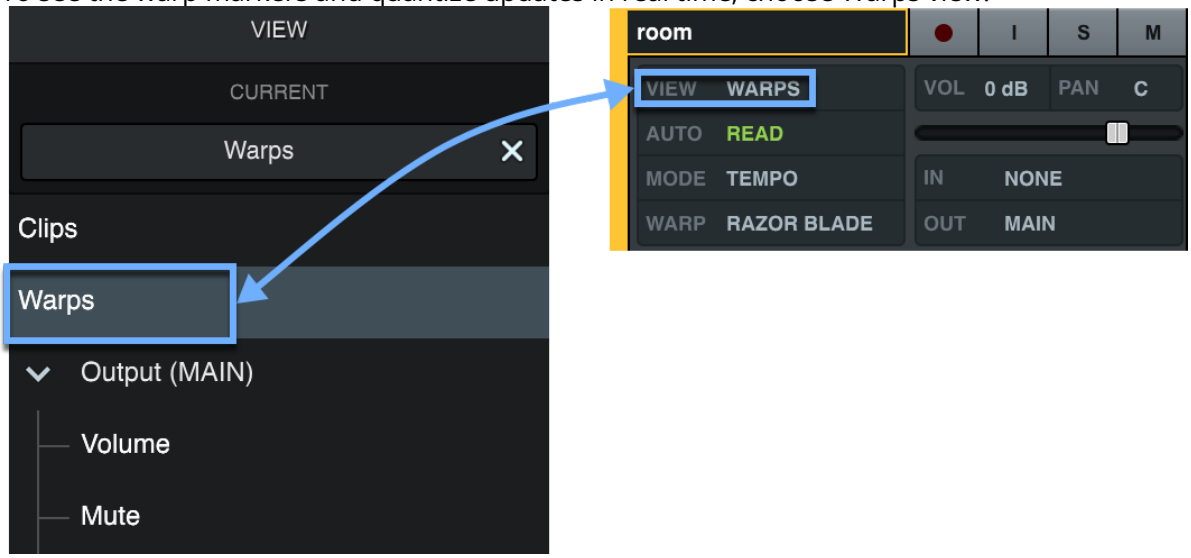
WARPS view shows warp markers at sixteenth note transients & tracks are quantized according to settings



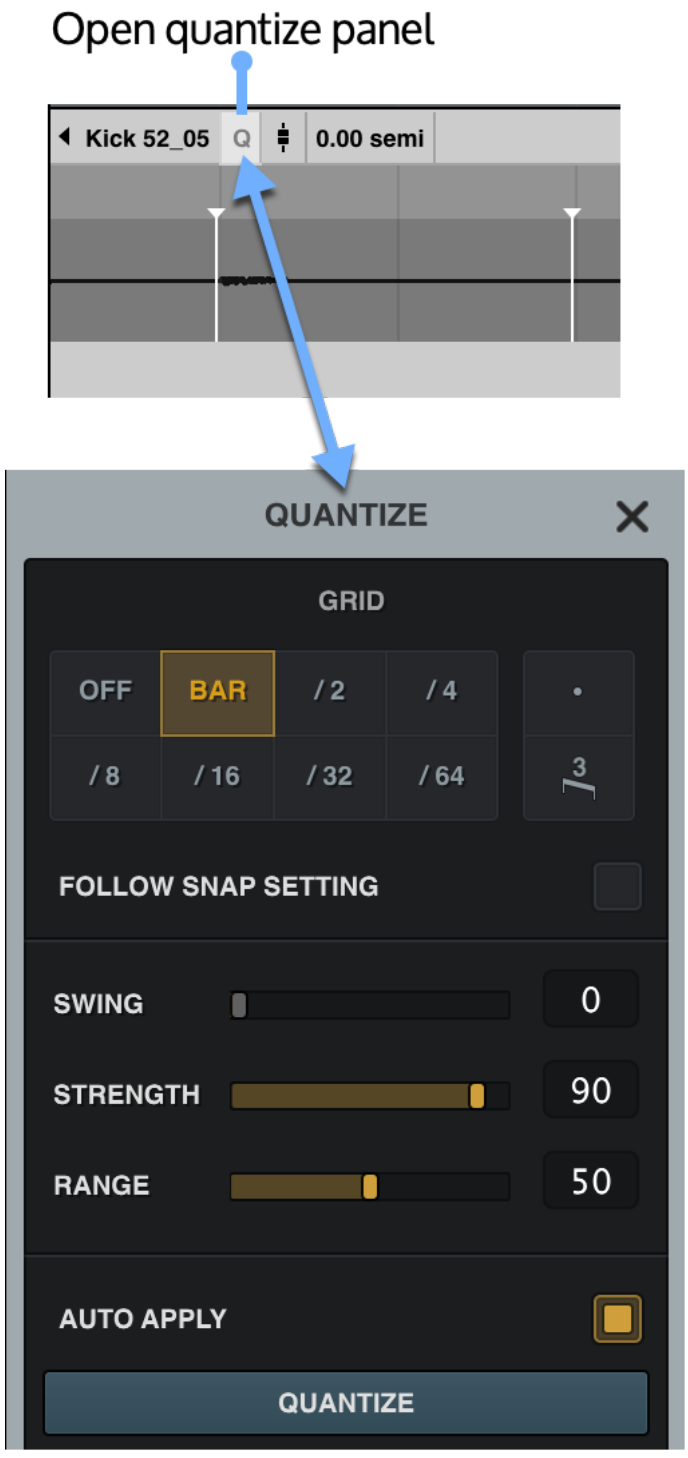



To quantize audio tracks:

1. Make a selection. You can select a range of audio on one or more tracks, one or more clips, or whole tracks. Quantize operations follow your selection group and track group settings.
2. To see the warp markers and quantize updates in real time, choose Warps view.



3. Press Shift+Command+U or select Edit > Quantize Settings to open the quantize panel. You can also press the Q in the header of an audio clip, though this will change your selection unless you have enabled a track group.



4. To preview your Quantize choices in real time, select Auto Apply.
5. Choose a grid value to which to quantize notes. You can select from bar lines 64th notes, and dotted or triplet modifiers.
6. To follow the Snap grid setting, click Follow Snap Setting.
7. To adjust the amount of swing from 0 to 100%, move the Swing slider.
8. To adjust quantize strength, move the Strength slider from 0 to 100%.
9. To adjust the quantize detection range, move the Range slider from 0 to 100%.
10. Under Priority Grouping, select whether to use Selection grouping, Track Group grouping, or no grouping (OFF) to quantize the audio tracks.
11. Click Quantize to apply your settings.

**Note:** If Auto Apply is enabled, any setting you change will update in your audio track or tracks.

**Tip:** To remove any quantization in your selection, click OFF.

# Using the Mixer

## About Mixer View

Mixer view presents an analog console-like layout of your audio, instrument, and bus tracks, and the main track. You can use mixer view to:

- Mix audio levels and pan tracks
- Adjust trim, polarity, and track delay on a track
- Arrange tracks
- Assign track inputs
- Use tape emulation on an audio or instrument track
- Using master tape emulation on a bus or Main track
- Use Neve or API summing emulation on a bus or the Main track
- Use API Console Emulation on tracks
- Use insert effects on a track
- Configure a sidechain with a console extension or sidechain-capable plug-in
- Record enable, mute, and solo a channel
- Monitor a channel’s input
- Configure a bus and view the sources for that bus
- Configure sends from a track
- Send track audio to cues
- Change a track's output

## Mixing Audio

When you mix, you combine multiple audio and instrument tracks to create a stereo output file, and/or output stems, or multiple audio sources combined into mono or stereo outputs with buses. To create the

sound of the overall mix, you balance the levels, frequency content, dynamics, creative effects, and stereo panning position of the audio and instrument tracks in your session.

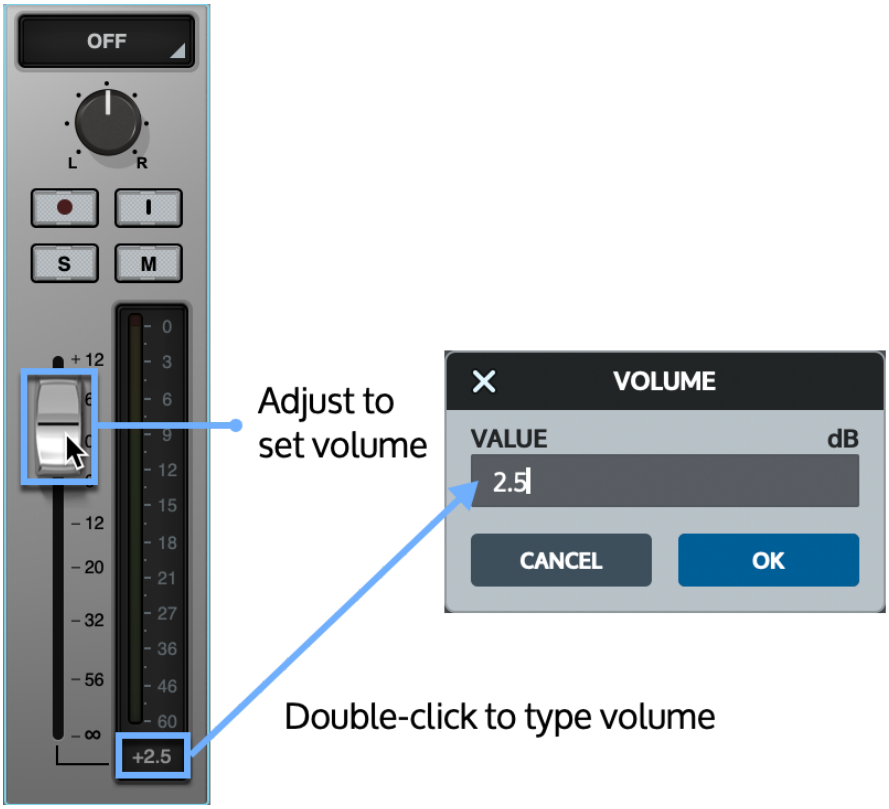
## BALANCING VOLUME LEVELS

To balance audio levels in LUNA's mixer, you can use:

- Clip gain (Timeline)
- The volume fader (Mixer/Focus track)
- The volume fader in the track controls (Timeline)
- Text entry in Timeline track controls or Mixer channel

To balance levels with the Mixer or a Focus channel:

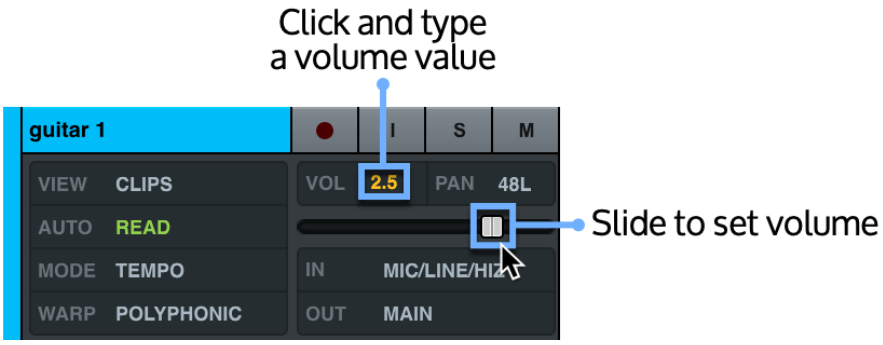
1. Play the session.
2. Move the volume fader up to increase volume, and down to decrease volume. The level is indicated by the value at the bottom of the volume meter.
3. To set a precise value for the volume fader, double-click the value at the bottom of the volume meter and type a value in dB, then click OK. You can type whole values, decimal values, and negative. For example 5, 1.6, and -3.7 are all valid values.



To balance levels with the Timeline track controls:

1. Play the session.
2. Move the volume fader left or right on the track controls in the Timeline. Move the fader left to reduce volume, and right to increase volume.
3. To set a precise value for the volume, click the displayed volume and type a value in dB, then press Return. You can type whole values, decimal values, and negative. For example 5, 1.6, and -3.7 are all valid values.

Note that after entry, the value in the track controls shows the nearest whole value, even though the correct decimal value is applied to the fader.

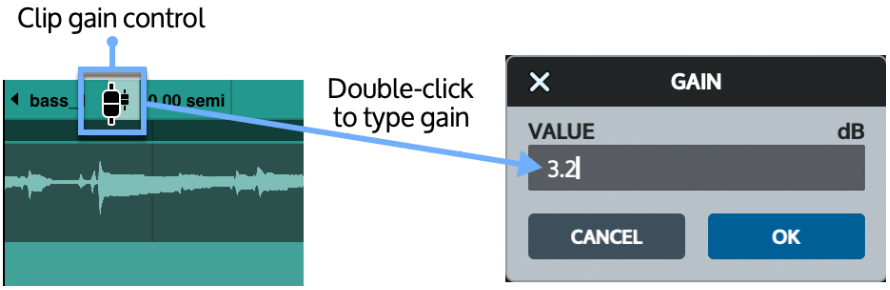



To balance levels with the clip gain control:

1. Hover the mouse cursor over the gain control icon at the top of an audio clip to show the Gain Control Editing Tool.
2. Move the slider up and down to increase or reduce the gain of a clip, without altering the gain of other clips on the track.
3. To enter a precise value, double-click the gain control, type the value in the popover, and press OK.

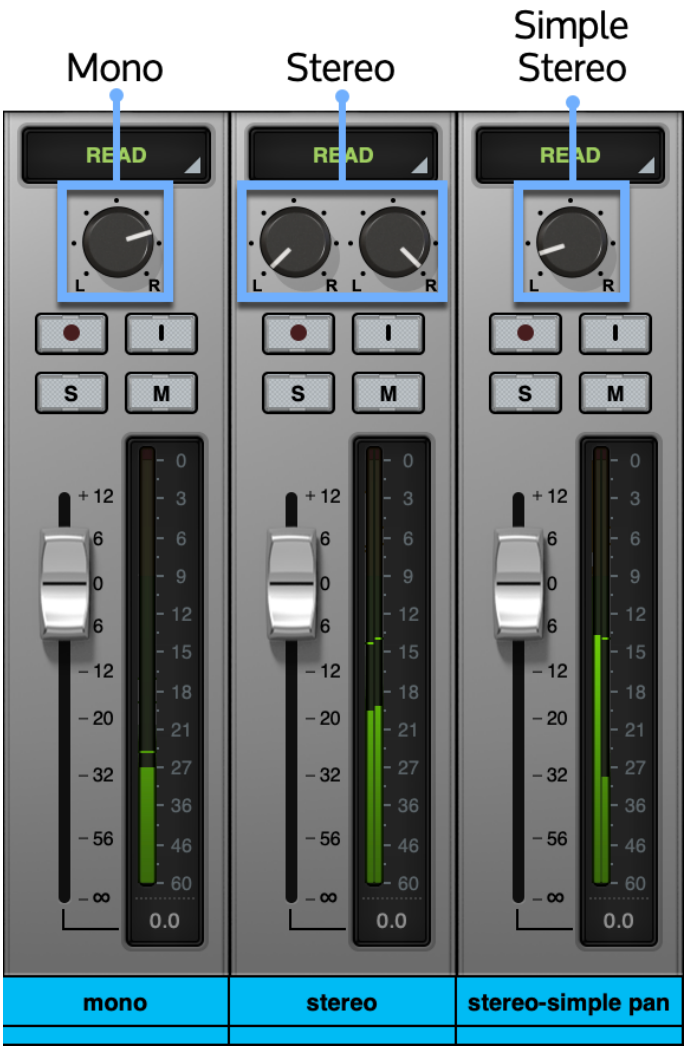
Clip gain allows a wide range of adjustment, from -144 dB to +48 dB. As you adjust clip gain, the waveform display shows the resulting changes to the audio level. If you select multiple clips and adjust the gain slider on one clip, the gain change is applied to all selected clips. To reset the clip gain control to 0 dB, Option-click the control.

**Note:** Tracks must be at the Medium (Default) size or larger to see the clip gain control on the track.



## PANNING TRACKS

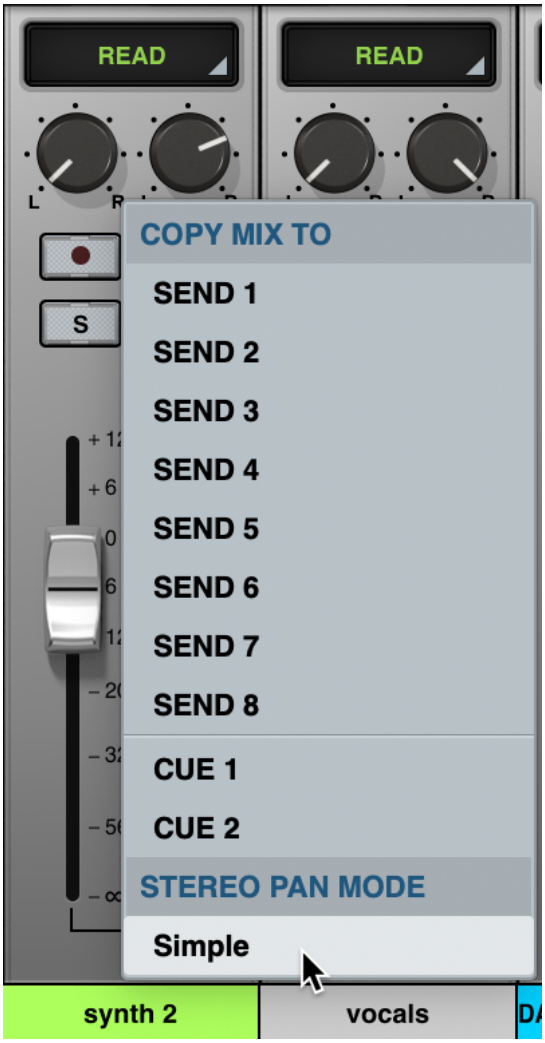
You pan a track to locate the track in the stereo field. In LUNA, a track can be mono or stereo, and you can pan tracks differently based on the track format. Use the pan knobs to pan the tracks to the left or right of the stereo image. A mono track has a single pan knob, while a stereo track has two pan controls–one for the left track, and one for the right track.




To pan a track in the mixer:

- Click and drag the pan control at the top of the channel strip.
- To type a precise value for the pan knob, double-click and type a positive or negative pan value from 0-100, then press Enter. When you type a pan value, use the prefix minus (-) for left and no prefix for right. You can also include the letter L for left or the letter R for right. For example, -24, L24, and 24L both pan a pan control 24% left. 33, R33, and 33R all pan a control 33% right.

- To simplify panning for a stereo track, you can right-click the pan control, and choose Simple under Stereo Pan Mode. The Simple stereo pan mode option allows you to pan both stereo tracks with one control to achieve the stereo image you want.




Panning in Timeline view

You can also pan tracks in the Timeline view.

In the track controls for each track, you can double-click and drag on the pan setting, or click the pan value and type a value from 0-100, then press Enter. When you type a pan value, you can use the prefix minus (-) for left and no prefix for right. You can also type L for left or the letter R for right. For example, -24 and 24L both pan the audio 24% left.

## MUTING AND SOLOING

When you mute a track it goes silent in the mix, and in any sends to which it is routed (unless they are assigned pre-fader). When you mute a track, it goes silent in the session for the duration that the mute is applied. You can also automate mutes.

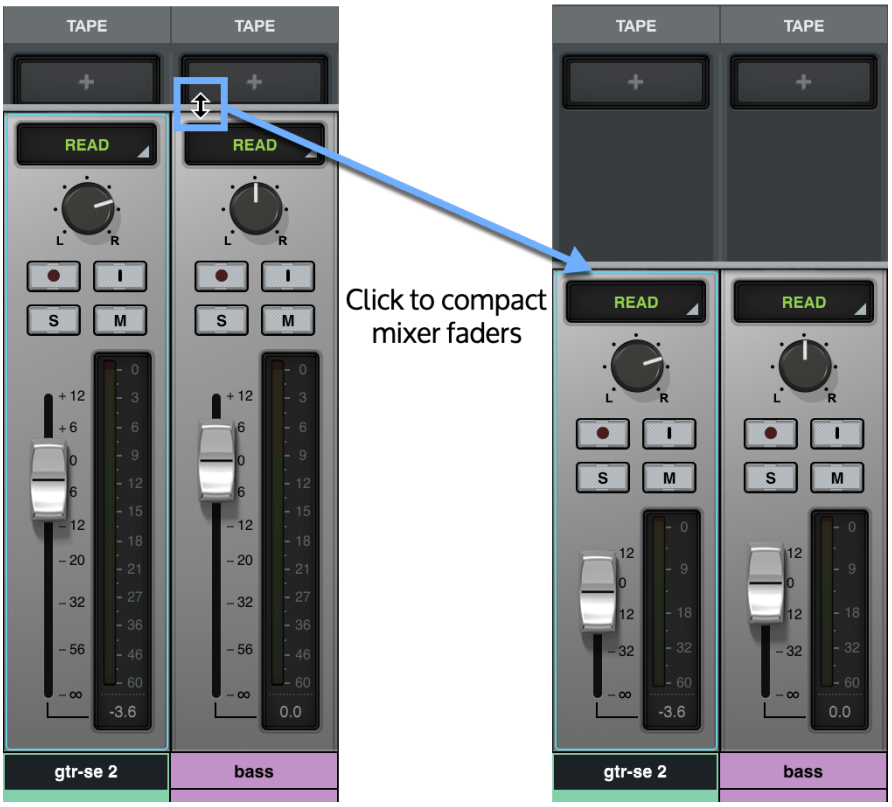
Soloing a track isolates it, or plays it without the other mix elements. When you solo a track, any bus to which it is sent also continues to sound in the session; however only the soloed tracks sound through the bus. You can solo multiple tracks by default in LUNA. You can also configure LUNA to allow only one track to be soloed at a time (see "The Mix workflow" for the X-Or Solo setting).

## BUS SPILL

The Bus Spill control is a feature on a bus track and the Main track that allows you to see only the bus track and all the bus sources (all tracks routed to the bus) in the Mixer and Timeline. To enable Bus Spill, click the Spill button on a bus or the Main track. When Bus Spill is enabled, the Timeline and MIxer show only the source tracks that feed the bus, and the Main track. The Spill button flashes on the bus or Main track when Bus Spill is enabled.

## COMPACTING MIXER FADERS

You can click at the top of the mixer fader section to compact the mixer faders, and allow more space to work with the mixer slots. Click again to expand the mixer faders to full height. You can also toggle this setting with the menu item View > Compact Monitor Faders.



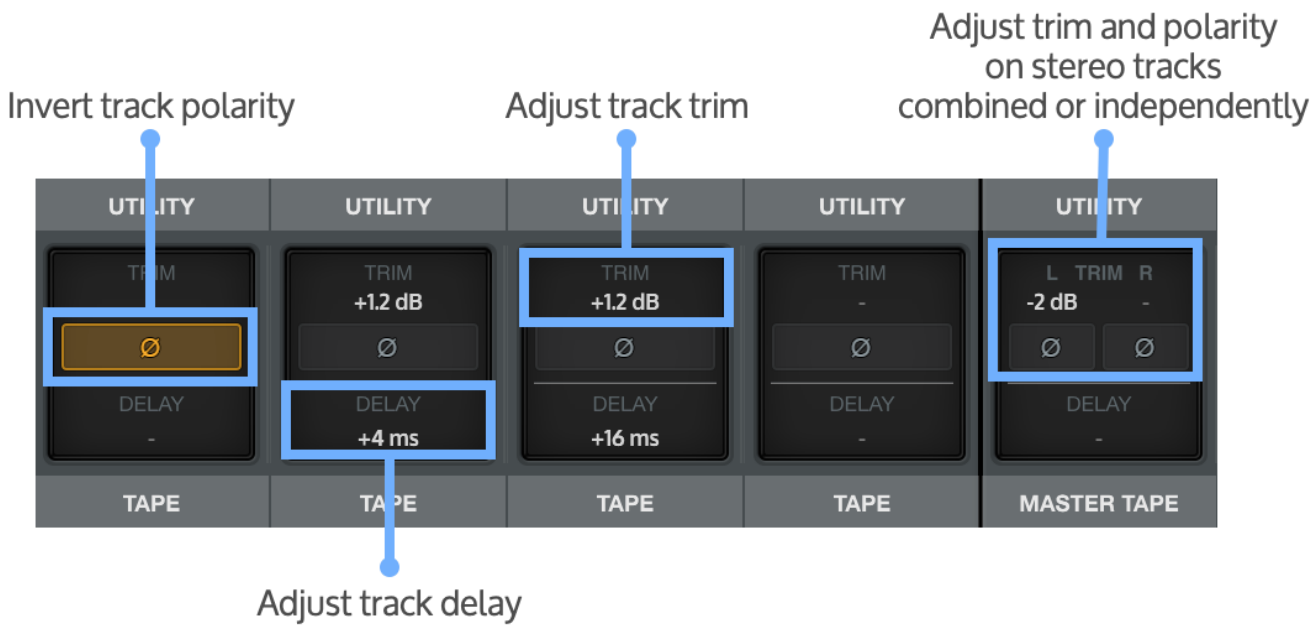

## SCROLLING THE MIXER

You can scroll in the Mixer view using the arrow keys.

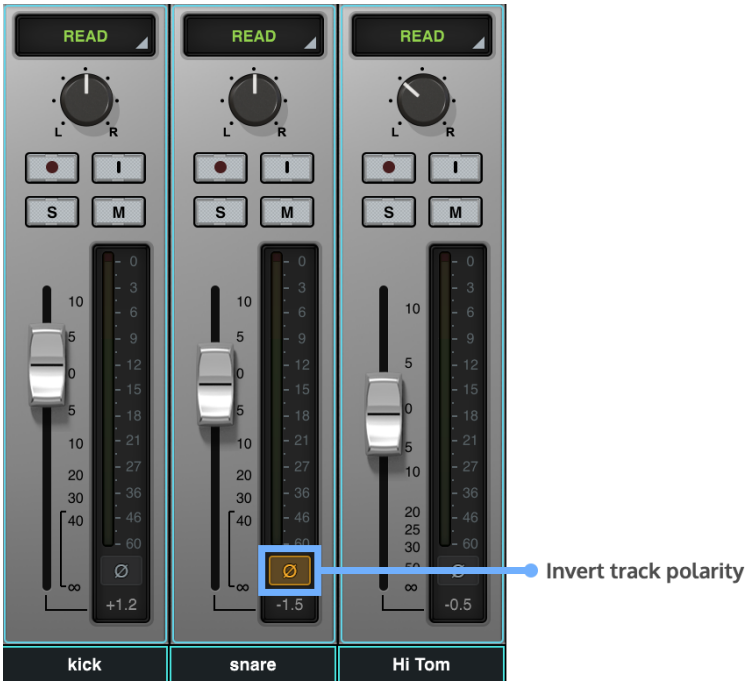
- To scroll one track to the left or right, use the left/right arrow keys.
- To scroll up or down in the mixer, use the up/down arrow keys.
- Command + left/right arrow keys scrolls the mixer an entire “page” or screen of faders.
- Option+ Command + left/right arrow keys scrolls the mixer to the first or last fader.

## ADJUST TRIM, POLARITY AND TRACK DELAY

You can use the Utility row tools on any LUNA channel to trim the track after console summing, and before tape, plug-ins, or channel faders by as much as +12 dB or -144 dB. In the Utility row and on the channel fader you can invert polarity 180° for any track. You can delay a track by .1–1000 milliseconds. You can adjust linked stereo channels or unlink them to invert polarity or adjust trims independently.

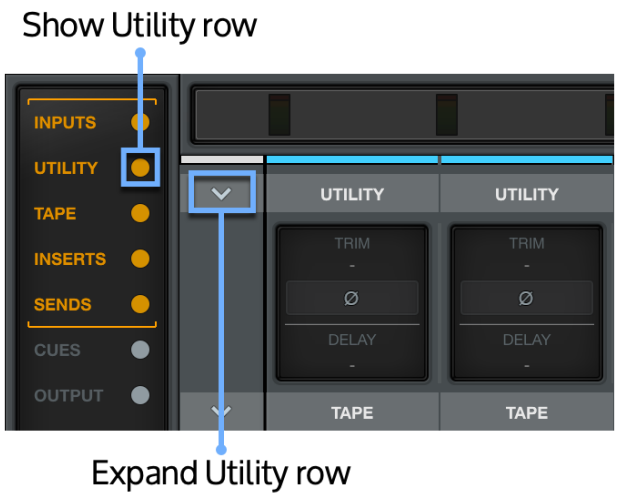



Polarity invert is also available at the track fader.

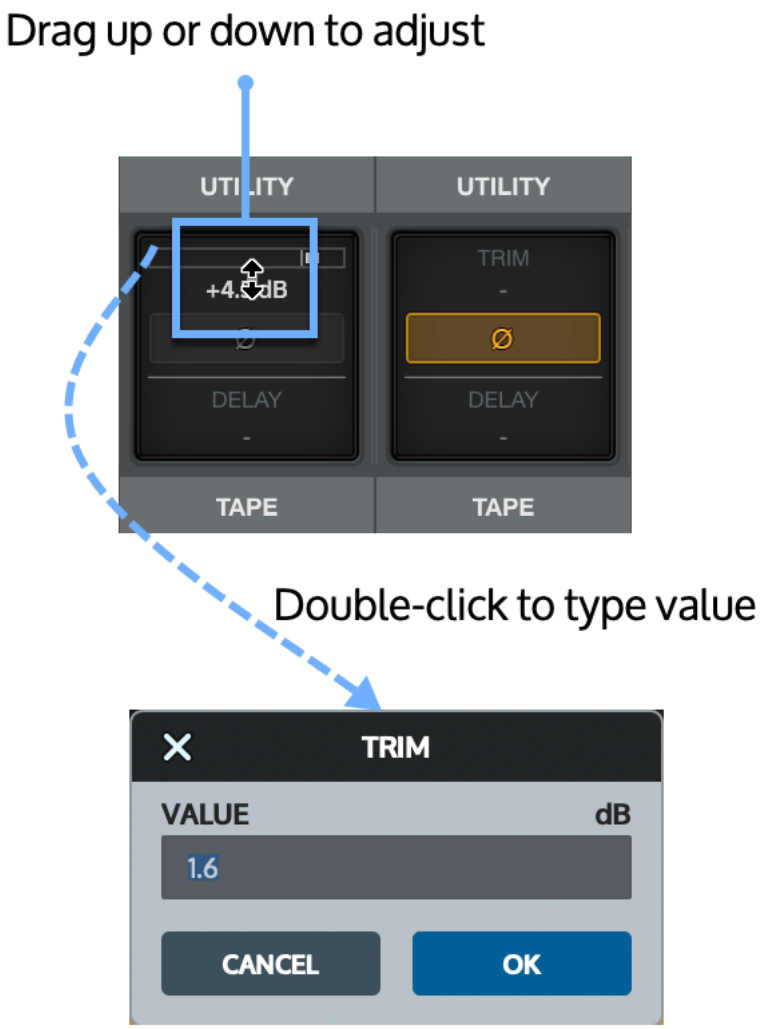



To adjust track trim:

1. Show and expand the Utility row in the mixer, if it is not already visible.



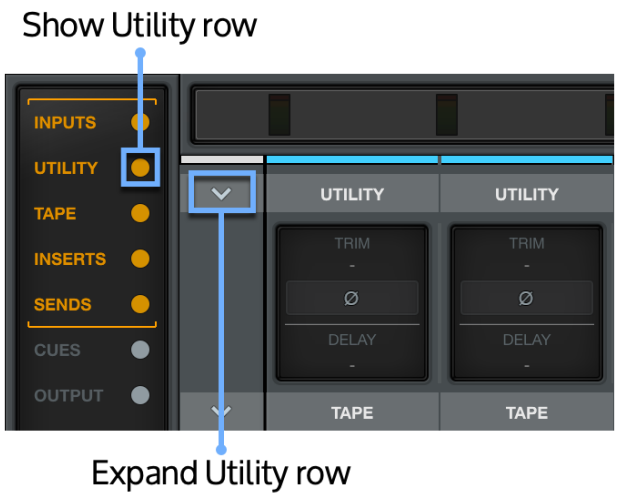

2. Click and drag up or down under TRIM to adjust the trim level. To adjust trim level more accurately, double-click and type the value, then click OK.



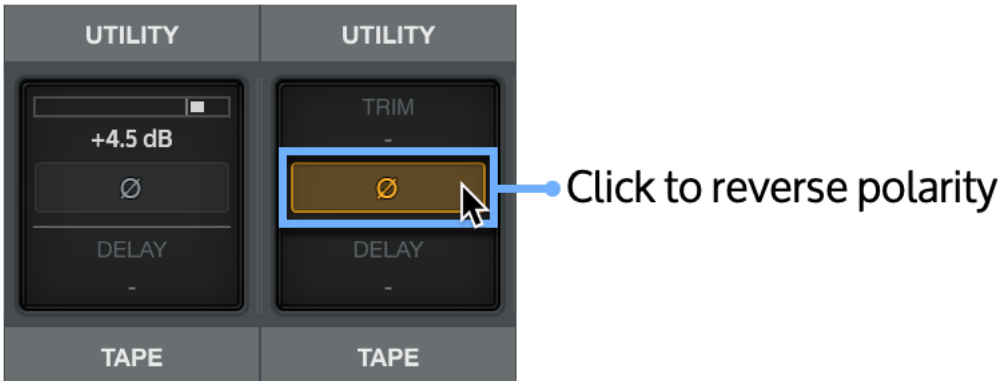

To reset the Trim value, Option-click the Trim level.

To adjust track polarity:

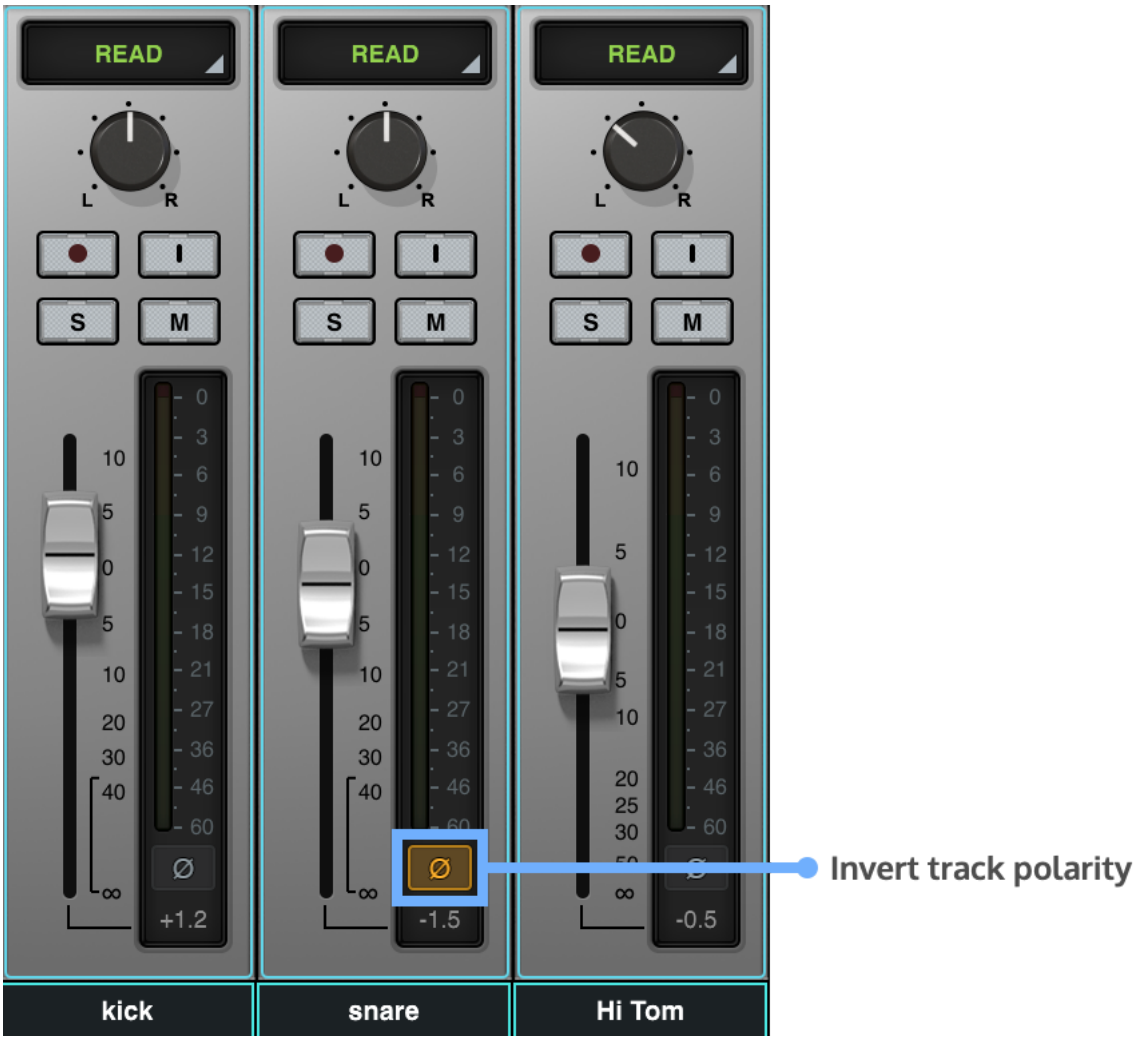
1. Show and expand the Utility row in the mixer, if it is not already visible.




2. Click the polarity button to reverse polarity. Polarity is reversed 180º when the button is highlighted.

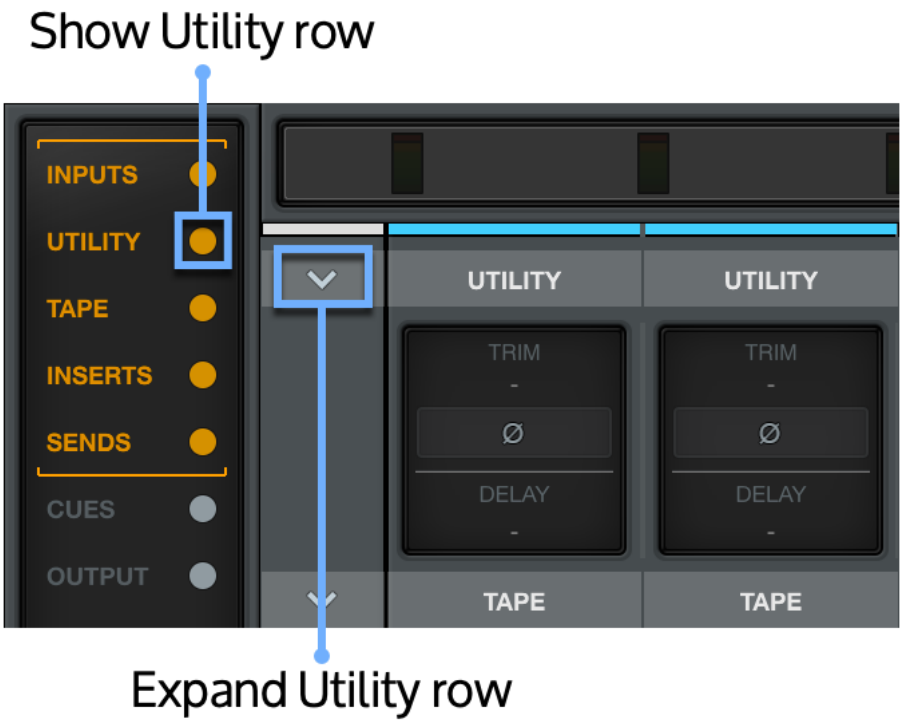



3. Alternatively, you can reverse polarity on the track's fader. On the track fader in the Mixer view or on the focus channel, press the Polarity invert button to reverse polarity.




To adjust trim or polarity on stereo tracks independently:

1. Show and expand the Utility row in the mixer, if it is not already visible.

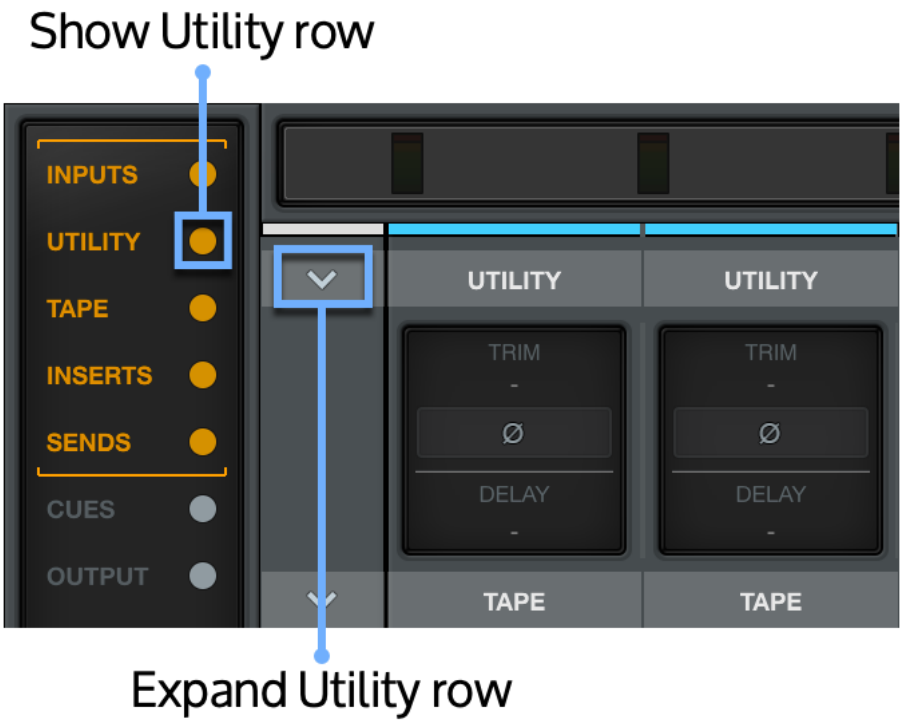



2. Hover over the TRIM area on a stereo track. UNLINK appears. Click to unlink the stereo tracks.

When a stereo track is unlinked, you can adjust the trims and polarity separately for each channel. Hover over the TRIM area again and click LINK to relink the tracks.

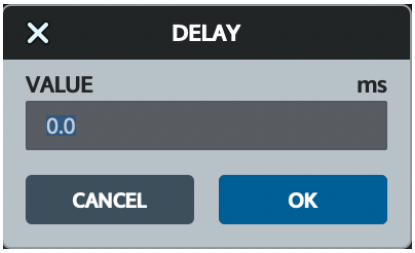
**To delay a track:**

1. Show and expand the Utility row in the mixer, if it is not already visible.




2. Click and drag in the Delay area to adjust the track delay.

3. To type the track delay, double-click the Delay area and type the value, then click OK.




The track is delayed on playback by the number of samples you set.

# Mixing Down Tracks

LUNA offers a full suite of mixdown options, including the ability to export any combination of raw tracks and bus outputs from a session, in stereo or mono as required, with or without effects applied. LUNA can also export MIDI tracks as a multitrack MIDI file with tempo.

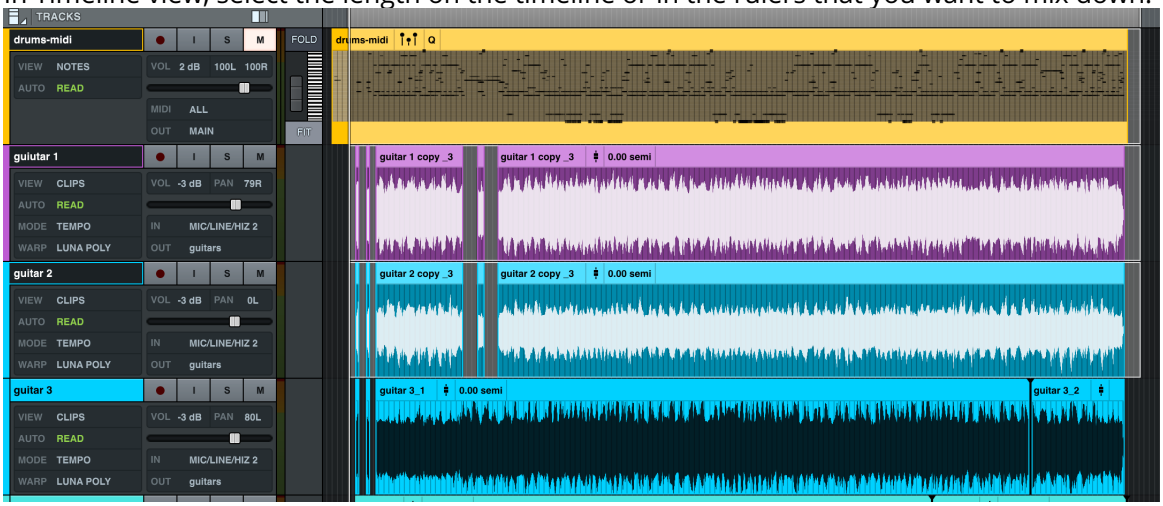
For a simple stereo mixdown, LUNA mixes down either the entire range of audio and MIDI, or a selected audio range at any sample rate supported by the hardware, and bit depths from 8 to 24. You can mix down a file as WAV, AIFF, MP3, or AAC (.m4a).

## CUSTOM DITHER

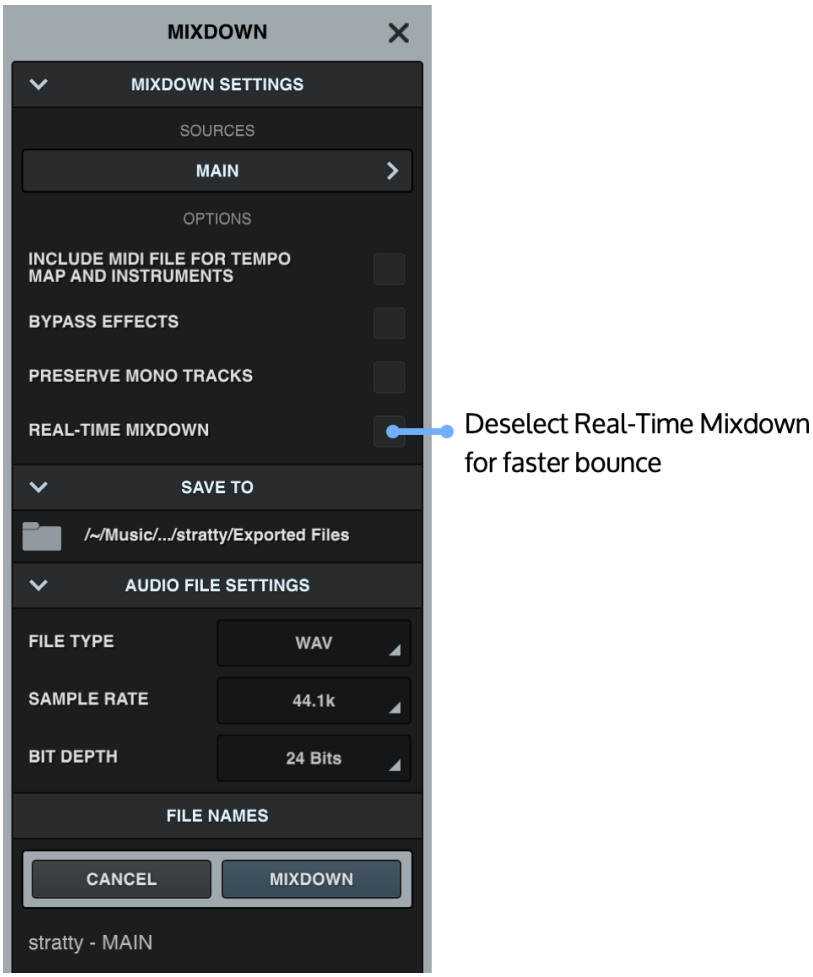
A custom dither algorithm is applied when exporting tracks to a format that requires it.

To mix your LUNA session down to a stereo audio file:

1. In Timeline view, select the length on the timeline or in the rulers that you want to mix down.




2. Select File > Export > Mixdown. The Mixdown dialog appears.

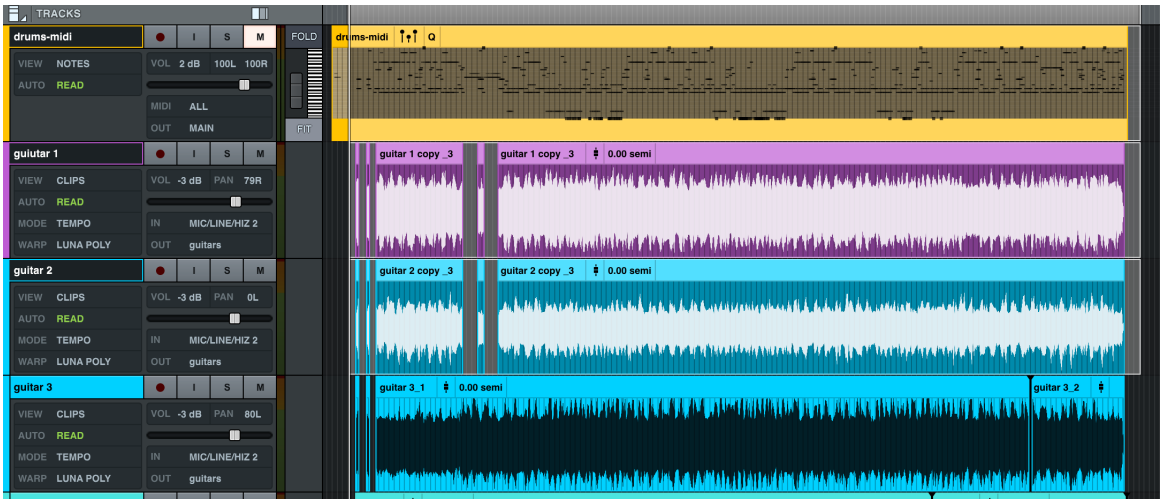



3. Choose the file type for the mixdown file.
4. For WAV or AIFF, choose the sample rate and bit depth for the mixed file. For an MP3 or AAC file, select VBR (variable bit rate) and quality, or CBR (continuous bit rate) and the bitrate in kbps.
5. To listen to your session during mixdown, choose the Real-Time Mixdown option. Note that the session will mix down faster if you deselect Real-Time Mixdown.
6. Click Mixdown to mix down the file.

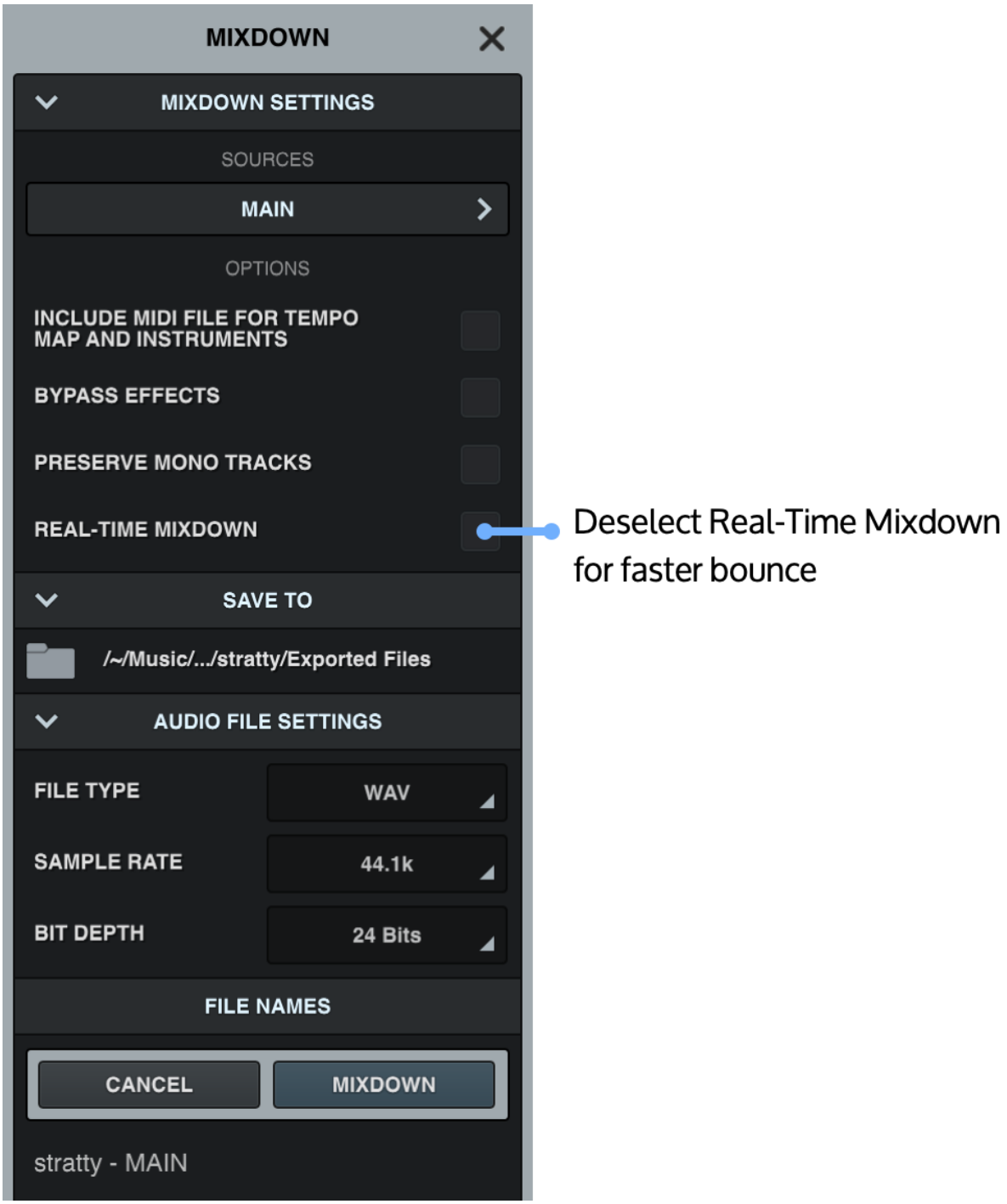
By default, files are automatically named with the name of the session, and the name of the output (for example, session - MAIN.wav). Double-click the mixdown file name to change it. By default, files are mixed down to the Exported Files folder in the LUNA session folder.

To mix down tracks and buses from a LUNA session:

1. In Timeline view, select the length on the timeline or in the rulers that you want to mix down.



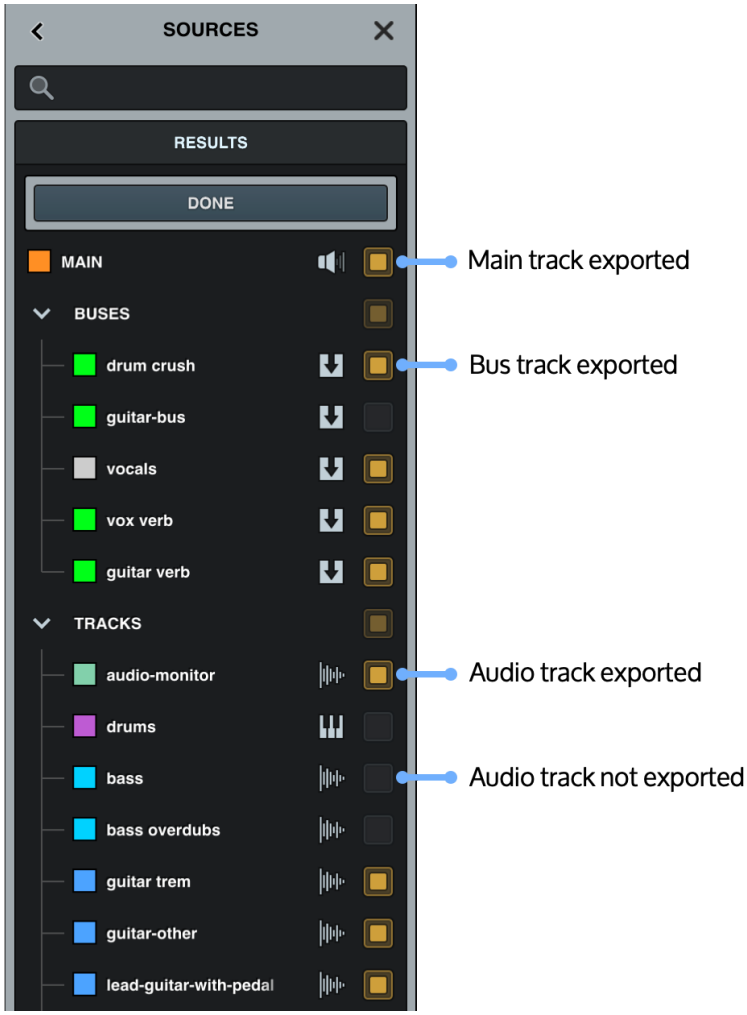

2. Select File > Export > Mixdown. The Mixdown dialog appears.




3. Choose the file type for the mixed down files.
4. For WAV or AIFF, choose the sample rate and bit depth for the mixed down files. There are additional options you can set for an AAC file: VBR (variable bit rate) and quality, or CBR (continuous bit rate) and the bitrate in kbps.
5. To export the MIDI from the session as a multitrack MIDI file with tempo data, choose Include MIDI file for tempo map and instruments.

6. To export tracks without effects, choose Bypass Effects.
7. To export mono tracks as mono files, choose Bypass Pan (Preserve Mono Tracks). If you do not choose this option, panned mono tracks are exported as stereo tracks with the panning information applied to the stereo exported file.
8. To listen to your session during mixdown, choose the Real-Time Mixdown option. Note that the session will mix down faster if you don't choose Real-Time Mixdown.
9. Under Sources, click Main >.

10. Select the tracks to export. You can export any combination of tracks and buses.




11. Click Done to return to the Mixdown dialog.

12. Click Mixdown to mix down the files.

By default, files are automatically named with the name of the session, and the names of the outputs appended (for example, session - MAIN.wav, session - verb.wav). Double-click the name of any mixdown file to rename it. By default, files are mixed down to the Exported Files folder in the LUNA session folder.

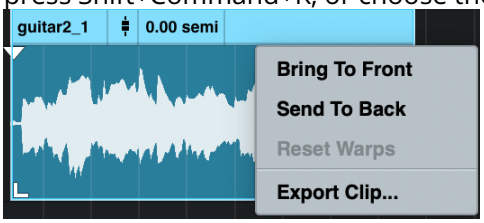
**Tip:** Click and drag to select multiple source checkboxes.

### EXPORTING AUDIO FROM THE TIMELINE

You can export individual audio clips as single files, multiple audio clips on the same track as multiple files, and multiple audio clips from different tracks as separate files, directly from the Timeline.

To export audio clips:

1. In the Timeline view, click one or multiple audio clips to export.
2. Right-click an audio clip and select Export Clip. You can also select one or more audio clips and press Shift+Command+K, or choose the menu item File > Export > Clips.




3. While the Export dialog is open, select clips in your session you want to export. Each clip is added to the export list.
4. To remove a clip from the export list, click it again. (Tip: you can click a clip in the Export browser to select and center that clip in the timeline.)
5. Under Save To in the export browser, select the location where you want to export the clips by clicking the folder icon and choosing a location from the Finder.
6. Under Audio File Settings, specify the settings for File Type, Sample Rate and Bit Depth.
7. Click Export to export your clips.

---

## Using Default Extensions

By default, LUNA assigns Extensions that you own or are currently demoing to supported tracks. For example, if you own or are demoing Studer A800 Tape, it is automatically assigned to all audio and instrument tracks.

You can change the default Extensions (on a per-session basis) by simply selecting a different Extension, or no Extension, in the New Tracks and Create Bus dialogs. You can enable or disable automatic Extension assignment in LUNA Settings, under Options > Miscellaneous > Assign Default Extensions.

**Note:** Extensions are not automatically assigned in a session created from a template. For full control over which Extensions are assigned on a per-track basis, create a custom template.

---

# Using Neve Summing

You can add Neve Summing to bus tracks and the main track using a LUNA Extension.

## USING THE NEVE SUMMING LUNA EXTENSION

Neve Summing imparts the sound and headroom characteristics of a Neve console bus channel directly into the LUNA summing buses. You can purchase the optional Neve Summing LUNA Extension to add Neve summing to Bus and Main tracks.

**Note:** when you change the Neve Summing setting for a bus, the faders for the bus and for all tracks that feed the bus will change position because of the difference in fader taper between LUNA native summing bus and Main channels and Neve Summing bus and Main channels.

To add Neve Summing:

- In the Input row of a bus or the Main track, click the Summing button, and choose Neve Summing.
- Set the controls for Headroom (HR), Trim, and Impedance.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. The tracks must be in an enabled track group (Track > New Track Group, or Command+G), or Selection Grouping (Track > Selection Grouping, or Control+G) must be enabled to adjust Neve Summing settings on multiple tracks at one time.

Neve Summing provides these controls and characteristics:

- Channel characteristics: The fader and panning characteristics of the bus change to accurately emulate the Neve console bus characteristics.
- Headroom (HR): The headroom setting increases or decreases the amount of headroom in the channel, and the amount of saturation. The available range is +4 dB to +28 dB, and the lowest setting (fully counter-clockwise) has the least saturation and the most available headroom. As you turn this up to the top of the range, you can get saturation and even distortion characteristics. You can rotate the knob or double-click it to choose a value from the drop menu. The headroom control is gain-compensated, so the volume changes are minimal when changing the headroom control. The Low impedance setting is louder than unity gain, even with gain compensation.

- Trim: The trim setting allows you to compensate for gain changes introduced by the summing headroom and impedance controls, and allows you to increase or decrease the overall level of the summing bus. The available range is -6 dB to +6 dB. You can rotate the knob or double-click it to type a value.
- Impedance: This setting changes the impedance character of the bus or Main channel from low to high impedance. The default is high impedance. The Low and High bus impedance settings provide different audio character and gain levels, and one or the other might be more appropriate for your audio material and bus. Generally, the Low impedance setting is louder than the unprocessed audio.
- Bypass: The Bypass switch (labeled In/Out) allows you to toggle Neve summing on and off to audition the audio effects.

---

# Using API Summing

You can add API Summing to bus tracks and the main track using a LUNA Extension.

## USING THE API SUMMING LUNA EXTENSION

API Summing imparts the sound and headroom characteristics of an API console bus channel directly into the LUNA summing buses. You can purchase the optional API Summing LUNA Extension to add API summing to Bus and Main tracks.

**Note:** when you change the API Summing setting for a bus, the faders for the bus and for all tracks that feed the bus will change position because of the difference in fader taper between the LUNA native summing bus and Main channels and the API Summing bus and Main channels.

To add API Summing:

- In the Input row of a bus or the Main track, click the Summing button, and choose API Summing.
- Set the controls for Headroom (HR) and Trim.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. The tracks must be in an enabled track group (Track > New Track Group, or Command+G), or Selection Grouping (Track > Selection Grouping, or Control+G) must be enabled to adjust API Summing settings on multiple tracks at one time.

API Summing provides these controls and characteristics:

- Channel characteristics: The fader and panning characteristics of the bus change to accurately emulate the Neve console bus characteristics.
- Headroom (HR): The headroom setting increases or decreases the amount of headroom in the channel, and the amount of saturation. The available range is +4 dB to +28 dB, and the lowest setting (fully counter-clockwise) has the least saturation and the most available headroom. As you turn this up to the top of the range, you can get saturation and even distortion characteristics. You can rotate the knob or double-click it to choose a value from the drop menu. The headroom control is gain-compensated, so the volume changes are minimal when changing the headroom control.
- Trim: The trim setting allows you to compensate for gain changes introduced by the summing headroom and impedance controls, and allows you to increase or decrease the overall level of the summing bus. The available range is -6 dB to +6 dB. You can rotate the knob or double-click it to type a value.
- Bypass: The Bypass button (labeled In) allows you to toggle API summing on and off to audition the audio effects.

# Using API Vision Console Emulation

The API Vision Console Emulation Bundle turns LUNA into a full API console. You can create new audio, instrument, and bus tracks with API Vision Console elements pre-assigned, building sessions within the complete Vision console emulation experience. You can assign API Vision channel strips and API 2500 Bus Compressors to all tracks in your session.

API Console emulation provides a new way to interact with the LUNA workspace. See “API Vision Console Emulation” in the Extensions section for more information.

# Using Multitrack Tape

## USING TAPE LUNA EXTENSIONS

With LUNA, you can incorporate the classic sound of tape directly into your mixing workflow. LUNA implements tape emulation in a way that is both easy to use and sonically diverse. Both Oxide and Studer A800 provide you with the accurate, classic sound of a classic multitrack machine. The overall sound of Oxide is configured with presets and a per-channel saturation control, while Studer A800 offers per-machine and per-track control over the individual tape channel parameters. Tape can be enabled on any instrument or audio track, and is applied during playback only.

You can add emulated tape processing to audio and instrument tracks using LUNA Extensions. LUNA includes the Oxide LUNA Extension for simple one-knob tape emulation.

The optional Studer A800 LUNA Extension adds more advanced tape control, and the sound of a venerable modeled tape machine. If you already own the UAD Studer A800 plug-in, the Studer A800 LUNA Extension is available in your account. Conversely, if you purchase the Studer A800 LUNA Extension, the UAD Studer A800 plug-in is included.

LUNA Extension tape machine emulation includes global settings for the tape machine, and per-track settings for saturation. In this way, the tape machine emulation is similar to a true recording and mixing tape signal path.

LUNA is designed with the capability to use up to four “machines” for tape emulation. You can configure each machine slot with different global tape characteristics, and apply any one of the four machines to a track or group of tracks in your session. Overall tape characteristics are determined by each machine. You can then set the saturation individually for each track to which Oxide tape is applied, and other settings for

each Studer A800 channel. In this way, you can configure separate machines within your session, and still set individual “tape channel” characteristics for each track.

For example, a typical scenario could include two machines, with one machine more aggressively driven than the other. You can assign drums, bass, and guitars to the more aggressively driven machine, and vocals and backgrounds to the cleaner machine. You can add a third and a fourth machine with even more diverse characteristics. The ability to configure up to four machines provides wide flexibility in the range of tape sounds you can apply in a session.

## OXIDE LUNA EXTENSION CONFIGURATION

The Oxide Extension includes presets to configure the tape machine settings. You cannot manually adjust controls for the Oxide LUNA Extension. However, if you own the UAD Oxide Tape plug-in, you can configure and save presets in the plug-in that you can then use in the LUNA Extension.

## STUDER A800 LUNA EXTENSION CONFIGURATION

The Studer A800 LUNA Extension allows you to load presets and adjust manual controls. Settings like bias, tape speed, and tape type are configured on the tape machine globally for the session, and in addition, each track has its own level (saturation) control, as well as control over the individual track’s HF Driver and Repro EQ settings. You can use presets that you save in the UAD Studer A800 plug-in with the LUNA Extension.

## USING TAPE MACHINES

To configure a Tape Machine in a tape deck slot:

1. On an audio or instrument track in Mixer view, or on a Focus track in Timeline view, click the Tape slot. The Tape browser opens.

2. Double-click a tape slot (A-D) in which you want to configure the tape machine.
3. From the Machine list, select a tape machine type (Oxide or Studer A800). Studer A800 is only available if you have the Studer A800 LUNA Extension licensed and installed. The tape machine configuration is displayed in the browser.
4. Configure the tape machine through presets (Oxide, Studer A800) or configure the tape machine settings (Studer A800).

Once you have configured a tape machine in a slot, you can assign that tape machine to any number of audio or instrument tracks. You can configure a total of four tape machines, each with unique settings, for each LUNA session.

To assign a tape machine to a track:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.

2. Choose the tape machine from the list in the Tape Machine browser. A tape machine Saturation knob appears on the track, along with a VU meter and a Power button. In the Mixer, with Large View enabled for the tape row, additional settings for the Studer A800 LUNA Extension appear.
3. Use the Saturation knob to increase or decrease the amount of tape saturation applied to the track.
4. If you are using the Studer A800 LUNA Extension, you can configure the HF Driver HF setting, Bias, Repro LF, and Repro HF settings, and enable noise on a per-track basis, in addition to the overall machine controls.
5. Click the power button to enable or disable tape emulation on the track.

To configure the global sound of an Oxide tape machine:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.
2. Choose an Oxide tape machine from the list.
3. Choose a preset to configure the global sound of the Oxide tape machine in the session.

**Tip:** If you have the UAD Oxide Tape plug-in, you can use presets you have created in the plug-in with LUNA tape tracks.

To configure the global sound of a Studer A800 tape machine:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.
2. Double-click the A800 tape machine that you want to configure.
3. Choose a Preset to configure the global sound of the Studer A800, or adjust the controls manually. Click Open to open the additional machine controls.

To adjust a tape control, you can click and drag on the control to rotate it to the desired position, or you can double-click the control to choose from a list of values.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. The tracks must be in an enabled track group (Track > New Track Group, or Command+G), or Selection Grouping (Mixing > Selection Grouping, or Command+G) must be enabled to adjust tape settings on multiple tracks at one time.

You can access tape controls from the tape configured on a track.

Hover your mouse over the tape slot on a track, and use the tape options to open the tape browser, open the assigned tape machine for the track, or remove tape from the track.

# Using Master Tape

The UAD Ampex ATR-102 Mastering Tape Recorder plug-in and LUNA Extension provides the final “analog polish” to your music, turning your recordings into records. Fully authenticated by the Ampex Corporation and trusted by Platinum-selling professionals the world over, the ATR-102 LUNA Extension faithfully captures the unique dynamics, colorful frequency response, and tape saturation of this industry-standard Ampex machine.

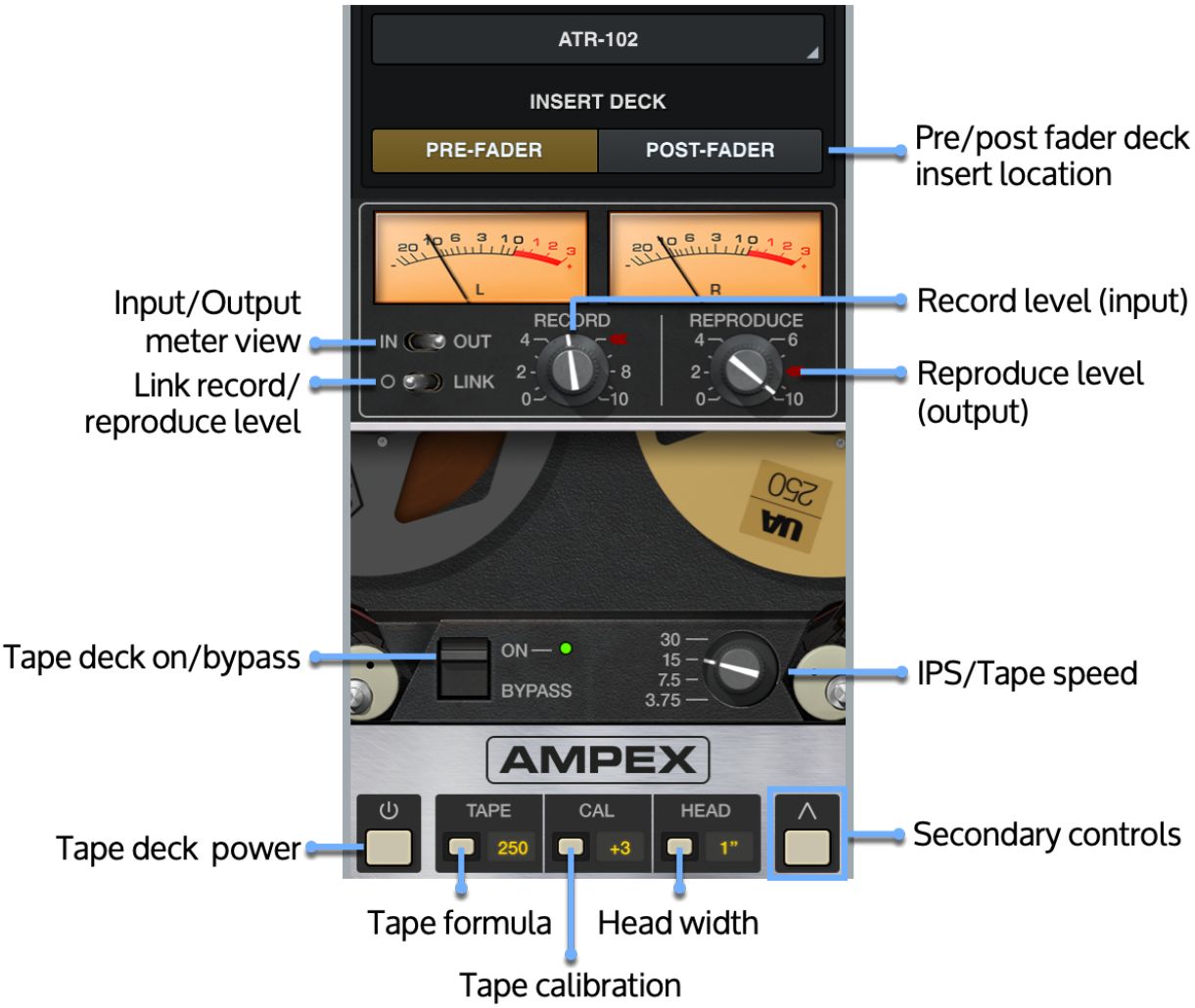
## USING AMPEX ATR-102

You can add Ampex ATR-102 to a Bus track or the Main track. You can configure each instance of Ampex ATR-102 Master Tape LUNA Extension with manual controls and presets.

Assign Ampex ATR-102 to a track

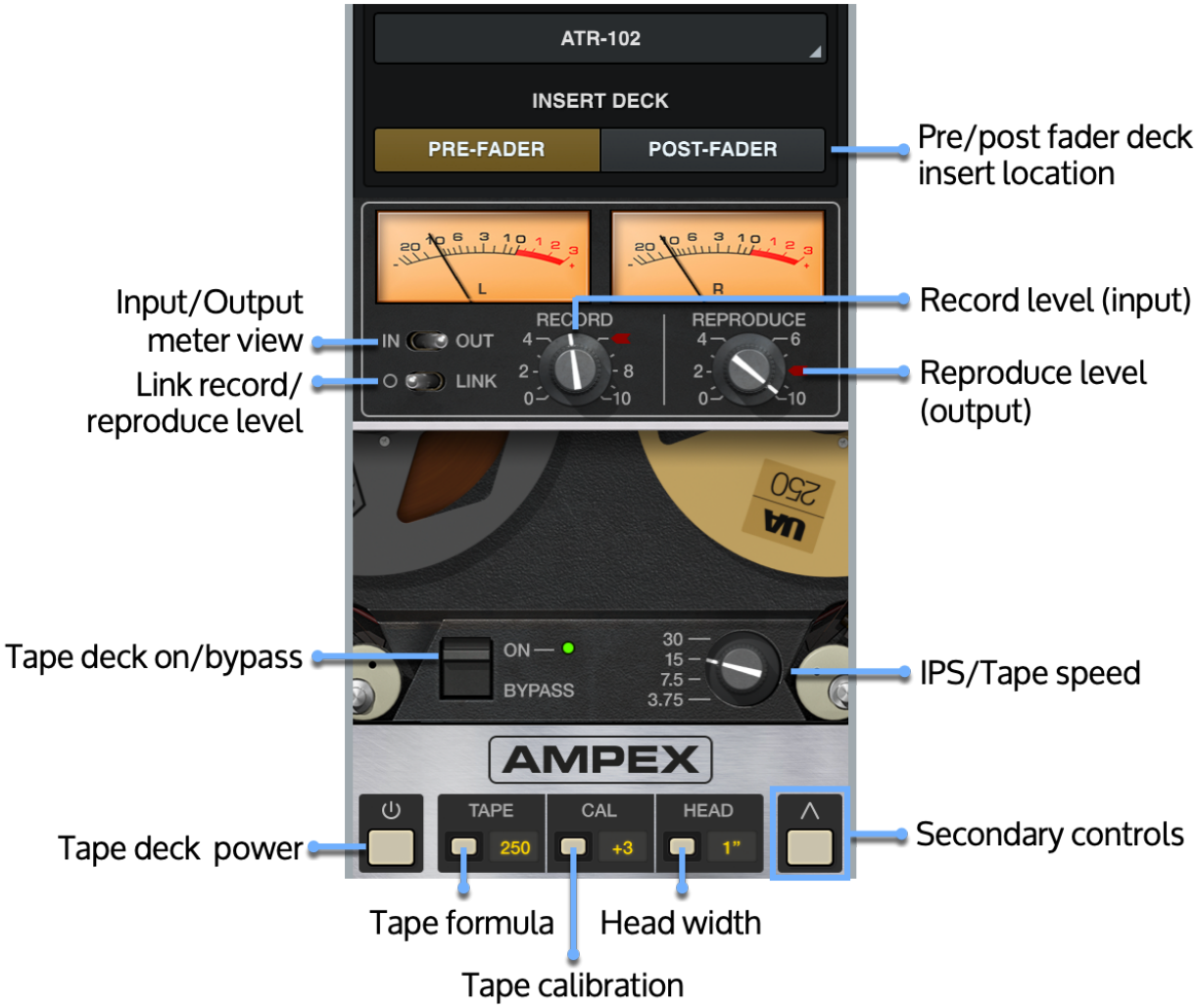
1. Click the Master Tape insert on a bus track or the Main track, and select the ATR-102.

2. The primary set of tape machine controls appear in the Master Tape slot, and the Master Tape deck appears in the browser on the left of the screen.



In the Master Tape slot, you can configure the most important features: tape formula, tape speed, and tape head width. You can also toggle the Master Tape deck on and off. You can further configure the Master Tape deck in the Browser on the left of the screen.

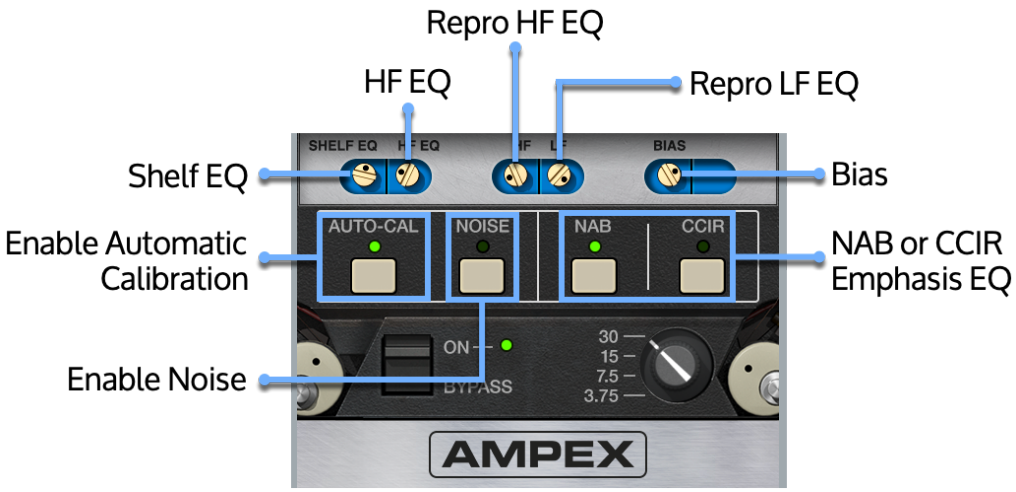
Master Tape Deck controls in Browser




To configure Ampex ATR-102 in the Browser:

1. Hover over the Master Tape insert on a track, and click the box to open the Master Tape Deck.

2. The Master Tape Deck opens on the left of the screen.
3. Adjust the controls manually, or choose a Preset to configure the global sound of the Ampex ATR-102.
4. Click the Open (^) button to open the secondary machine controls.




To adjust a rotary tape control, you can click and drag on the control to rotate it to the desired position, or double-click the control to choose from a list of values. You can toggle through push-button controls by clicking the buttons, or toggle switches by clicking them,

## INSERTING THE TAPE DECK PRE FADER OR POST FADER

The Ampex ATR-102 Master Tape LUNA Extension can be configured as either a pre-fader or post-fader effect. By default, the Ampex ATR-102 is pre-fader on the Main track and post-fader on buses. On the Main track, the ATR-102 is configured pre-fader to enable modern workflows where a master brickwall limiter or other processor is positioned after it. The Master Tape machine on a bus is configured post-fader by

default to apply the sound of the tape after other bus processing. The use of a Master Tape machine on buses allows for sonic exploration beyond what would normally be available with a single mixdown tape deck.

To configure the Ampex ATR-102 Master Tape LUNA Extension as pre or post fader:

1. Click in the Master Tape row and assign the ATR-102 LUNA Extension to a bus or the Main track,
2. Hover over the Master Tape slot, and click on •••.
3. To insert the tape deck pre-fader, select Insert Pre-Fader. An indicator to the left of the option indicates that the option is enabled.
4. To insert the tape deck post-fader, deselect Insert Pre-Fader.

You can also switch between the pre and post fader tape deck location by clicking the option in the Master Tape Browser.

Insert deck pre or post-fader

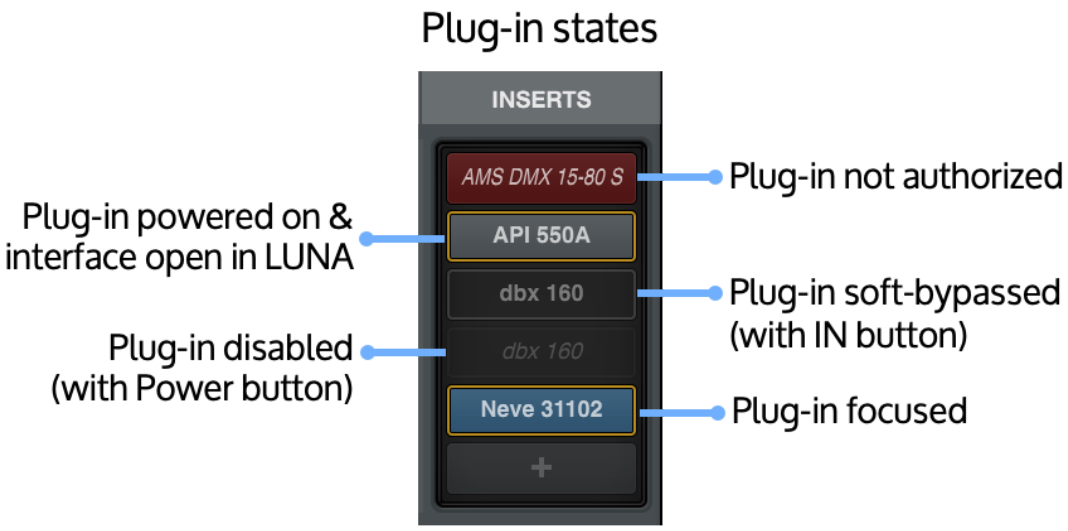
## Using Insert Plug-Ins

You use inserts to add UAD-2, UADx, and Audio Unit plug-In processing to audio, bus, instrument, and main tracks. You can expand the Inserts row to view the standard inserts. Record FX and the Unison insert appear in the Input row, when a track is Input or Record enabled. Click an available insert to open the list of available plug-ins in the Focus Browser, and click a plug-in from the pane to insert it.

**Note:** Only UAD-2 plug-ins can be used in Record FX inserts. Only Unison-capable UAD-2 plug-ins can be used in Unison inserts.

Plug-in states are indicated with colors and outlines.

- A gray plug-in plate indicates a powered-on and authorized plug-in.
- A red plug-in plate indicates that a plug-in is not authorized.
- A dimmed plug-in plate indicates that a plug-in is soft-bypassed with the IN button.
- A further dimmed plug-in plate with italicized text indicates that the plug-in is disabled with the Power button.
- A blue plug-in plate indicates that the plug-in is focused in the browser.
- A yellow outline around a plug-in plate indicates that the plug-in window is open in LUNA.



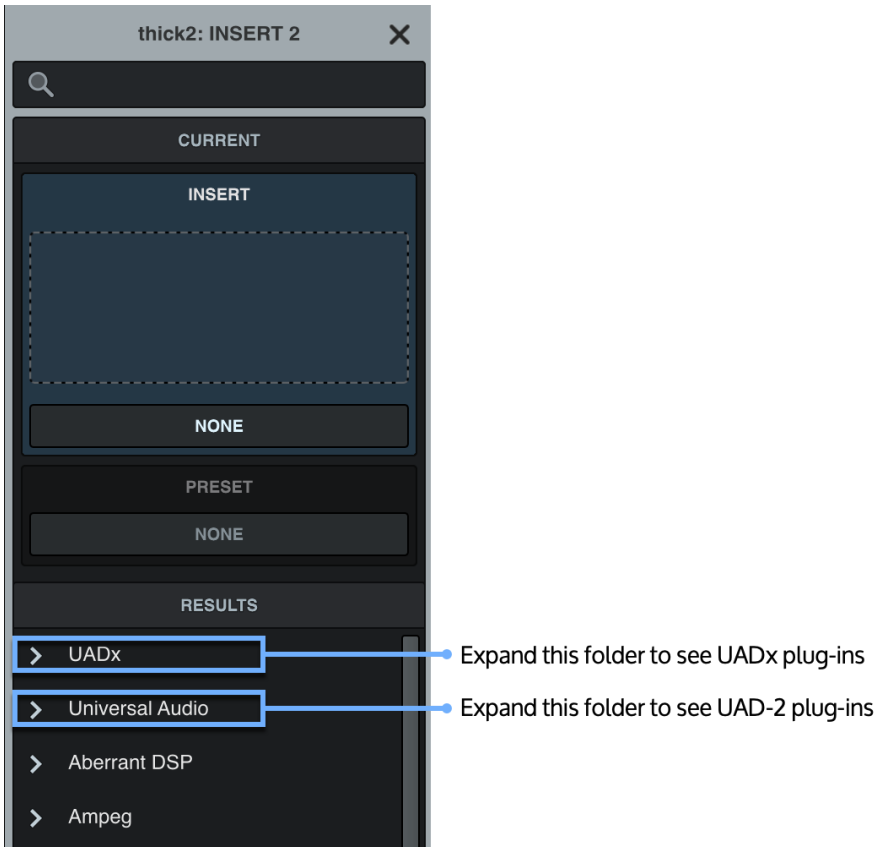

## ADDING PLUG-INS

Click on a Unison insert, Record FX insert, or standard Insert insert to add a plug-in. Note that you can only add a Unison-enabled UAD-2 plug-in in the Unison insert, and UAD-2 plug-ins in the Record FX inserts, and those inserts are only active when an audio track is record-enabled or input-enabled.

When you click on an insert, your list of supported plug-ins opens in the Plug-Ins browser. The list of plug-ins in the browser changes depending on the context. As an example, only Unison plug-ins appear when you click a Unison insert. On audio tracks, only UAD-2 plug-ins appear in the Record FX insert. When LUNA is ARM-enabled, all plug-ins can be added to a record-armed or input-enabled track, but non UAD-2 plug-ins are bypassed while the track is armed..

Plug-ins are organized by manufacturer, and you can click a manufacturer's name to show or hide the list of plug-ins. In addition, UAD plug-ins are sorted into three folders:

- **UADx** includes your installed UADx plug-ins that are licensed either through a UAD Spark subscription or demo, or licensed perpetually, because you own a license for the UAD-2 version.
- **Universal Audio** includes your UAD-2 plug-ins, including plug-ins that are licensed and plug-ins that still have available demos.
- **Universal Audio Sphere** includes your native Sphere plug-ins.
- **Universal Audio [inactive]** includes plug-ins that are not licensed and no longer have an available demo.

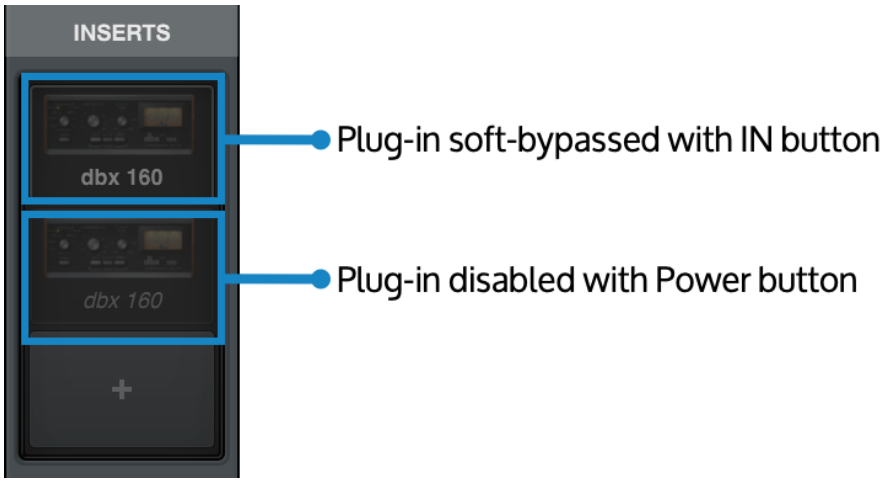



## BYPASSING PLUG-INS

LUNA includes the ability to soft bypass UADx plug-ins, most UAD plug-Ins, and many third party plug-ins. This allows you to bypass and re-enable a plug-in in the least audible way possible. If a plug-in supports soft bypass, the plug-in includes an IN button that is illuminated when the plug-in is active, and unlit when the plug-in is soft-bypassed.

In addition, all plug-ins include a power button, which allows hard bypass, but is more audible when switched. Both bypass types can free processing power, though the Power button generally frees more processing power.

Plug-ins that are soft bypassed (with the IN button) and disabled (with the Power button) appear differently in the LUNA mixer. Soft bypassed plug-in tiles are dimmed. Disabled plug-in tiles are dimmed further, and the plug-in name is italicized.




- Command+Click to soft bypass or re-enable a soft-bypassed plug-in (IN button).
- Command+Control+Click to enable or disable a plug-in (Power button).

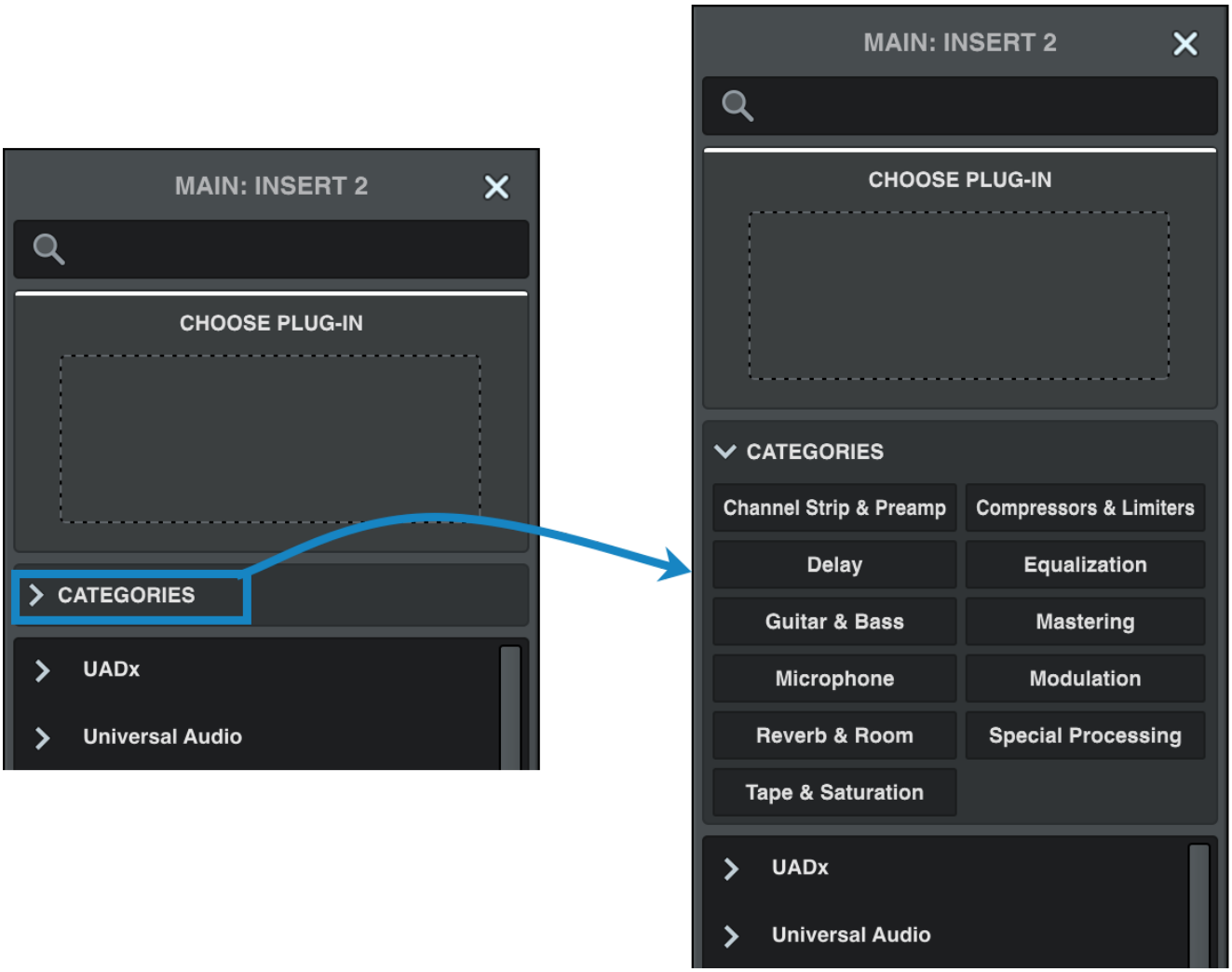
**Note:** LUNA attempts to soft-bypass a plug-in when you Command+Click it, but if the plug-in cannot be soft-bypassed, Command+Click disables the plug-in (with the Power button).

## FILTERING PLUG-INS BY CATEGORIES

You can filter the lists of UADx, UAD-2, and Audio Units plug-ins by categories. Categories allow you to narrow the list of available processors by the type of processor.

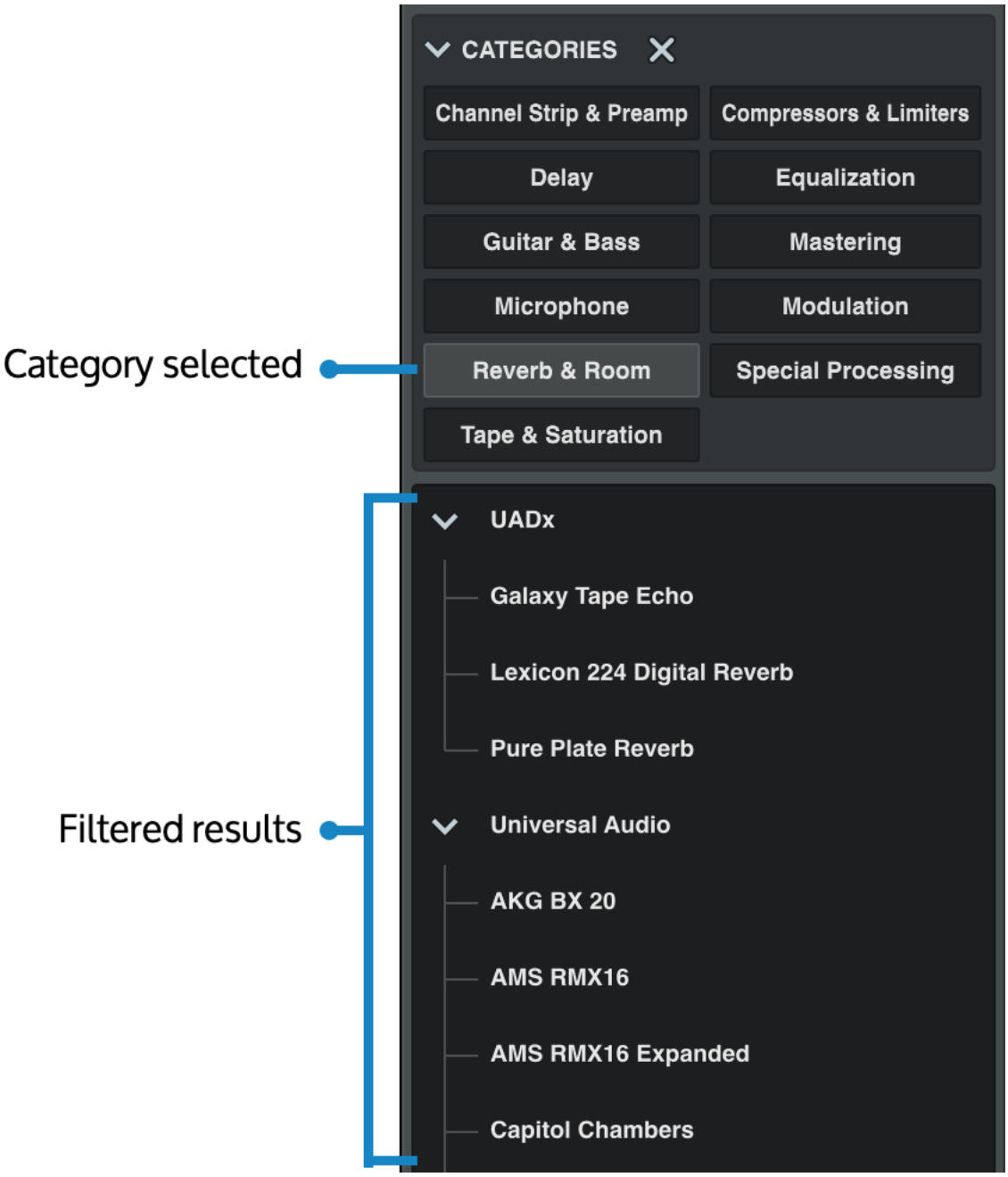
You can add or remove categories from Audio Units plug-ins (many popular plug-ins have already been categorized). UADx and UAD-2 plug-ins are pre-categorized and those categories cannot be changed.

Categories are displayed by default. To see a plug-in category, expand the Categories area above the list of plug-ins. To close or expand plug-in categories, click on Categories.




To filter the list of plug-ins

- Under the list of Categories, choose a category. The list of plug-ins is filtered by that category.

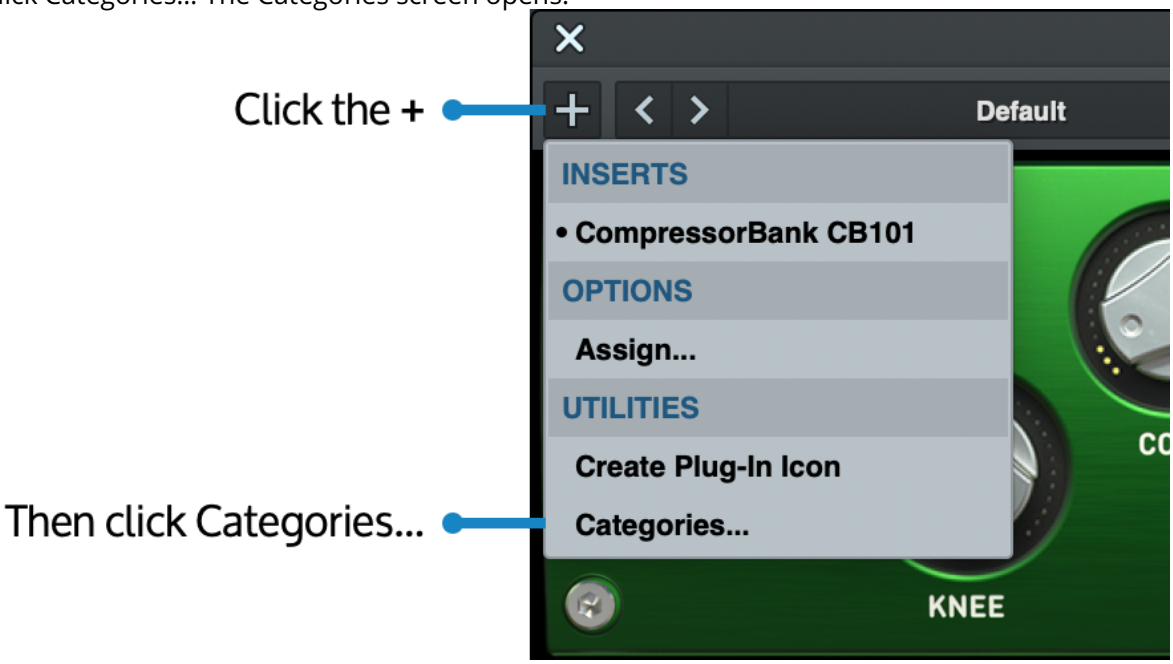



To stop filtering the list, click the **X** next to Categories.

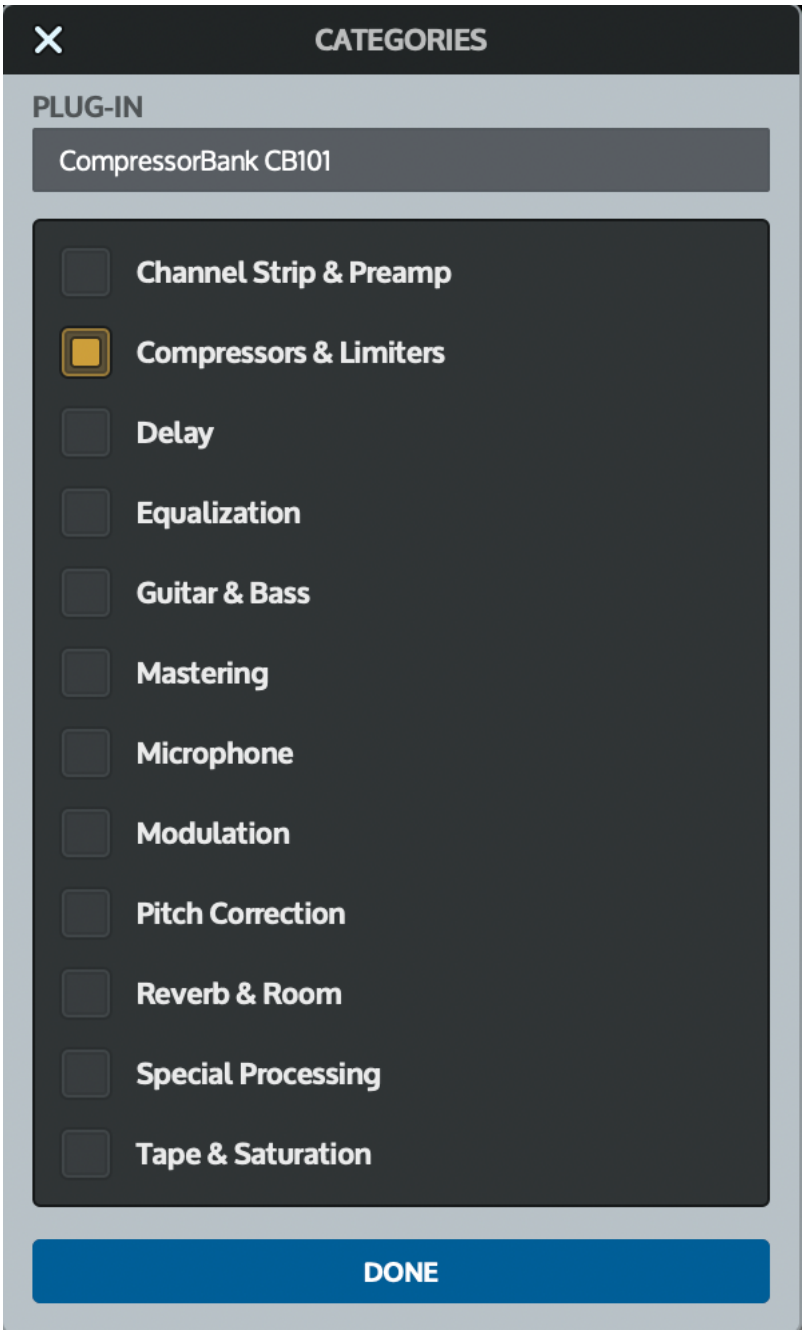
You can select multiple categories by Command-clicking. Note that this will show all plug-ins that match any of the selected categories.

To categorize Audio Units plug-ins

1. Add an Audio Units plug-in to an insert. After the plug-in window opens, click the plus symbol (**+**) near the upper left corner.
2. Click Categories... The Categories screen opens.




3. On the Categories screen, select the category or categories in which the plug-in belongs. You can click categories to select them, and click again to clear them. A plug-in can be listed in multiple categories.

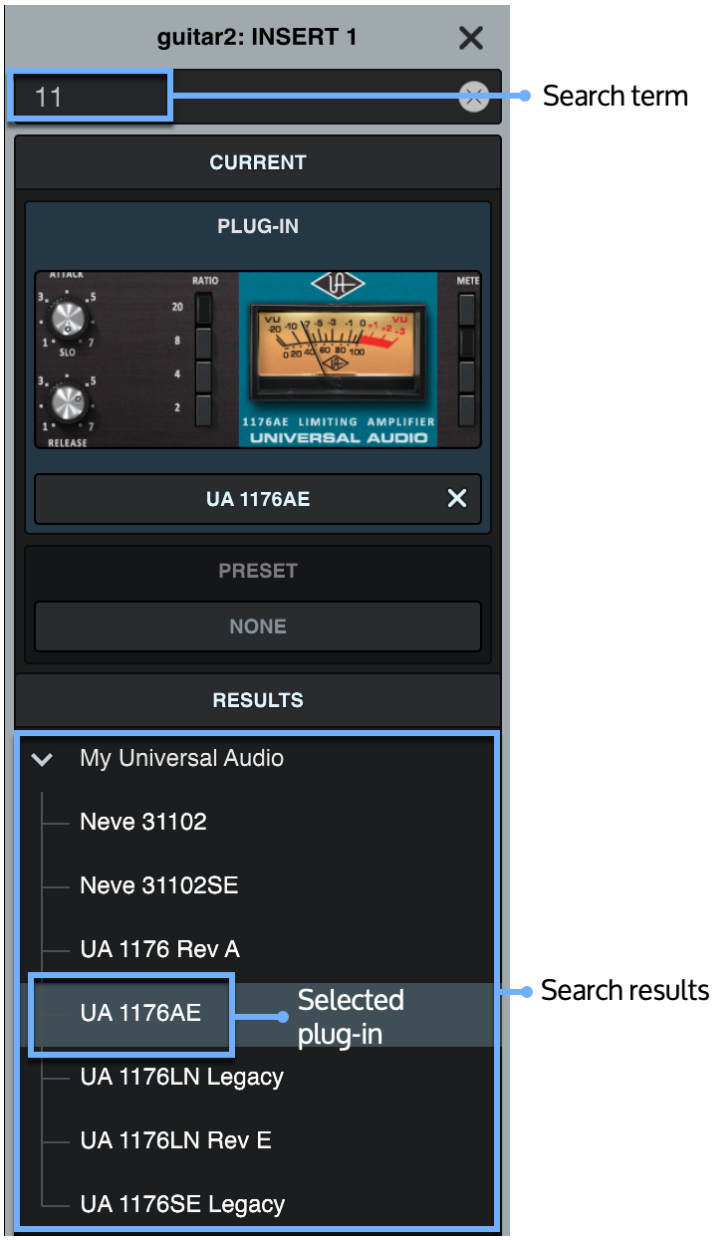



4. Click Done when you have finished assigning categories.

## SEARCHING FOR PLUG-INS

You can easily search for and choose plug-ins in the plug-ins browser. To search for a plug-in, after you click on an insert to open the plug-in browser, begin typing. As you type the browser shows the search results.

You can navigate through the list of plug-ins and apply plug-ins using the up and down arrow keys.




## HIDING, SHOWING, AND CLOSING PLUG-IN WINDOWS

When one or more plug-ins are open in LUNA, you can use key commands to hide or close them.

- To hide all floating windows, press Shift+W. This temporarily closes all floating windows (plug-ins, cue outputs, and others). You can restore these hidden windows by pressing Shift+W again. When you hide windows, then open a new window (for example, when adding another insert plug-in), any previously hidden windows reappear.
- To close windows, press Command+W. This closes the topmost floating window. Press Command+W repeatedly to close additional floating windows.

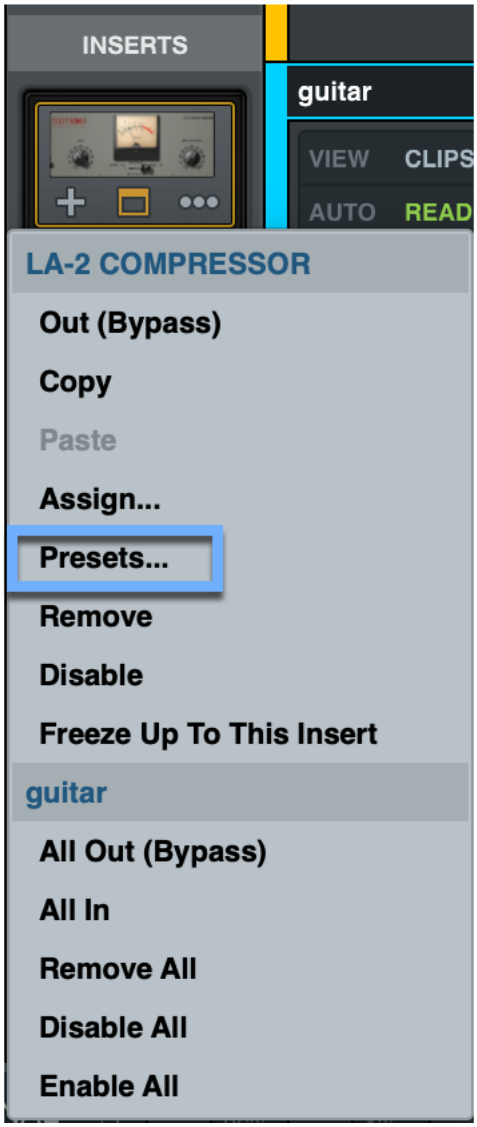
## USING PLUG-IN PRESETS

Plug-in presets are selected and saved using the Presets Browser.  You can favorite presets, filter presets by categories, search presets by name, and set a default preset that is loaded each time you instantiate a plug-in.

**Note:** You use the same plug-in presets with UAD plug-ins in Standard, Record FX, or Unison inserts, and they function identically. UADx plug-ins have their own presets.

To apply a plug-in preset:

1. Click Presets on the plug-in title bar, or on the plug-in icon in the Insert rack, click ••• and choose Presets... The Presets Focus Browser opens.
2. Click a preset to select it.




You can use the Up and Down arrows to navigate through presets. To search for a preset, click next to the magnifying glass at the top of the browser, and begin typing.

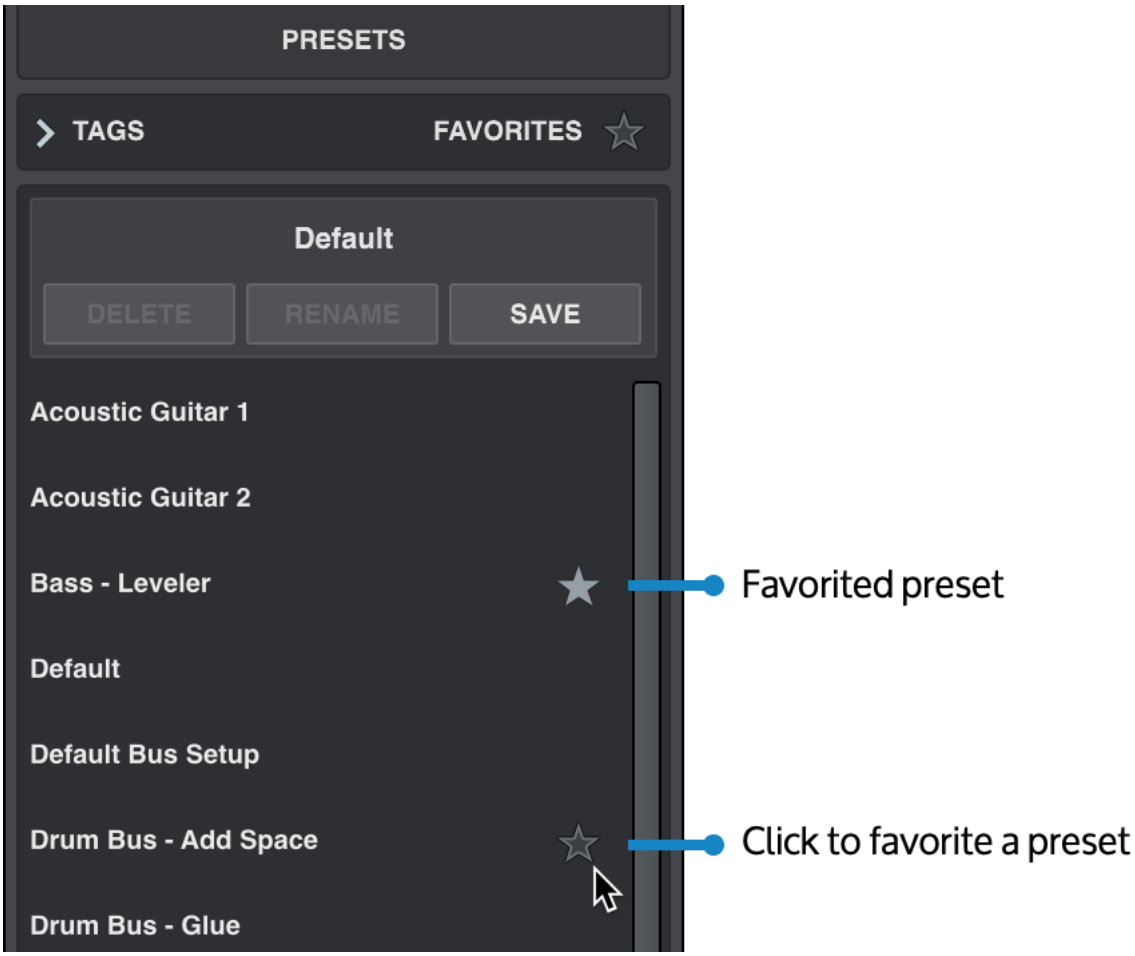
To save a plug-in preset:

1. Select a preset from the Preset Focus Browser.
2. Make changes to the plug-in as required.
3. Click Save. The Save Preset As dialog opens.
4. Click Save to save the changes to the existing preset, or type a name for the preset to save a new preset, then click Save.

You can delete or rename presets that you have created. If you save changes to a system preset, the preset is saved as a User preset with the same name.

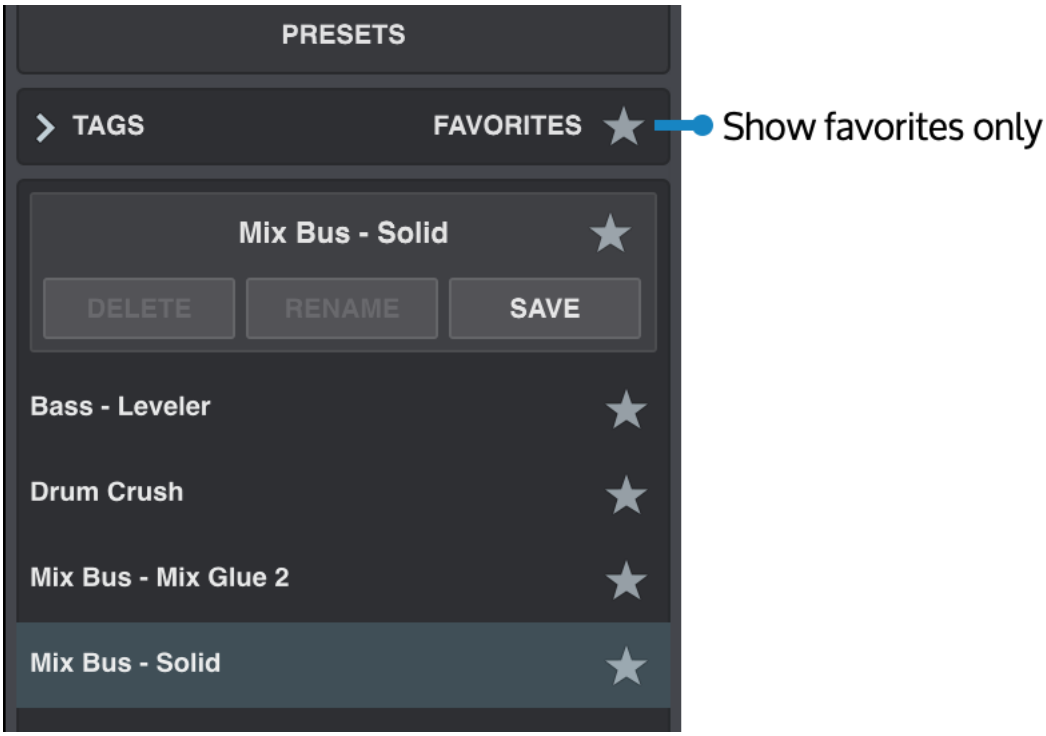
To favorite a plug-in preset:

1. Click the preset name on the plug-in title bar, or on the plug-in icon in the Insert rack, click •••, and choose Presets...
   The Presets Browser opens.
2. Click the star to the right of a preset name to favorite or unfavorite a preset.




To show only favorite presets:

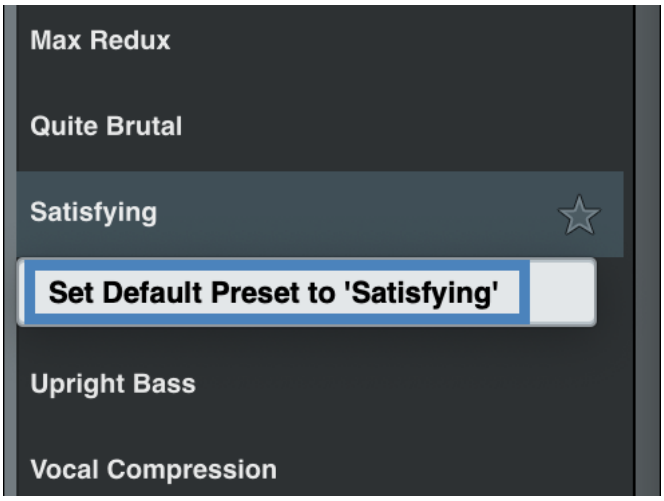
1. Click the preset name on the plug-in title bar, or on the plug-in icon in the Insert rack, click •••, and choose Presets...
   The Presets Browser opens.
2. Click Favorites under Presets. When Favorites is highlighted, only favorited presets are shown.




To set a default plug-in preset:

1. Select a preset from the Preset Browser.
2. Right-click or Control-click on the preset and select Set Default Preset to '*preset*'.

The default preset is now set. When you load the plug-in in the future, this default preset is loaded in the plug-in.



## SHOWING LARGE PLUG-IN ICONS

In the Inserts section, click on the Large View icon to show expanded inserts. This shows icons that represent the plug-ins loaded in the inserts.

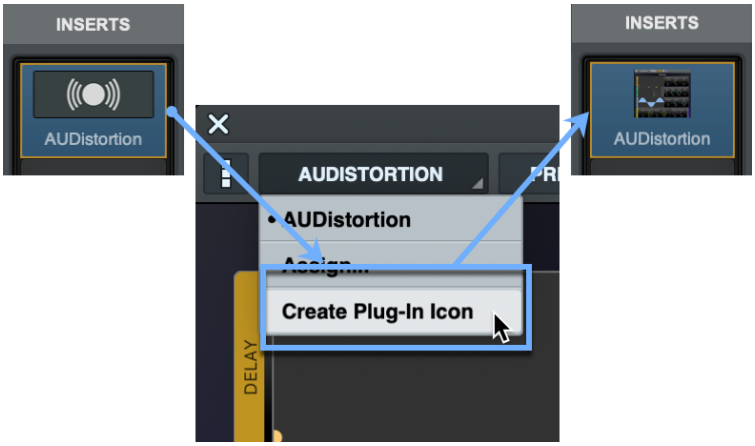
## ADDING AN ICON FOR A PLUG-IN

By default, third-party Audio Units insert, MIDI FX, and instrument plug-ins have a generic icon. You can add a plug-in icon at any time. The plug-in icon takes a snapshot of the current user interface of the plug-in.

To create a plug-in icon:

1. Click on a plug-in in an Instrument, MIDI FX, or Insert row in Mixer View or on a Focus track.
2. Arrange the window of the plug-in as you would like it to appear in the icon.
3. Click the plug-in Name bar at the top of the plug-in window, and choose Create Plug-In Icon.

The icon is created from the current plug-in window.



### RESIZING UAD PLUG-INS

Most UAD-2 and all Native UAD plug-ins can be resized. Plug-ins are resized system-wide, per plug-in. When you resize a plug-in, that resize level is shared immediately between all instances of that plug-in, and all plug-in formats, in all DAWs on your system. The resize setting is shared between AAX, VST3, and Audio Units formats.

The menu command Apply to All allows you to immediately apply the current plug-in's resize level to all native plug-in titles.

When you resize a plug-in, the plug-in window, toolbar, preset browser, and help windows are all resized.

**Note:** Some DAWs limit the maximum window size for plug-ins at certain screen resolutions. If your DAW does not support a selected plug-in size, the previously selected size remains selected.

To resize a UAD plug-in

1. Click the ••• in the toolbar above the plug-in's controls.
2. Choose a resize level, from 75–200%.

The native UAD plug-in is resized system-wide.

To resize all UAD plug-ins

1. Click the ••• in the toolbar above the plug-in's controls.
2. Choose a resize level, from 75–200%.
3. From the same menu, choose Apply to All.

All UAD plug-ins are resized system-wide.

To reset all UAD plug-ins to the default size

1. Click the ••• in the toolbar above the plug-in's controls.
2. Choose the 100% option.
3. From the same menu, choose Apply to All.

All UAD plug-ins are resized to their original size, system-wide.

---

## Converting Between Native and DSP Plug-Ins

If you are using LUNA in Apollo mode, LUNA can convert between native (UADx) and DSP (UAD-2) versions of available plug-ins, seamlessly. You do not need to configure anything to use this functionality; simply insert UADx plug-ins on tracks as you usually do. If LUNA needs to convert to a UAD-2 version of the plug-in when the track goes into ARM mode, the UAD-2 version of the plug-in is loaded automatically. When you take the track out of ARM mode, the plug-in converts back to Native (UADx) mode.

**Note:** You can only convert a plug-in between DSP (UAD-2) and native (UADx) when the track on which the plug-in is inserted is not in ARM mode. To use a UADx plug-in on a record-enabled or input-enabled track in LUNA, disable ARM mode or switch LUNA to Core Audio mode.

## TO CONVERT A SINGLE UAD PLUG-IN TO NATIVE OR DSP

1. Insert a UAD-2 or UADx plug-in in a standard insert in LUNA. Note that you cannot insert a UADx plug-in in a Record FX or Unison insert, which are reserved for UAD-2 plug-ins.
2. Click the plus symbol (**+**) on the left of the plug-in control bar.
3. Under Processing, choose UADx or UAD-2.

## TO CONVERT ALL AVAILABLE UAD PLUG-INS TO NATIVE OR DSP

- From the LUNA menus, choose Mixing > Convert UAD-2 Plug-Ins to UADx, or Mixing > Convert UADx Plug-Ins to UAD-2.

# Bypassing processing

You can easily bypass processing of LUNA Extensions, insert plug-ins, or both. On the Monitor strip, under the Bypass section, click Extensions, Inserts, or All Processing to bypass those items. When a processor is bypassed, the button for the bypassed item flashes.

Click the button for the bypassed item again to restore processing.

To view the Monitor section, choose View > Section > Monitor from the LUNA menus.

# Using sends

You can use the send slots to send audio from a track to a bus track, the main output, or any available physical output on your Apollo.  Note that multiple sends can send to the same physical output. They are mixed together before being sent to the physical output.

## ASSIGNING A SEND

Click on the send slot to open a list of send destinations in the Focus Browser on the left, to which you can route the send. Click on the send destination to route the send.

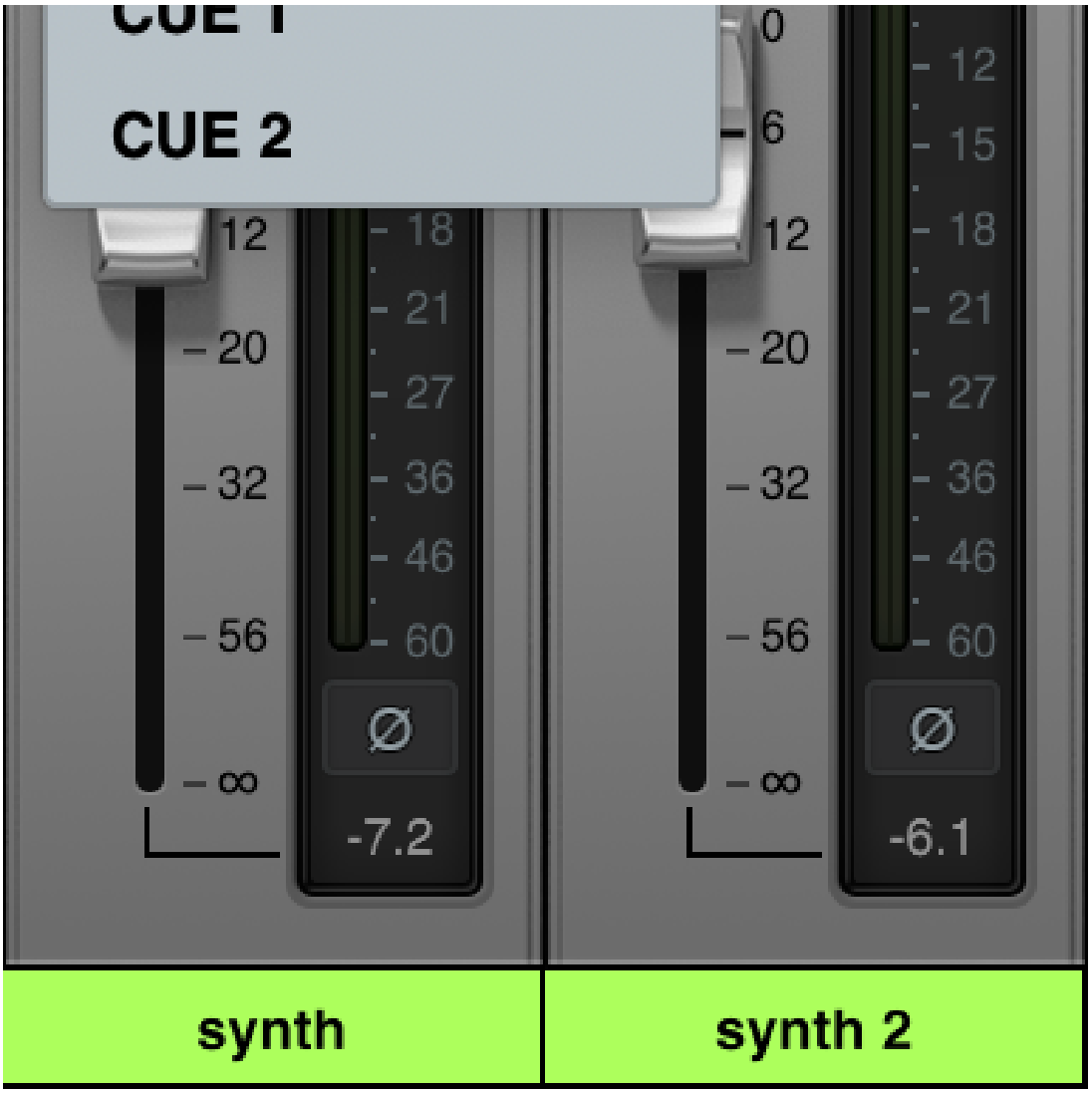
## ASSIGNING A SEND TO MULTIPLE DESTINATIONS

You can also send from a single send slot on a track to multiple buses. To assign a send slot to multiple outputs, click the Send assignment slot, then in the Sends browser, Shift-click or Command-click the outputs to assign. The send is then labeled with “Multiple.”

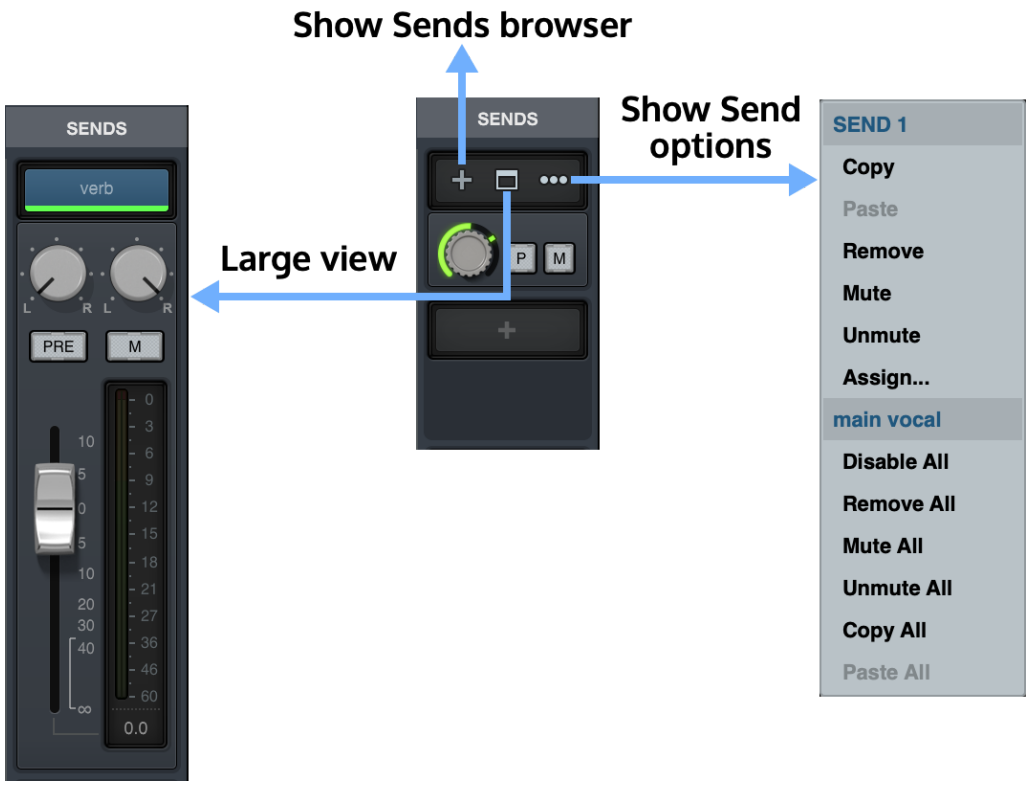
After you add a send, the send appears in the mixer track, with a small set of send controls displayed. These include the Send level, the Pre-fader button (P), and the Mute button (M).

To use sends:

- Expand the Sends row in Mixer View, or on a Focus track in Timeline view.
- Turn the Send knob to control the level of audio that you want to send to the destination. You can double-click the Send knob to type a value. When audio is playing on the track, the Send knob indicates the audio level on the track with a circular meter.
- Click the Pre button (P) to route audio to the send destination before the channel's main fader level. When audio is routed pre-fader, audio is sent from the disk to the destination regardless of the setting of the channel's fader and mute status. If audio is not routed to the send pre-fader, then if the channel is muted no audio is sent, and gain changes on the channel fader do affect the send.
- Click the Mute button (M) to mute audio to the send.
- To copy the main mix to a send, in Mixer view, right-click on a track's Pan knob or volume fader, and choose the send to which you want to copy the mix.



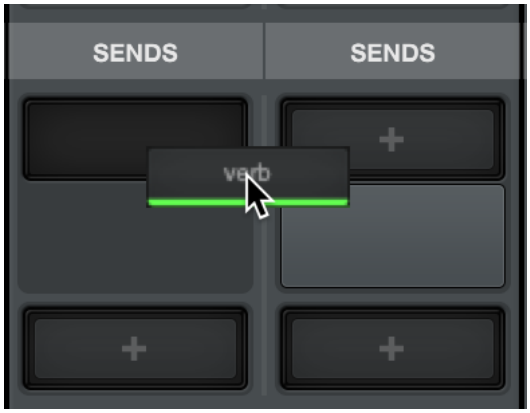

Hover your mouse over a send on a track to access send options.



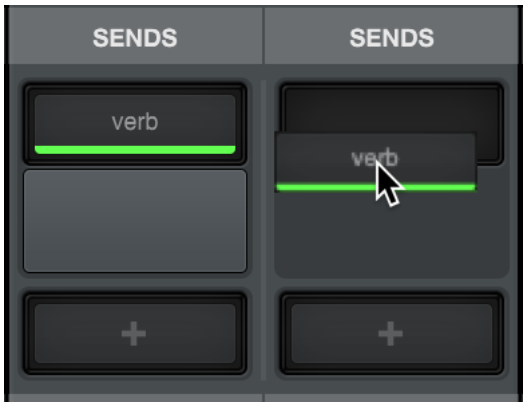

Click the Large view box to to expand all sends in the selected slot in the LUNA mixer. You can also click the Large View icon on the left of the mixer window. Large view shows a Send fader instead of a knob, and also shows the Pan control or controls for the send. Use the Pan control or controls to pan the audio when routed to a stereo destination.

Dragging, dropping, and disabling sends

- Drag and drop a send from one track to another to move the send assignment, level, and pan information to a different track.




- Option-click and drag and drop a send to copy that send assignment, level and pan information to a different send track.




- Command-click a send to disable it.

Copying all sends on a channel

Right-click at the top of the Sends row on a track, and select Copy All to copy all send assignments from a track. You can then right-click at the top of the Sends row on another track and select Paste All from "*source*" to paste the sends from the track.

# Using cues

Use cue mix buses to create up to four custom stereo mixes that are separate from the main monitor mix. You can use cue mixes:

- To send performers a headphone monitoring mix that is different from the main monitor mix, or a mix of the Main track and other channels.
- To send separate mixes to other rooms or audio equipment.
- Any time you want to send an alternate mix to another destination.

## TO USE CUE MIXES:

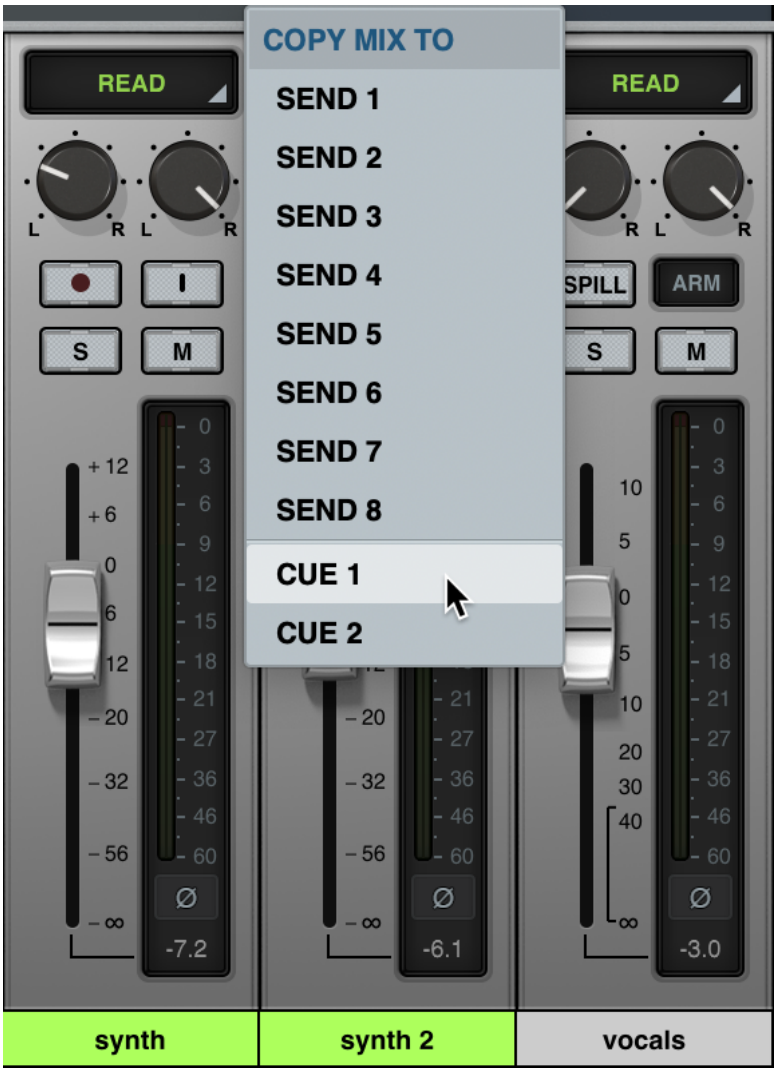
- Expand the Cues row in Mixer View, or on a Focus track in Timeline view.
- Turn the Cue level knob to control the level of audio that you want to send to the cue destination. You can double-click the Cue level knob to type a value. When audio is playing on the track, the Cue leve knob indicates the audio level on the track with a circular meter.
- Click the Pre button (P) to route audio to the cue destination before the channel's main fader level. When audio is routed pre-fader, audio is sent from the disk to the destination regardless of the setting of the channel's fader and mute status. If audio is not routed to the cue pre-fader, then if the channel is muted no audio is sent, and level changes on the channel fader do affect the send.
- Click the Mute button (M) to mute audio to the cue.

Click the Large view icon to expand the cues in a selected slot in the LUNA mixer. Large view shows a Cue fader instead of a level knob, and also shows the Pan control for the cue. Use the Pan control to pan the cue mix when routed to a stereo destination.

The cues that are displayed and available are dependent on your Apollo hardware. You can configure the number of available Cues in LUNA Settings > Hardware panel > Cue Bus Count.

## TO COPY THE MIX TO A CUE:

1. In Mixer View, right-click on a pan knob or a volume fader.
2. Choose the Cue to which you want to copy the mix.

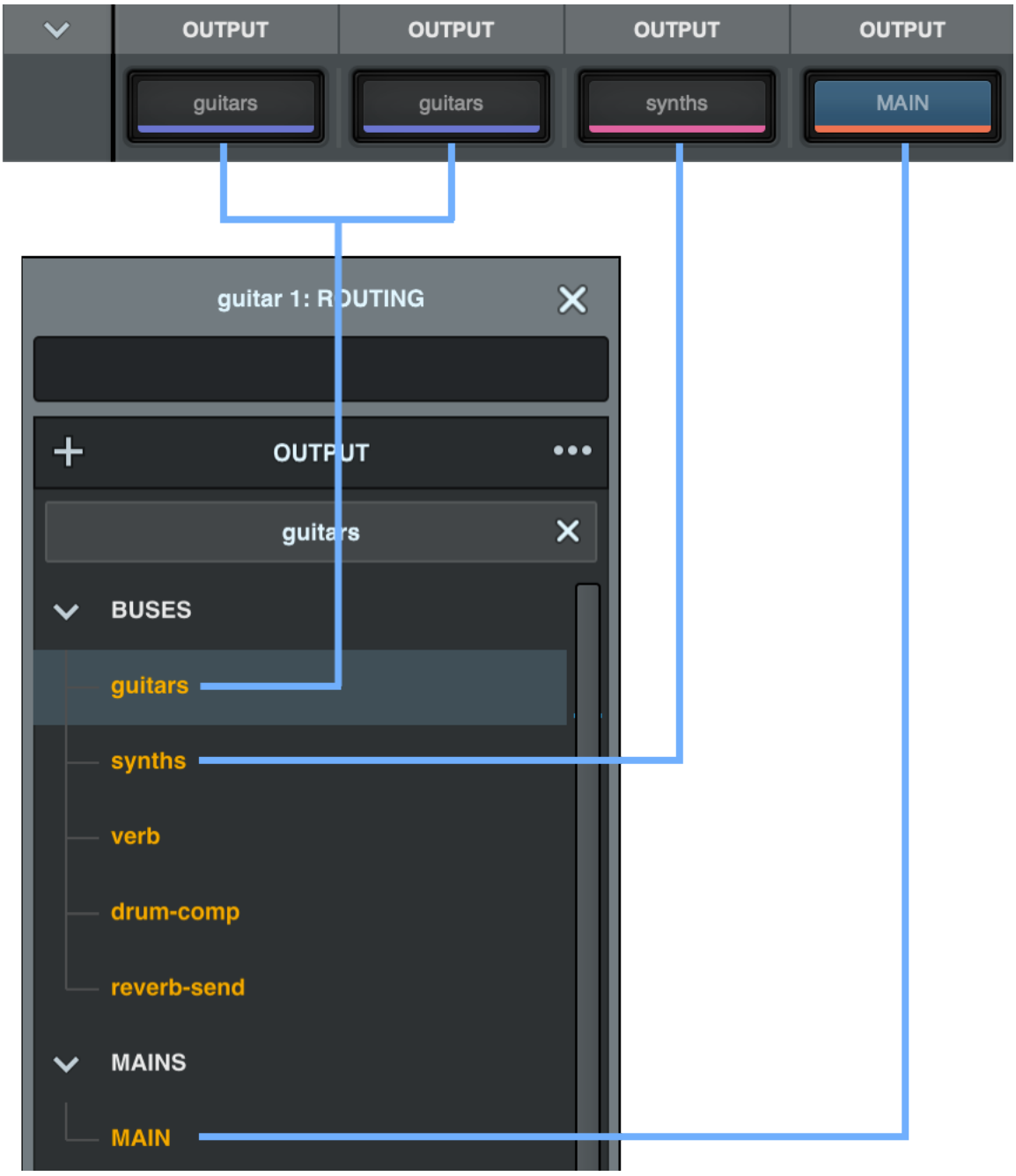



## Changing track output

You can change the track output, for example, to send a track's output directly to a hardware output, or to route a track's output to a bus.

### TO CHANGE THE TRACK OUTPUT:

1. Scroll to the Output row in the Mixer, or on the Focus channel.
2. Click the Output for the track.
3. In the track Output browser, select the output. You can route a track's output to Main, an Aux, or a hardware or virtual output or output pair.




## ASSIGNING A TRACK OUTPUT TO MULTIPLE DESTINATIONS

You can assign the output of a track to multiple destinations. To assign an output to multiple destinations, click the output assignment slot, then in the Output browser, Shift-click or Command-click the outputs to assign. The output is then labeled with “Multiple.”

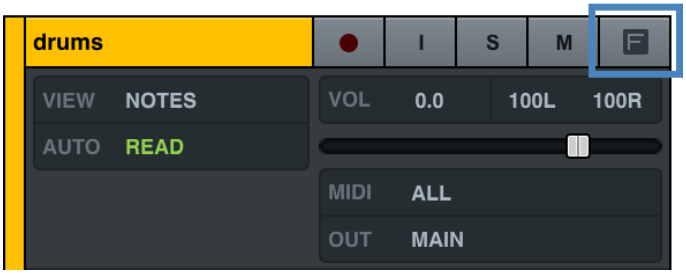
# Using Track Freeze

Track Freeze allows you to freeze audio, instrument, and bus tracks as audio in their current state with all plug-ins and extensions applied, to reduce system processing requirements. Once frozen, tracks can be easily “unfrozen” so changes can be made to the source material, plug-ins, and extensions.

## Freezing Tracks

### TRACK FREEZE QUICK START

- In Timeline view, click the F button in the track controls to freeze a track.



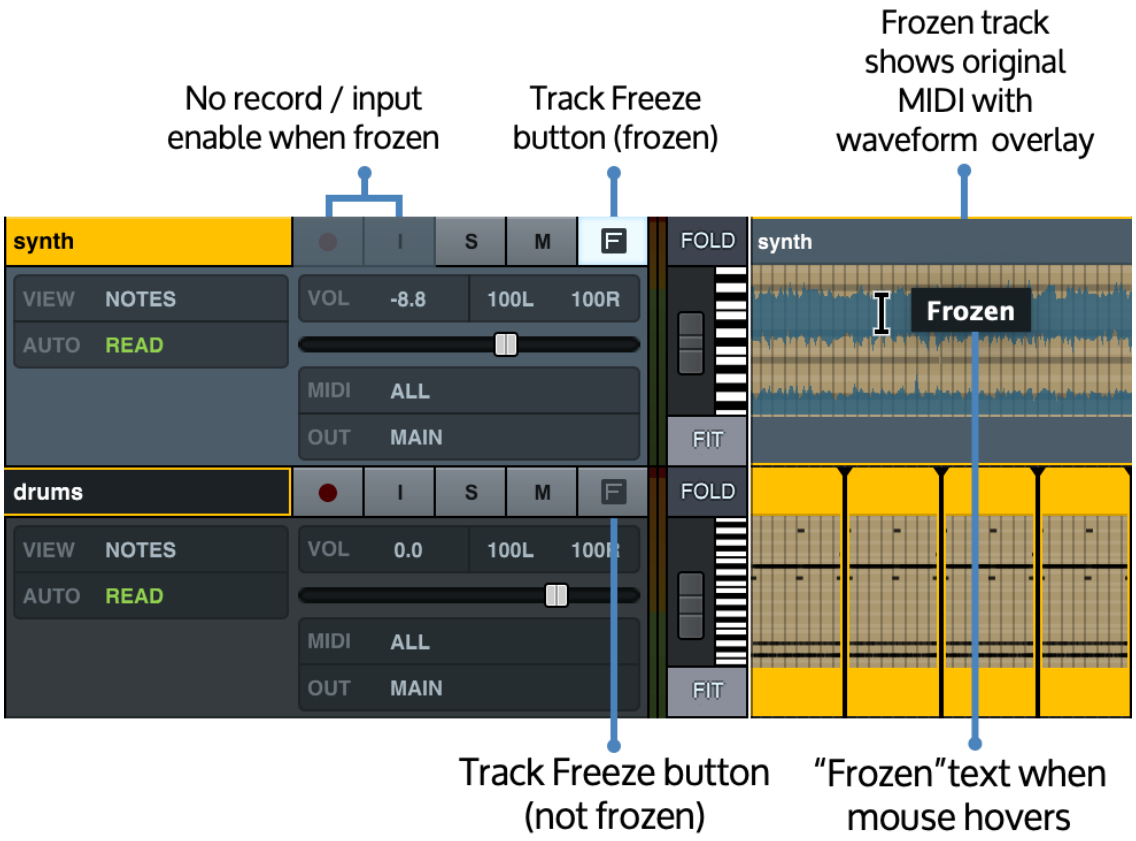

The track is frozen, indicated by the highlighted F on the track controls and the grayed out appearance of the track and any plug-ins or extensions.

The track now plays back as audio with all instruments recorded to audio, and all track processing applied. Audio and MIDI data on the track appears grayed out, and when you hover your mouse over the track, the text “Frozen” appears. You can work with your session as normal; however you cannot edit the track contents, plug-ins or extensions.

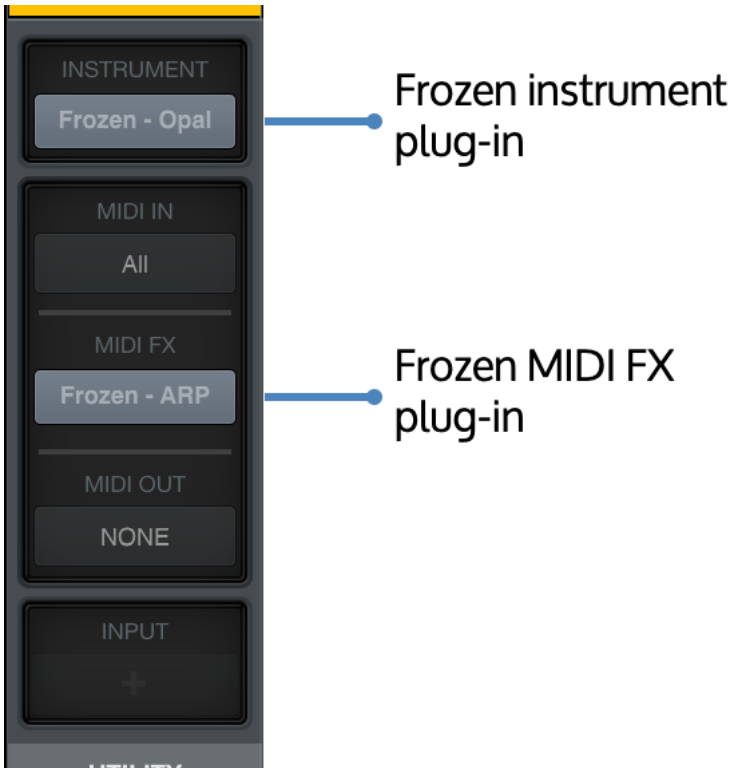
- Click the F again to unfreeze the track.

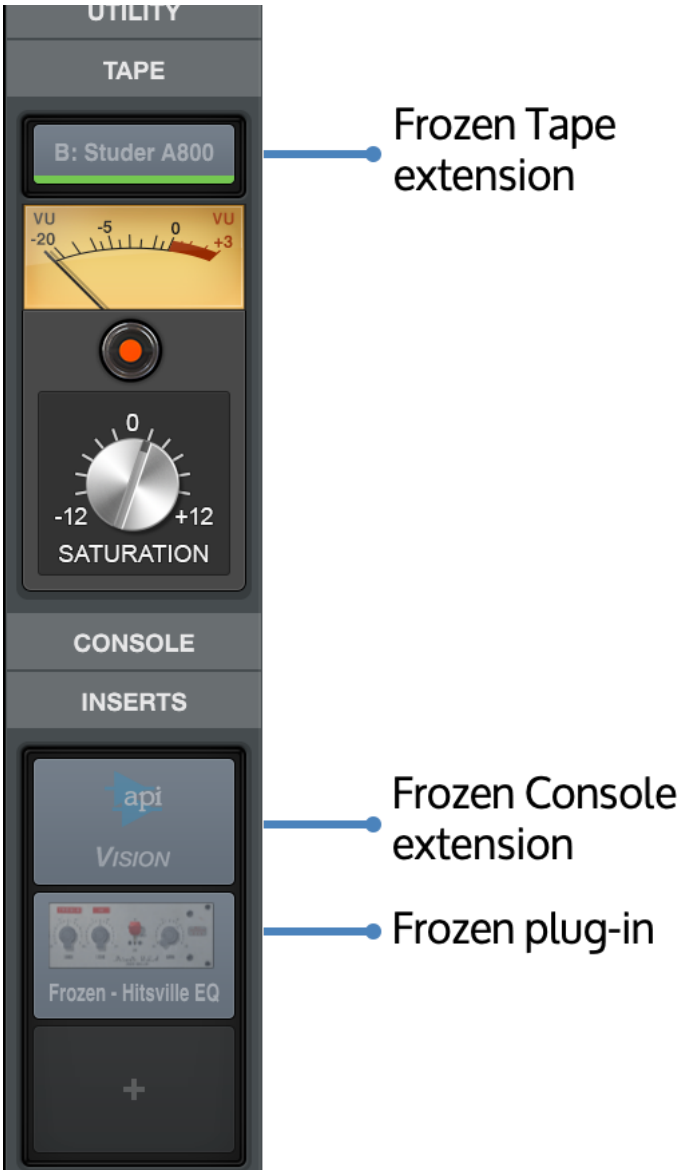
### TRACK FREEZE NOTES

- You can only freeze or unfreeze a track when the transport is stopped.
- If a track has no content on the timeline, the Freeze option is not available.




*A frozen instrument track in the timeline*

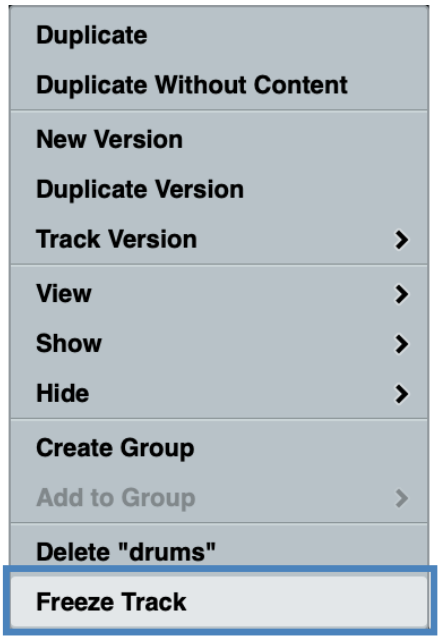





*A frozen instrument track in the mixer/focus channel*

## TO FREEZE AN AUDIO, INSTRUMENT, OR BUS TRACK

- In Timeline view, click the F on the track controls to freeze the track, or
- In either Timeline or Mixer view, right-click or Control-click on the track name and choose Freeze Track.




## TO UNFREEZE A FROZEN TRACK

- In the Timeline view, click the highlighted F on the track controls to unfreeze the track, or
- In either Timeline or Mixer view, right-click or Control-click on the track name and choose Unfreeze Track.

## PARTIALLY FREEZING A TRACK

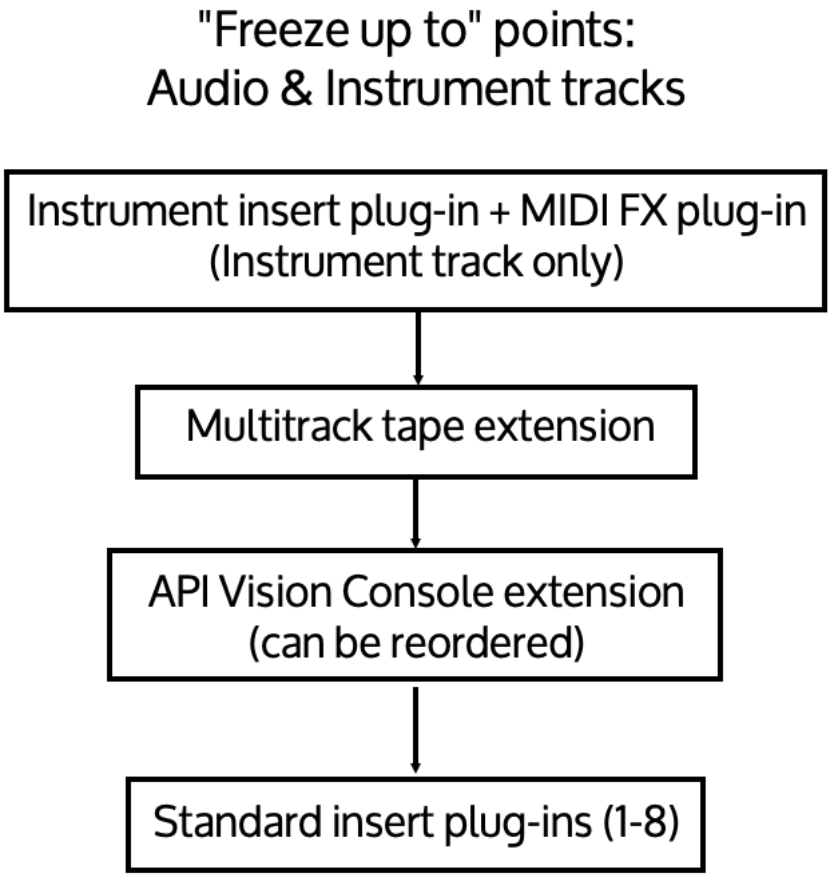
You can freeze a track only up to a certain point in the track processing. The processing follows the flow in the Mixer channel strip. When you freeze up to a specific point, the audio is processed for those instruments, extensions, and plug-ins only. Any extensions or plug-ins that follow the freeze point remain active and continue to process the resulting audio track.

**Note:** You cannot freeze or partially freeze a main track.

### Freeze points on an audio or instrument track

You can freeze at any of the following points on an audio or instrument track:

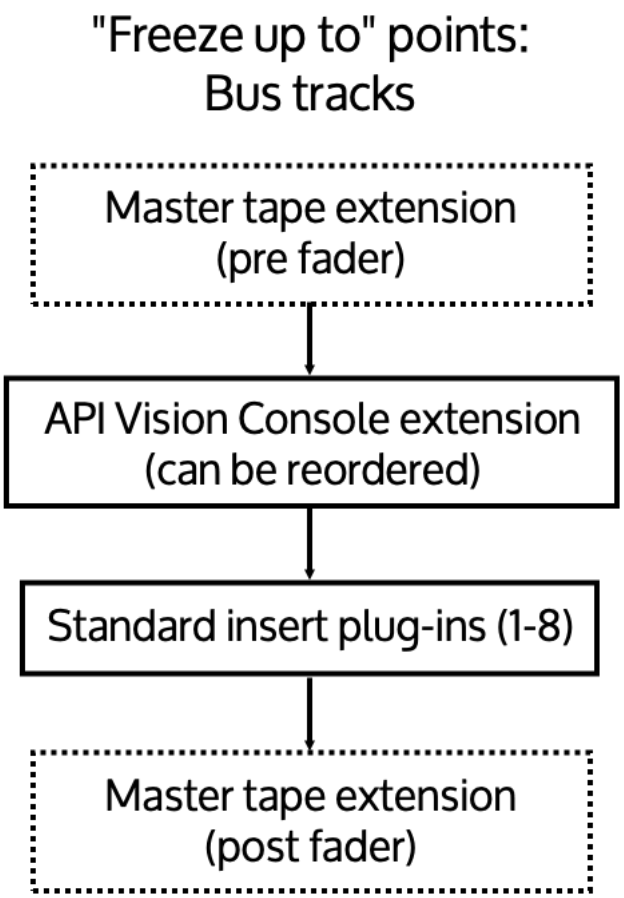
- An instrument plug-in and MIDI FX plug-in if inserted (instrument track only)
- A multitrack tape extension
- The API Vision Console extension (which can be ordered before standard insert plug-ins, or in any standard insert plug-in position)
- Any of the standard insert plug-ins 1-8




Freeze points on a bus track

You can freeze at any of the following points on a bus track:

- The master tape extension (if configured pre fader)
- The API Vision Console extension (which can be ordered before standard insert plug-ins, or in any standard insert plug-in position)
- Any of the standard insert plug-ins 1-8
- The master tape extension (if configured post fader)




TO FREEZE UP TO A SPECIFIC POINT ON AN AUDIO, INSTRUMENT, OR BUS TRACK

1. In the Mixer view or in the Focus channel, find the point at which you want to freeze the track.
2. Click ••• to view the options menu for that item.
3. Choose Freeze Up To This Insert.

The track is frozen up to the selected insert point. Frozen audio clips appear on the timeline for all audio sections. All frozen plug-ins, instruments, and extensions are grayed out and uneditable. Plug-ins and extensions beyond the freeze point can still be edited.

### FREEZING MULTIPLE TRACKS WITH TRACK GROUPS OR SELECTION GROUPS

When you apply a freeze or unfreeze operation with multiple tracks selected in a track group or with a selection group, all selected or grouped tracks are frozen or unfrozen.

**Note:** Track Freeze is controlled by the Mixing attribute in track groups.

## How Track Freeze affects your tracks

Frozen tracks are rendered as audio tracks and played back as audio by LUNA. If there are silences or spaces in a track, separate clips are rendered only for the audio portions of the track.

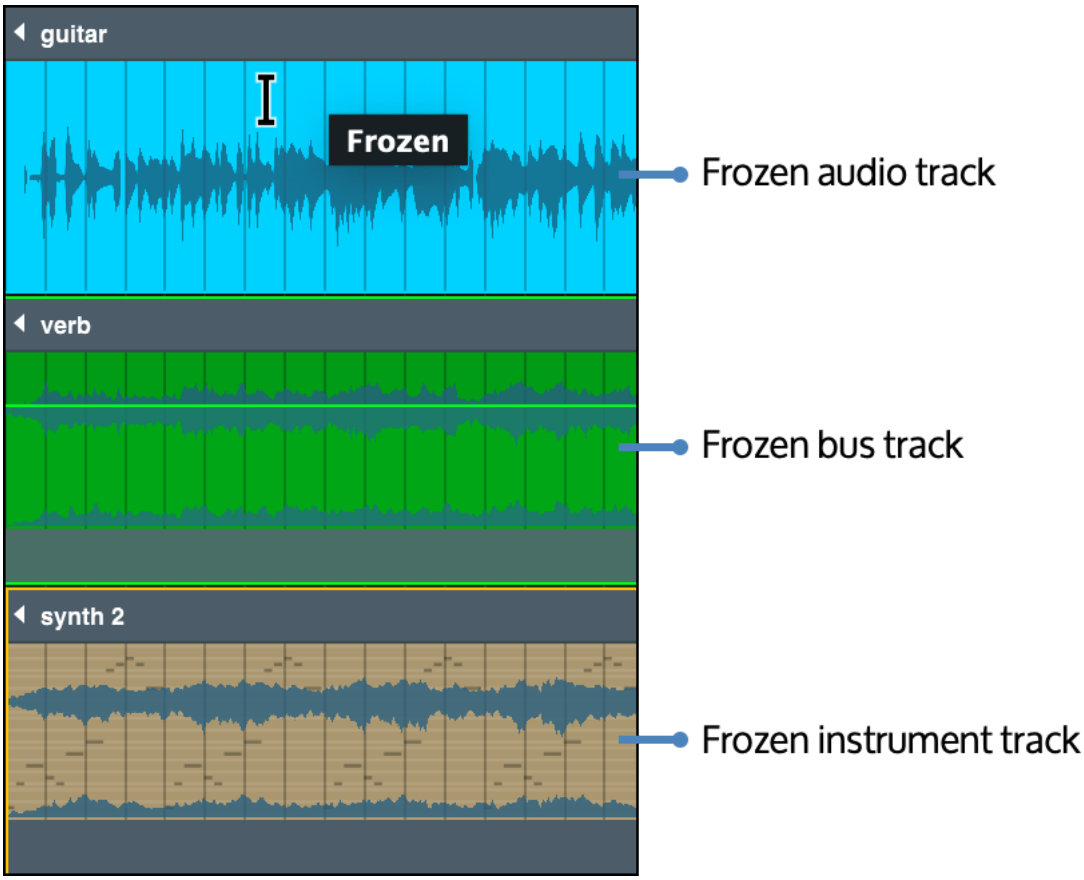
### TIME SIGNATURE AND TEMPO CHANGES

You can change session time signatures and tempos and frozen tracks will follow those changes. Frozen instrument and bus tracks use the Polyphonic warp algorithm. On audio tracks that have been frozen, you can change the warp algorithm. You cannot change the warp algorithm on a frozen instrument or bus track.

### FROZEN TRACK APPEARANCE

In the Timeline view, frozen tracks appear as grayed out audio tracks. Instrument tracks show an overlay of the waveform and the MIDI data. When you hover your mouse over a frozen track in the timeline, “Frozen” appears.

Any silent or muted regions of a track are replaced with silence, and not included in the frozen audio clips. Reverb and delay tails are intelligently calculated and included in frozen tracks.




## AVAILABLE FUNCTIONS ON FROZEN TRACKS

In the Timeline and Mixer view, you can adjust the following settings for a frozen track.

- Volume
- Panning
- Solo
- Mute
- Sends, send volume, send mutes, send panning, and send pre/post routing (note that sends to a frozen bus are also frozen)
- Automation (for parameters that are not frozen)
- Track show/hide
- Track tempo/time signature changes
- Cues, cue volume, cue mutes, pre/post
- Insert plug-ins can be added after any frozen insert plug-ins
- Console and tape extensions can be added if none were on the track when it was frozen, or console/tape extensions were not frozen
- Sidechaining with a frozen track as an audio source, and sidechaining to a an insert-plug-in that is added after any frozen plug-ins

### UNAVAILABLE FUNCTIONS ON FROZEN TRACKS IN TIMELINE VIEW

In the Timeline view, the following functions are unavailable.

- Editing waveform or MIDI data on a track
- Moving, cutting, duplicating, copying, or pasting a clip
- Clip options (clip pitch, clip gain, renaming a clip)
- Trimming or fading a clip
- Record-enable and input-enable buttons
- Track versions
- Converting a track from stereo to mono or mono to stereo

### UNAVAILABLE FUNCTIONS ON FROZEN TRACKS IN MIXER VIEW

In the Mixer view, the following functions are disabled and grayed out for instruments, extensions, and plug-ins that are before or at the freeze point.

- Insert plug-ins that are on the track when frozen
- Instruments
- MIDI FX
- Tape extensions that are on track when frozen
- Summing extensions (note that you can still see metering for frozen summing extensions)
- Console extensions that are on on a track when frozen
- Track inputs
- Record-enable and input-enable buttons
- Trim control in the utility row
- Track conversion (stereo to mono or mono to stereo)

In both Mixer and Timeline views, any View items that cannot be edited or automated are shown in the View browser with an F, and you cannot edit or automate these items.

# Sidechaining in LUNA

Sidechaining allows you to use the audio output from one track to key, or trigger, an effect such as a compressor on another track. Sidechaining is generally used with compression, but any processor (typically a dynamically-triggered processor) that supports sidechaining can be used. For example, a gate can be

triggered to silence a tom channel when the snare is hit, or an expander can be triggered to bring up room tone on a snare hit.

---

# Sidechain source and destination

Sidechaining uses a source and destination: a source track (the audio source that will trigger the processor), and a destination (the audio processor on a track that will be triggered by the source audio).

- The sidechain source can be any audio, instrument, or bus track, and does not require any plug-ins or extensions. The sidechain source is post-plug-in, post-extension, and pre-fader.
- The sidechain destination is one sidechain-capable plug-in or extension on any audio, instrument, or bus track. It is important to remember that the sidechain source is a track, but the sidechain destination is a plug-in or extension on a track.

Each audio, instrument, and bus track in LUNA has a single sidechain input that can route sidechain audio to a single processor on the track. Sidechain can be configured in the Utility row for the destination track, or in the plug-in or extension (when using API Vision Console LUNA Extensions). Note that the sidechain source track is not heard through the destination track — it is only used to trigger the plug-in or extension to which it is routed.

### BEFORE YOU CONFIGURE A SIDECHAIN:

- A sidechain source track can be any audio track, instrument track, or bus track. The source track must pass audio, or it will not have any functionality.
- The sidechain-capable plug-in or extension on your destination track (for example, an API Vision Console Emulation extension) must be instantiated.

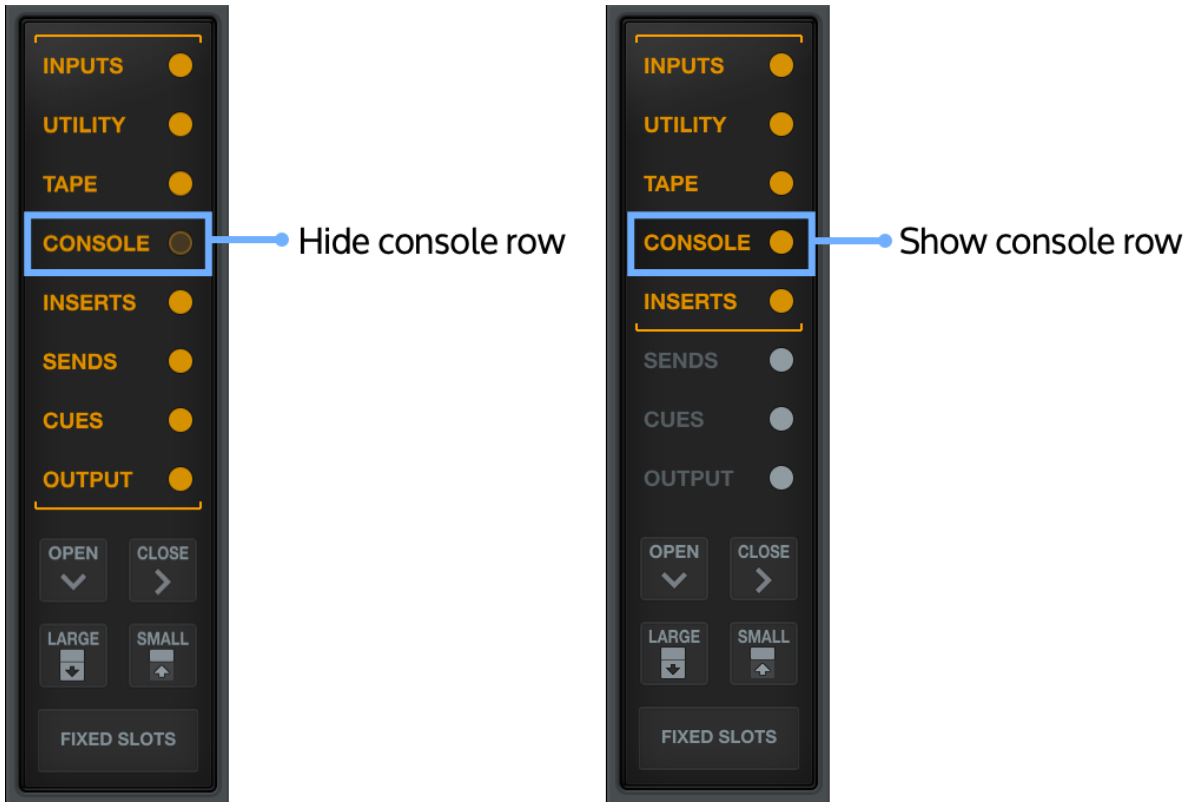
---

# Configuring a sidechain with API Vision Console Emulation

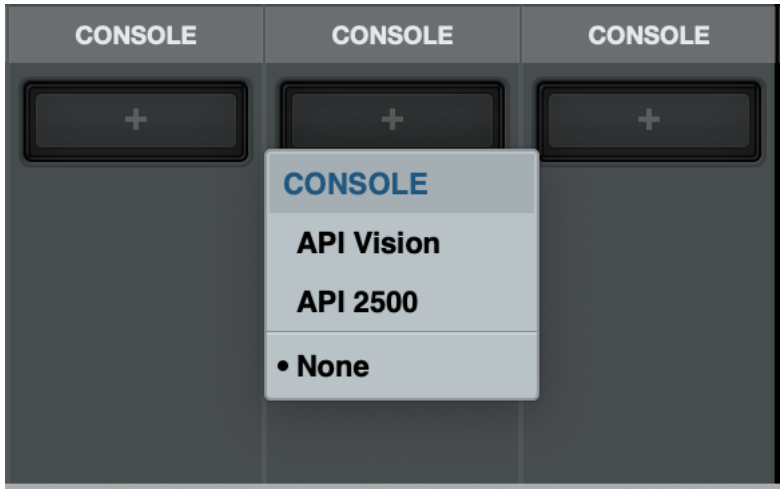
You can simply configure an API Vision Console Emulation LUNA Extension as a sidechain destination from within the extension.

### CONFIGURING AN API VISION CONSOLE EMULATION EXTENSION AS A SIDECHAIN

1. Make sure the Console row is showing in the LUNA mixer.

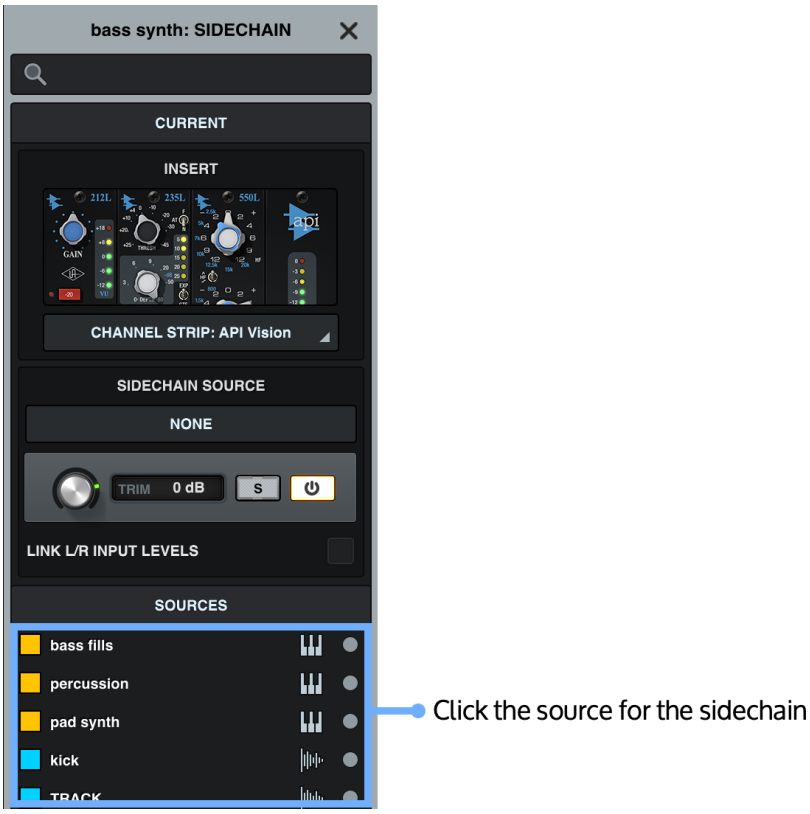



2. Click on the Console row on a track and choose API Vision or API 2500.




   The API Vision Console Extension browser opens.
3. If you are using API Vision channel strip, enable the module you want to use as the sidechain destination (for example, the compressor). On API 2500, you do not need to enable a module, as all processors are enabled.
4. At the top of the extension browser under Sidechain, click Assign.

5. From the Sources list, click the source track.




The sidechain is configured with the source and destination you selected.

# Configuring a sidechain with a native UAD plug-in

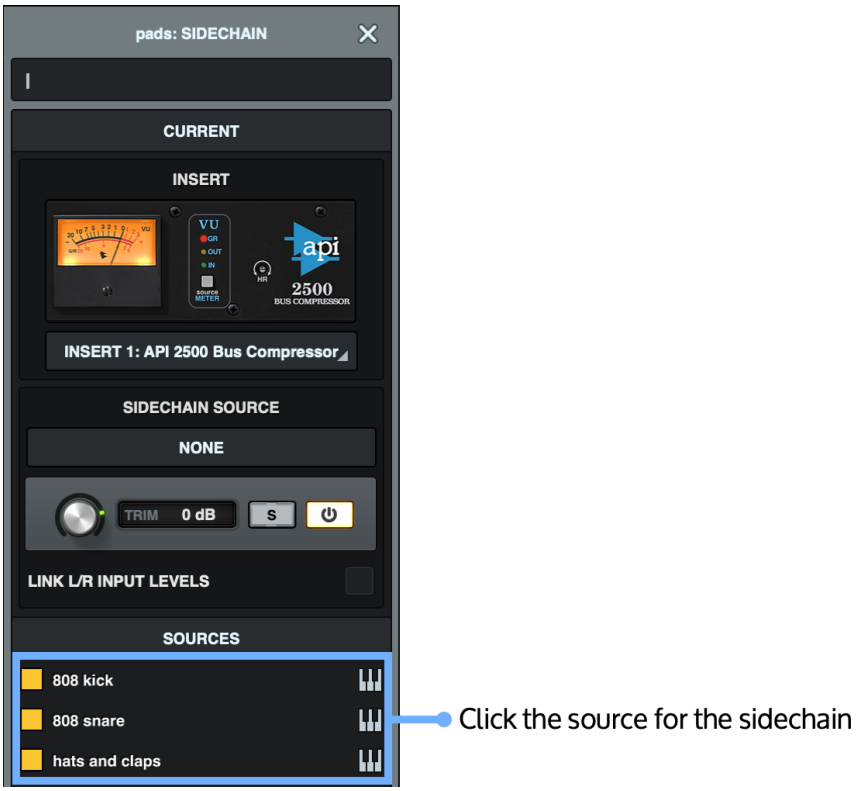
You can configure a sidechain-capable UAD plug-in from within the plug-in.

## CONFIGURING A UAD PLUG-IN AS A SIDECHAIN DESTINATION

1. Instantiate a sidechain-capable plug-in on a track.

2. At the top of the plug-in, click the Sidechain:Assign or SC button.

3. From the Sources list, click the source track.




The sidechain is configured with the source and destination you selected. Configure the plug-in settings to taste.

# Configuring a sidechain with an Audio Units plug-in

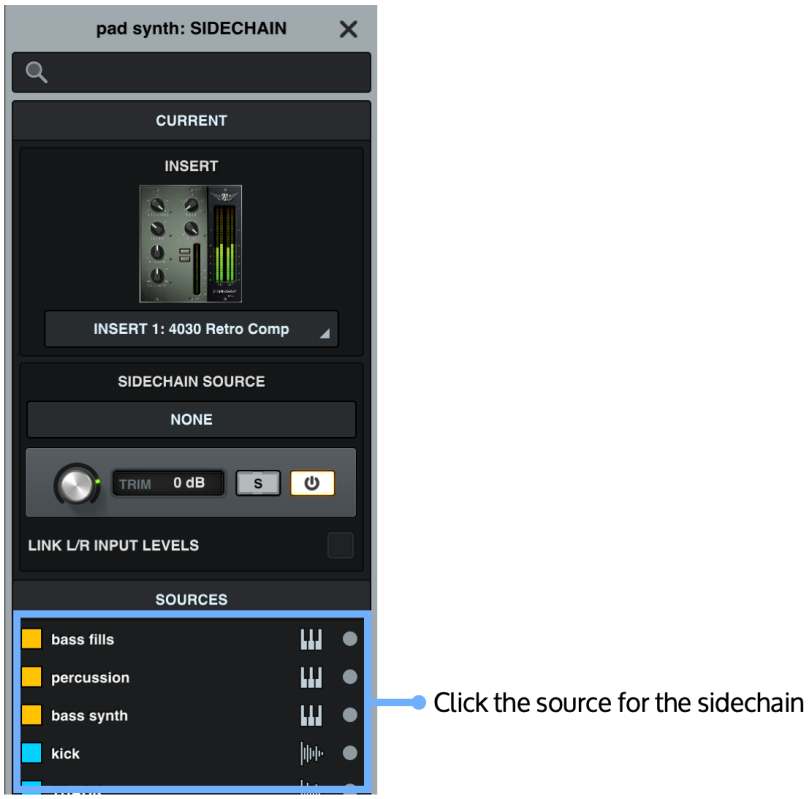
You can configure sidechain-capable Audio Units plug-ins from within the plug-ins.

## CONFIGURING AN AUDIO UNITS PLUG-IN AS A SIDECHAIN DESTINATION

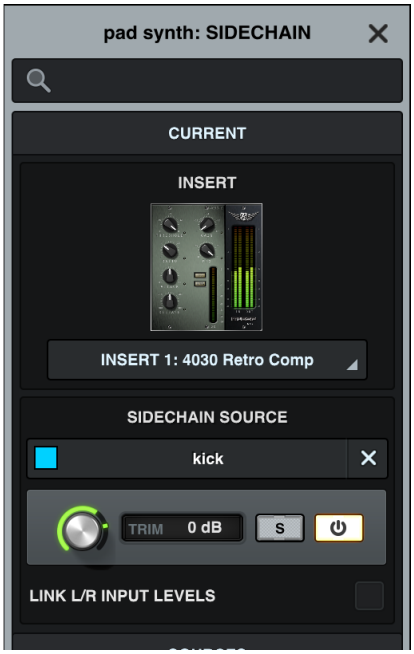
1. Instantiate a sidechain-capable plug-in on a track.

2. At the top of the plug-in, click the Sidechain Enable, Sidechain, or SC button.

3. From the Sources list, click the source track.




The sidechain is configured with the source and destination you selected.



Configure the plug-in to respond to key or sidechain input. The process for configuring a plug-in to “listen” to the sidechain input varies. See the example below.

Click the button that enables key/sidechain input for the plug-in

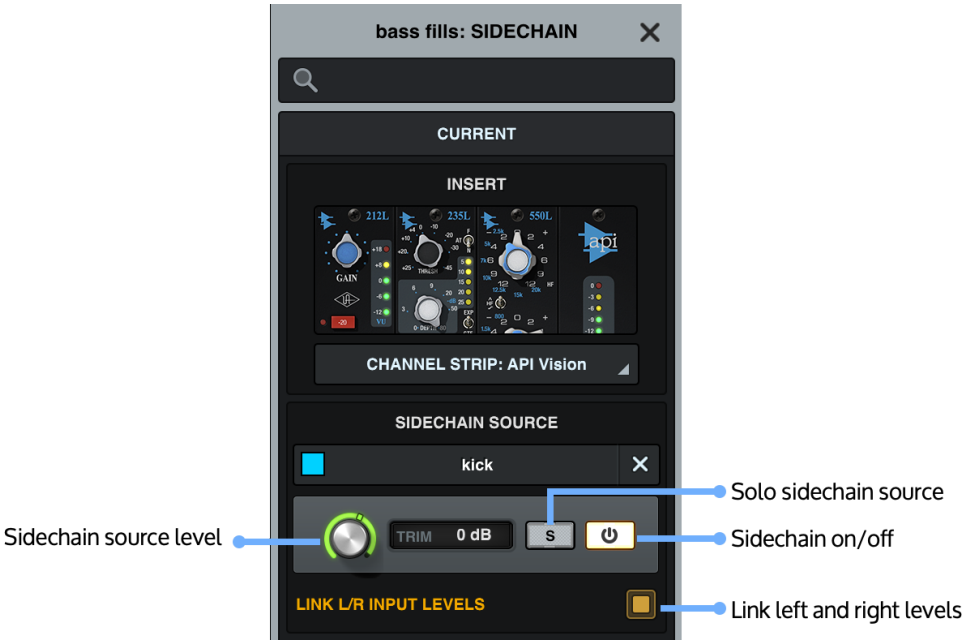
Different plug-ins use different methods to enable the key or sidechain input, as shown below.

Sidechain input enabled

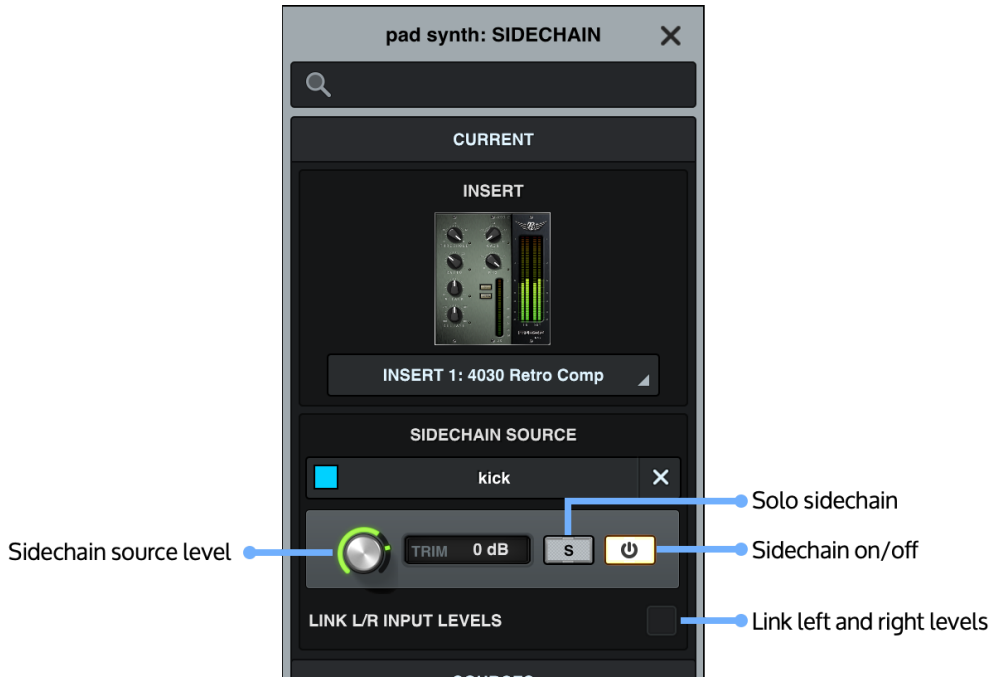
## CONFIGURING SIDECHAIN OPTIONS

After you configure the sidechain source and destination, the sidechain configuration appears in the sidechain browser. In the sidechain browser, you can change the configuration.

1. If desired, use the trim knob to adjust the key trigger level from the sidechain source.
2. To hear the sidechain source, click the solo button.
3. To enable or disable the sidechain, click the power button.
4. With a stereo sidechain destination, you can optionally link the left and right input levels from the sidechain source by checking the Link L/R input levels box.
   **Tip:** Stereo link allows you to apply the stereo sidechain signal to both channels of the destination processor equally when the source levels vary (so, for example, the stereo panorama doesn't shift).




*Sidechain options with a LUNA Extension*




*Sidechain options with a plug-in*

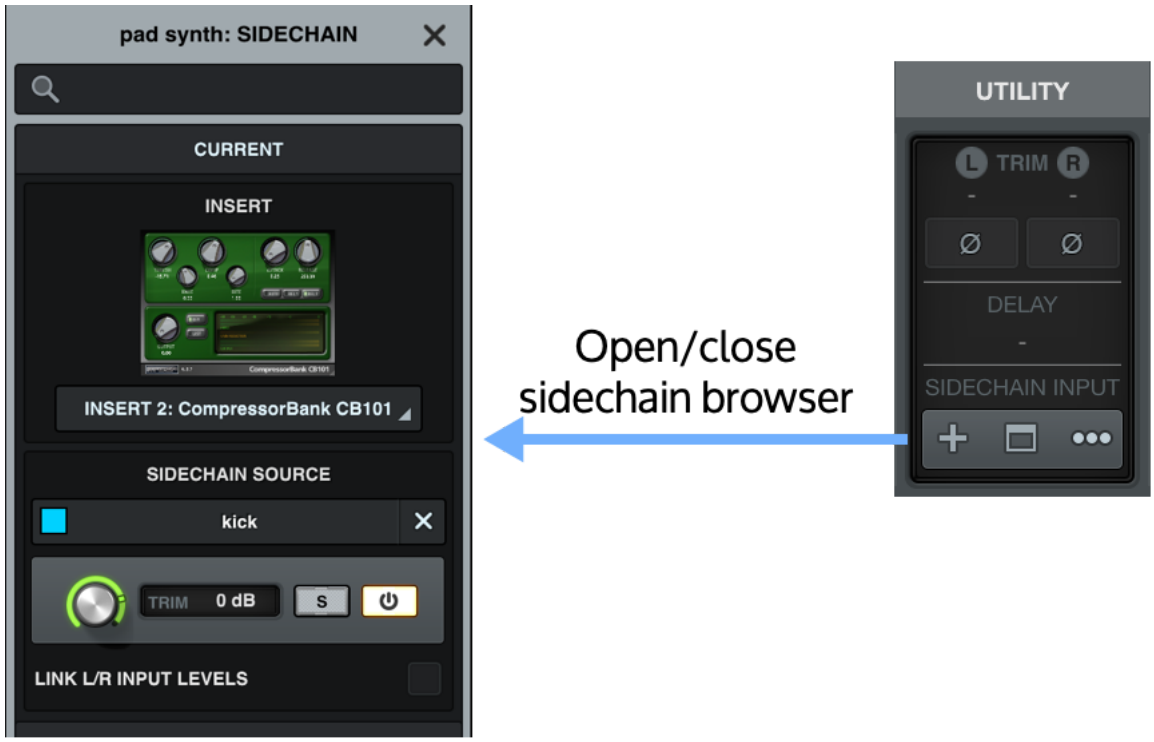
## REMOVING A SIDECHAIN

You can remove a sidechain by removing the sidechain source, or removing the sidechain insert.

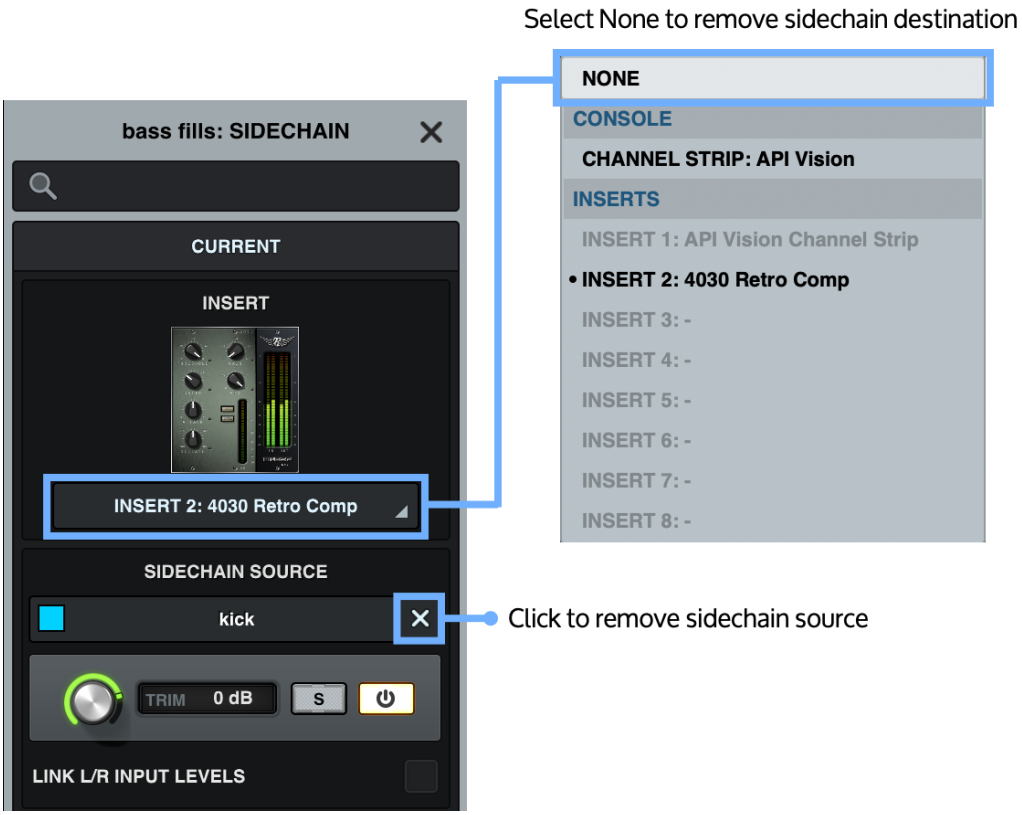
**Tip:** To temporarily disable sidechain processing, power off the sidechain with the power button in the sidechain browser.

To remove a sidechain source:

1. Click the plus sign in the Utility row of the destination track to open the sidechain browser.




2. Click the X next to the sidechain source to remove the sidechain source. The sidechain destination is automatically removed.
3. To remove the sidechain destination without removing the sidechain source, click the Insert and select None.




## Sidechain hover options

The sidechain control plate appears in the Utility row on the track where the sidechain destination extension or plug-in is instantiated. When you hover your mouse over the sidechain plate, these options appear.

- Click the plus sign to open or close the sidechain browser.
- Click the square to open or close the sidechain extension or plug-in.
- Click ••• to show a menu that allows you to enable or disable the sidechain (this is the same as clicking the power button in the sidechain browser).

# Using MCU Control Surfaces with LUNA

## MCU Control Surface Support in LUNA

LUNA supports MCU-compatible (Mackie Control Universal-compatible) MIDI control surface devices for externally adjusting LUNA's functions. You can configure up to six control surfaces in LUNA settings. When you connect multiple multi-fader control surfaces, they present as one large fader set, so banking and navigating through tracks works across all control surfaces.

In addition, LUNA includes a special control mode for a single fader control surface, such as the Presonus Faderport. LUNA automatically recognizes the most popular single fader control surfaces, and configures them in *focus module* mode. Focus module mode allows single fader surfaces to better integrate with additional control surfaces. A focus module controls the most recently selected (focused) track, or a bus track when a bus is spilled.

**Note:** This documentation describes LUNA's functions with mixing control surfaces that use the MCU protocol. Your MCU control surface might not have all of these functions, and some functions might be accessed with secondary/modifier keys on the control surface. Consult your control surface's documentation for operating instructions that are specific to the device.

### FOCUS MODULE OVERVIEW

A focus module allows you to always have the track or bus you are working with at your fingertips, while one or more other control surfaces with more channels work seamlessly alongside the focus module to provide deeper mix control capabilities. When you define a single-fader control surface in LUNA control surface settings, that control surface should be automatically configured as a focus module.

A focus module has the following features:

- Functions as a separate control surface from additional surface modules, which is isolated from channel banking and nudging, ensuring that the selected track always remains assigned to your designated control surface.
- When a bus is not spilled, the focus module shows the focus channel (the most recently selected channel). The focus module maintains this channel, even as you bank or navigate channel-by-channel through tracks on another control surface.
- When a bus is spilled, the focus module switches to show the bus channel, regardless of the selected channel.
- Only one focus module can be defined at a time.

**Note:** When you have enabled a focus module, and Show Main Track is off, when you select the Main track it does not appear on the focus module. It is assumed that when you disable Show Main Track, you are using a control surface that includes a dedicated Main Track fader.

---

## Setting up your MCU Control Surface with LUNA

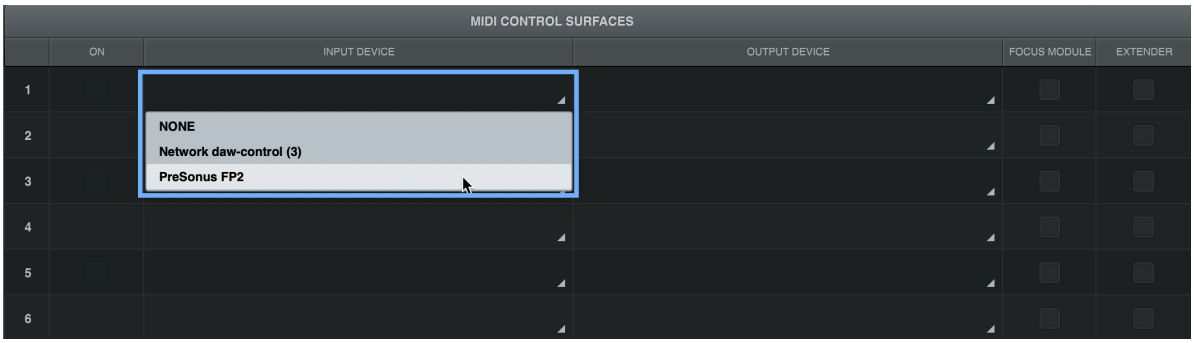
Connect your control surfaces to your computer, and make sure they are recognized or configured as required. A USB control surface typically only requires that it is connected and powered on, while a virtual control surface might require more extensive configuration. Refer to your control surface's documentation for specific details.

**Notes:**

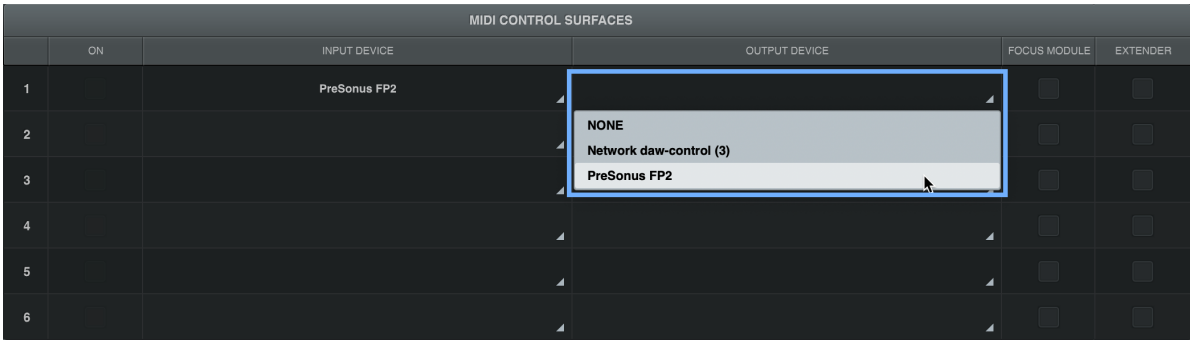
- For specific configuration steps and known issues for supported control surfaces, see this article.
- Any required software and device firmware for your control surface should be installed and up to date.

### TO SET UP YOUR CONTROL SURFACES WITH LUNA

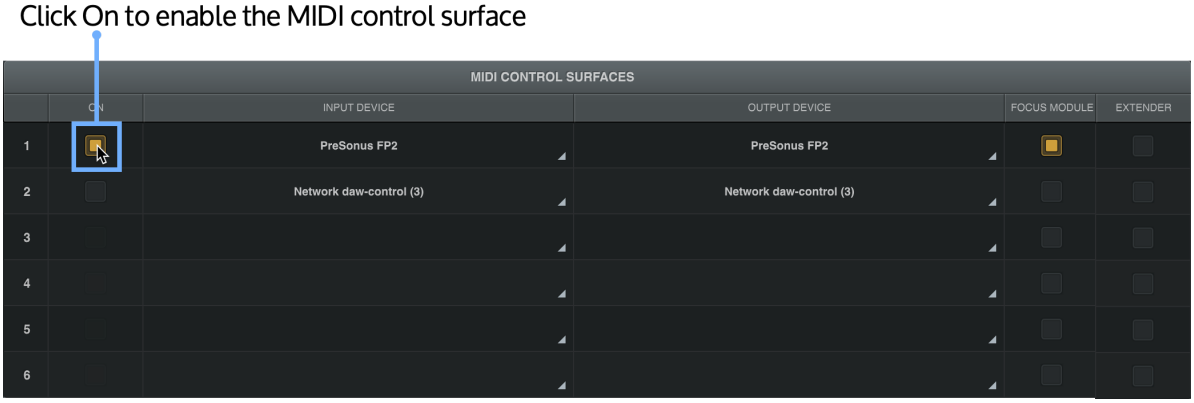
1. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
2. Click Controllers.
3. In one of the MIDI Control Surface rows, click under Input Device and select a connected MIDI control surface from the drop menu.




4. In the same MIDI Control Surface row, click under Output Device and select the same MIDI control surface.




5. Select the box in the On column to enable the control surface.




6. If the control surface is a single fader control surface, the Focus Module box is automatically selected. if you do not want to use the control surface to follow the focused track, or to control a bus when the bus is spilled, deselect this box. See Focus Module overview for more information.
7. If the surface is an extender module (for example, a Behringer X-Touch Extender or an additional SSL UF8 used as an extender), click the Extender box.

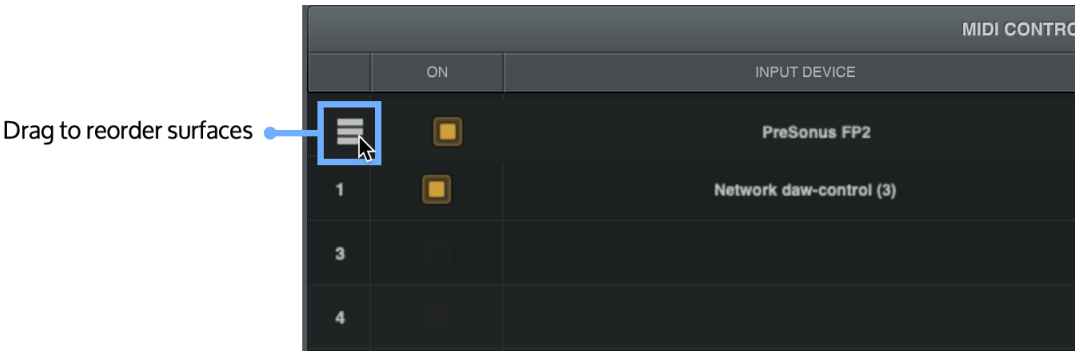
**Tip:** If your single fader control surface is not automatically configured as a focus module, check the focus module box. (To have your control surface considered for addition to the supported controllers list, you can submit feedback by clicking the feedback button in the upper right corner of the LUNA window.)

## REORDERING MCU CONTROL SURFACES

When you have two or more MIDI control surfaces defined in LUNA, you can reorder control surfaces to change the order of tracks on the control surfaces.

To reorder MIDI control surfaces

1. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
2. Click Controllers.
3. Click the number of the MIDI control surface you want to reorder, and drag to the new location.




The control surfaces are reordered. If you have an open session, the tracks are reallocated between the control surfaces.

## CONFIGURING MIDI CONTROL SURFACE SETTINGS

You can configure settings for how the control surface works with LUNA. To configure these settings:

1. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
2. Click Controllers.
3. Adjust the settings as described in this section. The control surface is active when its ON button is lit.

Surface Shows Tracks From

- Main Window: The control surface always registers tracks from the main window, even if you open and switch focus to alternate windows.
- Focused Window: The control surface registers tracks from the currently focused window, whether main or an alternate.

Bank to Selected Track

- On: When you select a track, the control surface banks to show the bank which contains the selected track.
- Off: You bank the control surface manually, and selecting a track in LUNA does not change the bank position on the faders.

Scroll LUNA When Banking

- On: When you switch banks on the control surface, this option scrolls LUNA to show the tracks in the bank in LUNA on both the mixer and timeline. Note that if you have large track heights, not all tracks in a bank might show.
- Off: LUNA's mixer and timeline windows do not adjust when you switch banks on the control surface.

Show Main Track

- On: Shows the Main track in the group of faders on the control surface. LUNA automatically places the Main track on the master fader for any control surface that supports it, but you can use this setting to show the Main track fader when you are using a control surface that doesn't have a dedicated master fader.
- Off: Does not show the Main track on the group of faders on the control surface. Use this when your control surface has a dedicated master fader, and you don't want to duplicate the Main track fader.

**Note:** When you have enabled a focus module, and Show Main Track is off, when you select the Main track it does not appear on the focus module. It is assumed when you disable Show Main Track that you are using a control surface that includes a dedicated Main Track fader.

Use Surface Fader Taper

- On: LUNA adheres to the markings and positions on the control surface as closely as possible. For example, if you set a track to -15 dB, the control surface fader will register at the -15 dB mark on the control surface. This allows you to use the fader throw on the control surface as it was originally designed, instead of as it is represented in LUNA.
- Off: LUNA sets the faders to represent the physical fader orientation in LUNA, without adhering to the markings and numbers on the control surface. When you choose this setting, the fader layout on the control surface adopts the values of API Vision Console extensions on a track, or Neve or API Summing on a bus or the main track, just as it adjusts onscreen in LUNA.

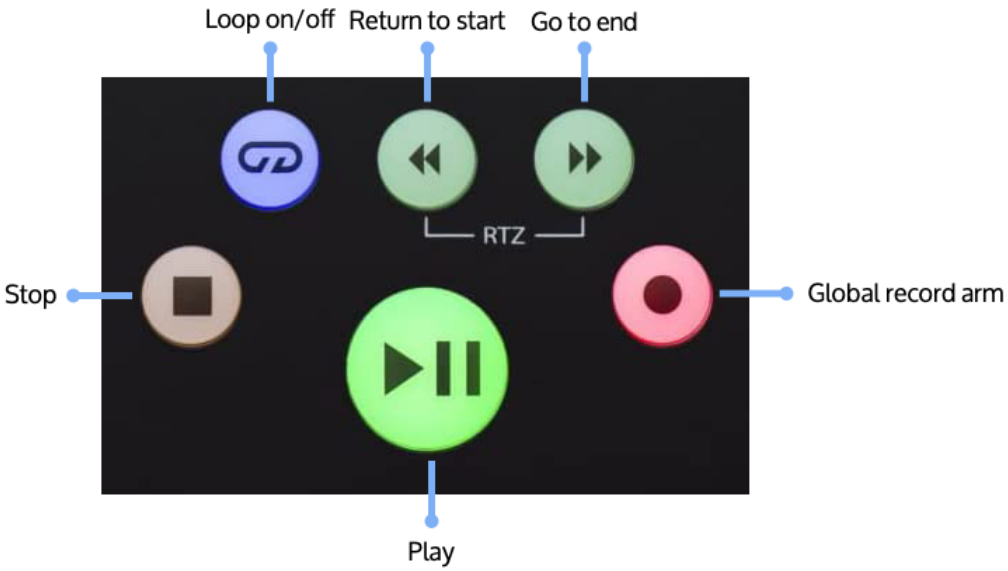
---

# MCU Control Surface Mix and Transport Features

Typical MCU-compatible control surfaces have some common mix and transport features. These include transport functions, track-level functions, and function keys.

## TRANSPORT FUNCTIONS

MCU-compatible control surfaces use standardized controls for the system transport.




Play/pause

Starts playback. Press the key again to stop playback.

Stop

Stops playback.

Record arm (global)

Record-arms the transport using the global record function. This allows you to record on any record-armed tracks.

Loop

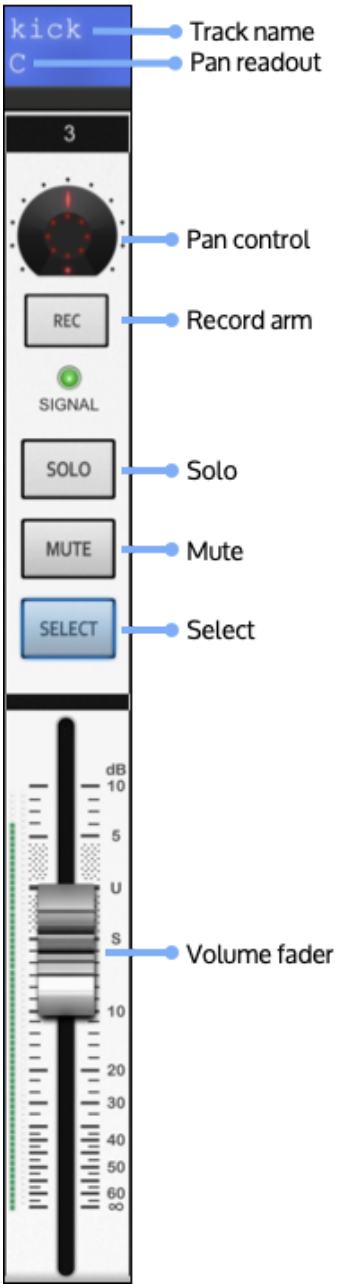
Turns loop playback on and off.

Fast forward/rewind

The fast forward and rewind keys on your transport go to the start of the session (return to zero) and to the end of the session.

## TRACK FUNCTIONS

Per-track functions are available on your control surface.




Name

The name of the track, abbreviated if necessary.

**Note:** Not all control surfaces represent the name of the track.

Pan readout

The value of the track pan setting.
**Note:** Not all control surfaces represent the track pan readout.

Select

Selects the track on the control surface and in LUNA. If you have a focus module, the selected track appears on that module. If you select multiple tracks, the last-selected track appears on the focus module.

Solo

Solos the track.

Mute

Mutes the track.

Record Arm (track)

Record arms an audio or instrument track. On a bus or on the main track, this spills the bus or main track.

Volume fader

Controls the volume level of the track.

Pan

Pans the track. On a stereo track, this works like simple stereo pan mode, and pans both left and right channels so the audio result matches the pan knob on the control surface.

### CLICK AND METRONOME

Some control surfaces implement a Click or Metronome button which toggles the LUNA click on and off.

---

## Control Surface Function keys

Function keys are an MCU standard, but not all control surfaces include them, and some control surfaces may have a limited set of function keys. LUNA supports the function keys F1 and F2.

### F1

Toggles between timeline and mixer views.

### F2

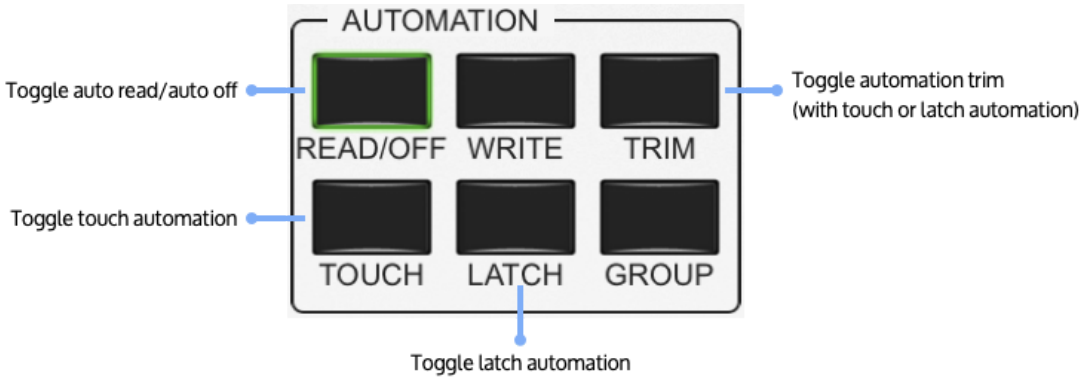
Spills the main bus.

---

# Control Surface Automation Features

The following control surface track automation features are available in LUNA. To change the automation mode with a control surface, a track must be selected. The automation mode of a selected track is displayed on the control surface.

**Note:** Write mode is not supported in LUNA.




### READ

Toggles between automation Read and automation Off mode.

### TOUCH

Toggles automation Touch mode.

### LATCH

Toggles automation Latch mode.

### TRIM

Toggles Trim automation mode while Read, Latch, or Touch are enabled.

---

# Control Surface Navigation Features

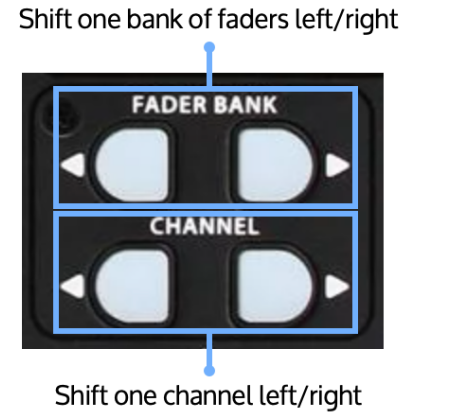
MCU-compatible control surfaces include several features for navigating, resizing and zooming tracks in the timeline view.

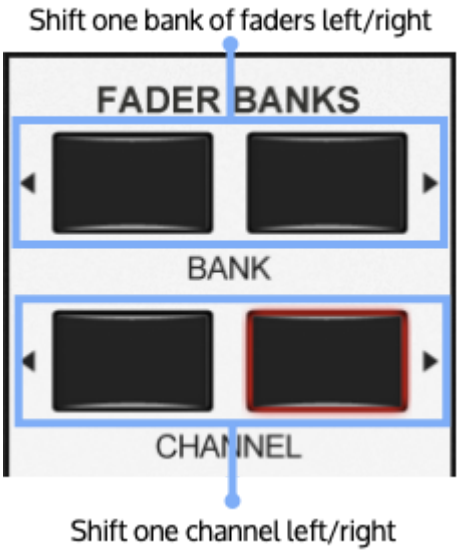
## BANK, NEXT/PREVIOUS TRACK, AND CHANNEL FUNCTIONS

Most control surfaces have banking and/or nudging features that shift the faders on the control surface to the left or right by eight or by one. Other control surfaces have a combination of banking and channel selection features that can shift the faders on the control surface to the left or right by eight, but can also select the next or previous track.

Banking and nudging typically occurs without changing the track selection, and simply changes which faders the control surface shows. However, control surfaces that use channel selection to nudge cause the track selection to change, and can shift the control surface faders as the track selection is moved out of the fader area.

Different banking, channel navigation, and channel selection buttons are shown below.



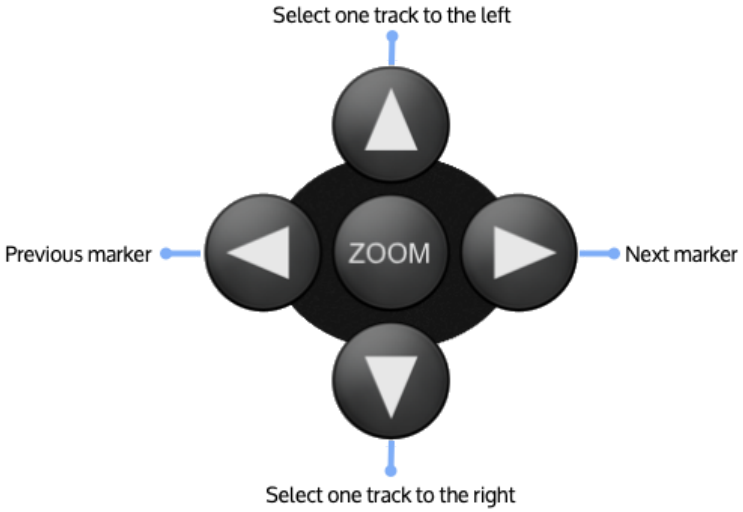




## NEXT AND PREVIOUS TRACKS AND NEXT AND PREVIOUS MARKERS

Some surfaces have a 4-way arrow key pad for navigation.

- The up and down arrows move the track selection one track to the left or right.

- The right and left arrows move to the next or previous marker.

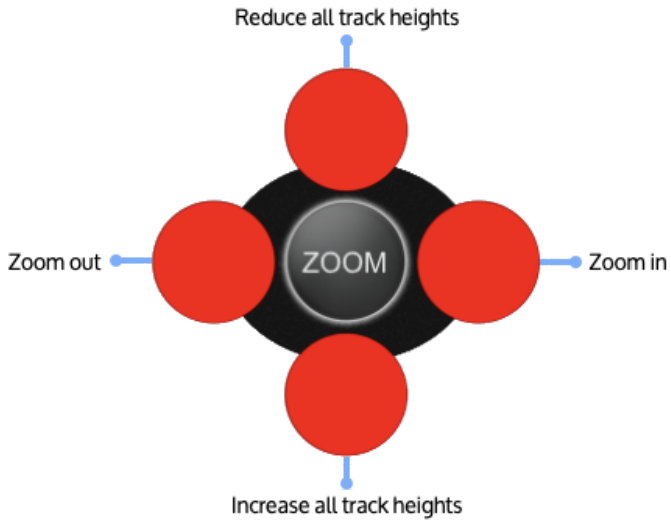



## SCROLL FUNCTIONS

Some control surfaces implement scrolling features with arrow keys, knobs, or a jog wheel. Typically, these controls allow you to navigate forward and backward one bar at a time. Scrolling functions might be labeled Jog, Scroll, or Next/Previous.

## ZOOM AND RESIZE FUNCTIONS

Some control surfaces implement timeline zoom and track height controls. For example, with the DAW Control app as shown below, the arrow buttons flash red when zoom functions are active.



### ZOOM IN

Zooms timeline data larger horizontally.

### ZOOM OUT

Zooms timeline data smaller horizontally.

### REDUCE ALL TRACK HEIGHTS

Makes all tracks smaller vertically.

### INCREASE ALL TRACK HEIGHTS

Makes all tracks larger vertically.

---

## Using Markers in LUNA with a Control Surface

If your control surface includes a Marker button, you can use this to add a marker. You can also navigate between markers.

### PLACE A MARKER

Press the Marker key on your control surface. This opens the marker browser, and you can optionally type a name for the marker and choose a color, then click Apply to add the marker.

### NAVIGATE BETWEEN MARKERS

You can navigate between markers in different ways, depending on your control surface. On control surfaces that have arrow keys, use the right and left arrow keys to navigate between markers. On others, you may have to press the Section button, then use a control such as a jog wheel or knob to navigate between markers.

---

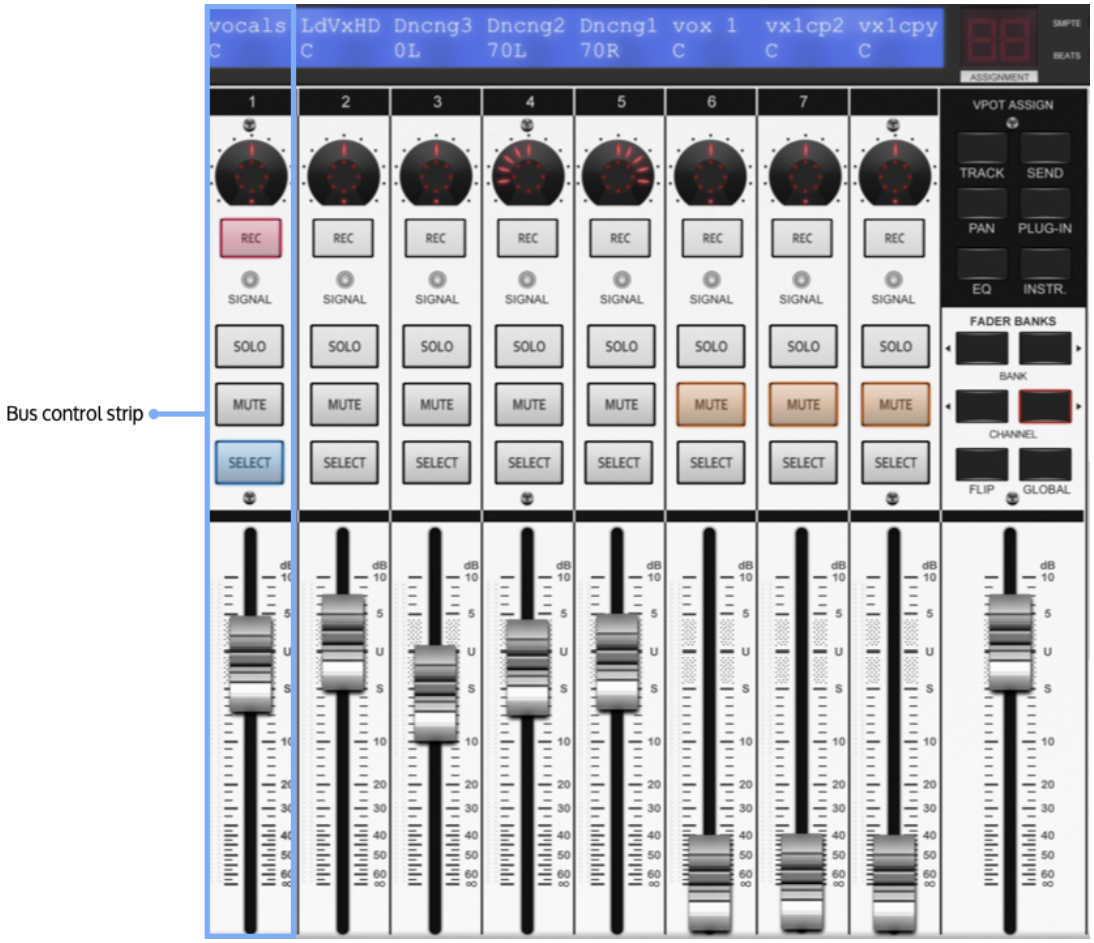
## Using Bus Spill on a Control Surface

You can spill a bus by pressing the Record Arm button on a bus track. Bus track spill is dependent on your bus and track layout in LUNA, the number of faders and control surfaces in your control surface layout, and the number of tracks spilled.

## BUS SPILL: NO FOCUS MODULE

When you spill a bus and you do not have a focus module configured, the bus track appears fixed at the right or left of one control surface, and the spilled tracks appear to the other side on the same or multiple control surfaces, with empty faders in between (if your bus spills less tracks than the control surface can represent). The bus fader remains fixed in that location, even if you navigate through tracks or banks on the control surface, so it is always available to adjust. The bus position is determined by the order of the bus in relation to its source tracks in LUNA.

In the example below, using DAW Control on iPadOS, the bus spills tracks to the right of the bus control track.




*Bus spill (no focus module)*

## BUS SPILL: WITH FOCUS MODULE

When you have a defined focus module in LUNA settings, and you spill a bus, that module automatically takes control of the fader for the spilled bus. The bus fader is locked on the focus module, while the rest of the tracks appear on your other control surface or control surfaces. This allows you to mix the bus with a single fader, while the other modules are spilled onto one or more other control surfaces.

*Bus spill (with focus module)*

When you “unspill” the bus, by disabling Record Arm on the focus module, the focus module again controls the focused track.

---

# Controlling Extensions and plug-ins

Many control surfaces can control Extensions Extensions and plug-ins in LUNA.

For information on controlling Extensions and plug-ins with your MCU device, see the specific article for your control surface:

- Behringer
- DAW Control
- iCon Pro Audio
- ONE Control Plus
- Presonus FaderPort
- SSL UF8
- V-Control

---

# Undo

If your control surface has an Undo button, it controls LUNA’s undo function.

**Note:** LUNA does not support Redo from a control surface.

# Using Track Groups

## Track Groups overview

Track groups provide a way to make edits, mix changes, and add and control inserts across multiple tracks, multiple groups of tracks, or all tracks. When a track group is selected, edits and mix changes affect all tracks in the group.

## Track group properties

With track groups you create, you can enable one or more of the following track group properties.

### EDITING PROPERTY

When the Editing property is enabled for a track group, edit commands and mouse gestures are linked across all tracks in the group. This includes cut, paste, and copy operations, fades, and warp editing.

The following controls and features apply when the Editing property is enabled, and you edit audio in a track group.

- Placing the playhead on one track in a track group places the playhead on all tracks in the group. Selections made on one track are made on all tracks in the group.
- Quantizing audio applies to all tracks in the track or selection group.
- Any editing key commands that rely on the edit position or a selection range apply to all tracks in the group (for example, extending a selection).
- Selecting one clip in a group grabs all clips within the same range in the track group.
- Trimming or Warp Trimming a clip in the track group will trim all other clips within range in the track group.
- When creating fades with the mouse or key commands, fades are created on all tracks in the track group, as long as there is track data within the fade range.
- Adjusting fade shapes and duration with the mouse in a group will adjust the fade shape of all fades within range in the track group.
- Changing track view or track height applies to all tracks in the track group.
- Recording automation applies to all tracks in the track group.
- Vertical trimming of automation lines and breakpoints applies to all tracks in the track group.
  **Note:** drawing automation manually on one track in the group does not draw that same automation on other tracks in the group.
- Tab to transient within an edit group moves from one transient zone to the next, requiring fewer tab keys to navigate with multiple tracks (see “Warp editing with track groups”).

## MIXING PROPERTY

When the Mixing property is enabled for a track group, mixer controls and mix operations are linked on all applicable grouped tracks.

The following controls and features apply when the Mixing property is enabled for a track group.

- All mixer control mouse inputs to a track in a group are applied to all tracks in the track group. Control adjustments maintain a relative offset when adjusted.
- All changes to API Vision Console extensions are applied to all channels in a track group or selection group.
- All track toggle control inputs (Record, Input, Solo, Mute) are applied to all tracks in the track group, when possible.
- Automation mode selection on one track is applied to all tracks in the track group.
- Automation written with faders, knobs, or sliders is written for all tracks in a track group.

## INSERTS PROPERTY

When Inserts are enabled for a track group, inserts and insert controls are linked on grouped tracks. When you add an insert to a grouped track, it is added in the same slot on all grouped tracks. When you adjust controls on such an insert on enabled grouped tracks, the controls are adjusted for the same insert on all grouped tracks.

**Note:** Grouped controls only work on identical plug-ins that are inserted in the same slot in a track group.

## SENDS PROPERTY

When Sends are enabled for a track group, sends are linked on grouped tracks. When you add or adjust a send to a grouped track with this property enabled, the same send is added or adjusted on all tracks in the group.

## GROUP EDITING PRIORITY

Prioritized tracks are checked first for transients, and assigned higher priority for audio quantizing.

### How group editing priority works

When tracks in a group or selection group are prioritized, transient, quantize, and warp operations prioritize those tracks for transient detection and for quantize operations. If a transient appears on multiple tracks, the transient on the priority track is chosen first. This is useful when editing drums, for example, to detect primary transients, and prevent a secondary track (for example, a room microphone track) from overriding a snare or kick track, to prevent phasing and timing issues.

When multiple tracks are selected, transients are detected first on prioritized tracks. When there is no transient on a priority track, transients on non-prioritized tracks are used.

# The All Tracks Group and Selection Group

There are two default track groups. These track groups cannot be edited, but they can be individually enabled or disabled.

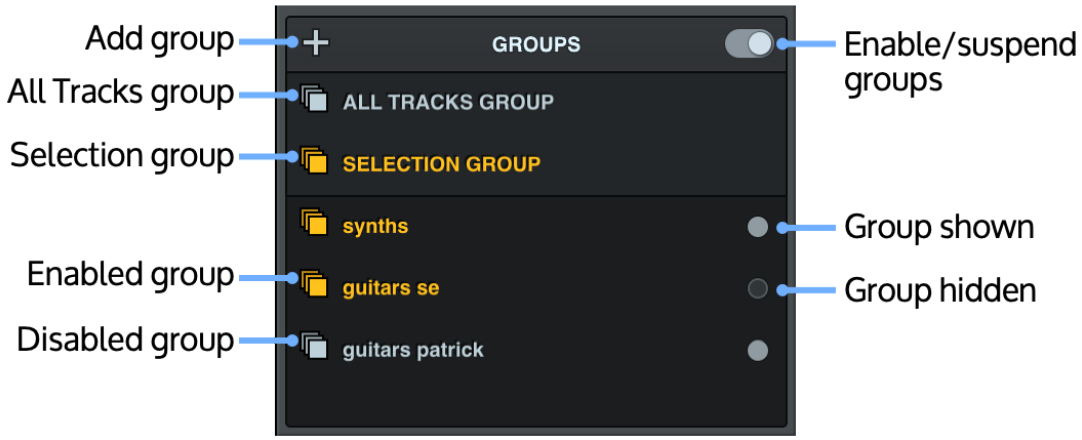
- All Tracks Group - This group includes all tracks in the session, and enables Mixing, Editing, and Inserts.
- Selection Group - This group replaces the Selection Grouping feature. When enabled, this allows you to use selection grouping, and enables Mixing, Editing, and Inserts. You can toggle this group with the existing Selection Grouping command, Track > Selection Grouping, or Control+G.

---

# Creating Track Groups

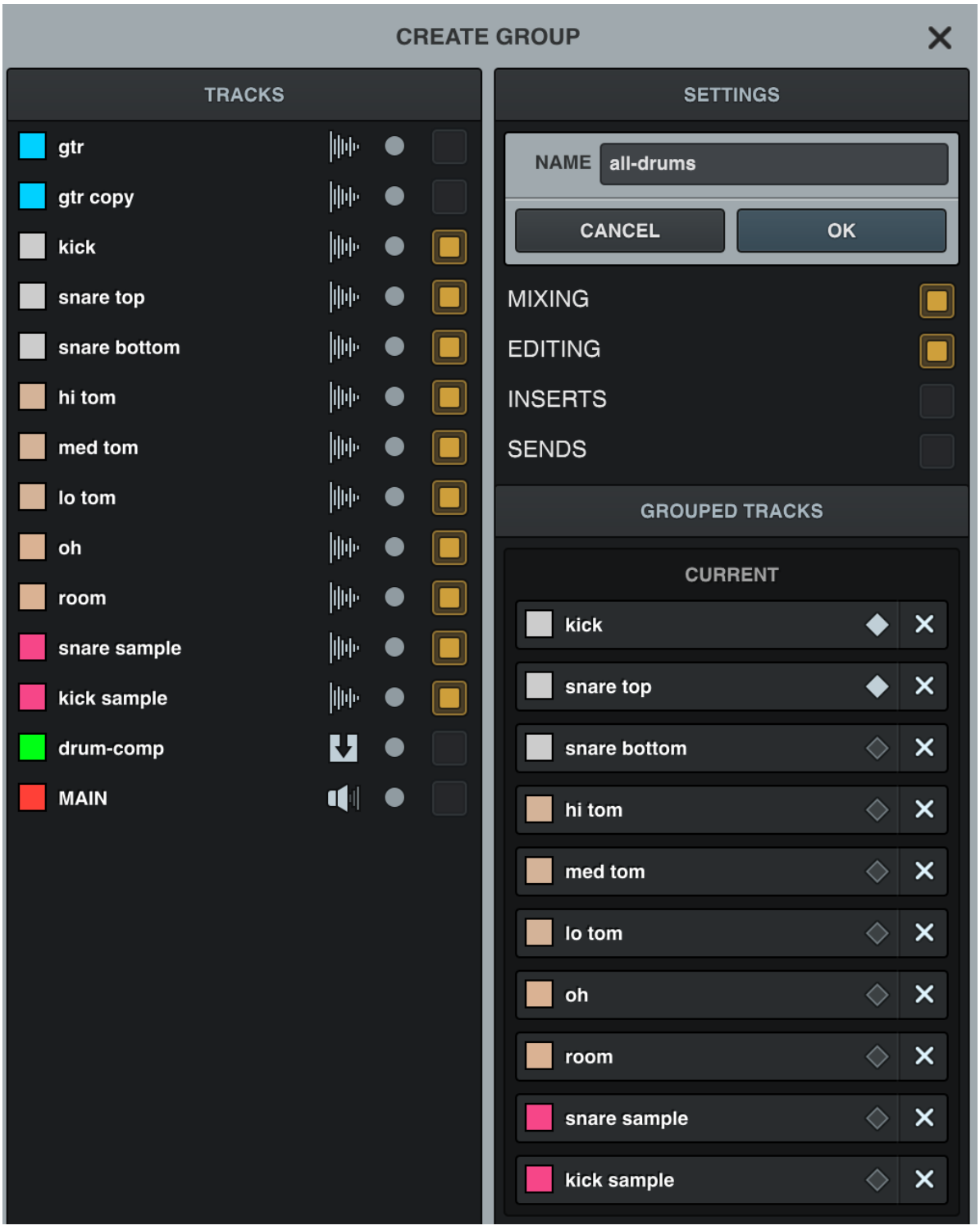
You can create, enable, disable, and edit groups from the Groups browser. You can create or add to groups with a menu item, or by right-clicking or control-clicking on one or more selected track names in the Timeline or Mixer.

**Note:** The Browser must be visible to see the Groups browser.




### TO CREATE A TRACK GROUP USING THE GROUPS PANEL:

1. Select the track or tracks you want to add to the new group.
2. In the Groups panel, click the **+** symbol to add a group.
3. The Create Group browser opens.



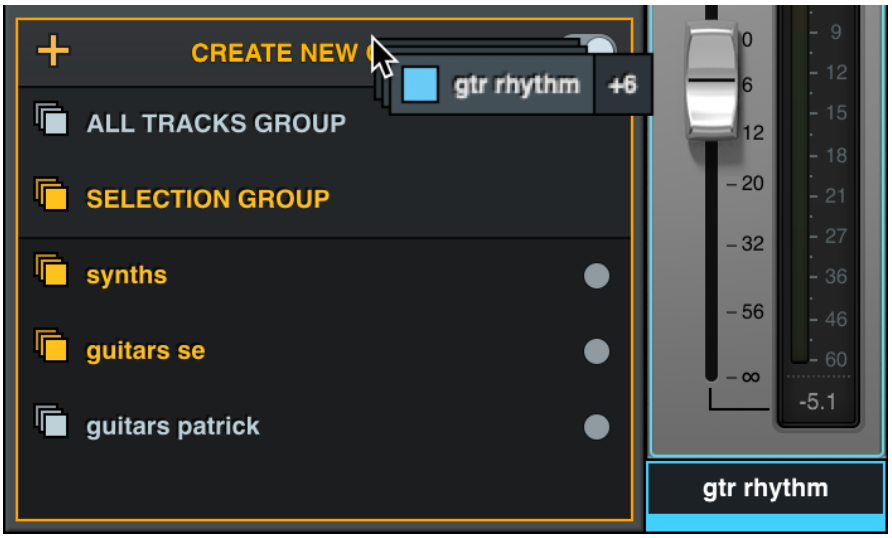

4. Type a name for the group.
5. Select whether the group behavior applies to Mixing, Editing, Inserts, and Sends.
6. To add or remove a track, click it in the Tracks browser. You can also remove a track by clicking the **X** next to the track in the Grouped Tracks list.

7. To prioritize a track, click the diamond next to the track name. Tracks that are prioritized have solid diamonds, and non-prioritized tracks have hollow diamonds.
8. Click OK to create the group.

The new group appears in the Groups browser. If you don't type a name for the group, the group is added as Group, plus a number, if applicable.

## TO CREATE A TRACK GROUP BY DRAGGING TRACKS:

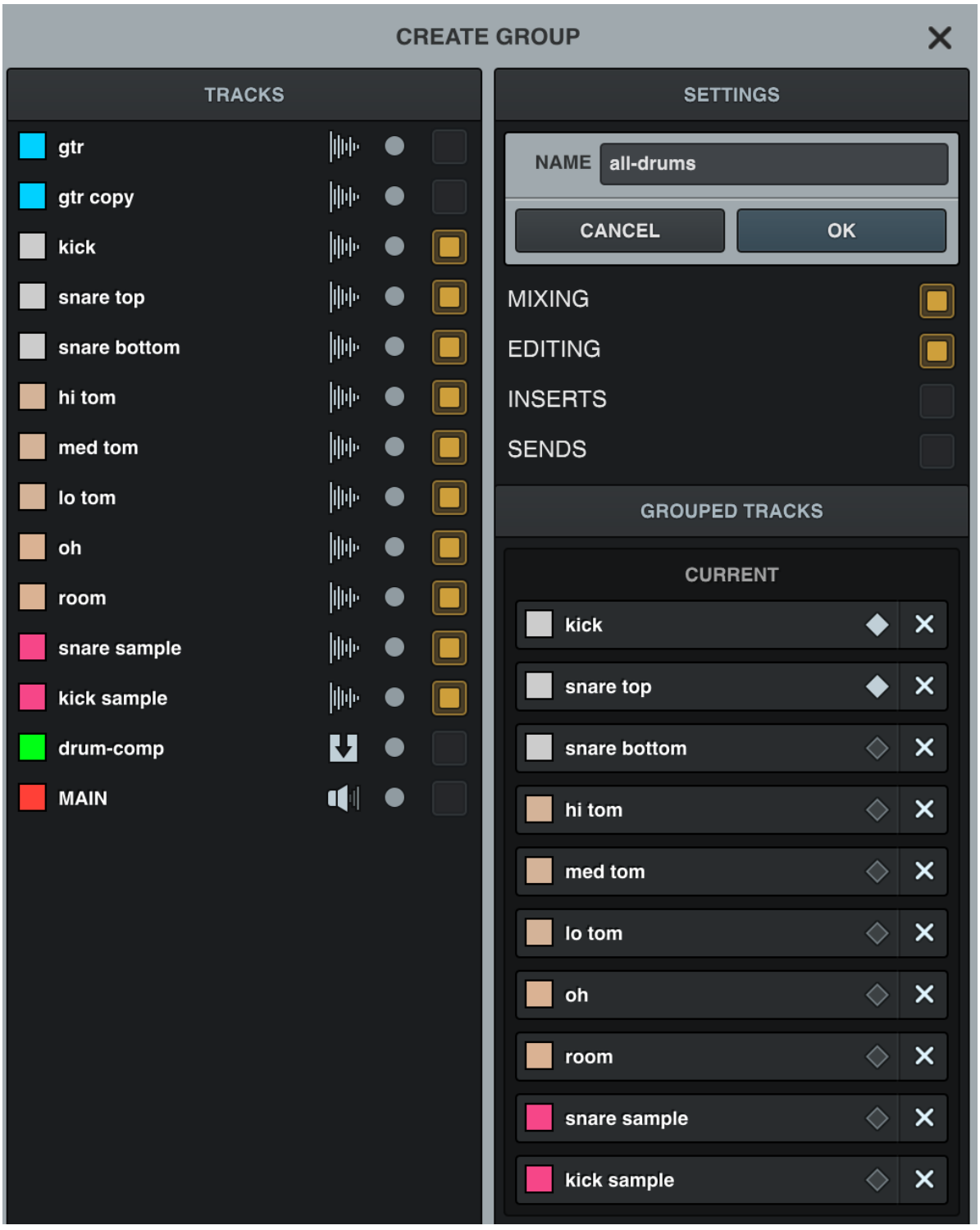
1. Select one or more tracks in the Mixer or Timeline.
2. Drag and drop the tracks to the top of the Groups browser.




The label for the Groups browser changes to Create New Group when you drag the tracks over the top of the browser. When you drop the tracks, a new group called GROUP, plus a number, if applicable, is created.

## TO CREATE A TRACK GROUP WITH THE LUNA MENU OR A KEY COMMAND:

1. Select the track or tracks you want to add to the new group.
2. Select Track > New Track Group, or type Command+G.
3. The Create Group browser opens.

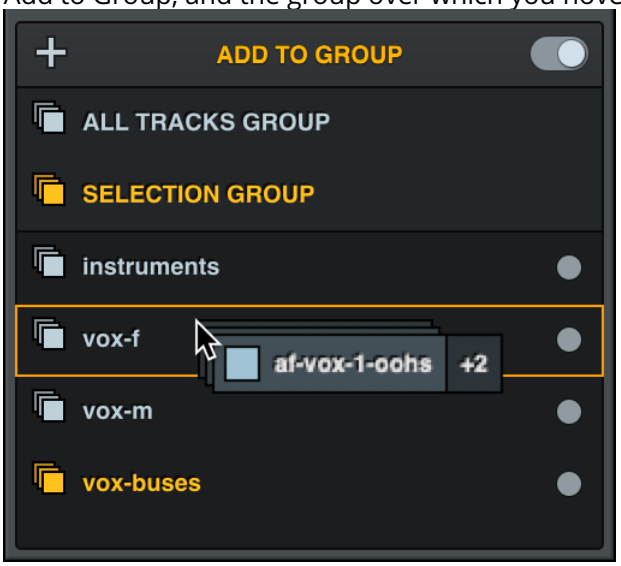



4. Type a name for the group.
5. Select whether the grouped track behavior applies to Mixing, Editing, Inserts, and Sends.
6. To add or remove a track, click it in the Tracks browser. You can also remove a track by clicking the **X** next to the track in the Grouped Tracks list.

7. To prioritize a track, click the diamond next to the track name. Tracks that are prioritized have solid diamonds, and non-prioritized tracks have hollow diamonds.
8. Click OK to create the group.

## TO ADD TRACKS TO A TRACK GROUP BY DRAGGING:

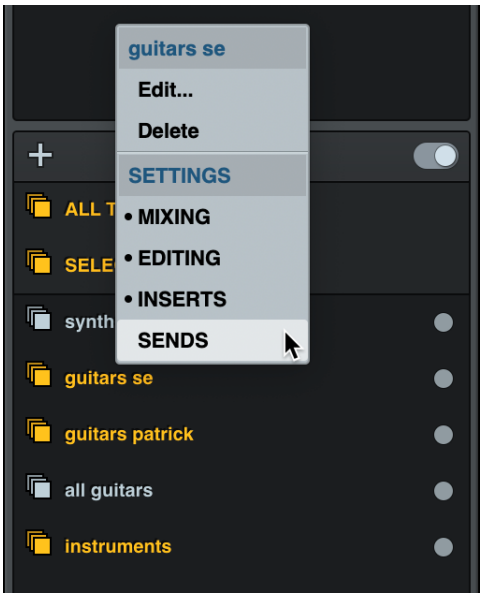
1. Select the track or tracks you want to add to the group.
2. Drag the track or tracks over the group in the Groups browser. The Browser name changes to Add to Group, and the group over which you hover is highlighted.



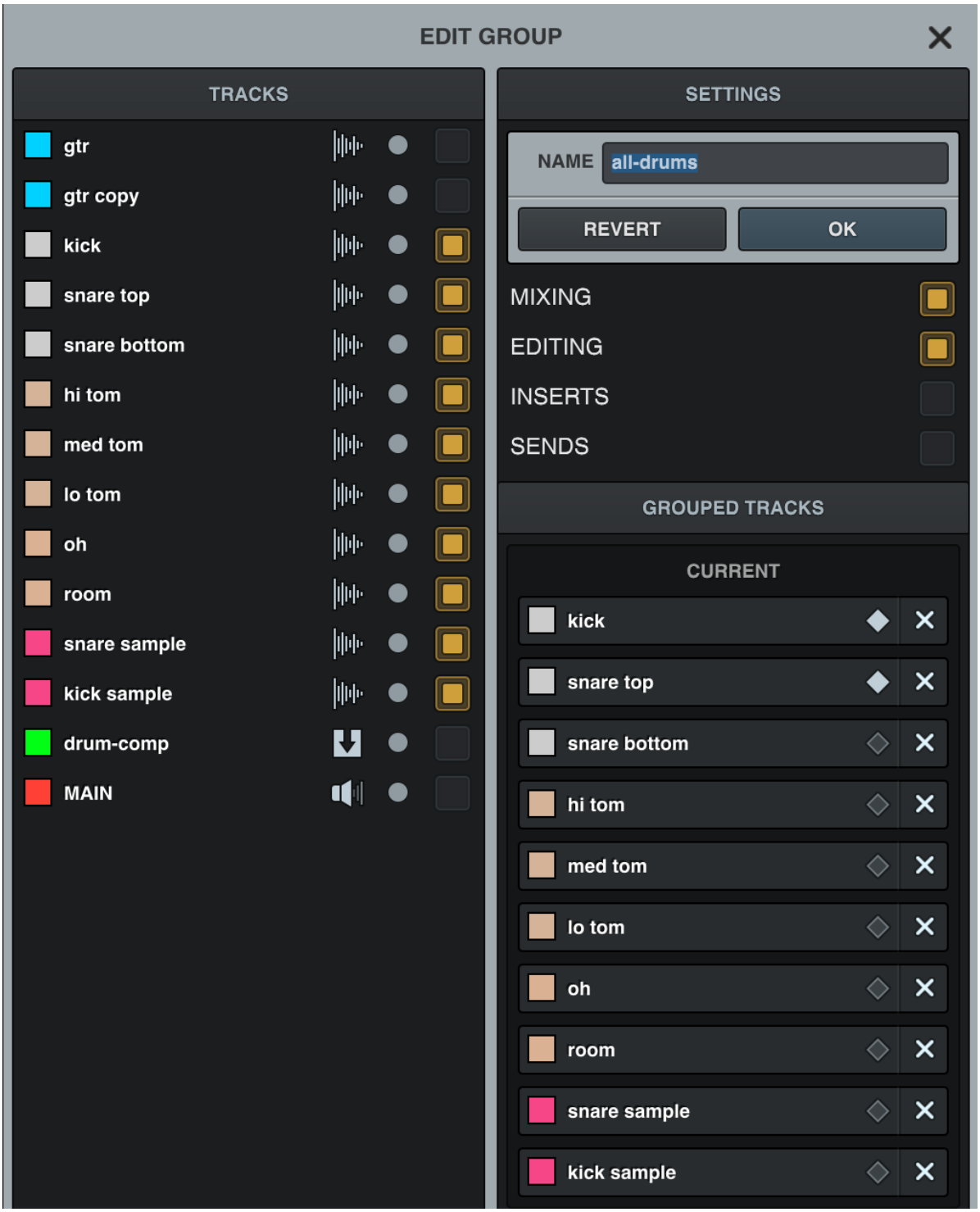

3. Drop the tracks to add them to the group.

## TO EDIT A TRACK GROUP:

1. Right-click or Control-click on the track group in the Groups browser.




2. To change the Mixing, Editing, Inserts, or Sends property, select from the menu.
3. To edit tracks in the group or the group name, select Edit.




4. Make the changes to the group, and click OK. To discard changes to the group, click Revert.

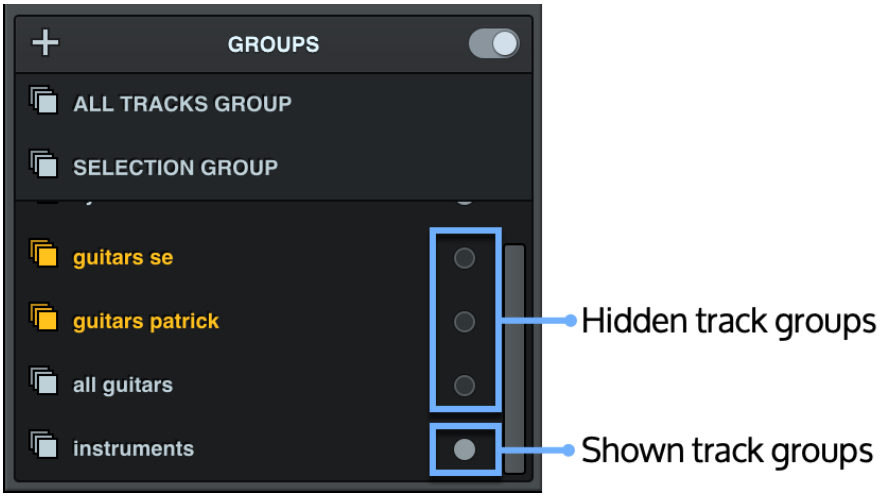
## TO DELETE A TRACK GROUP:

- In the Track groups browser, right-click or Control-click on a track group, and select Delete.

The track group is deleted, but tracks are not deleted. You cannot delete the All Tracks Group or Selection Group.

## TO SHOW OR HIDE THE TRACKS IN A TRACK GROUP:

- In the Track Groups browser, click the indicator to the right of the track group name to toggle track group visibility.
- To show only the tracks in the group, Command+Click the indicator.



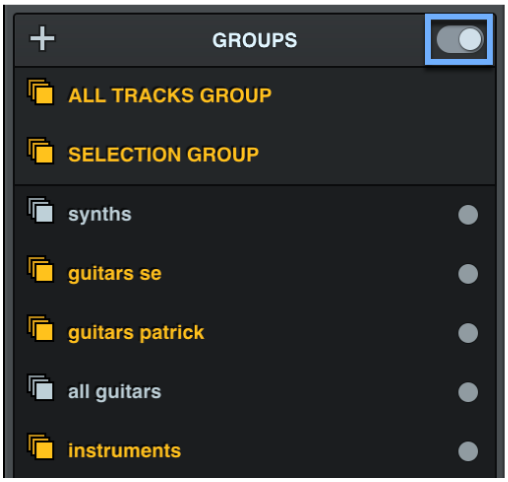

## TO ENABLE OR DISABLE A TRACK GROUP:

- Click on the track group name to toggle the enabled or disabled state. Enabled track groups are highlighted.

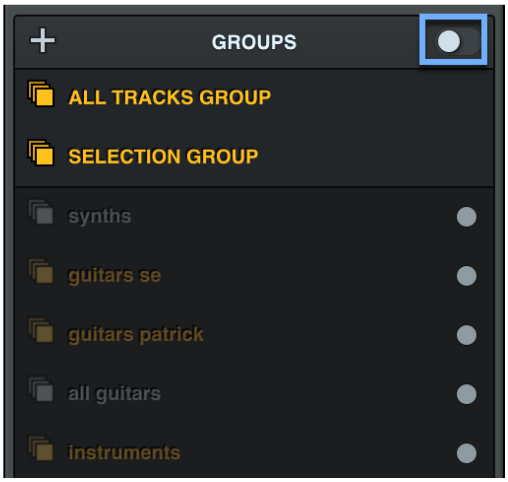
## TO ENABLE OR DISABLE ALL TRACK GROUPS:

- Press Shift+Command+G, or click the toggle on the upper right of the Groups browser.
  **Note:** When you disable Groups, only user-created groups are disabled. The All Tracks group and Selection group remain enabled.

Groups enabled




Groups disabled




## Warp editing with Track Groups

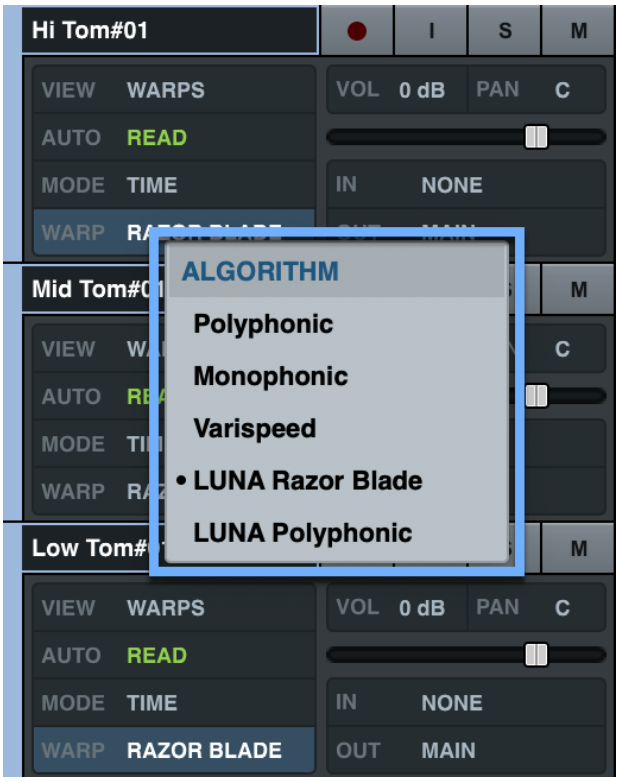
When a track group with audio tracks is enabled for Editing, you can perform multitrack Warp edits. Use this to tighten up the performance on drum tracks, for example. Warp markers are automatically placed for a group of tracks by finding the earliest transient within a transient zone (within a 30 millisecond range). To place a warp marker at a specific location regardless of the transient zone, Control-click the location where you want to add the warp marker.

**Note**: Warp markers for prioritized tracks take precedence over non-prioritized tracks. For this reason, when transients are detected on prioritized and non-prioritized tracks in a group, the automatic warp markers are aligned first with transients on the prioritized tracks within a transient zone, then with transients on non-prioritized tracks.

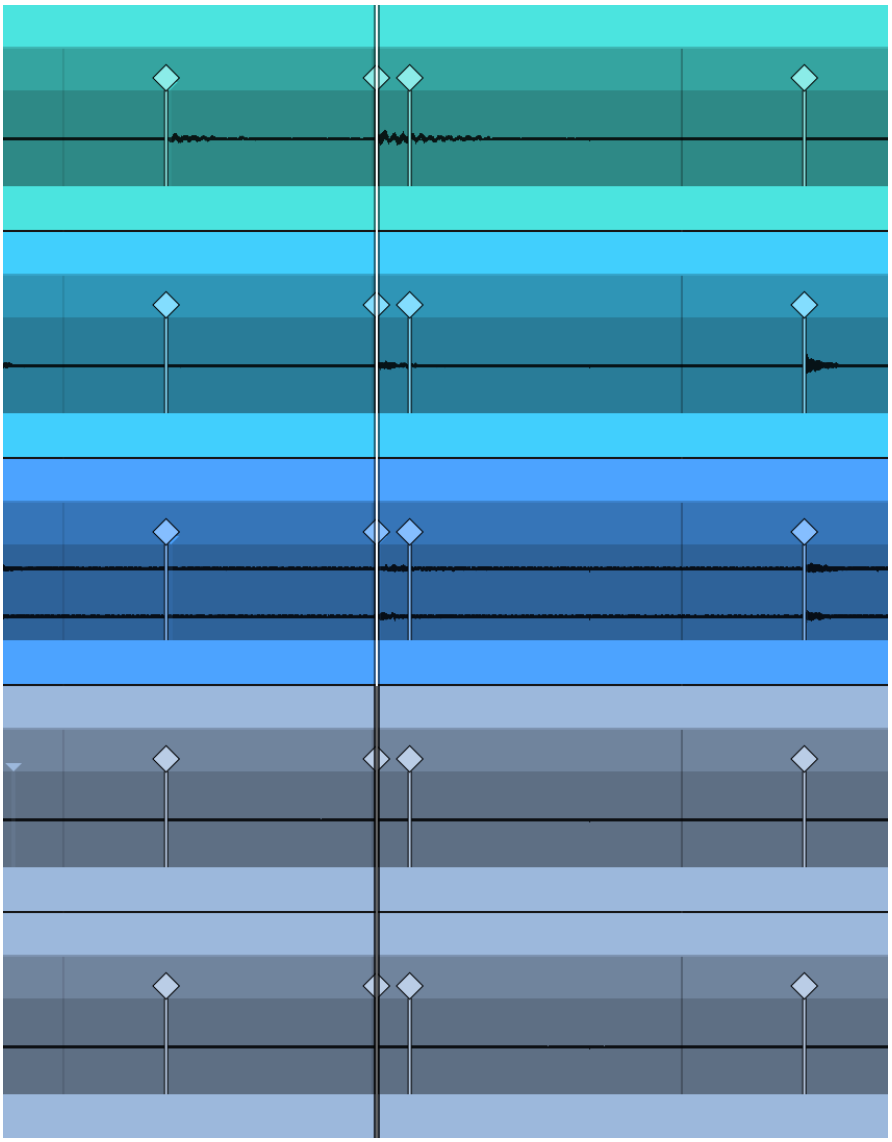
### TO WARP EDIT MULTIPLE TRACKS:

1. Enable a group with the tracks you want to edit.
2. In the Timeline, click View on one of the tracks in the group, and select Warps from the browser.

3. Click next to Warp and set the Warp Algorithm for the track group from the menu.




4. Place one or more Warp markers on a track in the group. Warp markers are placed on all tracks in the group. A warp marker is placed on prioritized tracks first, then on the earliest transient in the group. To place an arbitrary warp marker, Control-click.

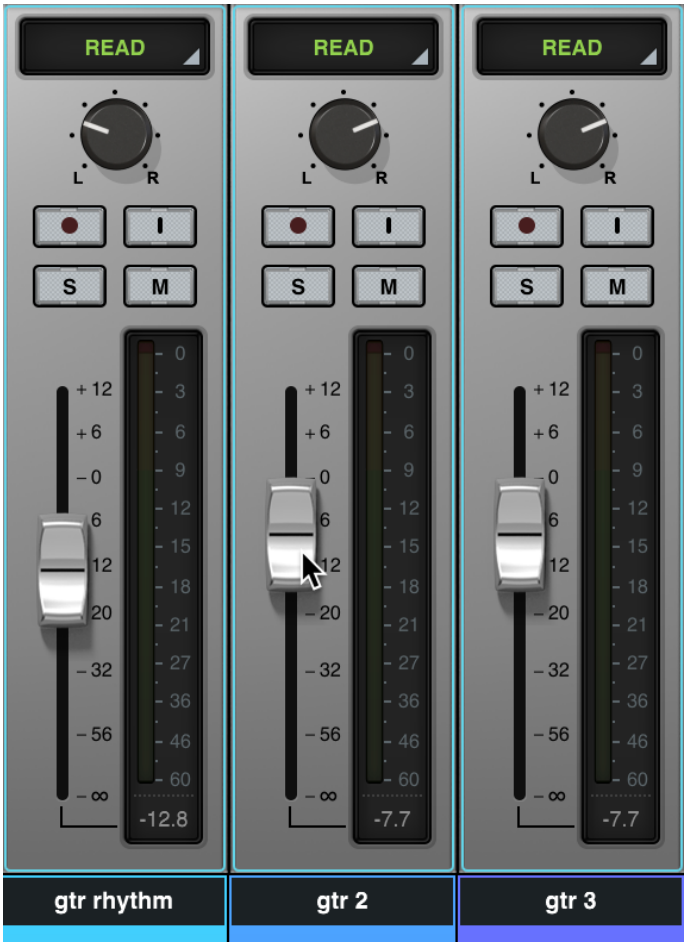


When you adjust Warp markers on a track in a group, Warp markers on all grouped tracks are warped along with the Warp marker you move.

## Mixing with Track Groups

When a track group is enabled for Mixing, grouped tracks in the Mixer appear highlighted. When you move a fader or knob on a grouped track, all other knobs or faders move relative to the knob you move. If you drag tracks to reorder them, all group members move as a block.

To adjust a single control without affecting the rest of the group, Control-click the control. The group is temporarily suspended while you configure the control.




## USING INSERTS WITH TRACK GROUPS

To use Inserts with Track Groups, enable the Inserts property in the Track Group.

When you add an insert to a track, the same insert is added in the same slot on other tracks in the group. The controls for grouped plug-ins are linked, so any adjustments you make to one plug-in are made to the identical plug-ins on the other grouped tracks.

## USING SENDS WITH TRACK GROUPS

To use Sends with Track Groups, enable the Sends property in the Track Group.

When you add a send on a track, the same send is added in the same slot on other tracks in the group. The controls for sends are linked, so any adjustments you make to one send are made to the same send on the other grouped tracks.

# Automation

## Automation overview

Automation is the process of writing changes to various controls in your session over time, that are then played back as the session is played back, when track automation is enabled. Most parameters on a track can be automated.

This section covers:

- Automation modes
- Automating volume
- Automating panning
- Automating plug-in parameters
- Automating extension controls
- Automating MIDI Continuous Controllers for an Instrument

## Automation modes

LUNA has the following automation modes.

| Automation Mode | Description |
|---|---|
| Off | Do not play back automation that is written on the track. |
| Read | Play back all automation that is written on the track. |
| Touch | Plays back the track and any written automation, but begins to write automation as soon as you touch an automatable control. For example, if you touch a volume fader that is or is not already automated, automation data is written as long as you touch or move the fader.<br>Use Touch to write initial automation to a track, to write precise control automation, or to “touch up” existing automation. |

| | |
|---|---|
| Latch | Latch automation mode reads automation and writes it just as Touch. However, Latch “latches” at the point you release the control, and remains in that position until it is touched again, until playback stops, or until the loop restarts.<br><br>The first time you use Latch mode, it will stay at the position where you last released the fader after you stop playback. Every subsequent time, Latch mode returns to the current value after you stop playback.<br><br>Use Latch when you want to write automation and then leave the control at a specific value until you stop playback. For example, if you want to ramp up a clip’s volume, then leave the volume at a set position for the remainder of a section, use Latch. |
| Trim | Use Trim when you want to preserve automation, but want to raise or lower the overall level of the automation. When you set a track to Read Trim mode, indicated on the track as Read (T), the fader changes color to indicate that it is in Trim mode. When in Trim mode, the volume fader for a track does not move to indicate track automation. The fader allows you to change the overall level, while the underlying automation is preserved.<br><br>In Trim mode, LUNA can also still be in Touch or Latch mode. These modes are indicated as Touch (T) and Latch (T). Trim modes allow you to write level changes to the automation with Trim behavior, without completely overwriting the automation. For example, you can reduce or increase the overall level of an automation pass, while still preserving the underlying automation, by using Latch Trim or Touch Trim. Touch Trim writes the trim adjustment to the automation as long as you hold the fader, then returns to the previous Trim level when you release the fader. Latch Trim writes the trim adjustment to the automation, but continues to write automation at the trimmed level where you release the fader until playback or until the loop restarts.<br><br>You can write Trim automation using the Volume fader in the Mixer or on the Focus channel in the Timeline. All non-trimmable controls still write control changes in either Touch or Latch mode. Trim automation is only available on Volume. |

## Selecting an item or items to automate

The View browser for a track (accessed from Timeline view) shows the items you can automate. For an audio track, this is volume, mute, and mono or stereo pans, and the controls for any plug-ins on the track. For an instrument track, this is volume, mute, and mono or stereo pans, plus all the MIDI Continuous Controllers (CCs) of the Instrument plug-in, and controls for any plug-ins on the track.

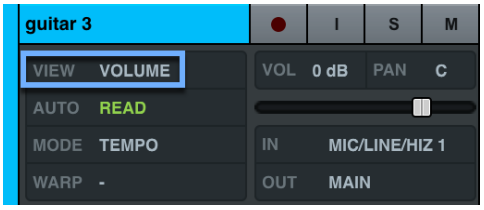
Plug-ins on audio and instrument tracks also have controls that can be automated. The browser shows all automatable parameters for all plug-ins on a track. When automation has been added, the View browser highlights any automated parameter in yellow.

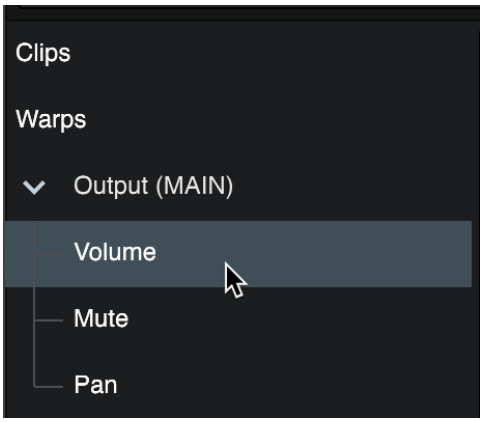
# Drawing automation

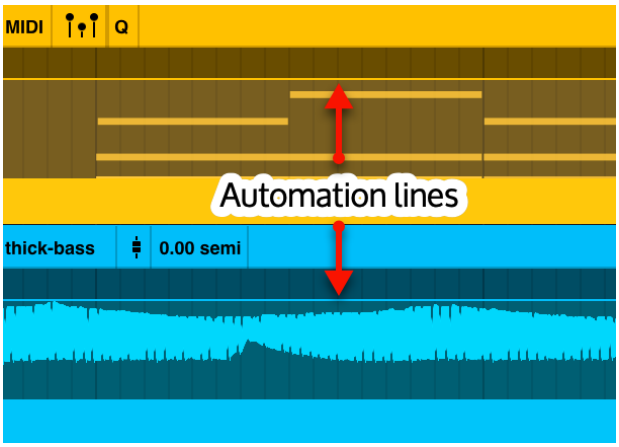
For precise editing of automation, you can draw automation. Double-click anywhere on a track that is showing an automatable control to add an automation breakpoint. You can draw automation anywhere on a track on the timeline, including in places where there are no clips. When you draw automation, the automation points you add snap to the grid if Snap is enabled. To draw automation without snapping to the grid, press Command while drawing automation.

## TO DRAW AUTOMATION ON AN AUDIO OR INSTRUMENT CLIP:

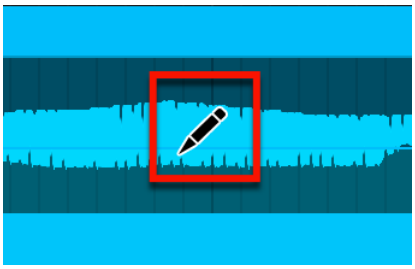
1. In Timeline view, click View, and choose the parameter for which you want to draw automation (for example, Volume). Note that you may have to expand the Output in the View browser to see the controls that can be automated. The audio or MIDI clip shows a line for the automatable parameter.



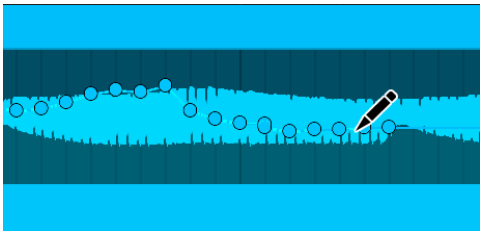





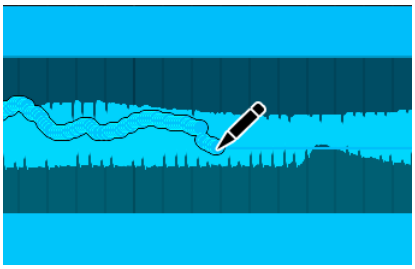

2. To add a single automation point, double-click. to add multiple automation points, press Control and hover over the clip. The cursor changes to the Pencil Editing Tool.



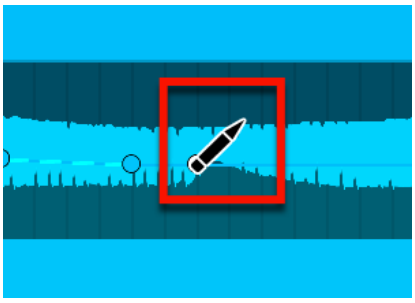
3. While you hold Control, click the points you want to add on the automation line. Hold Control and drag to draw automation across the track.



4. To draw automation without snapping automation points to the grid, press Control+Command while drawing automation.

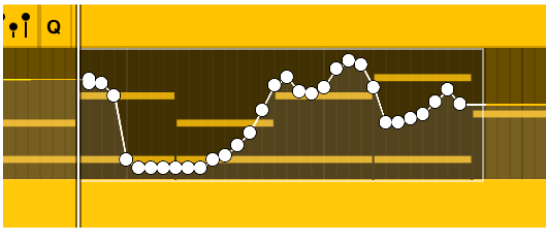


5. To adjust an automation point, click the point and drag up or down. To adjust with fine control, hold Shift while you drag.
6. To clear an automation point, hold Control and hover over an automation point. The cursor changes to the Eraser Editing Tool (the pencil turns around). Click an automation point to remove it.

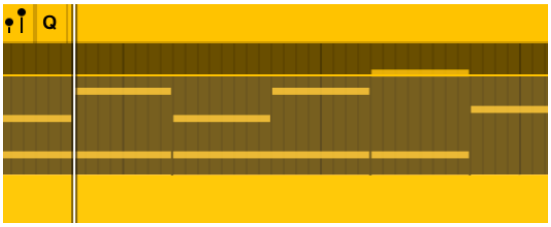


7. To clear a range of automation, select the range on the audio or instrument track, and press Delete.

Automation selected



Automation cleared



Your automation changes are played back when the session plays the clip, when an Auto Mode is enabled. When Auto Mode is Off, automation is ignored.

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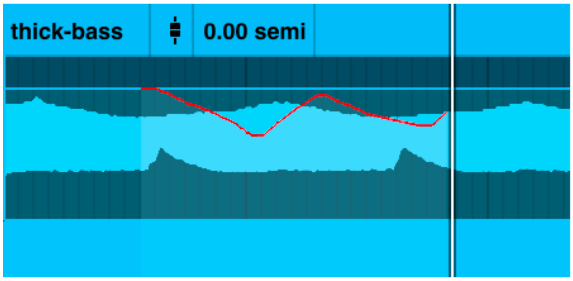
## Writing volume automation with the volume fader

You can write automation with a track control, such as a pan control or volume fader. Automatable controls do not require that you enable recording for automation. Setting a write automation mode (Touch or Latch) for a track automatically enables you to write automation for any automatable control.

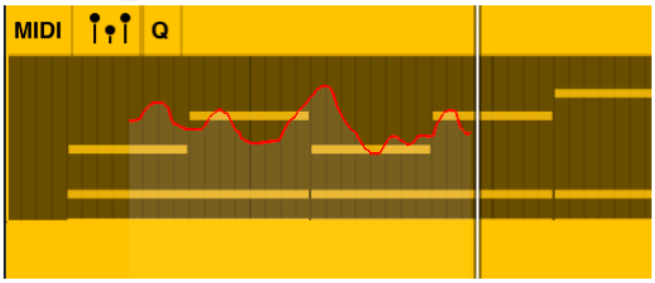
Automation is written from the time you touch a control until you release the control, playback stops, the loop restarts, or you switch LUNA automation modes. If you are writing Touch automation, releasing the fader stops writing automation and returns the fader to the previous level (before you started writing automation). If you are writing Latch automation, the fader remains at the release level.

**Note:** You can write volume automation on an audio track, an instrument track, a bus track, or the Main track. On an instrument track, you can write Volume automation for the track Output, or other types of volume automation for controls in the Instrument plug-in or for Continuous Controllers (CCs).

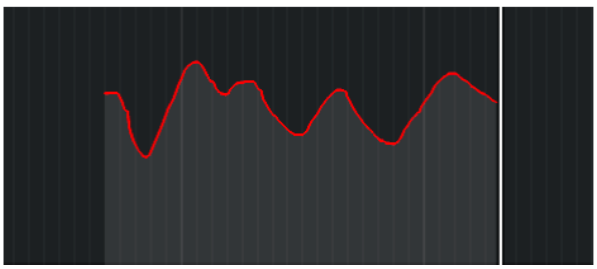
## Writing automation: audio track




## Writing automation: Instrument track



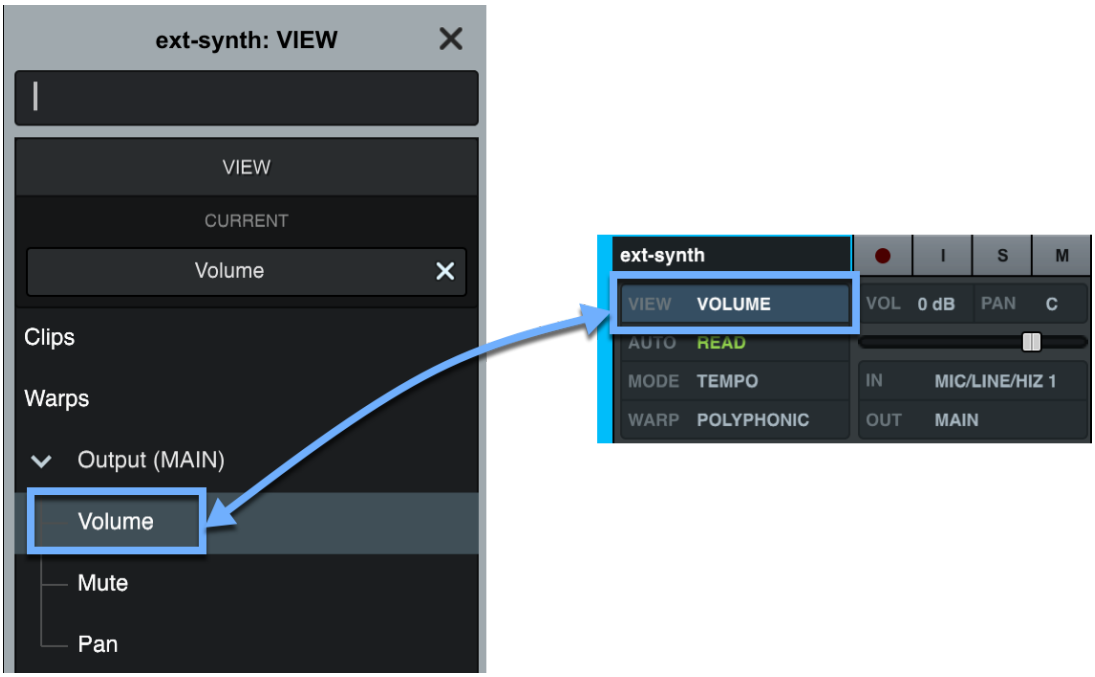

## Writing automation: bus/Main track



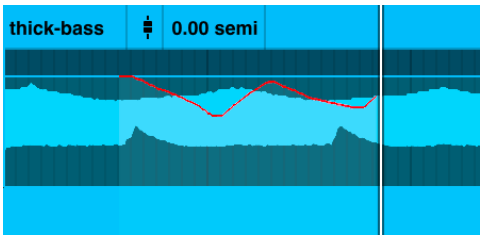
### TO WRITE VOLUME AUTOMATION:

1. On the Focus channel in the Timeline, or on the track in the Mixer, set the track for which you want to automate volume to either Touch or Latch mode.

2. To view the results of your automation, and to edit the automation, switch the track view to Volume. In the track control area in the Timeline, click View, then from the browser choose Volume.




3. Make a selection or place the playhead where you want to start playback.
4. Press Play or the Spacebar.
5. As the track plays, adjust the volume. Volume automation is written to the track.

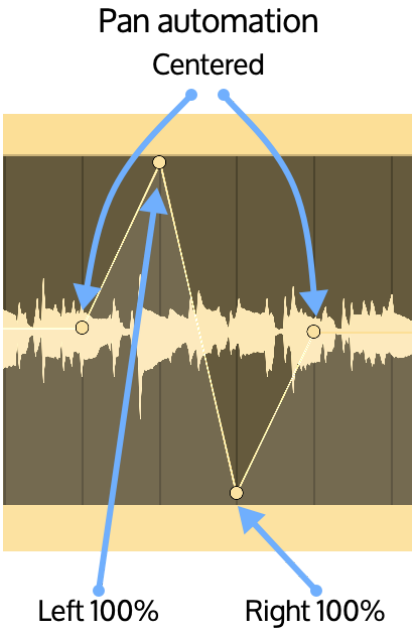



6. To stop writing automation, press the Stop button or the Spacebar, or release the fader. Automation also stops writing when playback stops (for example, at the end of a selection).

If you are writing Touch automation, release the fader to stop writing automation and return the fader to the previous level (before you started writing automation). If you are writing Latch automation, the fader remains at the release level.

## Writing pan automation

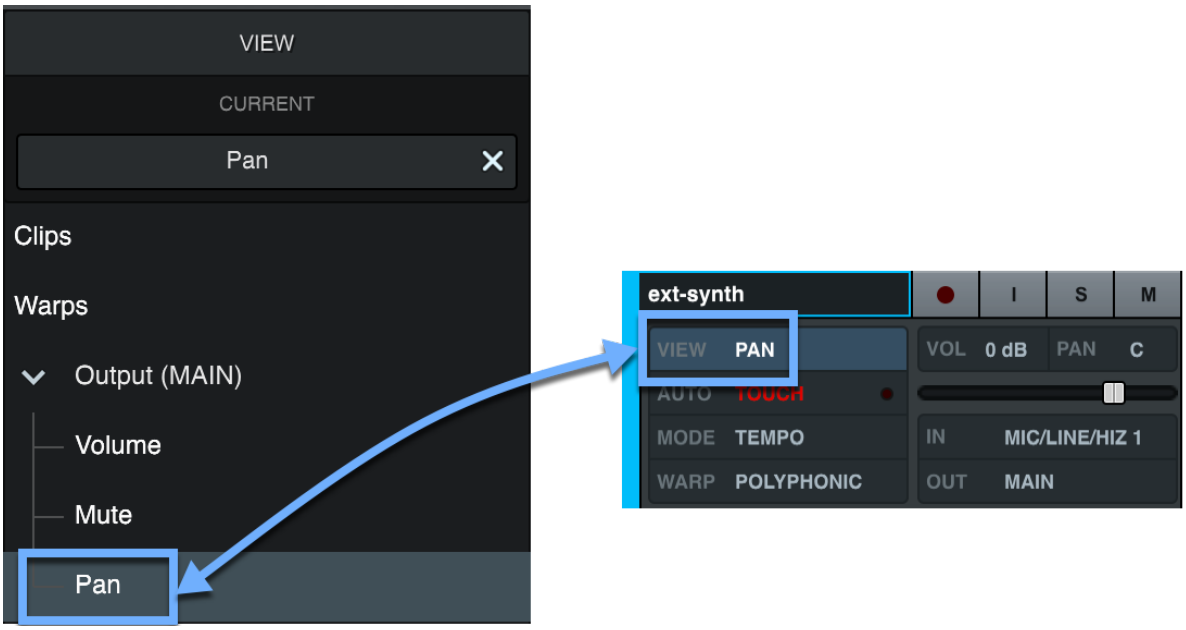
Pan automation is represented on a horizontal line, with the center being unpanned, above the center panning increasing to the left, and below the center panning increasing to the right.



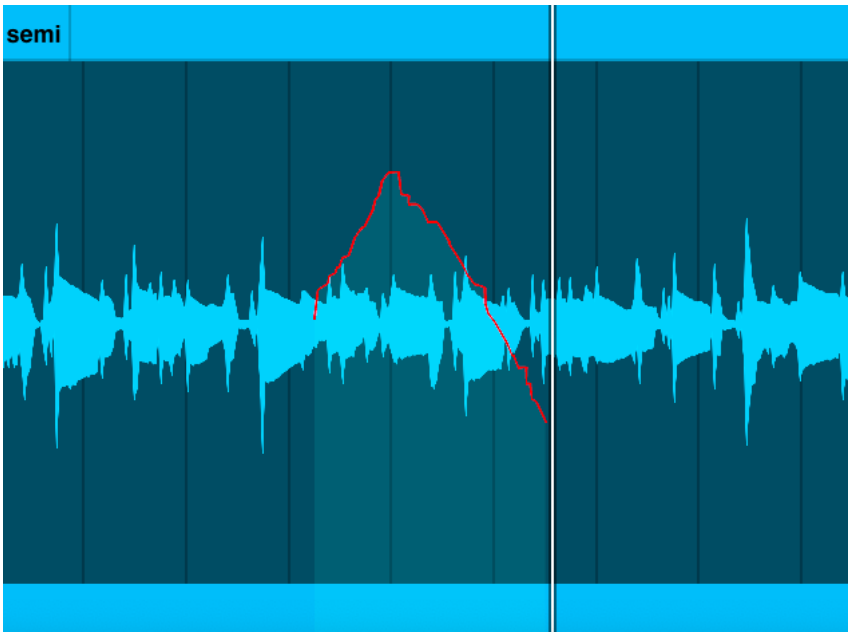

## TO WRITE PAN AUTOMATION:

1. In the Track controls on the Timeline, on the Focus channel in the Timeline, or on the track channel strip in the Mixer, set the track for which you want to automate panning to either Touch or Latch mode.

2. To view the results of your automation, and to edit the automation, switch the track view to Pan. In the track control area in the Timeline, click View, then from the browser choose Pan.




3. Make a selection or place your cursor where you want to start playback.
4. Press Play or the Spacebar.
5. As the track plays, adjust the pan control in the mixer or on the track. Pan automation is written to the track.




6. To stop writing automation, press the Stop button or the Spacebar, or release the fader. Automation also stops writing when playback stops (for example, at the end of a selection).

If you are writing Touch automation, release the fader to stop writing automation and return the fader to the previous level (before you started writing automation). If you are writing Latch automation, the fader remains at the release level.

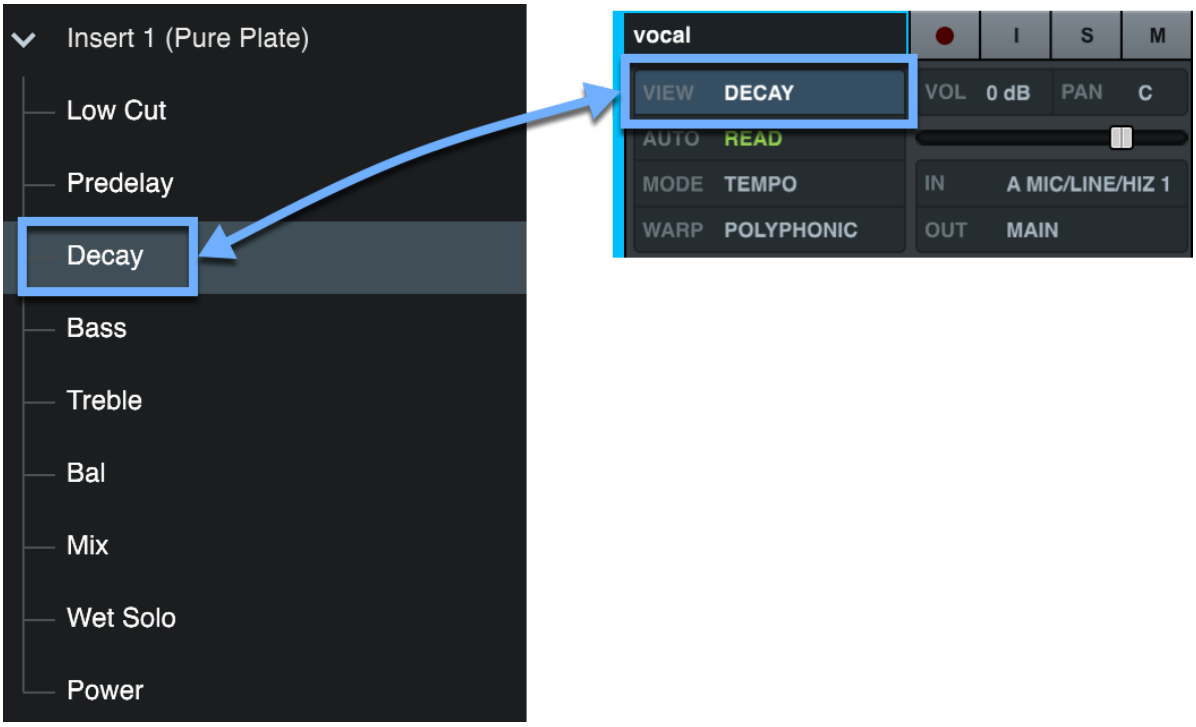
---

# Automating plug-in parameters

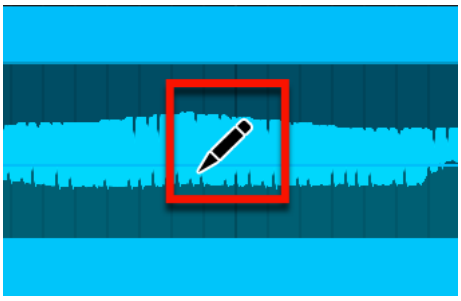
You can edit automation for any plug-in assigned to a track. All automatable plug-in parameters appear in the track's View browser.

### TO WRITE PLUG-IN AUTOMATION:

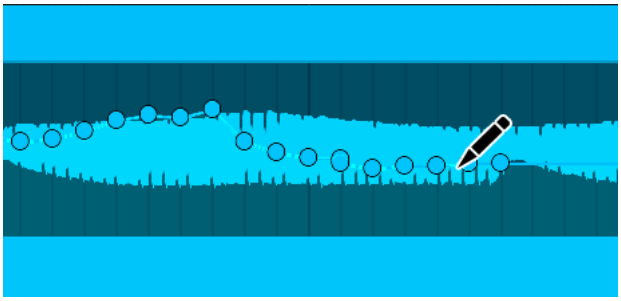
1. On the Track control area in the Timeline, click View, then from the browser choose the plug-in parameter to automate. On the track, the plug-in parameter line appears.



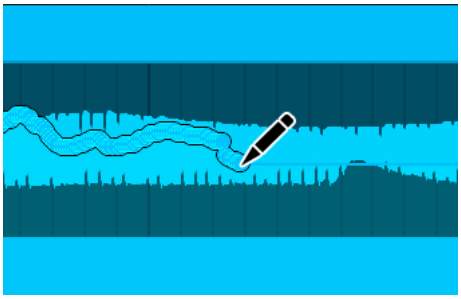

2. To add automation points, press Control and hover over the track. The cursor changes to the Pencil Editing Tool.



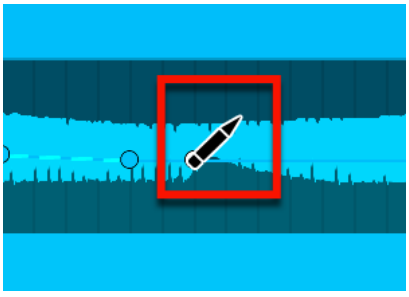
3. While you hold Control, click the points you want to add on the automation line. Hold Control and drag to draw automation across the track.



4. To draw automation without snapping automation points to the grid, press Control+Command while drawing automation.

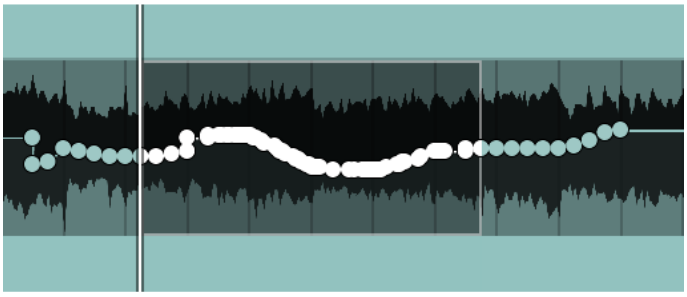


5. To clear an automation point, hold Control and hover over an automation point. The cursor changes to the Eraser Editing Tool (the pencil turns around). Click an automation point to remove it.

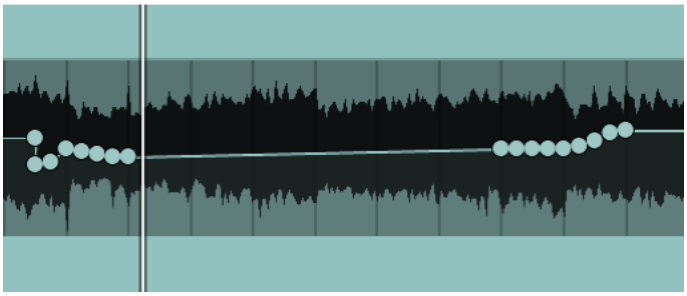


6. To clear a range of automation, select the range on the track and press Delete.

Automation selected



Automation cleared



Your automation changes are played back when the session plays the clip and Automation is enabled. When Auto Mode is Off, automation is ignored.

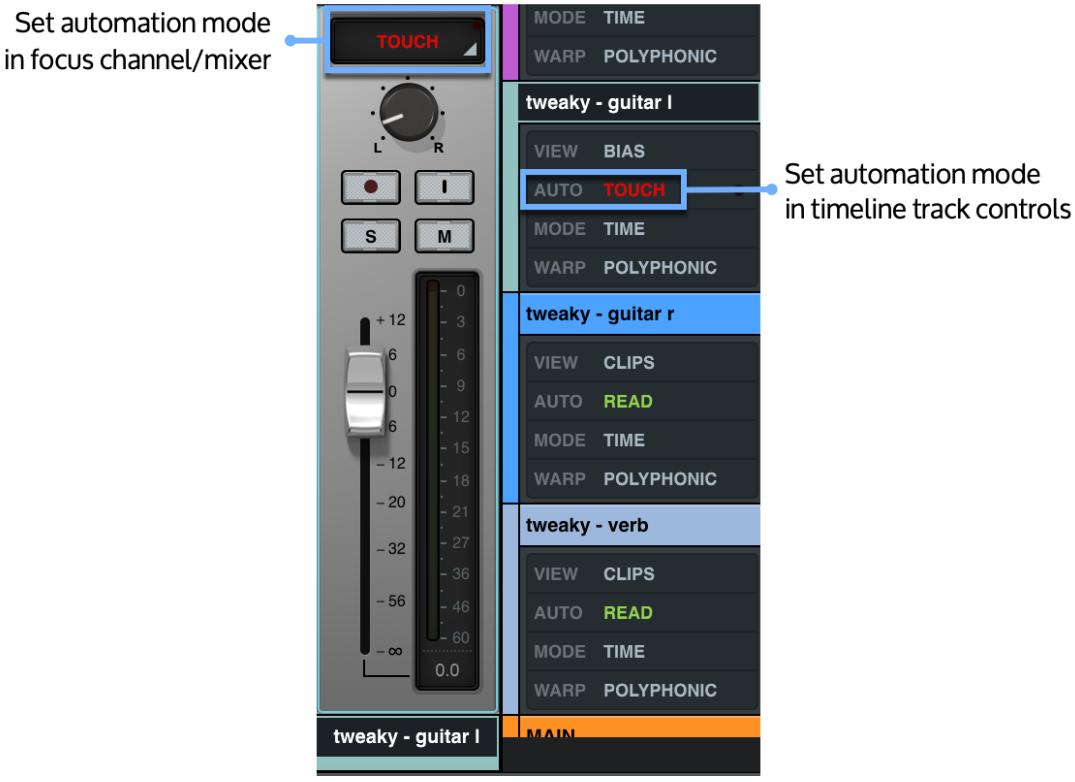
---

## Automating LUNA Extension controls

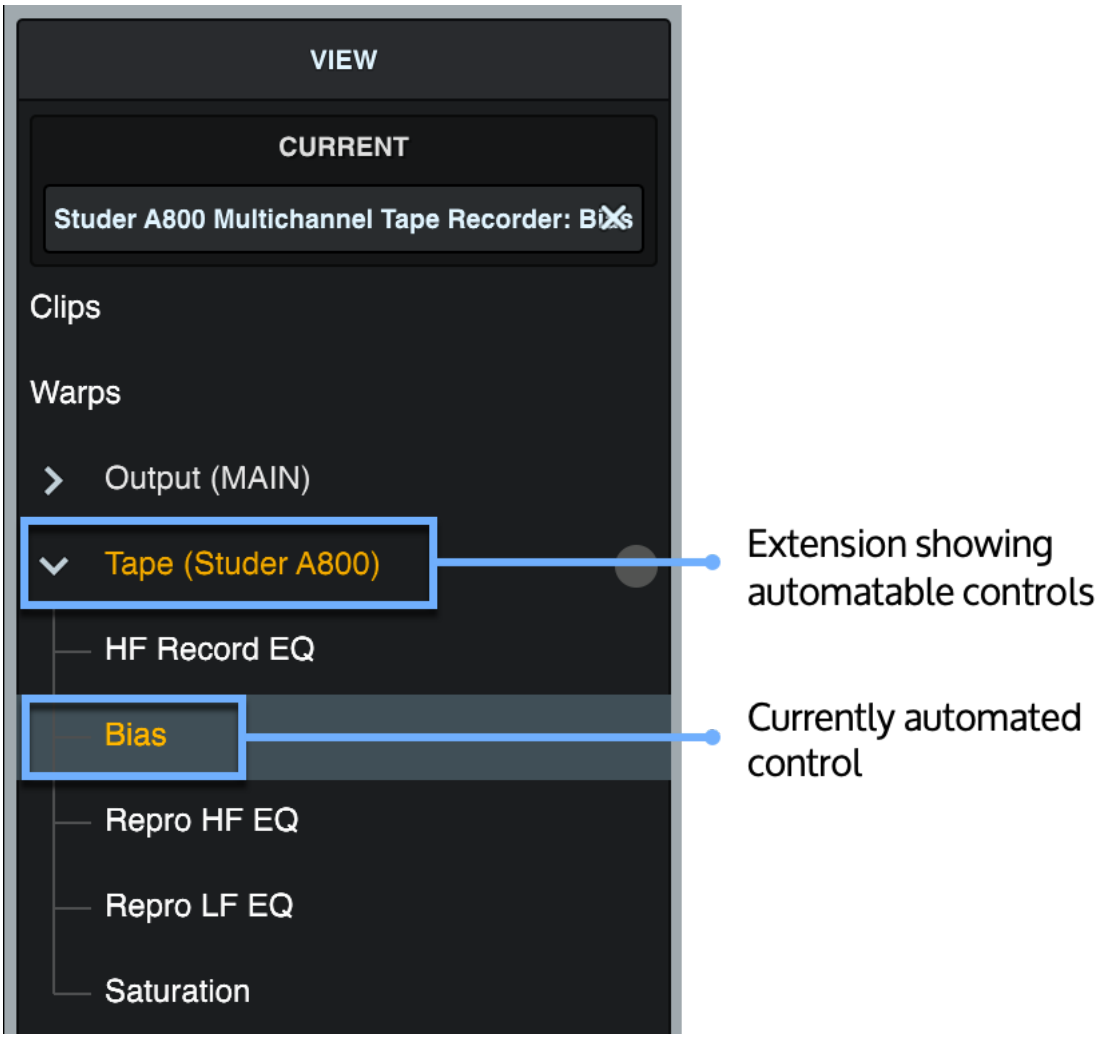
You can write automation for any LUNA Extension assigned to a track. All automatable LUNA Extension controls are listed in the track's View browser.

### TO WRITE LUNA EXTENSION AUTOMATION BY ADJUSTING A CONTROL:

1. On the track controls, set the track for which you want to automate LUNA Extension controls to either Touch or Latch mode.



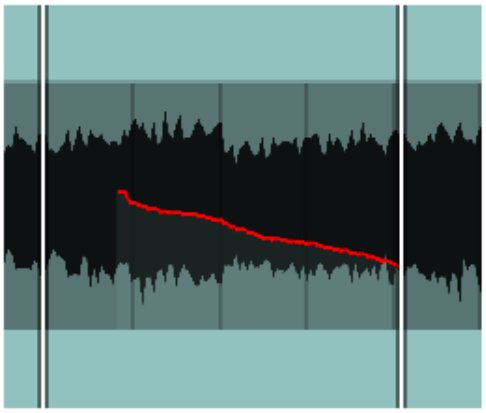

2. To see the results of your automation in the timeline during playback, click View on the track controls, and from the View browser, select the control for which you want to view automation.



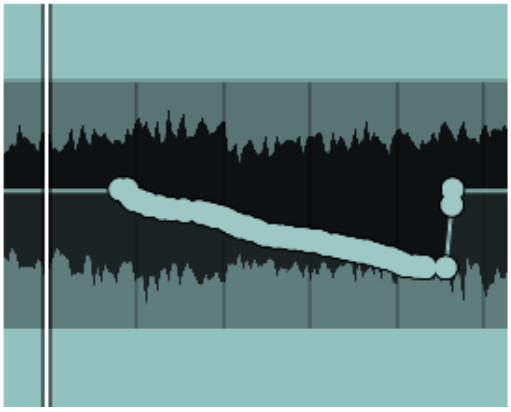

3. Press the Spacebar or play on the transport. While the track is playing, adjust the control you want to automate.
4. Press the Spacebar or stop on the transport to stop writing automation.

If you selected the control in the View browser, you can see the control automation while it is being written, and see the automation results after it is written.

Writing automation

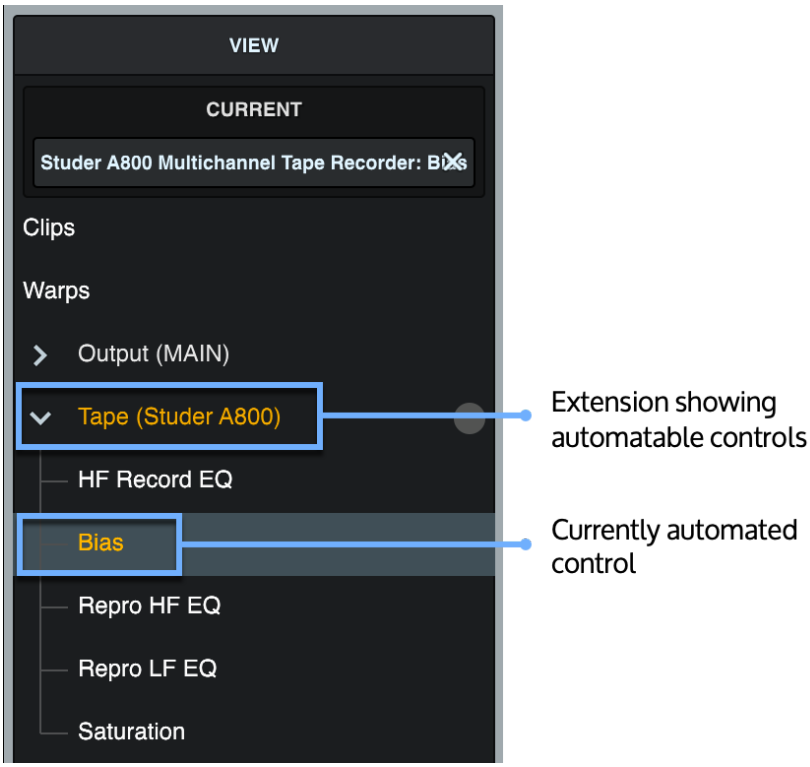


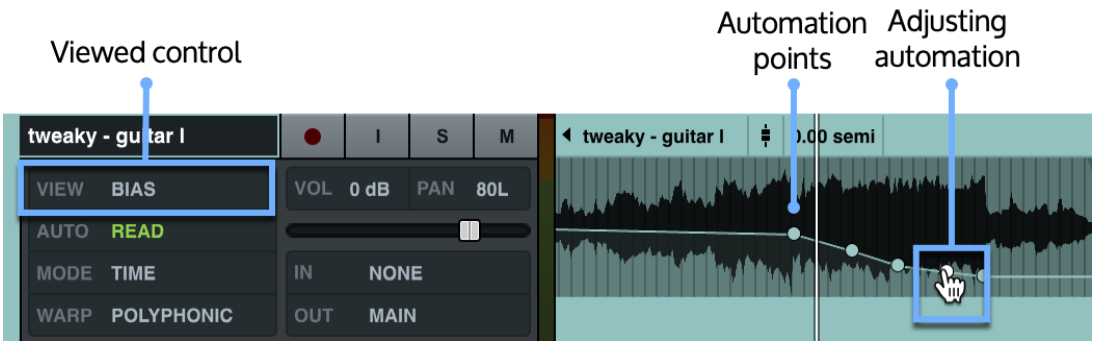
Automation written



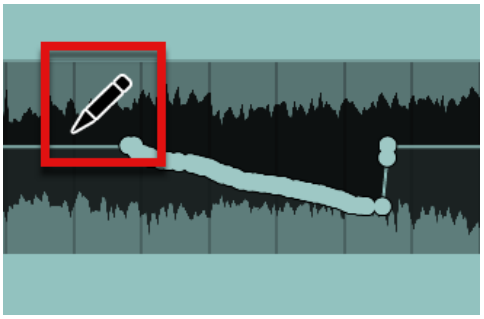
**TO WRITE LUNA EXTENSION AUTOMATION MANUALLY:**

1. On the Track control area in the Timeline, click View, then from the browser choose the LUNA Extension control to automate. On the track, the LUNA Extension control line appears.

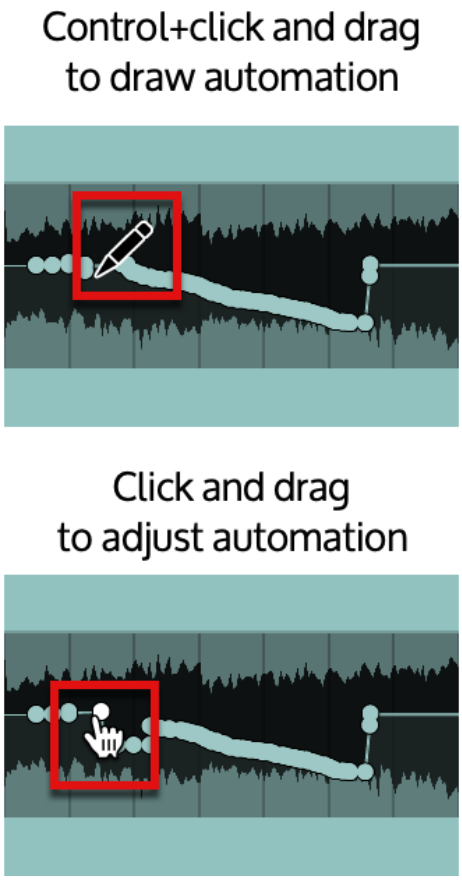


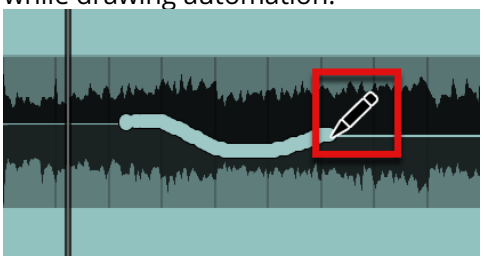

2. To add automation points, press Control and hover over the track. The cursor changes to the Pencil Editing Tool. You can also double-click to add an automation point at the cursor.



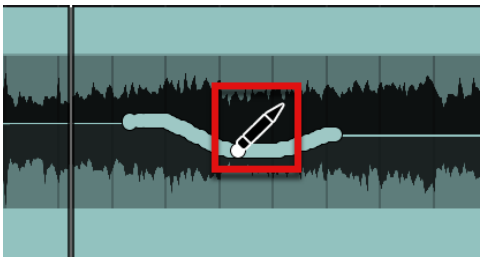
3. While you hold Control, click the points you want to add on the automation line. Hold Control and drag to draw automation across the track. To adjust a single automation point, click and drag.




4. To draw automation without snapping automation points to the grid, press Control+Command while drawing automation.

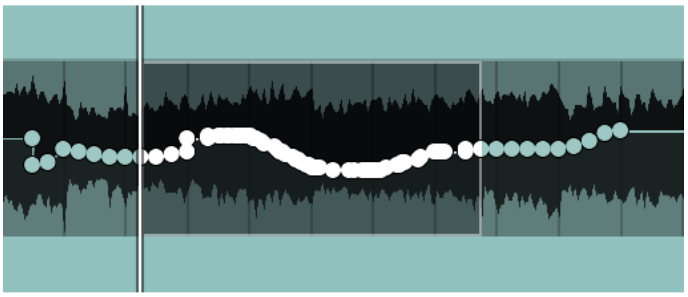


5. To clear an automation point, hold Control and hover over an automation point. The cursor changes to the Eraser Editing Tool (the pencil turns around). Click an automation point to remove it.

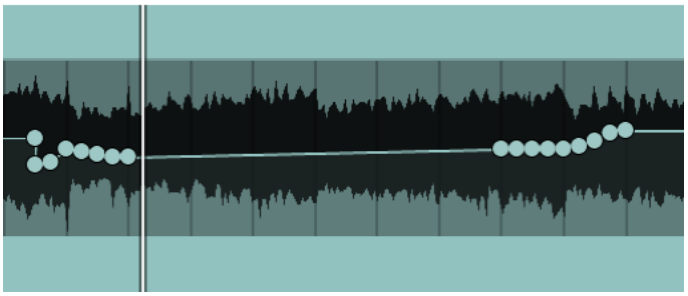


6. To clear a range of automation, select the range on the audio or instrument track, and press Delete.

Automation selected



Automation cleared



Your automation changes are played back when the session plays the clip and Automation is enabled. When Auto Mode is Off, automation is ignored.

---

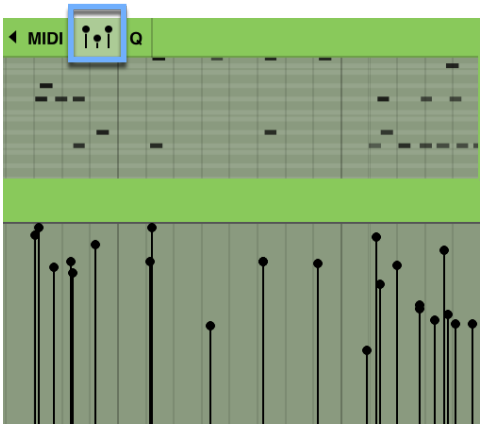
## Automating a MIDI Continuous Controller

You can edit automation for any MIDI Continuous Controller (CC) on an instrument track. All automatable CC messages appear in the track's View browser.

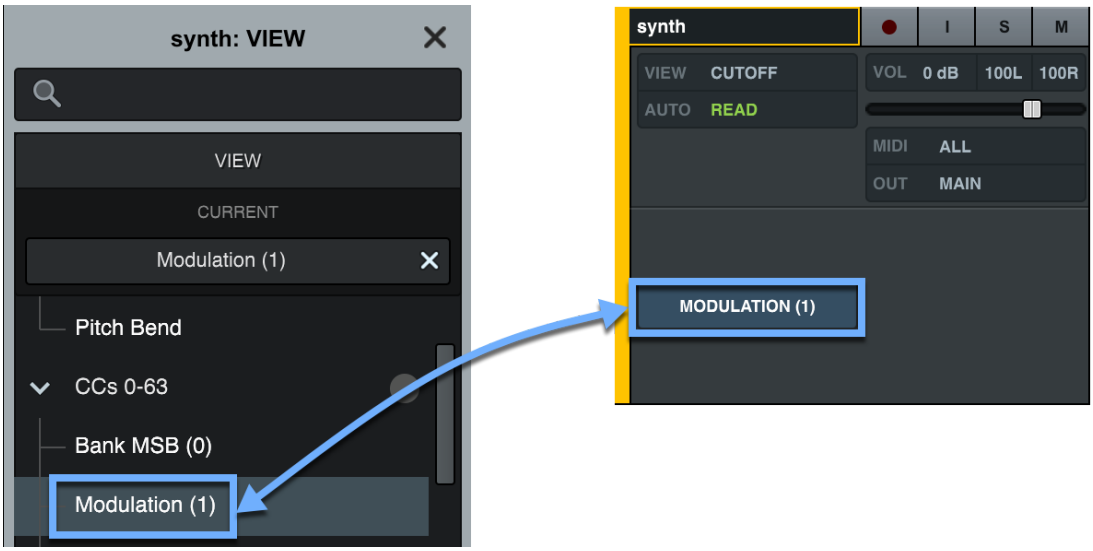
**Note:** you can edit all MIDI CCs supported by the Instrument, even if the CC is not used in a program.

## TO WRITE MIDI CC AUTOMATION:

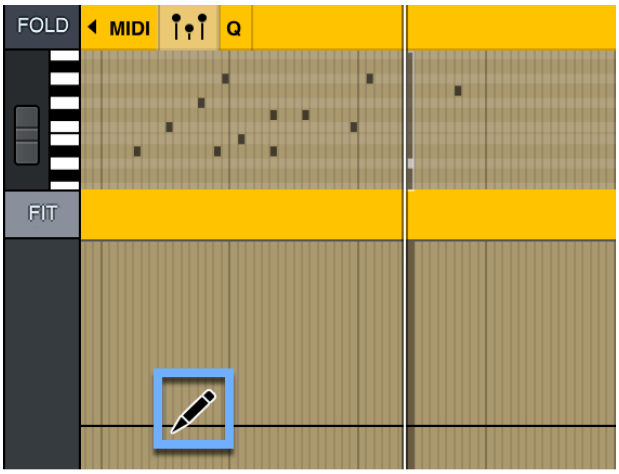
1. Enable the MIDI CC view by clicking the MIDI CC icon on a clip on the instrument track.



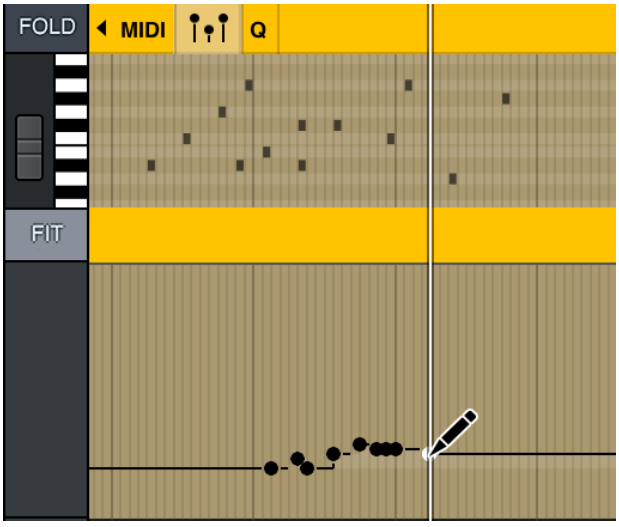

2. On the Track control area in the Timeline, click the CC Controller button (this defaults to Volume), then from the browser choose the MIDI CC to automate. Below the MIDI piano roll, the MIDI CC line appears.



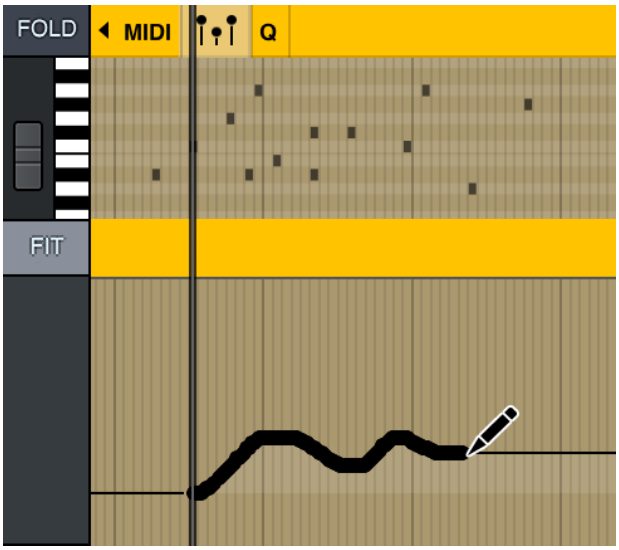

3. To add automation points, press Control and hover over the CC track. The cursor changes to the Pencil Editing Tool.




4. While you hold Control, click the points you want to add on the automation line. Hold Control and drag to draw automation across the track.

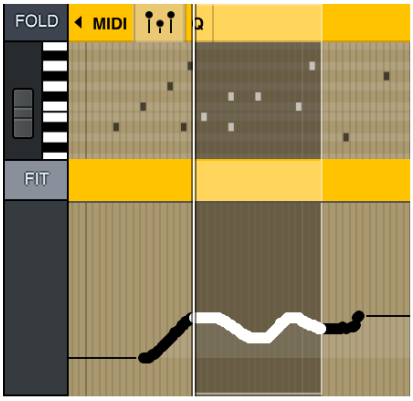



5. To draw automation without snapping automation points to the grid, press Control+Command while drawing automation.

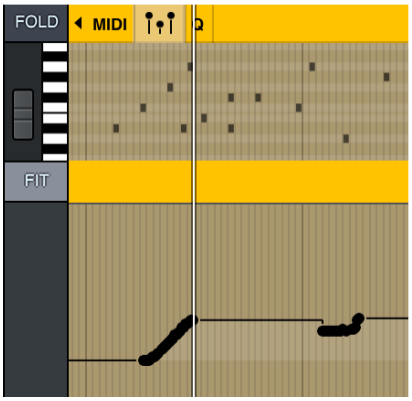



6. To clear an automation point, hold Control and hover over an automation point. The cursor changes to the Eraser Editing Tool (the pencil turns around). Click an automation point to remove it.
7. To clear a range of automation, select the range on the track, and press Delete.

Automation selected




Automation cleared



Your automation changes are played back when the session plays the clip and Automation is enabled. When Auto Mode is Off, automation is ignored.

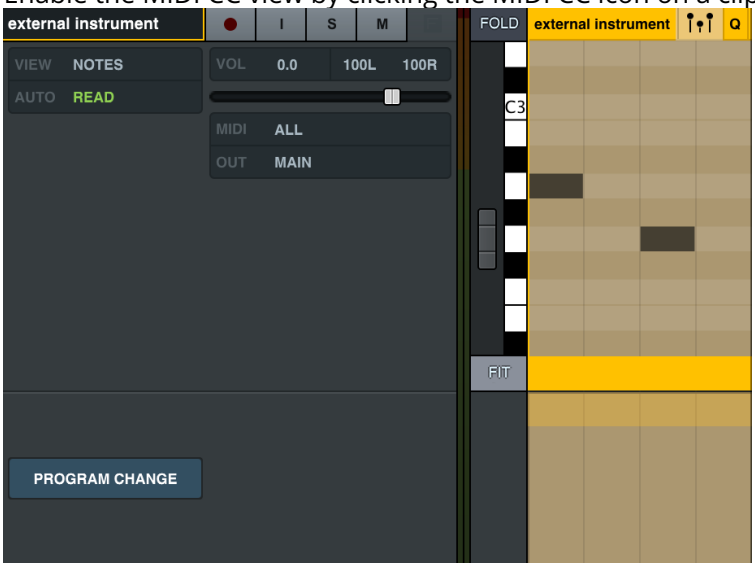
---

## AUTOMATING MIDI PROGRAM CHANGES

You can automate MIDI program changes with the Program Change control.

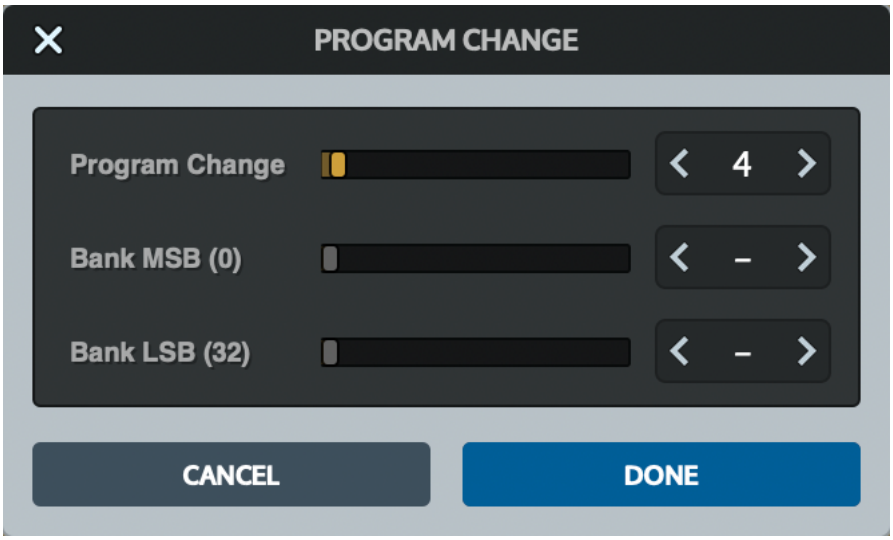
To automate a MIDI program change:

1. Enable the MIDI CC view by clicking the MIDI CC icon on a clip on the instrument track.

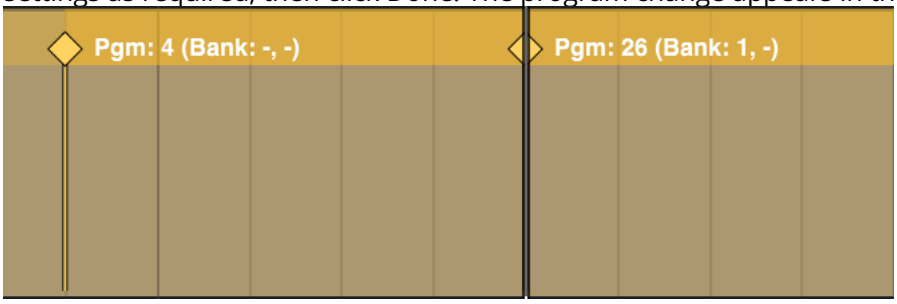



2. On the Track control area in the Timeline, click the CC Controller button (this defaults to Volume), then from the browser choose Program Change. Below the MIDI piano roll, the MIDI CC area appears.

3. Double-click in the program change area where you want to program change to occur. The Program Change window appears.




4. Configure the program change by setting the Program Change, Bank MSB, and Bank LSB settings as required, then click Done. The program change appears in the track.




# Trimming automation

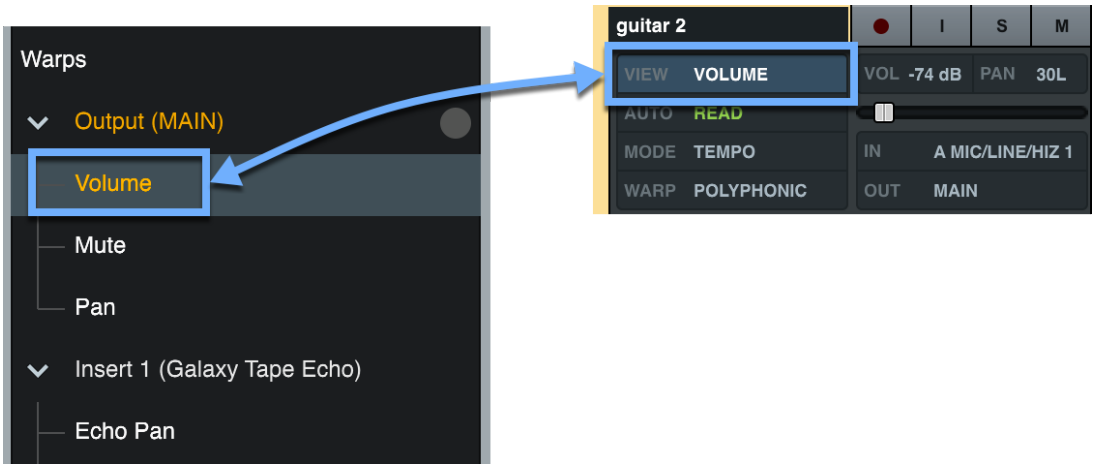
Trimming automation is the process of adjusting a range of automation data. You can trim a selection, a segment (the line between two automation points), or all automation on a clip.

## SHOW AUTOMATION

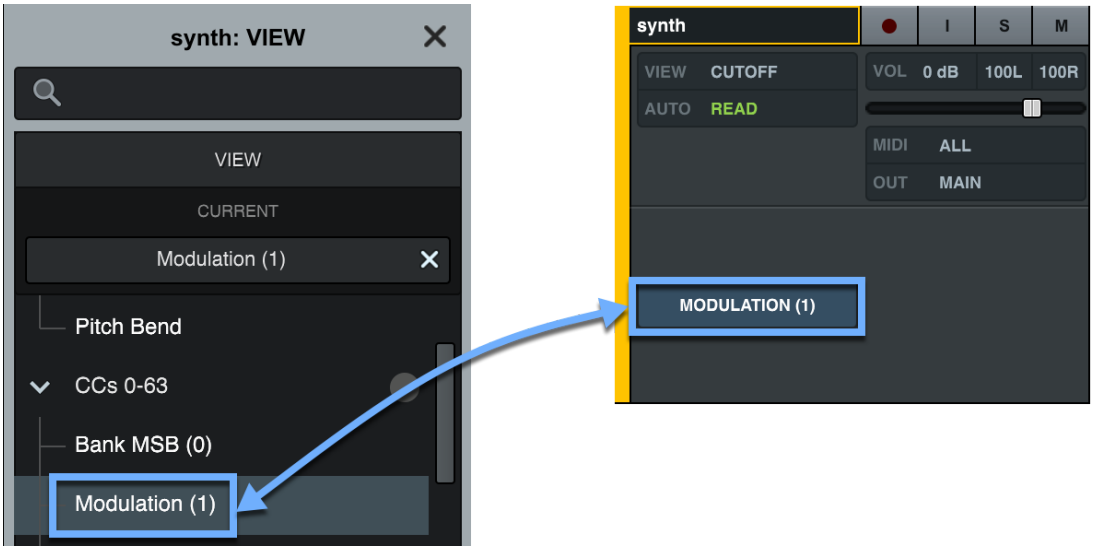
Before you trim automation, you must show the automation in the Timeline that you want to trim.

- Click View on the track to select the automated control you want to adjust.

**Tip:** Automated controls are highlighted in the Focus Browser.

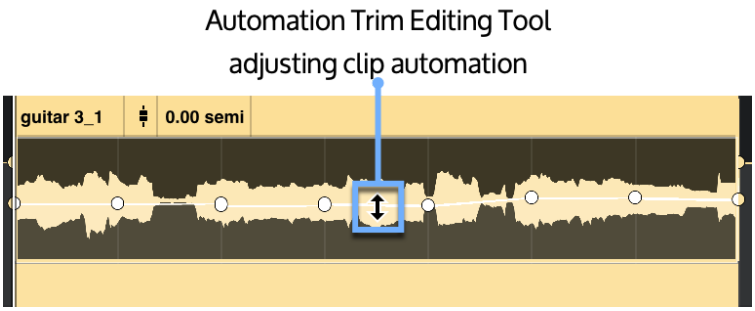



- To adjust a MIDI CC, open the MIDI CC view and choose the MIDI CC from the Track controls panel.




To trim all automation on a clip:

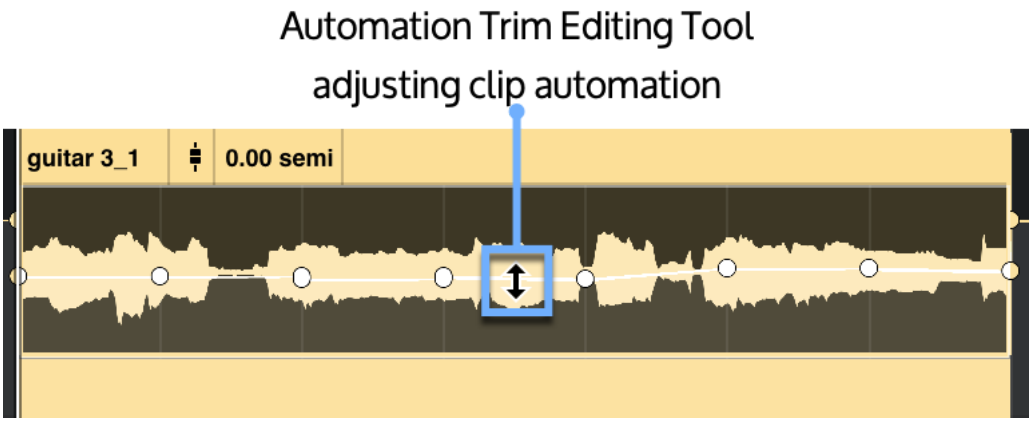
1. Hover the cursor over the automation line on the clip. The Automation Trim Editing Tool appears.
   Note that the cursor must be between automation points, and you may have to zoom in to place the cursor.
2. Click on the automation line and move the automation up or down to trim.
3. To trim automation with fine control, hold Shift while you drag the automation up or down.

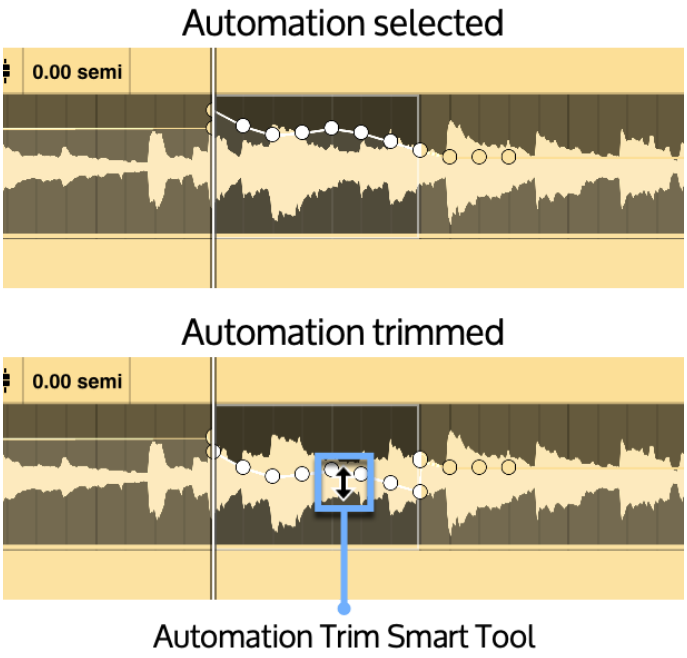



**Note:** Automation is trimmed for the entire clip. Automation breakpoints are added at the start and end of the clip.

To trim an automation selection:

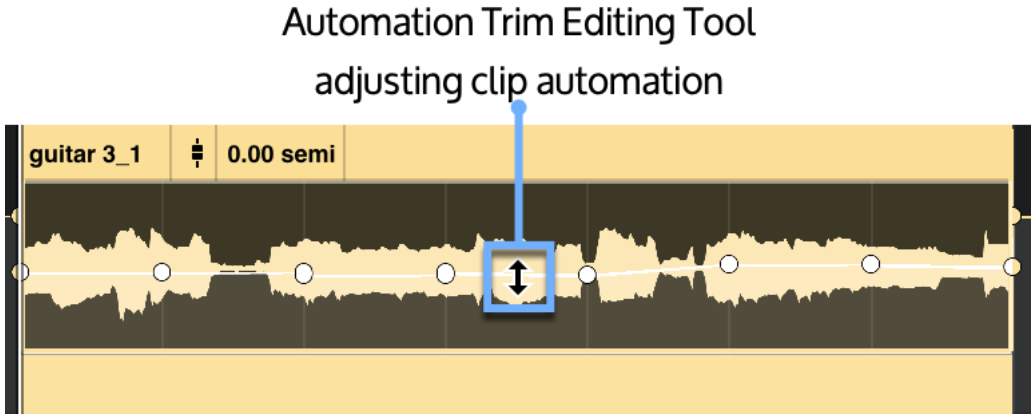
1. Make a selection on the track or CC automation line.
2. Hover the cursor over the automation line on the clip or CC track. Make sure the cursor is over the automation line and not an automation point. The Automation Trim Editing Tool appears.
3. Click on the automation line and move the selected automation up or down to trim.
4. To trim automation with fine control, hold Shift while you drag the automation up or down.



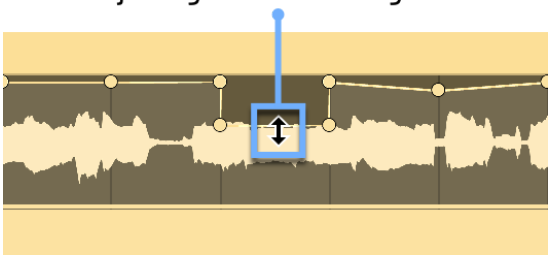



To trim an automation segment:

1. Hover the cursor over an automation segment on the clip. The Automation Trim Editing Tool appears.
2. Click on the automation segment and move the segment up or down to trim.
3. To trim automation with fine control, hold Shift while you drag the automation up or down.



Automation Trim Editing Tool
adjusting automation segment

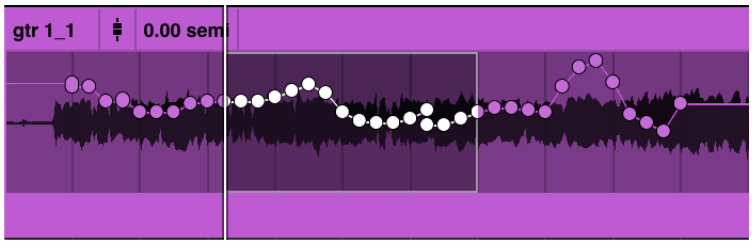


**Tip:** You may have to zoom in to trim an automation segment instead of the entire clip. You can only trim an automation segment when it has no slope (it begins and ends on the same value).

## Clearing all automation for a selection

To clear all automation data within a selection, make a selection on one or more tracks in the timeline, then choose Edit > Clear All Automation. When you clear automation for a selection, breakpoints are added at the beginning and end of the selection, if automation extends beyond the selection. This command clears automation for all controls and CCs for the selection.

Automation selected




Edit > Clear All Automation

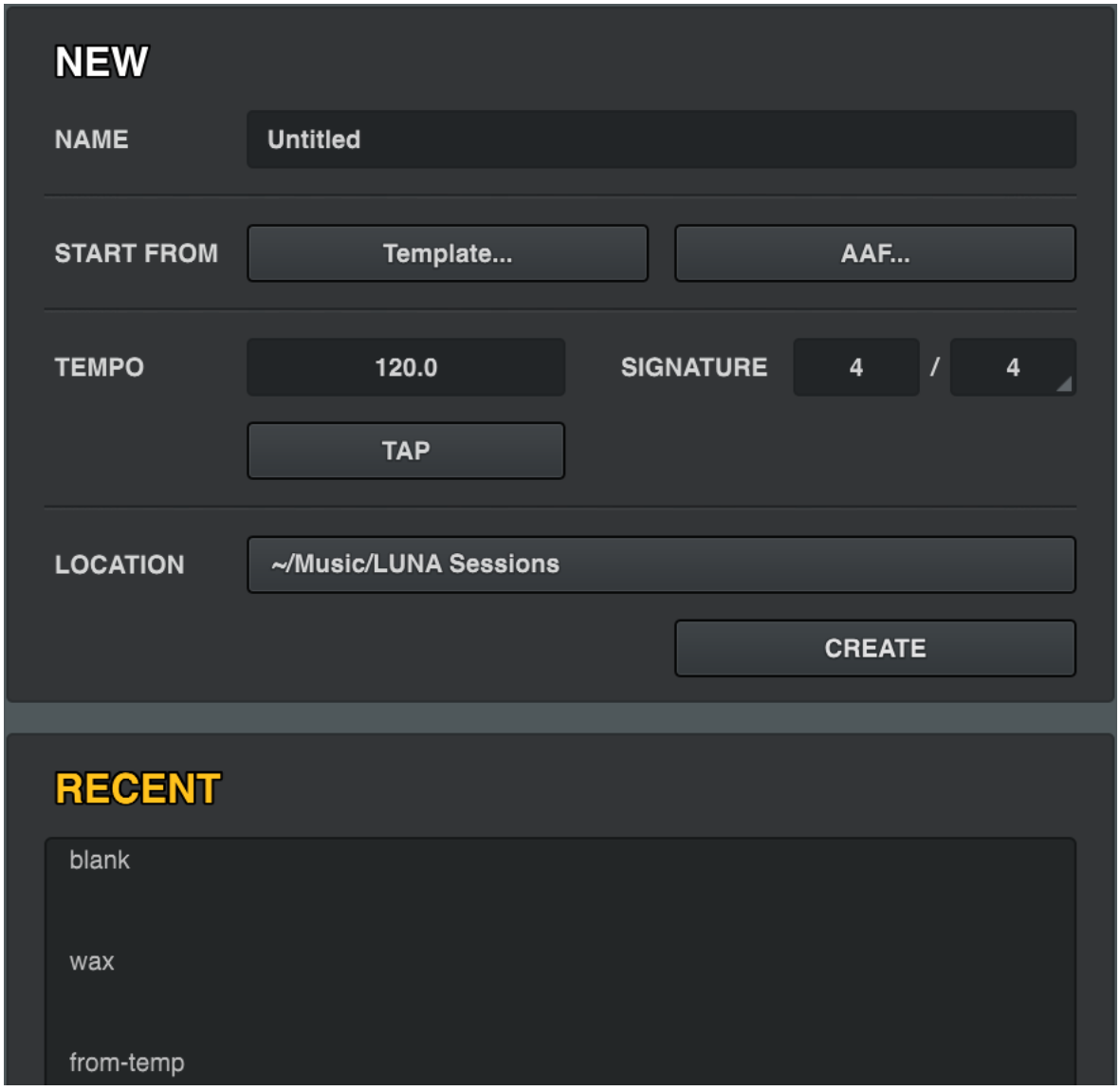
# Working with Sessions

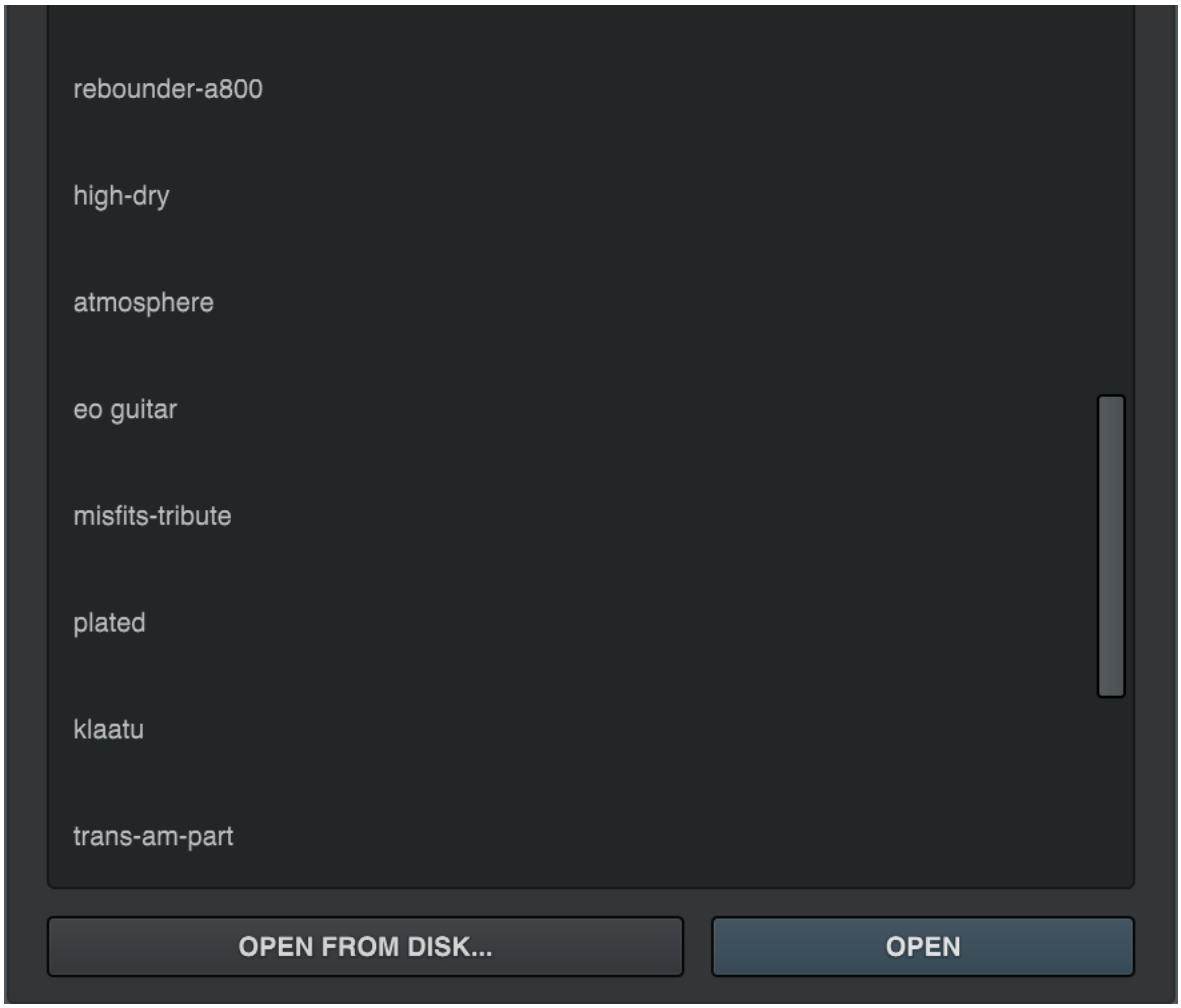
# Creating a New Session

## TO CREATE A NEW EMPTY SESSION:

1. On the Create Session panel, type a name for the session.
2. Specify a tempo and time signature for the session, or accept the defaults. Note that you can change the tempo and meter after you create the session.
3. To find the approximate tempo, you can tap the Tap button in time four or more times.
4. Click the Location bar to open a dialog where you can choose the location for the session file, or accept the default location.
5. When you have configured the new session settings, click Create.

A new session is created in a parent folder of the same name. When you export files, an Exported Files folder is created in this folder. This folder is the default location for any files exported from the session.






To create a new session from the main LUNA window, choose File > New (or use the Command+N shortcut) from the File menu.

## TO OPEN AN EXISTING SESSION, EITHER:

- Click the session name in the Recent list, and click Open, or
- Click Open From Disk... and select the session, then click Open.

## TO CLEAR THE RECENT SESSIONS LIST, EITHER:

- Right-click in the Recent sessions list and select Clear Recent.
- Or choose File > Open Recent > Clear Recent List from the LUNA menus.

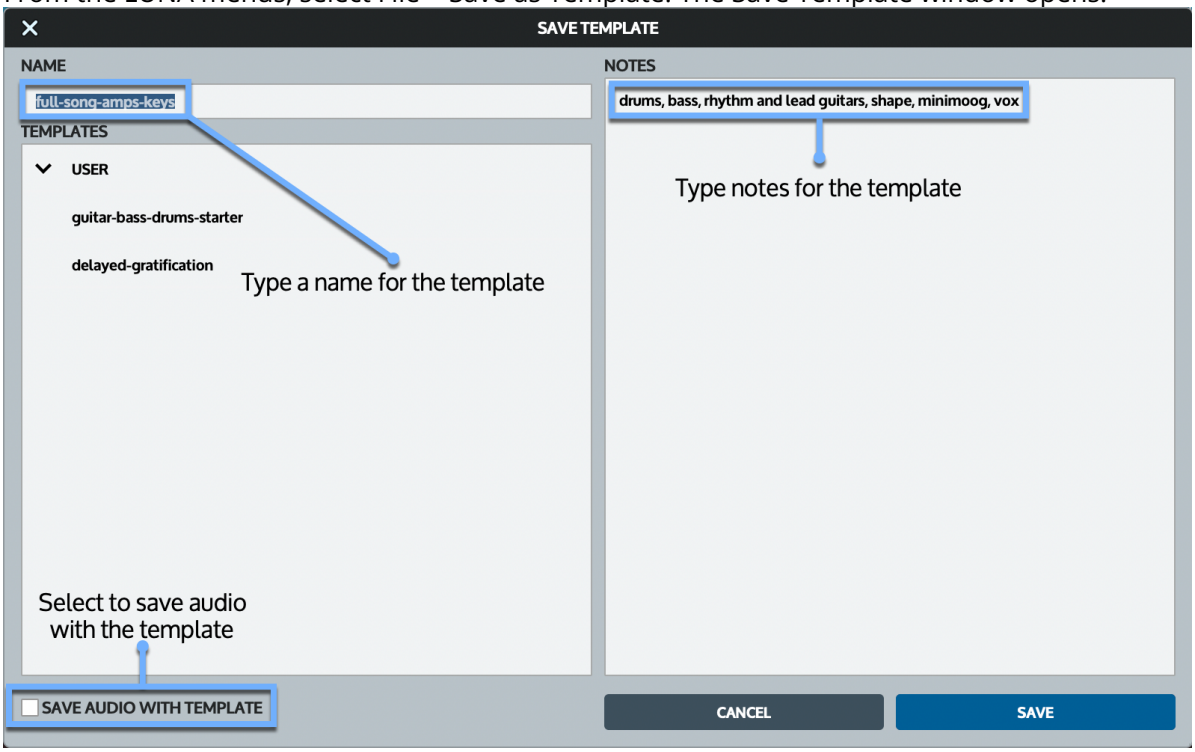
# Using Session Templates

A session template contains the tracks, plug-ins, instruments, LUNA Extensions, and send and routing information configured in a session. Tempo, meter, markers, and other timeline information is also included. A template can optionally be configured to contain the audio and MIDI data from the session from which it is created. You can select from your list of saved templates when creating a new session.

Use templates to create starting points for new sessions, with recording and mixing configurations preconfigured. A saved session contains all of the settings and customizations of the session from which it is created; however it does not save the undo history, versions, or bookmarks. When you create a new session from a template, it is a completely new session with no history.

## SAVING A SESSION TEMPLATE

1. From the LUNA menus, select File > Save as Template. The Save Template window opens.

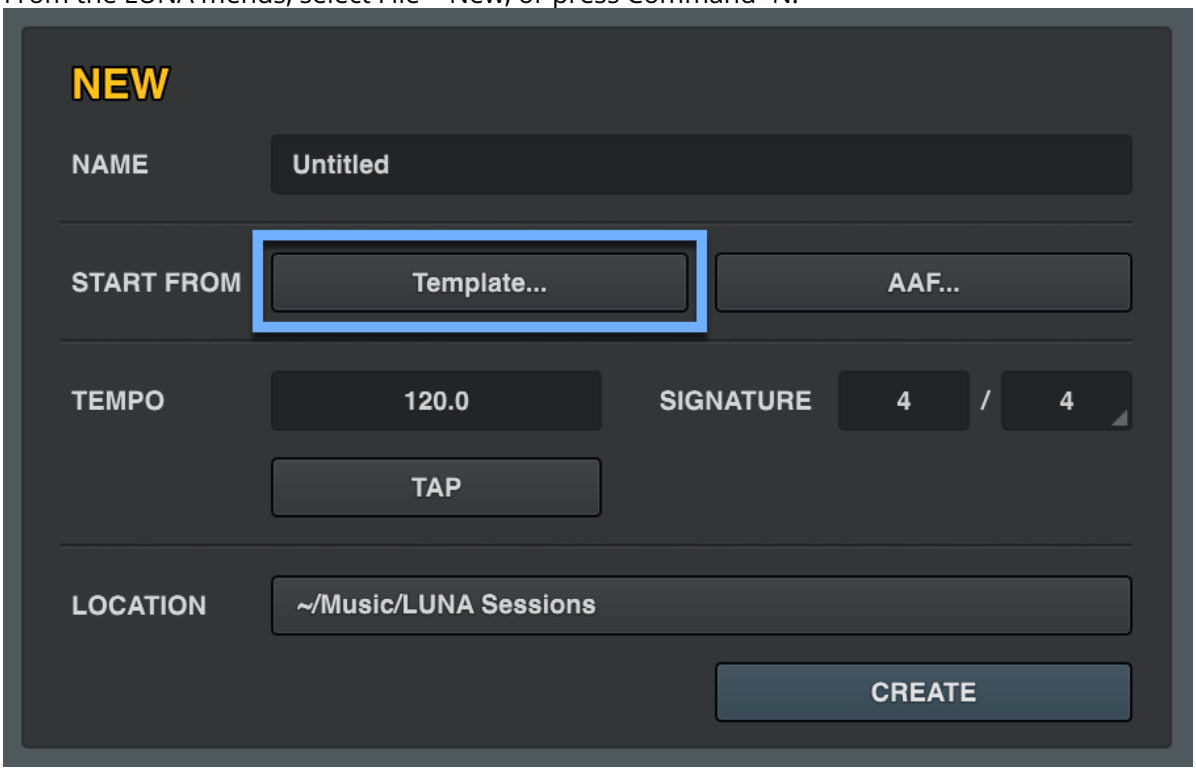



2. Type a name for the template.
3. In the Notes area, type any notes for the template.
4. To save audio and MIDI with the template, select Save audio with template.
5. Click Save.

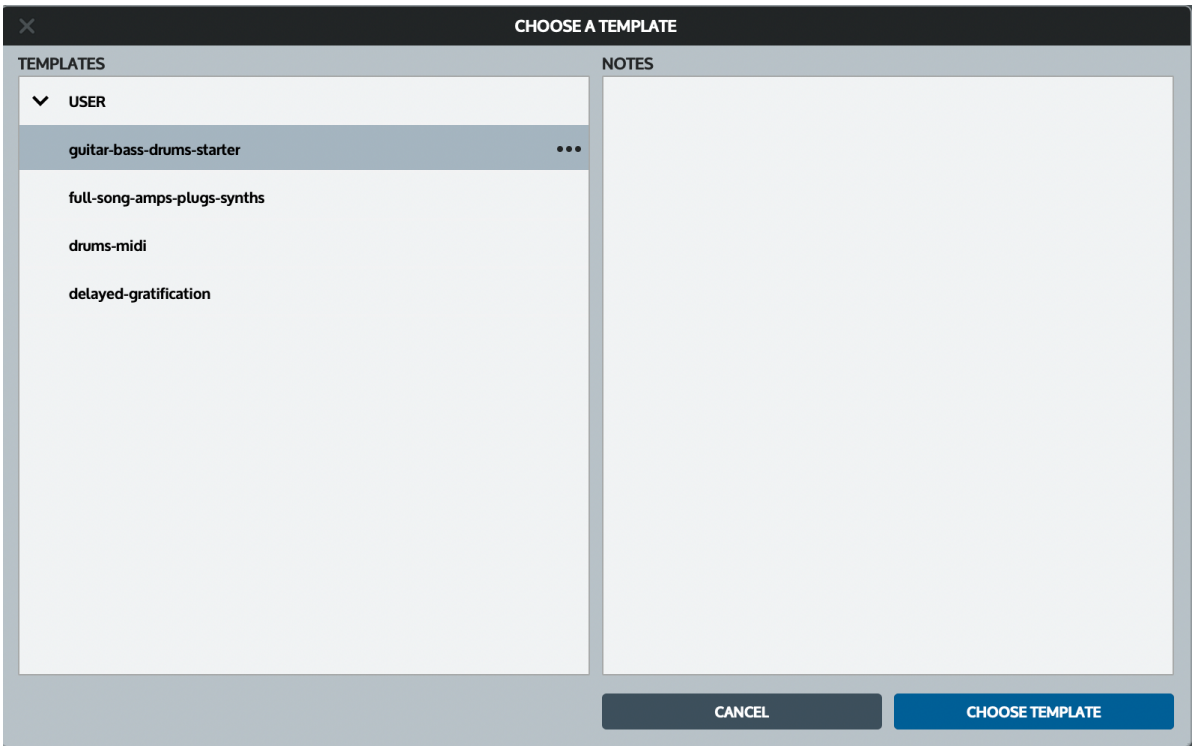
You can now use this template when creating a new session.

## CREATING A NEW SESSION FROM A TEMPLATE

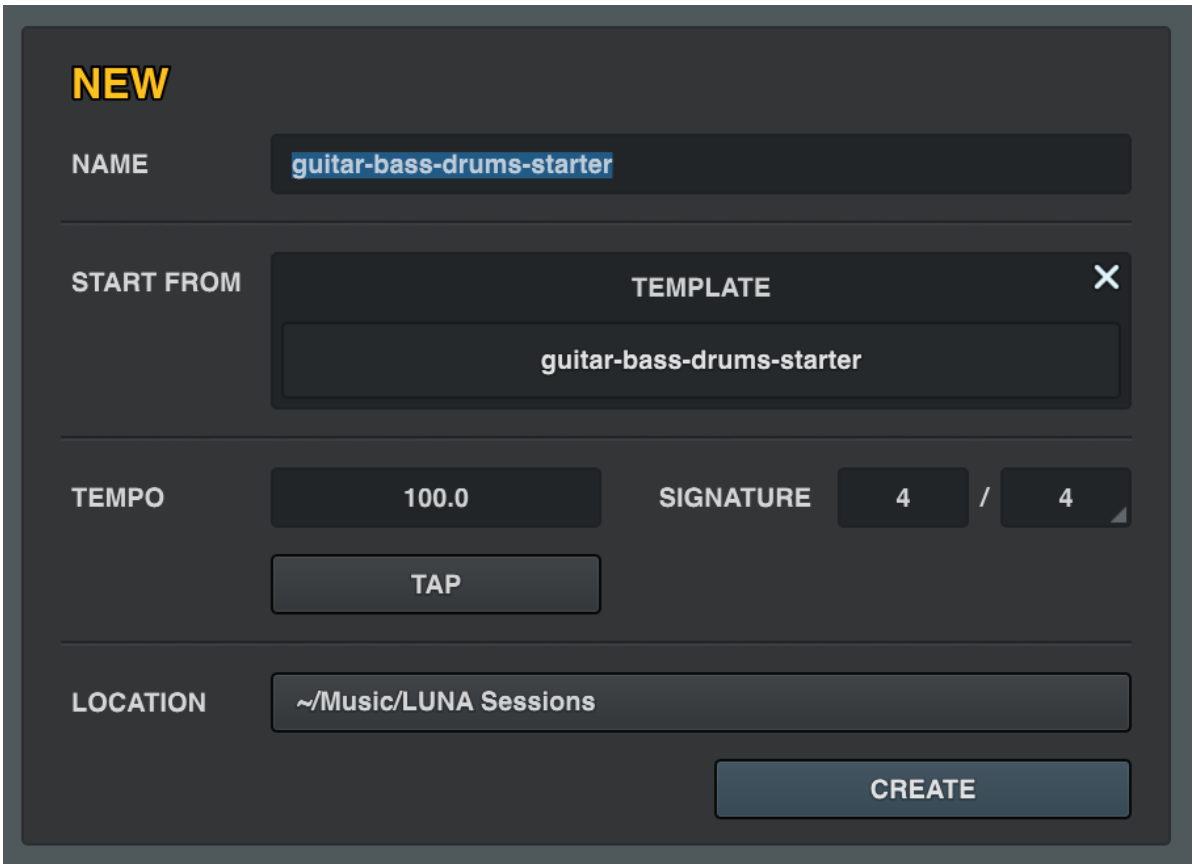
1. From the LUNA menus, select File > New, or press Command+N.




2. Next to Start From, click Template. The Choose Template window opens.




3. Choose a template, then click Choose Template.
4. The name of the session is updated with the template name, and the tempo and signature of the session are adjusted to match the template. In the Template field, the name of the template appears.




5. Type a new name for the session. Adjust the tempo and signature and change the session location if required.
6. Click Create to create the session.

The new template is created with the tracks and configuration of the template. If you chose to include audio or MIDI data in the template, that audio or MIDI appears in the new session.

---

# Importing an AAF Session

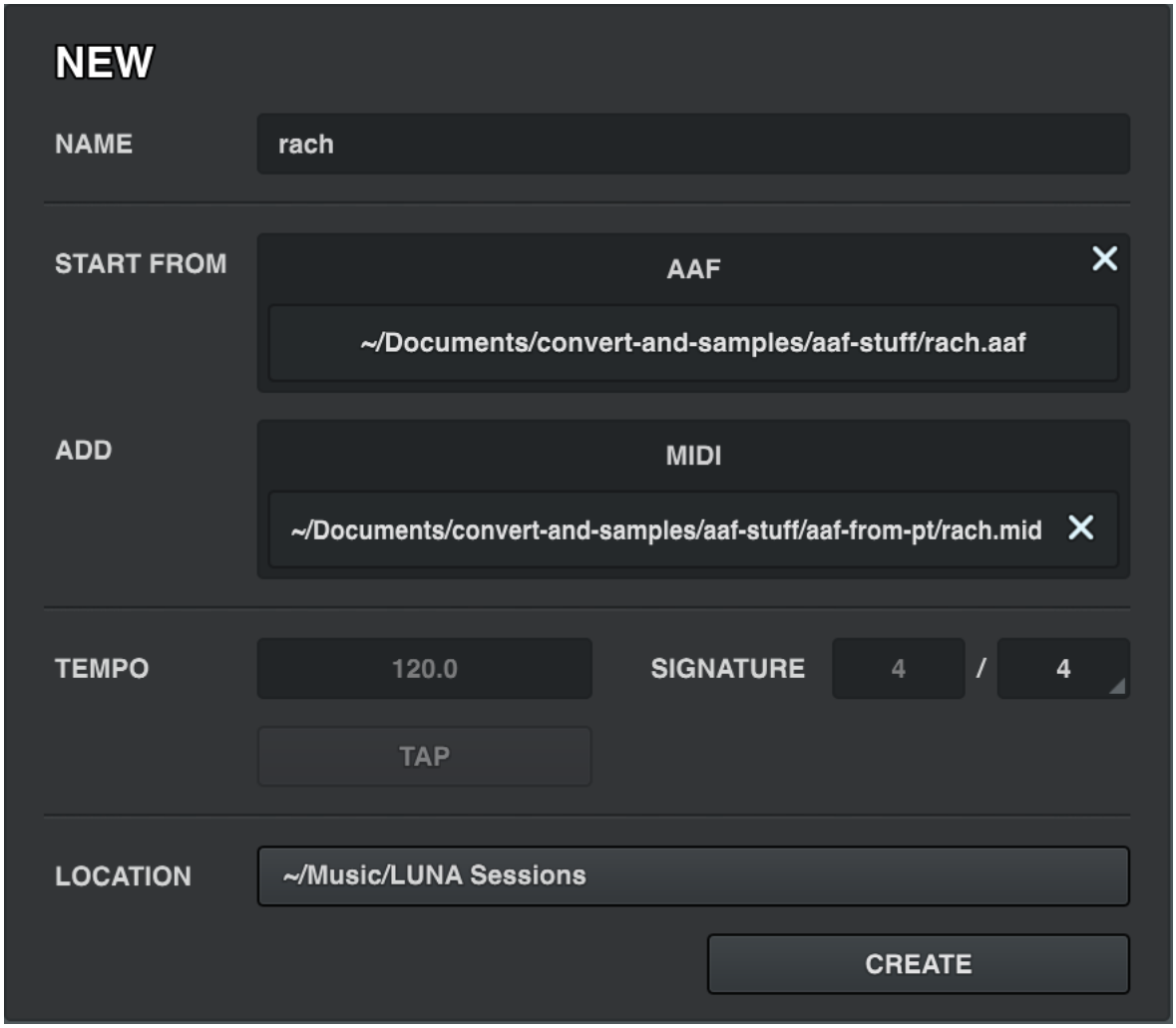
AAF (Advanced Authoring Format) is used by DAW and video applications such as Avid Pro Tools and Adobe Premiere to exchange sessions. LUNA can create new sessions using the AAF file, the audio files generated when the AAF is exported, and a multi-track MIDI file generated with the AAF file.

## WHAT IS IMPORTED

When you export or import an AAF file, you can exchange multiple audio tracks with their time positions, fades, and track names. Automation, panning, master tracks, buses, and plug-ins are not included in an AAF file.

To create a session from an AAF file:

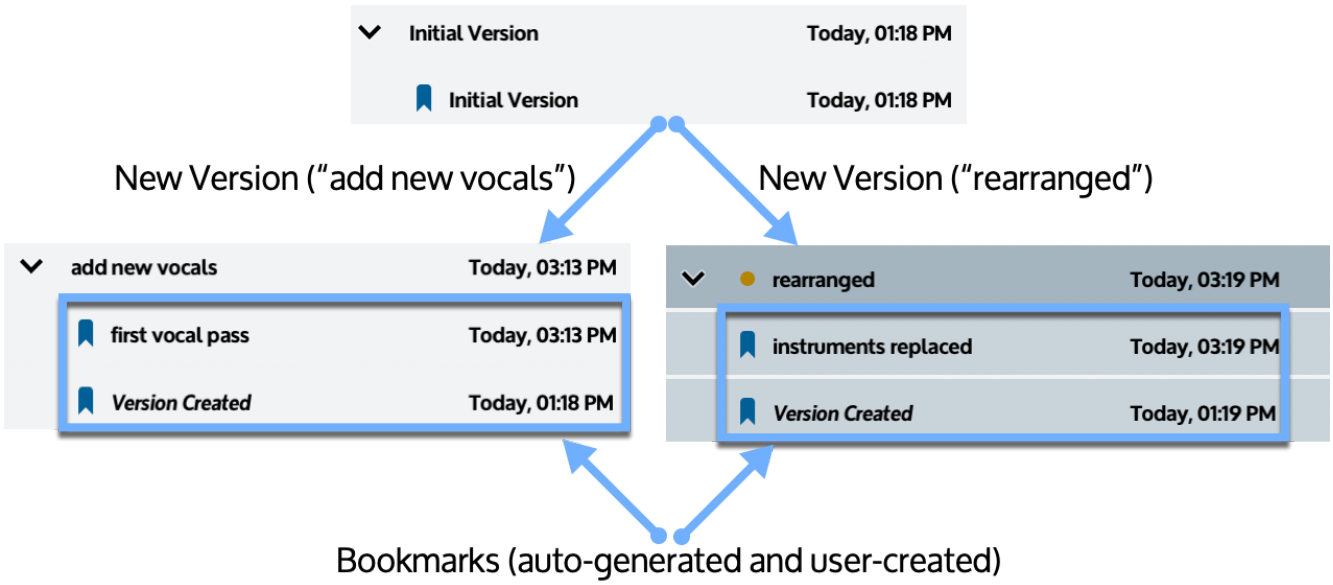
1. On the Create Session panel, type a name for the session.
2. Click the Start From AAF button.
3. From the dialog that opens, choose the AAF session to import.
4. Type a name for the session.
5. Specify a tempo for the session, or click the MIDI button, and choose a MIDI file to import.
6. Click the Location bar to open a dialog where you can select the location for the session, or accept the default location.
7. When you have configured the new session settings, click Create.



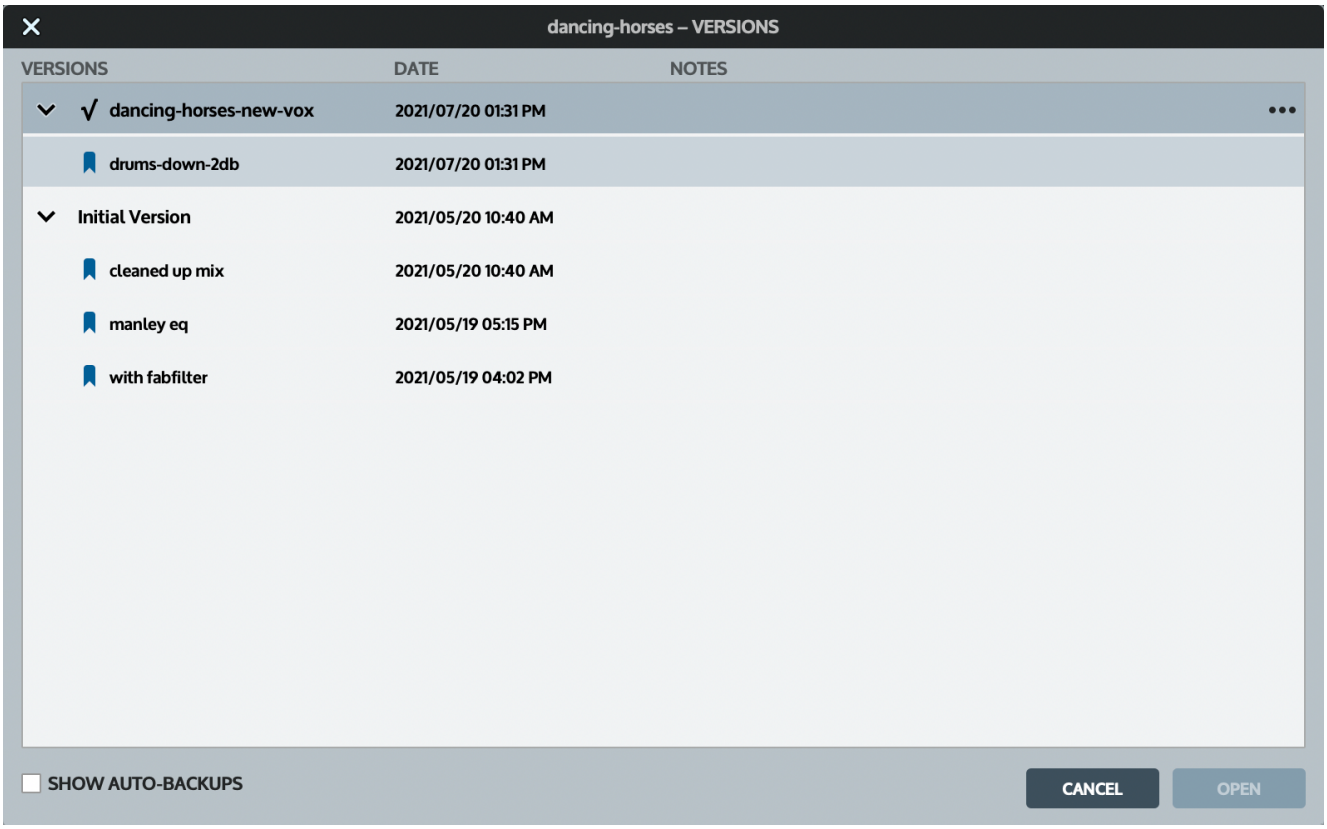
# Using Session Versions, Bookmarks, and Auto-Backups

LUNA includes session versioning and bookmarking features, to save the mix and edit state of a session at a defined point in time. Versions and bookmarks have slight differences.

- Creating a version is like saving a new session, without actually creating a new session. A version creates a top-level item in the version history. The name of the currently loaded version appears appended to the session name at the top of the LUNA application. A version can be useful when you are adding elements to a session, changing the arrangement of a session, or otherwise significantly changing the session.
- Bookmarks recall a state of the session, below a specific version. Bookmarks are created below the latest version, or the currently recalled version. A bookmark can be useful to save separate mixes below a version, or for minor changes in the mix or arrangement. For example, you could make bookmarks under a version for your test mix, a mix with the vocals up and down 3dB, and an instrumental mix.
- Automatic backups are saved when you close a session, and you can view and open automatic backups of your session without creating specific restore points.

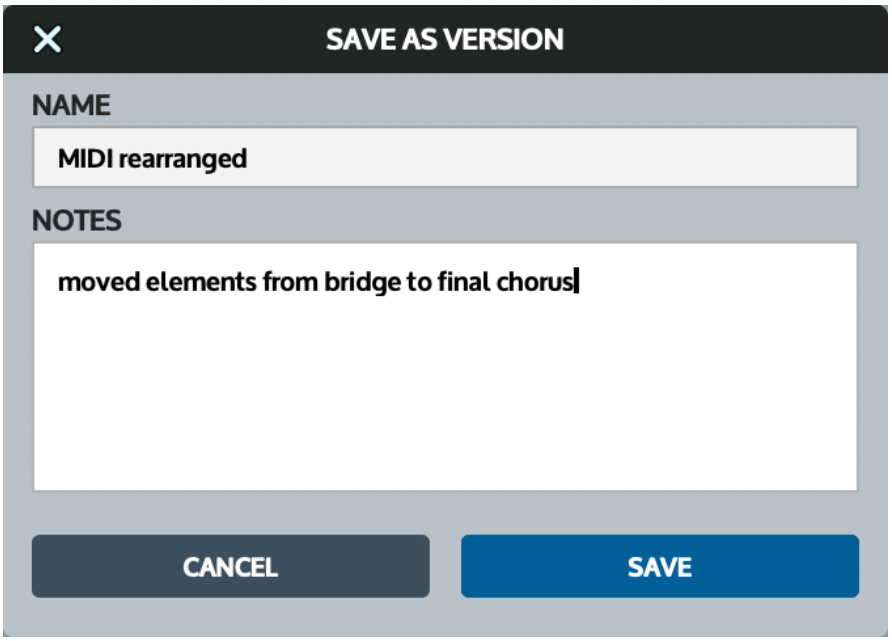



You can access versions and bookmarks through a simple interface that allows you to create, name, add, and remove versions and bookmarks.

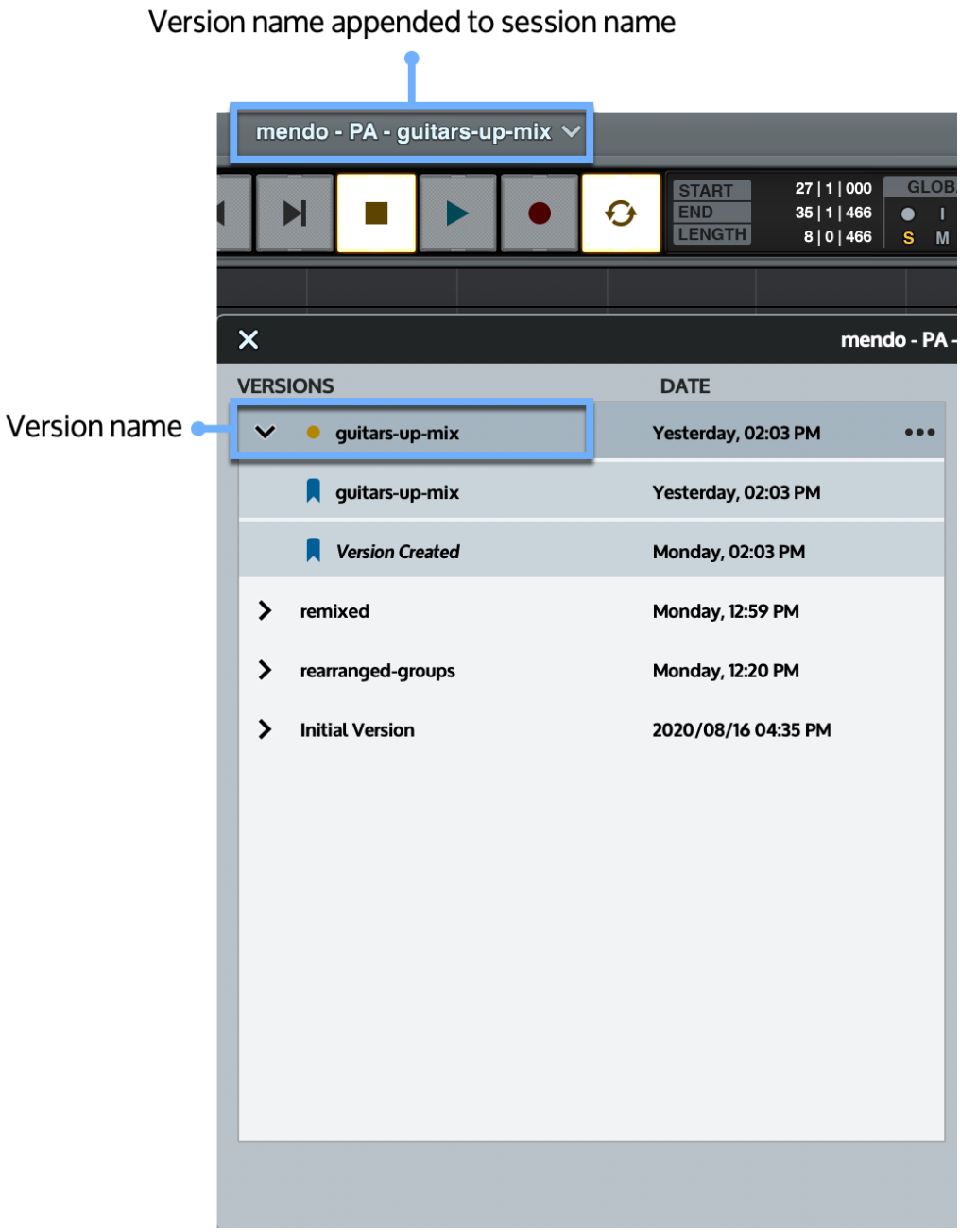



## TO CREATE A SESSION VERSION:

1. With a session open, press Shift+Command+S, or choose File > Save New Version from the LUNA menus.
2. Type the name for the version and any notes, then click Save.

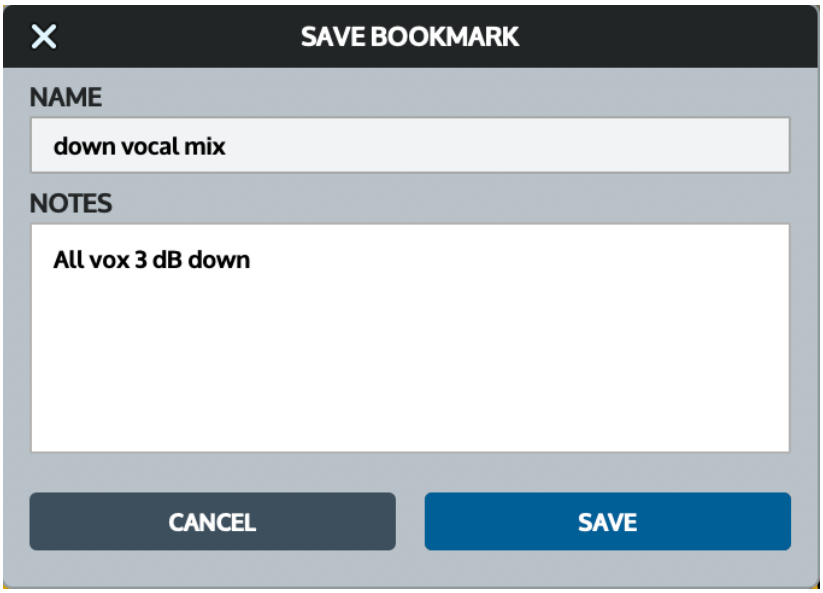



The new version is saved, and the version name is appended to the session name at the top of the LUNA window. Versions are listed in the Session Versions window (Shift+Command+O, or File > Open Session Version).




## TO CREATE A BOOKMARK:

1. With a session open, press Command+S or choose File > Save Bookmark.

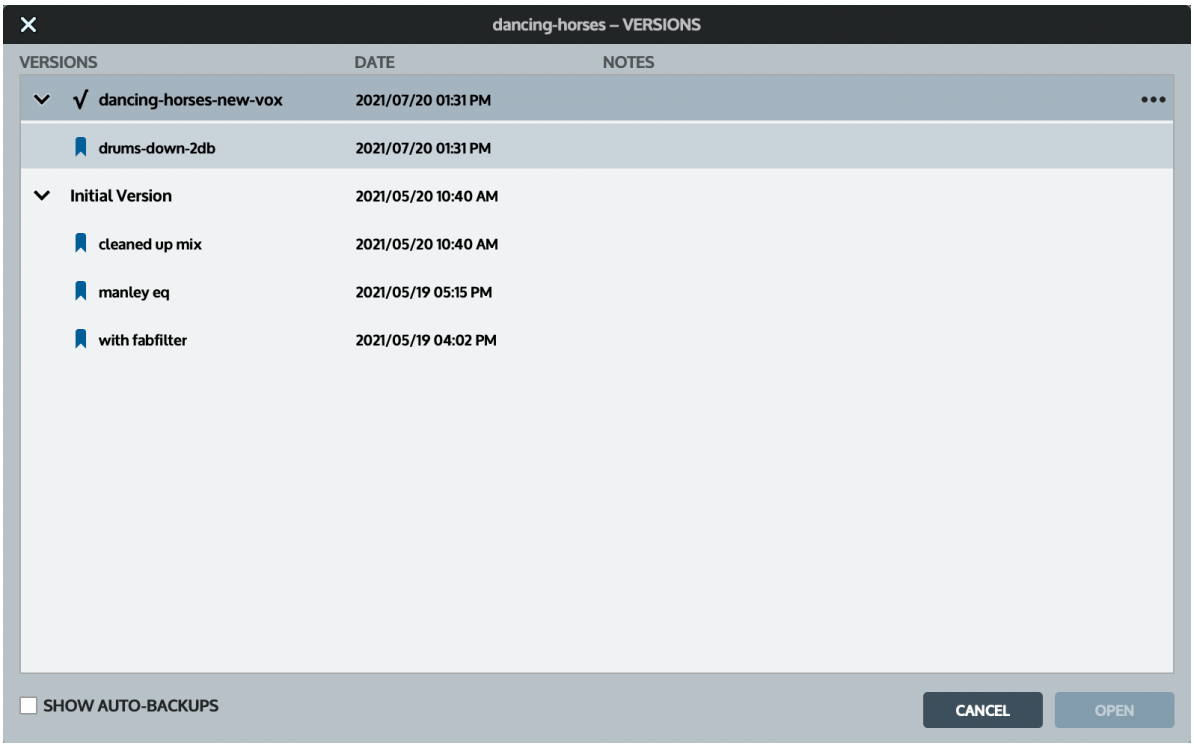



2. Type a name for the bookmark and any notes, then click Save.

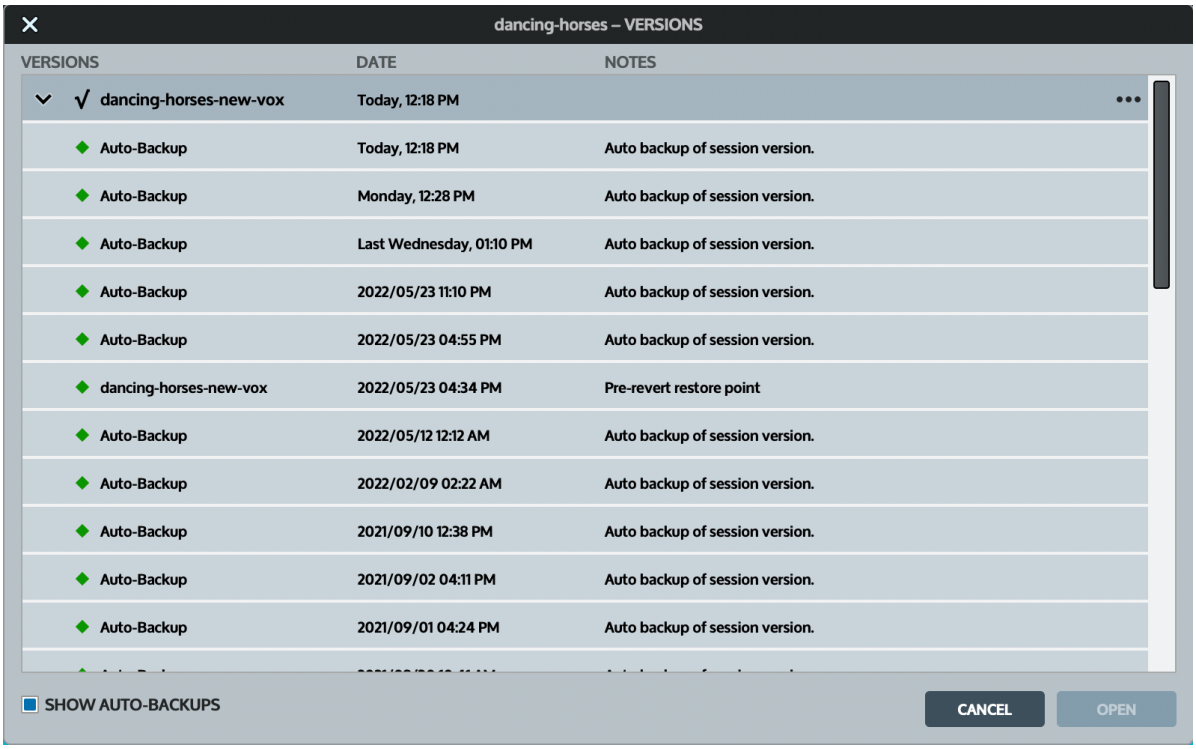
The new bookmark is saved. Bookmarks are listed in the Session Versions window (Shift+Command+O, or File > Open Version...).

## TO SWITCH TO A DIFFERENT VERSION OR BOOKMARK:

1. With a session open, press Shift+Command+O, or choose File > Open Session Version. The Session Versions window opens.




2. Locate the session Version or Bookmark you want to open. You can click the **>** next to a version to expand it, and show the bookmarks associated with the version. Click on a version or bookmark to read any Notes associated with the version or bookmark.
3. To show auto backups, click Show Auto-Backups.

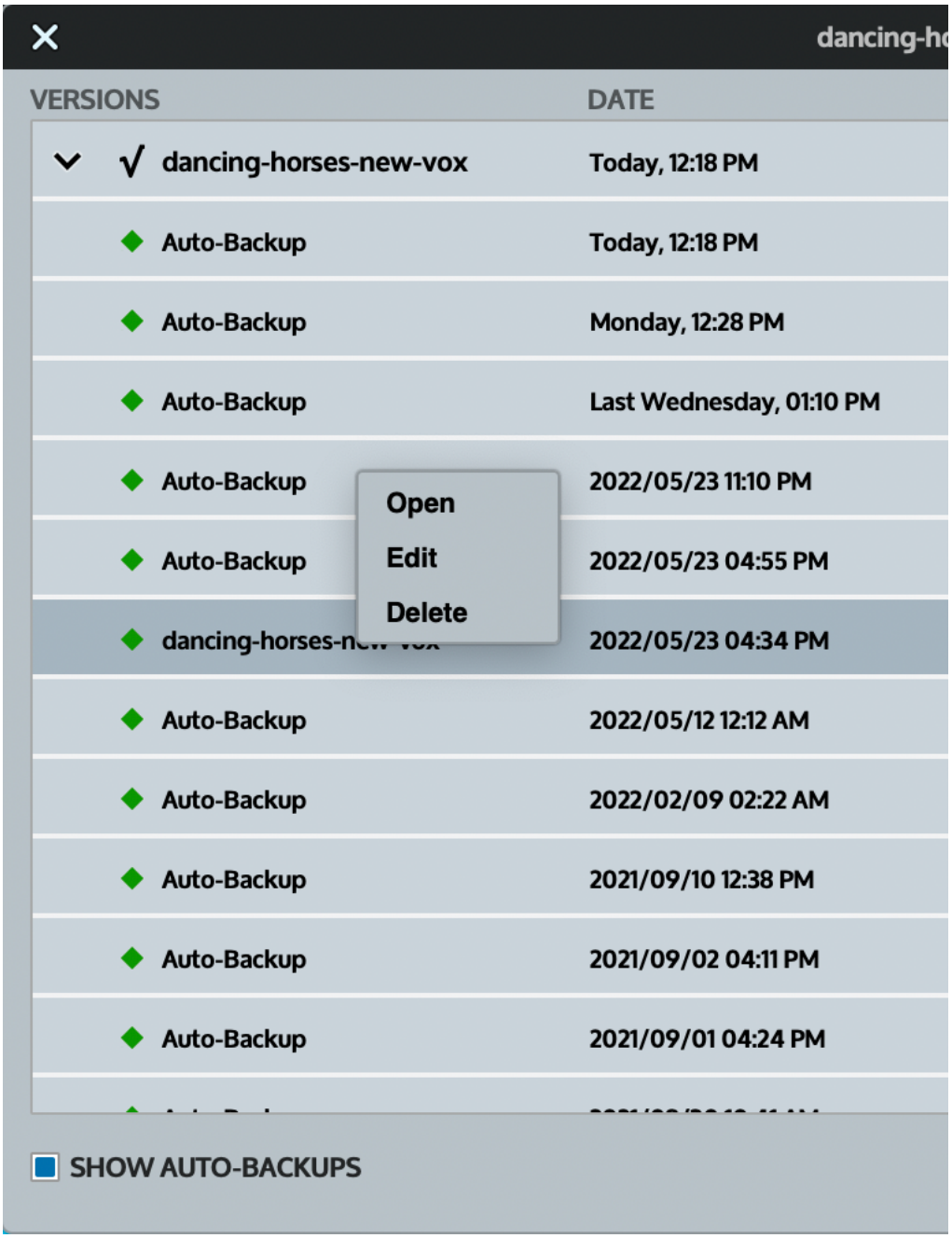



4. Double-click on the bookmark, version, or auto-backup to open it.

The version, bookmark, or auto-backup opens in LUNA.

## TO DELETE A VERSION OR BOOKMARK:

1. With a session open, press Shift+Command+O, or choose File > Open Version... The Session Versions window opens.
2. Right-click or Control-click on a version, bookmark, or auto-backup, and choose Delete. Click Delete on the warning dialog.




The version or bookmark is deleted.

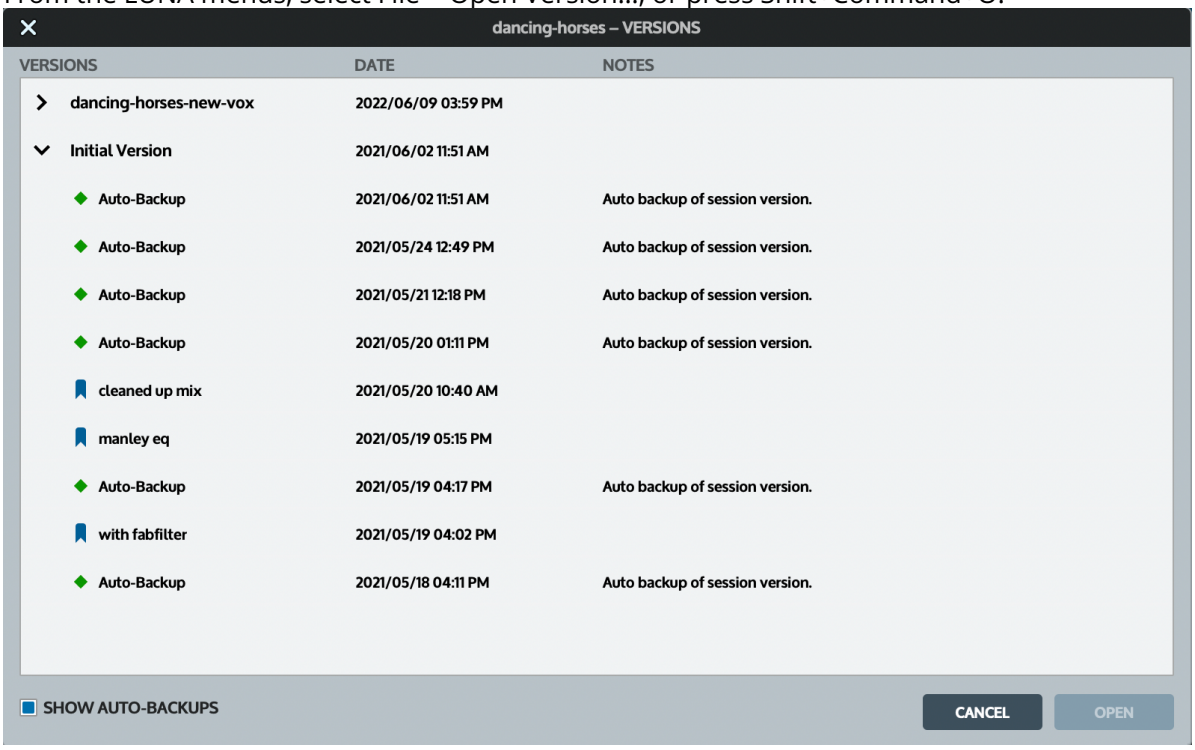
## TO RENAME A VERSION OR BOOKMARK:

1. With a session open, press Shift+Command+O, or choose File > Open Version... The Session Versions window opens.
2. Right-click or Control-click on a version or bookmark, and choose Edit.
3. Type the new name and click Save.

The version or bookmark is renamed.

## TO OPEN A SESSION VERSION:

1. In the Recent list, select a session. If the Recent list is not visible, select File > New.
2. From the LUNA menus, select File > Open Version..., or press Shift+Command+O.

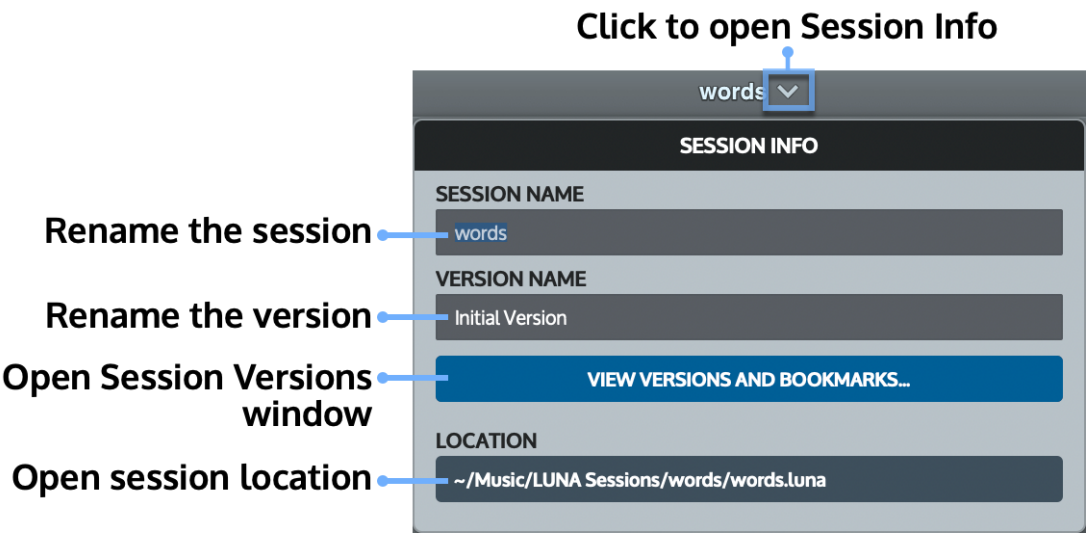



3. Select a version or auto backup and click Open. To show automatic backups, click Show Auto-Backups.

The selected session version opens.

## TO VIEW AND CHANGE SESSION INFO:

1. Click the triangle next to the session name at the top of the LUNA window.
   The Session Info popover opens.




2. Rename the session by selecting and changing the Session Name.
3. Rename the version by selecting and changing the Version Name.
4. To open the Session Versions window, click View Version and Bookmarks.
5. To open the Session Location in the Finder, click the Location.

---

# Trashing unused audio

You can remove (trash) unused audio from your session to reduce the session file size. Removed audio is moved to the macOS Trash.

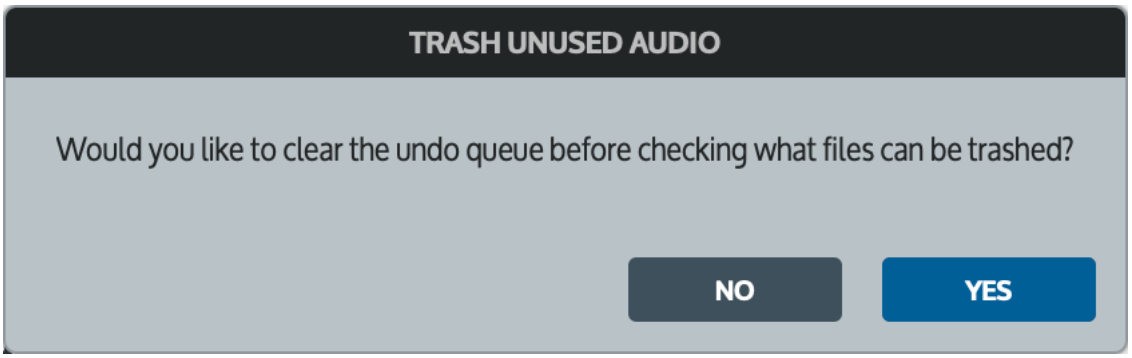
There are two options for removing unused audio:

1. Remove unused audio that isn't used in the session. This removes any audio that is not used in the current version, a saved bookmark, another session version, or an auto-backup.
2. Remove all unused audio, including any audio in the undo queue and any audio in an auto-backup. Currently unused audio that is used in a session version or bookmark is always preserved.

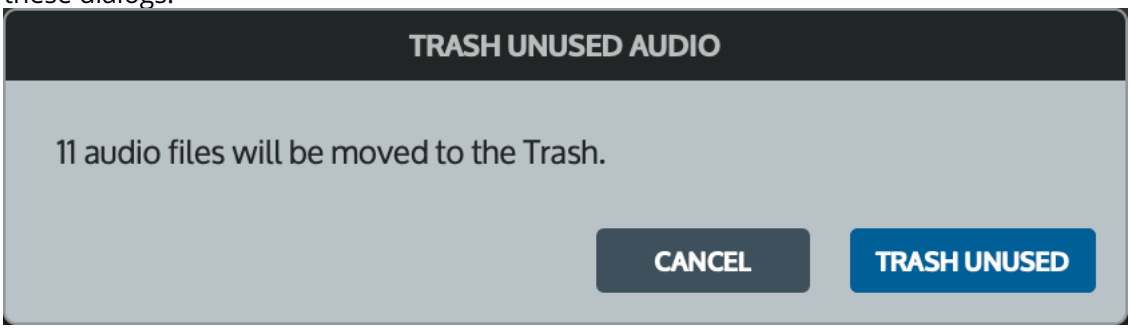
In addition, when you trash unused audio, you are given the option to clear the undo queue. This can free up more currently unused audio files, but will remove your ability to undo any changes.

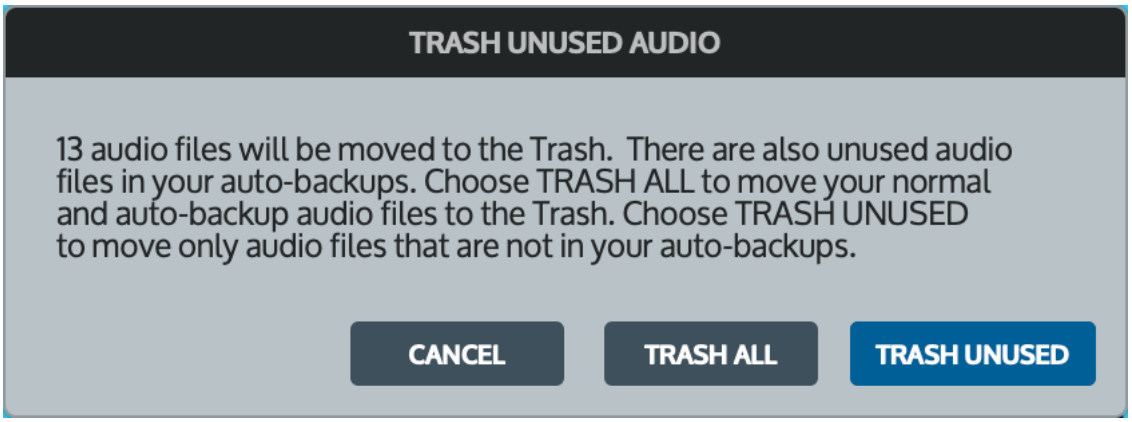
### TO TRASH UNUSED AUDIO:

1. From the LUNA menus, select File > Trash Unused Audio...
   You are prompted to clear the undo queue.




2. Click Yes to clear the undo queue, or No to continue without clearing the queue. Depending on whether there are unused audio files in your auto-backups, you will see one of these dialogs.




3. Click Trash Unused to move unused files that are not used in an auto-backup to the trash. If the Trash All option is presented, you can click that to move all unused audio files to the trash, including files in auto-backups. To cancel without moving any audio files to the trash, click Cancel.

Unused audio files are moved to the trash.

# Accelerated Realtime Monitoring

Accelerated Realtime Monitoring™ (ARM) is a deep hardware, DSP, and software integration feature inside LUNA that allows you to achieve the lowest possible latency while recording with UAD plug-ins in real time.

For those familiar with Apollo's Console software, ARM eliminates the need to use the Console app altogether, while providing all of the same features and benefits such as low latency plug-ins, input routing, cue mixing, and others.

You can turn ARM on or off globally. Use ARM to achieve the lowest possible input monitoring latency when you monitor input signals through LUNA outputs, including monitors, headphones, and cues.

**Note:** ARM is not supported at 4x sample rates (176.4 kHz and 192 kHz).

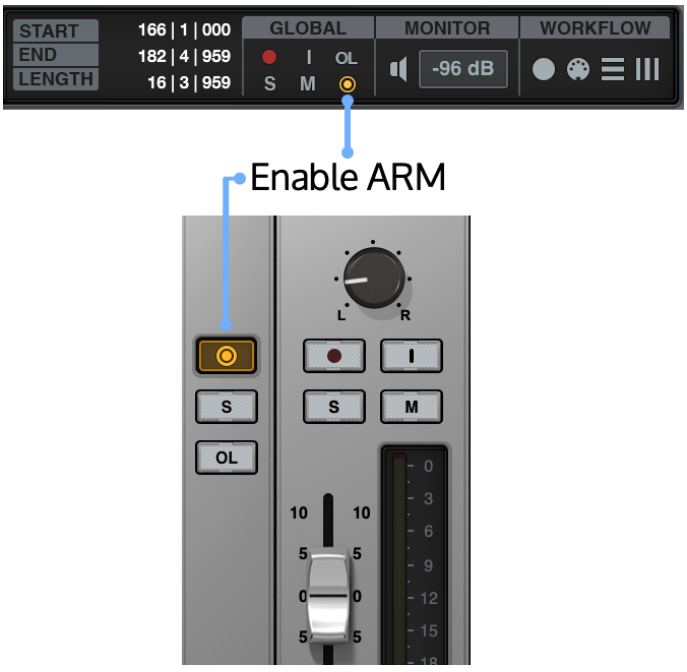
---

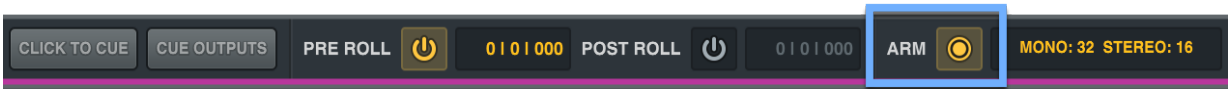
## Enabling ARM

ARM is enabled system-wide. When you enable ARM, all ARM components are affected, including audio tracks, instrument tracks, and ARM Aux-enabled buses.

### TO ENABLE ARM:

- Click the Toggle ARM Mode button in the Global settings at the top of the LUNA window, or
- Click the ARM toggle in Mixer view to the left of the track record/input enable controls, or
- Choose Transport > Accelerated Realtime Monitoring from the LUNA menus, or
- Click the ARM button in the Record Workflow (see "Using Workflows").






### TO ENABLE A BUS TO USE AN ARM AUX:

1. Enable ARM.
2. On the Bus track in Mixer view, click the ARM button.
3. From the Accelerated Realtime Monitoring drop menu, select an ARM Aux to assign the bus.
4. To bypass an ARM Aux for the bus, select None.

## Using ARM with audio tracks

When ARM is enabled, record or input-enabled audio tracks are accelerated through Apollo's DSP, which provides near-zero latency.

Only UAD plug-ins can be monitored on an input or record-enabled audio track when Accelerated Realtime Monitoring is enabled. Audio Unit plug-ins can be inserted, but remain disabled until the track is record or input-disabled, or ARM is disabled.

When recording in ARM mode, all Record FX and Unison inserts are active. UAD plug-ins in the first four standard insert slots are enabled when a track is record-enabled or input-enabled. All eight inserts and insert slots are enabled when ARM is disabled or when the track is record-disabled or input-disabled. Any Audio Unit plug-ins on these tracks are bypassed.

LUNA and ARM control the muting and unmuting of Apollo input channels used on audio tracks. Apollo input channels that are used on record-enabled or input-enabled tracks are unmuted, and all other Apollo input channels are muted.

## Using ARM with Instrument Tracks

When ARM Is enabled, UAD Instruments and Audio Unit instruments run at the host buffer setting, and then are automatically routed to the Apollo for low latency plug-in processing and routing.

When you record on an instrument track, you can use ARM Mode to get the fastest response from UAD plug-ins that process audio on the instrument track. When ARM is enabled, you can use Audio Unit plug-ins on instrument tracks that are record or input-enabled.

## Using ARM with bus tracks

ARM supports two low latency auxiliary (AUX) buses, which are typically used for monitoring time-based effects such as reverb or delay in real time. Any two buses in the LUNA session can be declared as ARM AUXes. The two declared AUXes use Console's AUX engine. These AUXes should have a UAD plug-in instantiated, and the sends must be correctly routed within the LUNA Mixer.

To set ARM Mode for a bus track, enable ARM, then click the ARM button on the bus track and select either Aux 1 or Aux 2 from its drop menu. When LUNA is in ARM mode, only the two ARM-enabled aux buses receive input from record or input-enabled tracks.

### NOTES FOR ARM WITH BUS TRACKS

- When LUNA is in ARM mode, tracks that are routed directly to buses while record or input-enabled do not play through the bus. Instead, they play through the Main output.
- To avoid additional latency, ARM Aux buses are not phase-aligned, and are therefore recommended only for time-based effects such as reverb and delay.

## LUNA buffers, latency, and delay compensation

You can set the buffer size for LUNA. Choose a value from 32–2048 samples. Choose the buffer size that allows you the best balance of processing power and speed. For example, when tracking audio without ARM enabled, a smaller buffer will give you the best results. For large mixes with lots of plug-ins, instruments, and Extensions, a larger buffer will allow for more processing.

In ARM mode, when an audio track is record or input-enabled, or audio is routed to an ARM AUX-enabled bus, the buffer for that audio is near zero, so you can use the largest buffers and still have the advantages of very low latency on audio and instrument tracks.

All audio and instrument tracks are automatically delay-compensated on playback to sync tightly with pre-existing material.

---

## Components affected by ARM (Apollo mode only)

The following components are affected on a track when you enable or disable Accelerated Realtime Monitoring.

| LUNA App Item | ARM Disabled | ARM Enabled (and Record/ Input Enabled) |
|---|---|---|
| Audio tracks with Apollo hardware inputs | LUNA manages signal flow. | Audio tracks use Apollo DSP resources to achieve the lowest possible latency to the Apollo Monitor and CUE outputs, up to the supported number of ARM channels. |
| Instrument tracks | UAD Instruments, Audio Unit instruments, UAD plug-ins, and Audio Unit plug-ins are supported. | UAD Instruments, Audio Unit instruments, UAD plug-ins, and Audio Unit plug-ins are supported. |
| ARM Aux 1-2 | LUNA manages signal flow. | Aux tracks use Apollo DSP resources to achieve the lowest possible latency to the Apollo Monitor and CUE outputs, up to the supported number of ARM channels. |

| | | |
|---|---|---|
| Cues | LUNA manages signal flow. | Cues use Apollo DSP resources to achieve the lowest possible latency to the CUE outputs, up to the supported number of ARM channels. |
| UAD-2 Plug-Ins | UAD-2 plug-ins are active and process audio, as long as there are available DSP resources. UAD-2 plug-ins can be active in the Unison insert, up to four RECORD FX inserts, and up to eight standard inserts. UAD-2 plug-ins in the Unison and RECORD FX inserts are always recorded to disk. | UAD-2 plug-ins are active and process audio, as long as there are available DSP resources. UAD-2 plug-ins can be active in the Unison slot, up to four RECORD FX slots, and up to four standard insert slots. Plug-ins in the Unison slot and RECORD FX slot are recorded to disk. Plug-ins in standard insert slots 5-8 are disabled. |
| LUNA Extensions:<br>Tape and Summing | Extensions are active and process audio, but are not recorded to disk. | Extensions are deactivated. Extensions resume processing when ARM is disabled. |
| Audio Unit and UADx plug-ins | Audio Unit and UADx plug-ins are active and process audio. Audio Unit and UADx plug-ins can be used in standard inserts only. | Audio Unit and UADx plug-ins (except virtual instruments) are deactivated on Audio and Bus tracks. Audio Unit and UADx plug-ins can be instantiated, however they are made inactive and a notification shows. Audio Unit and UADx plug-ins resume processing when ARM is disabled. If a UADx plug-in has an equivalent UAD-2 plug-in, the UAD-2 plug-in is activated in ARM mode. |
| LUNA Console Emulation | LUNA Console Extensions run natively. | LUNA Console extensions run on UAD DSP. |

## Available ARM resources

The system indicates the number of ARM channels available to assign to record- or input-enabled inputs at all times. These channels are used for playback and enabled seamless punch-in. This number decreases when ARM is enabled and you record- or input-enable one or more tracks.

ARM channels use the DSP in your Apollo interface. The number of available ARM channels depends on the physical inputs in your system.

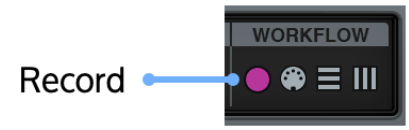
| UA Interface Model | Available ARM Channels |
|---|---|
| Apollo Rack Models (except Silver) | 16 |
| Apollo Silver | 10 |
| Apollo x4 | 12 |
| Apollo Twin | 10 |
| Apollo Solo | 2 |
| Arrow | 2 |

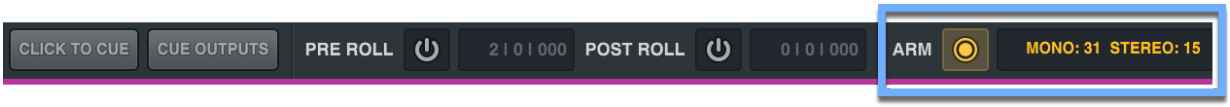
### HOW ARM RESOURCES ARE USED

- An audio track that is record-enabled or input-enabled requires one mono ARM resource per channel (one for a mono track, two for a stereo track).
- A bus that is fed by a record-enabled or input-enabled track, and is assigned to ARM Aux 1 or Aux 2, requires two mono (one stereo) ARM resources.

Example: A stereo audio track that is routed to two ARM-enabled buses requires six mono (three stereo) ARM resources, whereas a mono audio track with no ARM-enabled bus assignments consumes one mono ARM resource.

To view available ARM resources, enable ARM, and toggle the Record workflow on.




# Configuring LUNA Settings

You can configure settings for LUNA using the Setting screens, or by choosing LUNA > Preferences from the LUNA menus.

**Note:** To configure LUNA settings in Core Audio mode, see “Using LUNA with Core Audio.”

# Configuring the Session Autosave interval

### TO SPECIFY AN AUTOMATIC SAVE INTERVAL:

1. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
2. Click Options.
3. In the Autosave Interval field under Miscellaneous in the Options panel, type an auto-save interval in minutes.

### TO REVERT TO A PREVIOUS AUTOSAVED VERSION:

- From the LUNA app menu, select File > Open Version, and select a version, bookmark, or auto-saved file to which to revert.
  **Note:** Select Show Auto-Backups to show automatic backup files.

### TO SAVE A SESSION COPY:

- From the app menus, choose File > Duplicate. Specify the location and filename, and click Save.

---

# Assigning Default Extensions

LUNA can assign default LUNA Extensions that you own are that are currently being demoed. For example, LUNA can assign the Oxide Tape plug-in to all tracks, or Neve Summing to all buses and the Main track. When these Extansions are assigned by default, you can change which Extensions are assigned (on a per-session basis) simply by making changes to the Extensions in the New Tracks dialog or the Create Bus dialog.

### TO ENABLE OR DISABLE DEFAULT EXTENSIONS:

1. Open the LUNA Sidebar by clicking the UA diamond logo on the left of the screen, and clicking Settings, or choose LUNA > Preferences from the app menu.
2. Click Options.
3. Under Miscellaneous, turn Assign Default Extensions on or off.

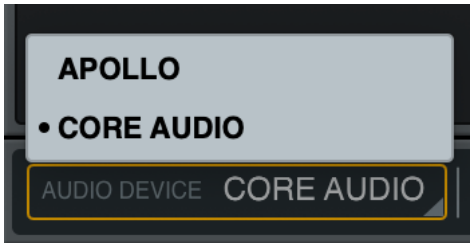
---

## Selecting Apollo Mode or Core Audio Mode

LUNA can run in Apollo mode or Core Audio mode. The mode is displayed and selectable in the Audio Device menu at lower left of LUNA's main window. You can switch the mode at any time.

To change between Apollo mode and Core Audio mode within a LUNA session:

1. Make sure the Info section is displayed (View > Section > Info).
2. At the lower right corner where the Audio Device is displayed, click and choose the mode.

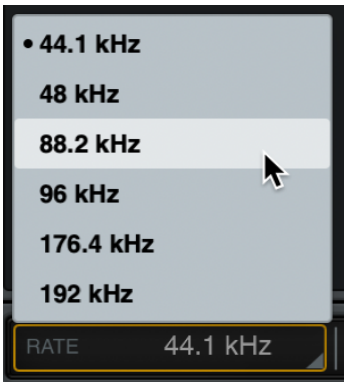



## Setting the hardware sample rate

LUNA can run a session at any supported hardware sample rate. The sample rate is displayed and selectable in the Settings > Hardware Panel > Sample Rate menu, and also in the Rate menu at lower left of LUNA's main window. You can switch the sample rate of a session at any time, and LUNA will create temporary audio files to maintain the session pitch and time.

To change the hardware sample rate from within a LUNA session:

1. Make sure the Info section is displayed (View > Section > Info).
2. At the lower right corner where the Rate is displayed, click the sample rate, and choose the new sample rate.



### TO CHANGE THE HARDWARE SAMPLE RATE FROM HARDWARE SETTINGS:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware panel.
3. From the Sample Rate menu, select the new sample rate.

---

## Choosing a clock source

The active clock source (Internal, ADAT, S/PDIF, or Word Clock) is displayed here. This area flashes red if the currently selected clock is unresolved (when digital audio is not synchronized).

### TO CHOOSE A CLOCK SOURCE:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware page.
3. From the Clock Source drop menu, choose the clock source.

### CONFIGURING THE DIGITAL MIRROR SETTING

This setting configures the S/PDIF outputs (Apollo, Apollo 8/x8, Apollo 8p/x8p and Apollo x4) or AES/EBU outputs (Apollo 16/x16) to mirror the Monitor 1 and 2 outputs. This feature is typically used when connecting to the stereo inputs of other devices with digital inputs such as a speaker system, stereo recorder, or external D/A converter. When Digital Mirror is ON, the Monitor Level knob controls both the digital output level and the analog monitor output level (these digital outputs are post-fader when mirrored).

---

## Configuring input delay compensation

UAD plug-in latency can be automatically compensated with Input Delay Compensation (IDC). Input Delay Compensation maintains phase alignment across all analog and digital inputs when UAD plug-ins that induce latency are used in LUNA. For example, if you use two microphones on an acoustic source (such as a drum kit) and a latency-inducing UAD plug-in is used on one of the mic channels but not the other, without input delay compensation, the phase of the two mic channels would no longer be aligned.

**Note:** LUNA will give you a warning when this situation occurs.

To change the input delay compensation from Hardware Settings:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware page.

3. From the Input Delay Compensation menu, choose the input delay compensation value.

| Setting | Description |
|---|---|
| Off | 0 samples |
| Short | 100 samples |
| Medium | 200 samples |
| Medium-Long | 300 samples |
| Long | 1000 samples |

For more information about Input Delay Compensation, see the *Apollo Thunderbolt Software Manual*.

---

# Configuring cue buses

In addition to the main monitor stereo mix bus and the two auxiliary stereo mix buses, Apollo features up to four stereo cue mix buses (two with Apollo Twin) that can be used for a variety of signal routing purposes.

The cue mix buses are used to create unique mixes that are separate from the main monitor mix. Cues are typically used for performers that want to hear a headphone mix that is different from the main monitor mix, sending separate mixes to other rooms or audio equipment, and similar applications.

### TO SET THE NUMBER OF CUE BUSES AVAILABLE IN LUNA:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware panel.
3. From the Cue Bus Count menu, choose the number of cue buses (if available).

### CUE LABELS

The cue labels vary per Apollo device model, as described below.

**Apollo rack models and Apollo x4 –** The cues are labeled CUE 1, CUE 2, CUE 3, and CUE 4 respectively.

**Apollo Twin –** With Apollo Twin, the two cues are labeled HP (headphone) and LINE 3/4 (line outputs 3 and 4) to reflect the available hardware outputs on the device.

## CUE COMPONENTS

The complete cue system consists of the cue mix buses, the cue sends, and the cue outputs.

**Cue Mix Buses –** A cue mix bus is the summed stereo mix of individual audio signals. Signals are routed into the cue mix buses via the cue send controls, and returned from the cue mix bus via the cue outputs controls.

**Cue Sends –** The cue sends adjust the individual channel signals going into the cue mix bus. Each input channel and aux return contains individual level, pan,***** and mute controls for each active cue mix bus. All cue sends are pre-fader and pre-mute so they are not affected by adjustments to the main monitor mix.

**Note:** If two input channels are stereo-linked, the cue sends on the stereo pair cannot be panned. Sends for stereo channels are hard-panned left and right.

**Cue Outputs –** Cue mix buses are returned via the Cue Outputs window, which is a matrix for routing the cues to Apollo's available hardware outputs.

**Cue Monitoring –** Available cue outputs also can be selected as a source for the main monitor outs via the Monitor Output Options, enabling any cue mix bus to be heard in the main monitor speakers.

### CUE COUNT

By default, two cues are displayed in Console (four with Apollo 16 and x16). Up to four cues are available with Apollo by increasing the Cue Bus Count in the Hardware panel within the Console Settings window.

---

## Configuring Alt Monitor count

Apollo features Alt (alternate) monitoring capabilities. Alt monitoring can be used to control an alternate pair or pairs of monitor speakers, which is convenient for quickly comparing how a mix sounds through a different set of speakers. Up to two pairs of Alt monitors can be used (one pair with Apollo Twin).

To configure one or more Alt Monitor settings:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware page.
3. From the Alt Count menu, choose the number of Alt Monitor mixes.

Alt monitoring is enabled in Hardware Settings within the Settings window by increasing the Alt Count setting to a non-zero value.

### ALT MONITOR CONNECTIONS

**Note**: The Alt channel output assignments cannot be modified.

**Apollo rack models and Apollo x4 –** The Alt 1 monitor signal is routed to line outputs 1-2, and the Alt 2 monitor signal is routed to line outputs 3-4.

**Apollo Twin –** The Alt monitor signal is routed to line outputs 3-4.

See the Apollo Software manual for more information.

---

# Configuring devices

You can set digital input and output formats, output reference level, and configure line inputs to bypass preamps. You can also configure channel DSP pairing, and easily identify devices.

### SETTING DIGITAL INPUT FORMATS (APOLLO TWIN, APOLLO 8P, APOLLO X8P, APOLLO X4)

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware panel.
3. From the Digital Input menu, choose the digital input format.

This menu selects the digital input type (ADAT or S/PDIF) to be used by the TOSLINK optical connector and Console's digital input channels.

Optical S/PDIF digital input is supported at sample rates up to 96 kHz. If the current setting is ADAT and the sample rate is higher than 96 kHz, when S/PDIF input is selected, the clock source is changed to Internal and the S/PDIF inputs are no longer available.

### SETTING DIGITAL OUTPUT FORMATS (APOLLO 8P, APOLLO X8P, APOLLO X4)

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware page.
3. From the Digital Output menu, choose the format of the digital output.

This menu selects the digital output type (ADAT or S/PDIF) to be used by the TOSLINK optical connector and Console's digital outputs channels.

Optical S/PDIF digital output is supported at sample rates up to 96 kHz. If the current setting is ADAT and the sample rate is higher than 96 kHz, when S/PDIF input is selected, the clock source is changed to Internal and the S/PDIF outputs are no longer available.

## SETTING OUTPUT REFERENCE LEVELS

Use the Output Reference Levels section for each interface to set reference level for the line outputs. The number of menus displayed depends on the currently connected Apollo hardware (for example, Apollo 16, which features more outputs, will display more output menus).

The line output reference levels can be set to –10 dBV or +4 dBu in adjacent pairs. The value is usually set to match the nominal input level of devices connected to these outputs (a setting of +4 dBu outputs a higher signal level than –10 dBV).

With Apollo X Series rackmount interfaces, you can set output reference levels to +24 dBu in LUNA Settings for operating level compatibility with professional mixing consoles and other high-end pro audio equipment.

## ALLOWING LINE INPUT GAIN

By default, line inputs on preamp channels are routed through the channel's preamp so the line input level can be adjusted with the Gain knob. However, preamp channel line inputs can be individually set to completely bypass the channel's preamp circuitry and instead operate at a fixed reference level.

Use this feature to route the preamp channel's line input signal directly into the D/A converter for the purest path when additional gain is not needed (for example, when connecting external mic preamps to preamp channel line inputs).

Two settings are available:

- **On** – The line input is routed through the channel's preamp
- **Bypass** – The preamp and associated circuitry are bypassed.The Preamp Gain Indicator ring for the channel is lit solid green. If a Unison plug-in is on a track that uses this channel's line input, the Unison plug-in is bypassed.

## CONFIGURING CHANNEL DSP PAIRING

Channel DSP Pairing allows multiple UAD plug-ins that are inserted in a single LUNA track to span across two paired DSP cores. This feature effectively doubles the amount of Realtime UAD Processing DSP loading that is available on a single input.

**Note:** Channel DSP Pairing changes the way available DSP resources are allocated. The feature does not increase the total amount of available DSP.

When enabled (the default setting), Channel DSP Pairing is automatic. Simply insert UAD plug-ins in tracks as usual, and input DSP resources are automatically distributed across DSP pairs as efficiently as possible.

**Note:** Individual UAD plug-ins must fit within a single DSP core, even when Channel DSP Pairing is available. A single UAD plug-in cannot span across paired DSPs.

A maximum of two DSP cores can be paired with a single Apollo input. More than one DSP pair can be allocated, so multiple Apollo inputs can take advantage of the feature.

The number of available DSP pairs is adjustable. Apollo rackmount models can be set to a maximum of four available DSP pairs (default value of 2), while Apollo Twin models have a maximum of two available pairs (default value of one). As the DSP Pairs value is increased, the Virtual Channels value is decreased. This reciprocal action sets how Apollo's internal DSP resources are allocated.

For more details, see the *Apollo Thunderbolt Software Manual*.

To configure Channel DSP Pairing:

1. At the left of the LUNA window, click the UA icon, then click Settings.
2. Choose the Hardware page.
3. Under Channel DSP Pairing, move the slider to balance DSP Pairs with Virtual Channels.

### IDENTIFYING DEVICES

Click the Identify switch to cause the currently selected unit's front panel LEDs to flash in a pattern. This feature is typically used with multi-unit systems to distinguish units when making I/O connections.

---

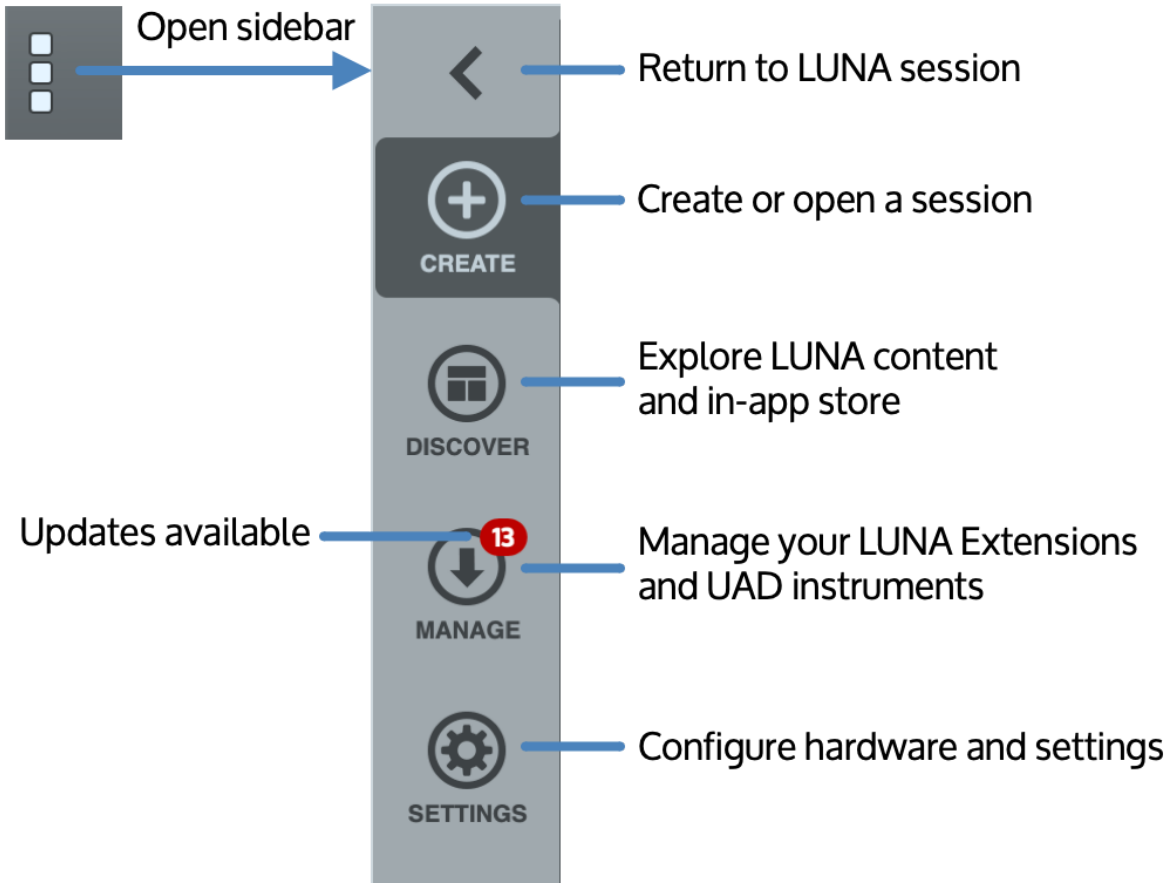
## Setting up the I/O Matrix

Use the I/O Matrix panel to configure custom I/O routings for Core Audio that are managed at the driver level. For an overview of I/O Matrix features, see the *Apollo Thunderbolt Software Manual*.

**Note:** Audio artifacts can occur with some Apollo multi-unit configurations when more than 64 inputs are available to LUNA. To prevent these artifacts, set the maximum number of inputs to 64 (or less) in the I/O Matrix panel.

### SETTING DISPLAY OPTIONS

To set display options, open the LUNA Sidebar, and click Settings.




## CONFIGURING PRE OR POST FADER METERING

1. Click the Options tab.
2. From the Metering popover, choose Post-Fader or Pre-Fader.

## SETTING CLIP HOLDS

1. Click the Options tab.
2. From the Clip hold popover, choose the clp hold duration. To clear meter clips to clear immediately, choose None. If meter clips should persist for the entire time a session is open, choose Infinite. You can also choose a duration in seconds from the available options.

## SETTING PEAK HOLDS

1. Click the Options tab.
2. From the Peak Hold popover, choose the duration that peaks on LUNA meters should remain.

### SHOWING DEVICE NAMES

1. Click the Options tab.
2. From the Show Device Names popover, choose Off or On.

---

## Configuring editing options

You can configure the default fade shape and length, and set the controls mode.

### CONFIGURING THE DEFAULT FADE SHAPE

From the Fade Shape menu, you can configure the default fade shape as Equal Power or Equal Gain.

Equal Gain is the default mode, and it works better for phase-coherent material, for example when fading between clips from the same guitar track or drum track. Equal Power mode works better for material that is less similar, dissimilar, or not phase-coherent, for example two different vocalists or two different guitar recordings.

### CONFIGURING THE DEFAULT FADE LENGTH

Configure the default fade length to specify the default length of any fade that is created automatically. For example, if you select a range of audio with edits in it, and select Edit > Create Fades (Command+F), this value determines the length of the fades created.

**Note:** This value specifies the *total* length of the default fade or crossfade, so with the default setting of 100ms, the length of a fade in or fade out is 100ms, and the length of a crossfade is 100ms, or 50ms on each side of the crossfade.

### SETTING CONTROLS MODE

This setting determines how LUNA knobs and UAD plug-in parameter knobs respond to adjustment. Three control modes are offered: Circular, Relative Circular, and Linear. The behavior of each mode is described below.

- Linear (slider) – In Linear mode, the knob is adjusted by dragging horizontally or vertically instead of by rotating. This behavior is similar to moving a physical fader.
- Circular (jump) – In Circular mode, the software knobs behave similar to physical rotary knobs. Values are changed by clicking on the knob then rotating in a circular direction. When the edge of the knob is clicked, the parameter value jumps to the mouse position.
- Relative Circular (grab) – Relative Circular mode operates similar to Circular mode, but the knob value does not jump to the mouse position when clicked. Instead, the knob value is modified relative to its original value.
  In Relative Circular mode, click anywhere on the knob to make an adjustment originating at the original value (it's not necessary to click on the current knob position).

**Tip:** To increase resolution when adjusting rotary controls in circular and relative circular modes, increase the radius of the mouse relative to the knob while dragging (move the mouse farther away from the knob while dragging in a circular motion).

---

# Using Monitor, Control Room, and Talkback sections

The Monitor, Control Room, and Talkback sections show controls for monitoring and for using talkback on talkback-enabled Apollo units. This section also allows you to bypass processing for inserts, Extensions, or both.

## VIEWING THE MONITOR STRIP

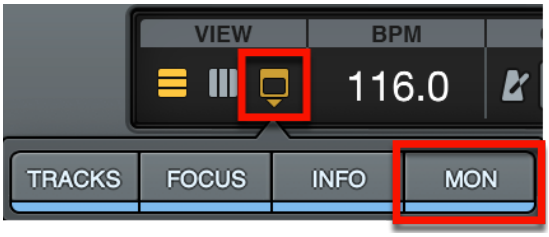
The meters  on the Monitor strip display the signal levels of the monitor mix bus just before the monitor level control. Levels displayed here mirror the state of the Monitor 1 – 2 LED meters on Apollo's front panel. You can control the level of the Monitor outs, switch to Mono, and Mute the Monitor outs.

From the Monitor strip, you can also open the Control Room strip and the Cue Outputs window.

To work with Cues, see "Making cue mixes."

To show the Monitor strip:

In the View section, click the Other Views icon and choose Mon, or from the app menu, choose View > Section > Monitor.




## VIEWING THE CONTROL ROOM STRIP

The control room strip allows you to configure options for the monitor outputs.

By default, the control room column is not visible. To show the column, click Control Room on the Monitor strip, or choose View > Section > Control Room from the app menu.

INSERTS
SENDS
A1
A2
C1
C2
0
3
6
9
12
15
18
21
27
36
46
60
L
R
TALK
BYPASS
EXTENSIONS
INSERTS
ALL PROCESSING
DIM AMOUNT
-30 dB
DIM
SHOW
CONTROL ROOM
CUE OUTPUTS
+ 12
+ 6
0
6
12
– 20
– 32
– 56
SOURCE
MONITOR
OUTPUT
MONO
MUTE
MONITOR

### Control Room Sources

Use the Source options to choose the source for the mix bus that is sent to Apollo's monitor outputs. The source is selected when its switch is lit.

The control room Source switches control the source that feeds the control room mix. The source can be the Monitor mix or any of the available cues.

Use Dim to quickly reduce the listening volume in the control room by a set amount and quickly return to the prior volume.

### Alt Trims

The ALT trim controls are typically used to compensate for different levels of the alternate monitor speakers so they have the same apparent volume as the main monitor speakers.

**Note:** ALT controls are only visible when the Alt Count menu in the Hardware panel within the Settings window is set to a non-zero value.

### Talkback strip

The talkback input channel strip is available in the Control Room module within Console whenever an Apollo model featuring talkback is connected.

The talkback strip has eight UAD plug-in inserts for Realtime UAD Processing. All talkback plug-in inserts operate the same way as other inputs.

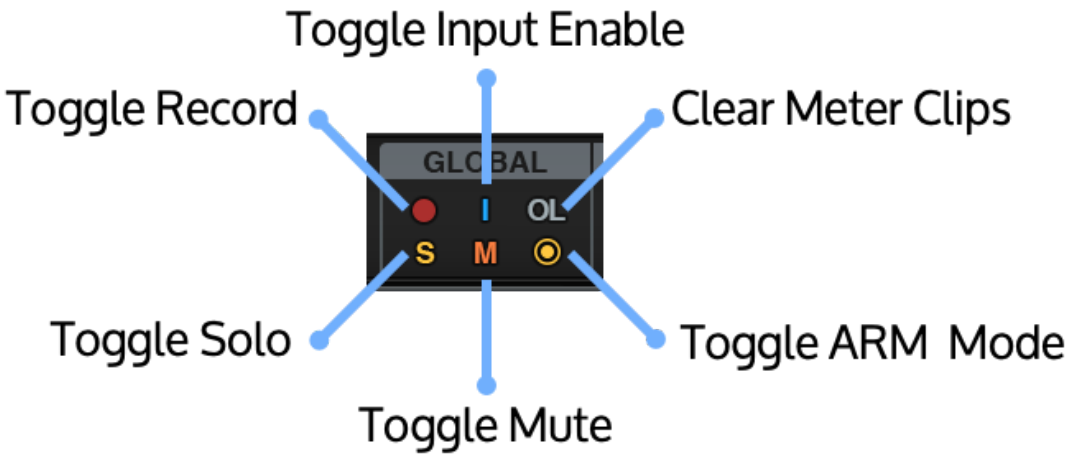
Talkback sends display an overview of the talkback levels being sent to each available send bus, including Aux 1 and 2, and 2 Cue mix buses.

To access the Talkback Sends Popover window, where individual talkback send levels are adjusted, click the Talkback Sends Display.

---

## Using global controls

Use global controls to toggle LUNA settings globally.




- To toggle record-enabled tracks globally, on the control bar in the Global section, click the Toggle Record button. All record-enabled tracks are toggled out of record-enabled mode. Click Toggle Record again to toggle the tracks back to record-enabled mode.
- To toggle input-enabled tracks globally, on the control bar in the Global section, click the Toggle Input Enable button. All input-enabled tracks are toggled out of input-enabled mode. Click Toggle Input Enable again to toggle the tracks back to input-enabled mode.
- To toggle soloed tracks globally, on the control bar in the Global section, click the Toggle Solo button. All soloed tracks are toggled out of solo mode. Click Toggle Solo again to solo the tracks.
- To toggle muted tracks globally, on the control bar in the Global section, click the Toggle Mute button. All muted tracks are unmuted. Click Toggle Mute again to mute the tracks again.
- To toggle ARM mode, on the control bar in the Global section, click the Toggle ARM Mode button. The system is ARM-enabled and any audio tracks that are record-enabled or input-enabled are put into ARM mode. To leave ARM mode, click Toggle ARM Mode again.
- To clear meter clips globally, on the control bar in the Global section, click the Clear Meter Clips button. All meter clips are cleared.

## Viewing system info

From the menu, select View > Section > Info.

The system info section is displayed at the bottom of the LUNA window. System Info

This area displays the audio device, sample rate, clock source, buffer size, DSP, CPU, and memory resource loads used by LUNA, including all loaded UAD-2 plug-ins (for Apollo, in the Console and LUNA). UAD-2 loads can be monitored as needed, for example when deciding which UAD plug-ins to load, based upon how much DSP is available. Values displayed here are mirrored in the UAD Meter & Control Panel application. More detailed display of DSP usage is available in the System panel within the UAD Meter & Control Panel application.

You can quickly set the audio device (Apollo or Core Audio), sample rate, clock source, and buffer size here. When you make a change to a setting, LUNA reloads your session.

# Keyboard Shortcuts and Menu Reference

## LUNA Keyboard Shortcuts

### WINDOWS AND DISPLAY

| Feature | Modifier(s) | Key |
|---|---|---|
| Toggle Timeline/Mixer | Command | = |
| Next Window | Command | ` |
| Previous Window | Command+Shift | ` |
| Show/Hide Floating Windows | Shift | W |
| Close Floating Window | Command | W |
| New Alternate Window | Shift+Command | = |
| Toggle Full Screen | Command+Shift | F |
| Spill Selected Bus | Shift | R |

### PLAYBACK AND TIMELINE

| Feature | Modifier(s) | Key |
|---|---|---|
| Toggle Playback | | Spacebar |
| Toggle Record | Command | Spacebar |
| | | Numeric Keypad 3 |
| Restart Playback | Control+Option+Command | Spacebar |
| Loop Playback | Control | L |

| Feature | Modifier(s) | Key |
|---|---|---|
| | | Numeric Keypad 4 |
| Return To Zero | | Return |
| Toggle Pre/Post Roll | Command | K |
| Toggle Metronome | | K |
| | | Numeric Keypad 7 |
| Toggle Count In | Shift | K |
| | | Numeric Keypad 8 |
| Create Marker | | Enter |

## ZOOMING AND SCROLLING

| Feature | Modifier(s) | Key |
|---|---|---|
| Auto Scroll | Shift | A |
| Zoom In | Command | ] |
| | | T |
| Zoom Out | Command | [ |
| | | R |
| Frame Selection | | E |
| Increase Selected Track Heights | Control | ↑ |
| Decrease Selected Track Heights | Control | ↓ |
| Increase All Track Heights | Control+Option | ↑ |

| Feature | Modifier(s) | Key |
|---|---|---|
| Decrease All Track Heights | Control+Option | ↓ |
| Zoom In Audio Waveforms | Option+Command | ] |
| Zoom Out Audio Waveforms | Option+Command | [ |
| Reset Audio Waveform Zoom | Control+Option+Command | [ |
| Scroll To Left Selection | Shift | ← |
| | | Q |
| Scroll To Right Selection | Shift | → |
| | | W |
| Scroll Mixer one track left or right | | ←,→ |
| Scroll mixer one page left or right | Command | ←,→ |
| Scroll mixer to first or last track | Option+Command | ←,→ |
| Scroll mixer up or down | | ↑,↓ |

## RECORD / INPUT / SOLO / MUTE

| Feature | Modifier(s) | Key |
|---|---|---|
| Toggle Record Arm | Shift | R |
| Toggle Input Enable | Shift | T |
| Toggle Input Enable on all record-enabled tracks | Option | K |
| Toggle Solo | Shift | S |

| Feature | Modifier(s) | Key |
|---|---|---|
| Toggle Mute | Shift | M |
| Toggle Record | Command | Spacebar |
| | | Numeric Keypad 3 |
| Discard Recording | Shift+Command | . |

## EDITING AND FADES

| Feature | Modifier(s) | Key |
|---|---|---|
| Clear | | Delete |
| Undo | Command | Z |
| Redo | Command+Shift | Z |
| Cut | Command | X |
| | | X |
| Copy | Command | C |
| | | C |
| Paste | Command | V |
| | | V |
| Duplicate selection | Command | D |
| Shift Cut | Shift | X |
| Shift Paste | Shift | V |
| Shift Duplicate | Shift | D |

| Feature | Modifier(s) | Key |
|---|---|---|
| Shift Insert | Shift | I |
| Shift Clear | Shift | Delete |
| Mute Selection | Command | M |
| Create Fades | Command | F |
| Fade To Clip Start (Fade In) | | D |
| Fade To Clip Stop (Fade Out) | | G |
| Trim From Clip Start | | A |
| Trim From Clip End | | S |
| Trim Clip to Selection | Command | T |
| Separate Selection | Command | E |
| | | B |
| Consolidate Selection | Option+Shift | 3 |
| Reverse Selection | Control+Shift | R |
| Heal Separation | Command | H |
| Export Mixdown | Option+Command | B |
| Export Clips | Command+Shift | K |
| Generate Sinewave in Selection | Control+Option+Shift | 3 |
| | Control+Option+Shift | # |

## MAKING SELECTIONS

| Feature | Modifier(s) | Key |
|---|---|---|
| Select All | Command | A |
| Select All Tracks | Shift+Command | A |
| Set Selection Start (while stopped or playing back) | | ↓ |
| Set Selection End (while playing back) | | ↑ |

## MOVING SELECTIONS

| Feature | Modifier(s) | Key |
|---|---|---|
| Move Selection Up | | P |
| Move Selection Down | | ; |
| Move Selection to Next Bar | | ] |
| | | Numeric Keypad 2 |
| Move Selection to Previous Bar | | [ |
| | | Numeric Keypad 1 |
| Move Selection To Next Clip Edge | | ' |
| Move Selection To Previous Clip Edge | | L |
| Move Selection To Next Transient | | Tab |
| | Option | ‘ |

| Feature | Modifier(s) | Key |
|---|---|---|
| Move Selection To Previous Transient | Option | Tab |
| | Option | L |
| Move Selection To Next Marker | Control+Option | ' |
| Move Selection To Previous Marker | Control+Option | L |
| Loop Select | Command+Shift | L |

## EXTENDING SELECTIONS

| Feature | Modifier(s) | Key |
|---|---|---|
| Extend Selection Up | Shift | P |
| Extend Selection Down | Shift | ; |
| Extend Selection To Next Bar | Shift | ] |
| | Shift | Numeric Keypad 2 |
| Extend Selection to Previous Bar | Shift | [ |
| | Shift | Numeric Keypad 1 |
| Extend Selection To Next Clip Edge | Shift | ' |
| Extend Selection To Previous Clip Edge | Shift | L |
| Extend Selection To Next Transient | Shift | Tab |
| | Option+Shift | ‘ |

| Feature | Modifier(s) | Key |
|---|---|---|
| Extend Selection To Previous Transient | Option+Shift | Tab |
| | Option+Shift | L |
| Extend Selection to Next Marker | Shift+Control+Option | ' |
| Extend selection to Previous Marker | Shift+Control+Option | L |
| Extend Selection To Session Start | Shift | Return |
| Extend Selection To Session End | Option+Shift | Return |

## NUDGE EDITING

| Feature | Modifier(s) | Key |
|---|---|---|
| Nudge Left | | , |
| Nudge Left Next Amount | | M |
| Nudge Right | | . |
| Nudge Right Next Amount | | / |
| Nudge to Next Clip | Control + Option | . |
| Nudge to Previous Clip | Control + Option | , |
| Nudge Content Left | Control | , |
| Nudge Content Left Next Amount | Control | M |
| Nudge Content Right | Control | . |

| Feature | Modifier(s) | Key |
|---|---|---|
| Nudge Content Right Next Amount | Control | / |
| Increment Nudge Value | Option + Command | = |
| Decrement Nudge Value | Option + Command | - |

## TRACKS AND VERSIONS

| Feature | Modifier(s) | Key |
|---|---|---|
| New Track Group | Command | G |
| Toggle Selection Grouping | Control | G |
| Suspend Groups | Shift+Command | G |
| New Tracks | Shift+Command | N |
| New Instrument Track (with Shape) | Shift+Command | I |
| Create Bus | Shift+Command | B |
| Delete Selected Tracks | Shift+Command | Delete |
| Import | Command | I |
| Import Session | Option | I |
| Duplicate | Option | D |
| Duplicate Without Content | Shift+Option | D |
| New Version On All Tracks | Control+Option | \ |
| New Version On Selected Tracks | Control | \ |
| Duplicate Version For All Tracks | Control+Option+Command | \ |

| Feature | Modifier(s) | Key |
|---|---|---|
| Duplicate Version On Selected Tracks | Control+Option+Command+Shift | \| |
| Find Track | Option+Command | F |
| Toggle Selected Track Views | Control+Command | ← , → |
| Toggle All Track Views | Control+Option+Command | ← , → |

## GRID

| Feature | Modifiers(s) | Key |
|---|---|---|
| Increase Grid | Shift | = |
| Decrease Grid | Shift | - |
| Toggle Snap To Grid | Shift | \ |
| Toggle Relative Grid Snap | Command+Shift | \ |
| Align Bar | Shift+Option+Command | I |
| Align Grid | Option+Command | I |

## MIDI

| Feature | Modifier(s) | Key |
|---|---|---|
| MIDI Merge | | Numeric Keypad 9 |
| MIDI Keyboard Mode | Option+Command | M |
| Open Quantize Browser | Command+Shift | U |
| Quantize Selection | Command | U |

| Feature | Modifier(s) | Key |
|---|---|---|
| Pitch Selected MIDI Notes up One Semitone | | ↑ |
| Pitch Selected MIDI Notes down One Semitone | | ↓ |
| Pitch Selected MIDI Notes up One Octave | Shift | ↑ |
| Pitch Selected MIDI Notes down One Octave | Shift | ↓ |

## SESSIONS AND LUNA

| Feature | Modifier(s) | Key |
|---|---|---|
| New Session | Command | N |
| Open Session | Command | O |
| Close Session | Command+Shift | W |
| Open Version | Shift+Command | O |
| Save Bookmark | Command | S |
| Save New Version | Shift+Command | S |
| Browse All Recent | Option+Command | O |
| Quit | Command | Q |
| Show Settings | Command | F5 |

# All Keyboard Shortcuts (Alphabetical)

| Feature | Modifier(s) | Key |
|---|---|---|
| Align Bar | Shift+Option+Command | I |
| Align Grid | Option+Command | I |
| Auto-Scroll | Shift | A |
| Browse All Recent | Option+Command | O |
| Clear | | Delete |
| Close | Command | W |
| Close Session | Command+Shift | W |
| Consolidate Selection | Option+Shift | 3 |
| | Option+Shift | # |
| Copy | Command | C |
| | | C |
| Create Bus | Command+Shift | B |
| Create Fades | Command | F |
| | | F |
| Create Marker | | Numeric Keypad Enter |
| | Fn | Enter |
| Cut | Command | X |

| | | |
|---|---|---|
| | | X |
| Decrease All Track Heights | Control+Option | ↓ |
| Decrease Grid | Shift | - |
| Decrease Selected Track Heights | Control | ↓ |
| Delete Selected Tracks | Shift+Command | Delete |
| Discard Recording | Shift+Command | . |
| Duplicate (Track or tracks) | Option | D |
| Duplicate Selection | Command | D |
| Duplicate Version For All Tracks | Control+Option+Command | \ |
| Duplicate Version On Selected Tracks | Control+Option+Command+Shift | \| |
| Duplicate Without Content (Track or tracks) | Shift+Option | D |
| Export Clips | Command+Shift | K |
| Export Mixdown | Option+Command | B |
| Extend Selection Down | Shift | ; |
| Extend Selection To Next Bar | Shift | ] |
| | Shift | Numeric Keypad 2 |
| Extend Selection To Next Clip Edge | Shift | ' |
| Extend Selection to Next Marker | Shift+Control+Option | ' |
| Extend Selection To Next Transient | Shift | Tab |

| | | |
|---|---|---|
| | Option+Shift | ‘ |
| Extend Selection to Previous Bar | Shift | [ |
| | Shift | Numeric Keypad 1 |
| Extend Selection To Previous Clip Edge | Shift | L |
| Extend selection to Previous Marker | Shift+Control+Option | L |
| Extend Selection To Previous Transient | Option+Shift | Tab |
| | Option+Shift | L |
| Extend Selection To Session End | Option+Shift | Return |
| Extend Selection To Session Start | Shift | Return |
| Extend Selection Up | Shift | P |
| Fade To Clip Start | | D |
| Fade To Clip Stop | | G |
| Find Track | Option+Command | F |
| Frame Entire Session (fit session to screen) | Control+Option+Command | ↓ |
| | Control+Option+Command | ↑ |
| Frame Selection (fit selected tracks to screen) | | E |
| Generate Sinewave in Selection | Control+Option+Shift | 3 |
| | Control+Option+Shift | # |

| | | |
|---|---|---|
| Heal Separation | Command | H |
| Hide Window | Shift | W |
| Import... | Command | I |
| Import Session... | Option | I |
| Increase All Track Heights | Control+Option | ↑ |
| Increase Grid | Shift | = |
| Increase Selected Track Heights | Control | ↑ |
| Input Enable Toggle | Shift | T |
| Loop Playback | Control | L |
| | | Numeric Keypad 4 |
| Loop Select | Command+Shift | L |
| MIDI Merge | | Numeric Keypad 9 |
| MIDI Keyboard Mode | Option+Command | M |
| Move Selection Down | | ; |
| Move Selection to Next Bar | | ] |
| | | Numeric Keypad 2 |
| Move Selection To Next Clip Edge | | ' |
| Move Selection To Next Marker | Control+Option | ' |
| Move Selection To Next Transient | | Tab |

| | | |
|---|---|---|
| | Option | ‘ |
| Move Selection to Previous Bar | | [ |
| | | Numeric Keypad 1 |
| Move Selection To Previous Clip Edge | | L |
| Move Selection To Previous Marker | Control+Option | L |
| Move Selection To Previous Transient | Option | Tab |
| | Option | L |
| Move Selection Up | | P |
| Mute Selection | Command | M |
| Mute Toggle | Shift | M |
| New Instrument | Command+Shift | I |
| New Session | Command | N |
| New Tracks | Command+Shift | N |
| New Track Group | Command | G |
| New Version On All Tracks | Control+Option | \ |
| New Version On Selected Tracks | Control | \ |
| Next Version (in Versions browser) | Shift | ↑ |
| Next Window | Command | ` |
| Nudge Content Left | Control | , |

| | | |
|---|---|---|
| Nudge Content Left Next Amount | Control | M |
| Nudge Content Right | Control | . |
| Nudge Content Right Next Amount | Control | / |
| Nudge Left | | , |
| Nudge Left Next Amount | | M |
| Nudge Right | | . |
| Nudge Right Next Amount | | / |
| Nudge to Next Clip | Control + Option | . |
| Nudge to Previous Clip | Control + Option | , |
| Open Quantize Browser | Command+Shift | U |
| Open Session | Command | O |
| Open Version | Shift+Command | O |
| Previous Version (in Version browser) | Shift | ↓ |
| Previous Window | Command+Shift | ` |
| Pitch Selected MIDI Notes up One Semitone | Shift | ↑ |
| Pitch Selected MIDI Notes down One Semitone | | ↓ |
| Pitch Selected MIDI Notes up One Octave | Shift | ↑ |
| Pitch Selected MIDI Notes down One Octave | Shift | ↓ |

| | | |
|---|---|---|
| Quantize Selection | Command | U |
| Quit | Command | Q |
| Record Arm Toggle | Shift | R |
| Redo | Command+Shift | Z |
| Reset Audio Waveform Zoom | Control+Option+Command | [ |
| Restart Playback | Control+Option+Command | Spacebar |
| Return To Zero | | Return |
| Reverse | Control+Shift | R |
| Save Bookmark | Command | S |
| Save New Version | Shift+Command | S |
| Scroll Mixer one track left or right | | ←,→ |
| Scroll mixer one page left or right | Command | ←,→ |
| Scroll mixer to first or last track | Option+Command | ←,→ |
| Scroll mixer up or down | | ↑,↓ |
| Scroll To Left Selection | Shift | ← |
| | | Q |
| Scroll To Right Selection | Shift | → |
| | | W |
| Select All | Command | A |

| | | |
|---|---|---|
| Select All Tracks | Shift+Command | A |
| Selection Grouping | Control | G |
| Separate Selection | Command | E |
| | | B |
| Set Selection Start (while stopped or playing back) | | ↓ |
| Set Selection End (while playing back) | | ↑ |
| Shift Clear | Shift | Delete |
| Shift Cut | Shift | X |
| Shift Duplicate | Shift | D |
| Shift Insert Time | Shift | I |
| Shift Paste | Shift | V |
| Show Mixer | Command | F2 |
| Show Settings | Command | F5 |
| | Command | , |
| Show Timeline | Command | F1 |
| Show/Hide Floating Windows | Shift | W |
| Solo Toggle | Shift | S |
| Spill Selected Bus | Shift | R |
| Toggle All Track Views | Control+Option+Command | ← , → |

| | | |
|---|---|---|
| Toggle Count In | Shift | K |
| | | Numeric Keypad 8 |
| Toggle Full Screen | Command+Shift | F |
| Toggle Metronome | | K |
| | | Numeric Keypad 7 |
| Toggle Playback | | Spacebar |
| | | Numeric Keypad 0 |
| Toggle Pre/Post Roll | Command | K |
| Toggle Record | Command | Spacebar |
| | | Numeric Keypad 3 |
| Toggle Relative Grid Snap | Command+Shift | \ |
| Toggle Selected Track Views | Control+Command | ← , → |
| Toggle Snap To Grid | Shift | \ |
| Toggle Timeline/Mixer | Command | = |
| Trim From Clip Start | | A |
| Trim From Clip End | | S |
| Trim Clip to Selection | Command | T |
| Update Loop | Command | L |
| Zoom In | Command | ] |
| | | T |

| | | |
|---|---|---|
| Zoom In Audio Waveforms | Option+Command | ] |
| Zoom Out | Command | [ |
| | | R |
| Zoom Out Audio Waveforms | Option+Command | [ |

# LUNA Menu Reference

## LUNA MENU

| Item | Key Command | Description |
|---|---|---|
| About LUNA | | Shows the LUNA version information. |
| Check for Updates... | | Checks the server for LUNA updates. |
| Preferences | Command+, | Opens the LUNA settings page. |
| Hide LUNA | Command+H | Hides LUNA windows. |
| Hide Others | Option+Command+H | Hides everything except LUNA windows. |
| Quit LUNA | Command+Q | Quits LUNA. |

## FILE MENU

| Item | Key Command | Description |
|---|---|---|
| New | Command+N | Open the LUNA New Session window. |

| | | |
|---|---|---|
| Open... | Command+O | Open a Finder window to open a session. |
| Open Recent | | Allows you to choose from a list of recent sessions to open. |
| Open Recent > Browse All Recent | Option+Command+O | Opens the Recent Session browser. |
| Open Recent > Clear Recent List | | Clears the Recent Sessions List. |
| Open Version | Shift+Command+O | Open a session version, bookmark, or auto-backup. |
| Close | Command+W | Closes the topmost floating window in the session. |
| Close Session | Shift+Command+W | Closes the session. |
| Save Bookmark | Command+S | Save the state of the session under the current version. |
| Save New Version | Shift+Command+S | Save a new version within the session. |
| Duplicate... | | Saves a copy of the session with a new name, in a location you choose. |
| Rename... | | Opens the Rename popover so you can rename the session. |
| Revert To | | Shows a list of automatically saved session bookmarks from which you can choose to revert the session. |
| Import... | Command+I | Opens a Finder window from which you can select an audio or MIDI file to import. |

| | | |
|---|---|---|
| Import Session... | Option+I | Opens the Import Session Data window, in which you can select a session, session version, or bookmark from which to import session data. |
| Export > Mixdown | Option+Command+B | Opens the Export Mixdown dialog. |
| Export > All Tracks as Files | | Opens the Export Mixdown dialog with options selected to export all tracks as separate files. |
| Export > Multitrack MIDI File | | Opens a Finder window and allows you to choose a location and specify a name to save a multitrack MIDI file from the session. |
| Export > Clips | Shift+Command+K | Opens the Eport Clips dialog. With Export Clips open, you can select individual audio and MIDI clips in the session to export as separate files. |

## EDIT MENU

| Item | Key Command | Description |
|---|---|---|
| Undo | Command+Z | Undo anything except a change made during recording. |
| Redo | Shift+Command+Z | Redo anything except a change made during recording. |
| Cut | Command+X | Cuts a selection to the clipboard |
| Copy | Command+C | Copies a selection to the clipboard. |
| Paste | Command+V | Pastes a selection. |

| | | |
|---|---|---|
| Clear | Delete | Deletes a selection. |
| Duplicate | Command+D | Pastes a selection right after the current selection. |
| Consolidate | Option+Shift+3 | Combines two or more clips into one. |
| Reverse | Control+Shift+R | Reverses a selection or clip. |
| Select All | Command+A | Selects all clips on a timeline track. |
| Shift > Cut | Shift+C | Cuts a selection and shifts clips to fill the cut space. |
| Shift > Clear | Shift+Delete | Deletes a selection and shifts clips to fill the deleted space. |
| Shift > Paste | Shift+V | Pastes a selection and shifts clips to accommodate the pasted data. |
| Shift > Duplicate | Shift+D | Duplicates selected data and shifts clips to accommodate the duplicated data. |
| Shift > Insert Time | Shift+I | Inserts a space of the current selection length, and shifts clips to accommodate the space. |
| Nudge > Left | , | Nudges the clip, playhead, selection, or selected notes to the left by the nudge amount. |
| Nudge > Left Next Amount | M | Nudges the clip, playhead, selection, or selected notes to the left by the next higher nudge amount. |
| Nudge > Right | . | Nudges the clip, playhead, selection, or selected notes to the right by the nudge amount. |

| | | |
|---|---|---|
| Nudge > Right Next Amount | / | Nudges the clip, playhead, selection, or selected notes to the right byt the next higher nudge amount. |
| Nudge > To Next Clip | Control + Option + . | Nudges the selected clip to the boundary of the next clip. |
| Nudge > To Previous Clip | Control + Option + , | Nudges the clip to the boundary of the previous clip. |
| Nudge > Increment Nudge Value | Option + Command + = | Increments the nudge amount. |
| Nudge > Decrement Nudge Value | Option + Command + - | Decrements the nudge amount. |
| Nudge Content > Left | Control + , | Nudges content within the clip to the left by the nudge amount, without changing the clip boundaries. |
| Nudge Content > Left Next Amount | Control + M | Nudges content within the clip to the left by the next higher nudge amount, without changing the clip boundaries. |
| Nudge Content > Right | Control + . | Nudges content within the clip to the right by the nudge amount, without changing the clip boundaries. |
| Nudge Content > Right Next Amount | Control + / | Nudges content within the clip to the right by the next higher nudge amount, without changing the clip boundaries. |
| Mute Selection | Command+M | Mutes a clip. |
| Separate Selection | Command+E | Separates a clip at the playhead location. |
| Separate on Grid | | Separates a selection or clip into separate clips on every grid line. |

| | | |
|---|---|---|
| Heal Separation | Command+H | Recombines selected separated clips into a single clip. |
| Create Fades | Command+F | Creates a fade or crossfade, depending on the selection. |
| Delete Fades | | Deletes fades in selected audio. |
| Fade to Clip Start | D | Fades from the playhead to the start of the clip (fade in). |
| Fade to Clip Stop | G | Fades from the playhead to the end of the clip (fade out). |
| Trim From Clip Start | A | Trims from the start of the clip to the playhead. |
| Trim From Clip End | S | Trims from the end of the clip to the playhead. |
| Trim Clip to Selection | Command+T | Trims the clip to the selection. |
| Increase Grid | Shift+= | Increases the grid setting by one increment (for example, from half notes to quarter notes). |
| Decrease Grid | Shift+- | Increases the grid setting by one increment (for example, from quarter notes to half notes). |
| Quantize | Command+U | Quantizes notes based on the current Quantize settings. If there are no quantize settings defined in the session, quantizes to bars at 100%. |
| Quantize Settings | Shift+Command+U | Opens the Quantize settings browser, where you can configure the quantize settings for a selection or clip. |
| Set Bar One | | Sets the current playhead position as bar one. Use when aligning to bars or the grid. |

| | | |
|---|---|---|
| Align Bar | Shift+Option+Command+I | Aligns the playhead to the nearest bar and adds a tempo event. |
| Align Grid | Option+Command+I | Aligns the playhead to the nearest grid increment and adds a tempo event. |

## TRACK MENU

| Item | Key Command | Description |
|---|---|---|
| New Tracks | Shift+Command+N | Open the Create New Tracks dialog. |
| New Instrument | Shift+Command+I | Creates a new instrument track with the Shape UAD Instrument instantiated. |
| New Track Group | Command+G | Creates a new track group with the selected tracks, and allows you to edit the track group. |
| Selection Grouping | Control+G | Enables or disables the Selection Grouping track group. |
| Suspend Groups | Shift+Command+G | Turns all track groups on or off. |
| Duplicate | Option+D | Duplicates selected tracks with content, including clips and track versions. |
| Duplicate Without Content | Shift+Option+D | Duplicates selected tracks without content. |
| Convert to Stereo | | Converts a mono track to stereo. |
| Convert to Mono | | Converts a stereo track to mono. |
| New Version > On All Tracks | Control+Option+\ | Creates a new Version on all tracks in the session. |

| | | |
|---|---|---|
| New Version > On Selected Tracks | Control+\ | Creates a new Version on all selected tracks. |
| Duplicate Version > On All Tracks | Control+Option+Command+\ | Creates a duplicate of the currently selected Version on each track in the session. |
| Duplicate Version > On Selected Tracks | Control+Option+Shift+Command+\| | Creates a duplicate of the currently selected Version on all selected tracks. |
| Select All Tracks | Shift+Command+A | Selects all tracks. |
| Delete Selected Tracks | Shift+Command+Delete | Deletes all selected tracks (except Main track). |
| Hide Selected Tracks | | Hides all selected tracks. |
| Find Track | Option+Command+F | Opens the Tracks Focus Browser and places the cursor in the Search bar. |

## MIXING MENU

| Item | Key Command | Description |
|---|---|---|
| Solo Mode > Latching | | Allows you to solo multiple tracks, and latch them on or off by clicking Solo buttons. |
| Solo Mode > Exclusive | | In this mode only one element can be soloed at a time. Each successive Solo button click disables the previous Solo button. |
| Create Bus | Shift+Command+B | Creates a bus. Selected tracks can be routed directly to the bus or routed to the bus through an Aux send. |

| | | |
|---|---|---|
| Assign Console Extension | | Opens the Session Console Assignment browser. |
| Convert UAD-2 Plug-Ins to UADx | | Converts UAD-2 (DSP) plug-ins to UADx (native) equivalents, if available. |
| Convert UADx Plug-Ins to UAD-2 | | Converts UADx (native) plug-ins to UAD-2 (DSP) equivalents, if available. |

## TRANSPORT MENU

| Item | Key Command | Description |
|---|---|---|
| Loop Playback | Control+L | When enabled, a selection will loop in playback and loop record. If there is an edit selection, that selection becomes the loop selection. |
| Play From Stop Location | | When enabled, the Stop button changes to a Pause button, and upon stopping the transport, the playhead is located at the current playback location, instead of returning to the previous start location. |
| Pre-Roll | | Plays the session for a specified period of time before the playhead or selection starts. You can use pre-roll to hear the context or lead-in to a selection, or to prepare to record at the playhead or over a selection. Pre-roll plays only the first time you play, when loop playback/record is enabled. |

| | | |
|---|---|---|
| Post-Roll | | Plays the session for a specified period of time after a selection ends. You can use post-roll to hear the context after a play or record selection. Post-roll plays only when there is a selection, and does not play when when loop playback/record is enabled. |
| Toggle Pre/Post-Roll | Command+K | Toggles pre-roll and post-roll on or off. |
| MIDI Merge | Numeric Keypad 9 | Toggles MIDI Merge and MIDI Replace mode, to specify whether new MIDI data recorded to a track is added to the existing MIDI data, or whether the MIDI on the track is replaced. |
| All Notes Off | | Stops all MIDI Notes and messages. |
| Accelerated Realtime Monitoring | | Toggles Accelerated Realtime Monitoring (ARM) mode to enable or disable the lowest possible latency on record/input enabled tracks. |
| Console Tracking Mode | | Toggles Console Tracking Mode, so Console inputs remain live and are not managed and automatically muted and unmuted by LUNA. |
| Toggle Playback | Spacebar | Starts or stops playback. |

| | | |
|---|---|---|
| Toggle Record | Command+Spacebar | Toggles recording. Press Command+Spacebar to start recording. If you press Command+Spacebar while LUNA is recording, the session continues to play, but the transport drops out of record.<br>Note that by default, the key command to toggle recording, Command+Spacebar, is mapped to the macOS Spotlight search feature. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Spotlight > Keyboard Shortcuts uncheck the key commands, or map them to different key commands. Refer to your macOS documentation for more information. |
| Restart Playback | Control+Option+<br>Command+Spacebar | Restarts playback from the original playhead position or the start of the selection. |
| Discard Recording | Shift+Command+. | Stops all current recording and discards all in progress recordings (no undo). |
| Update Playback > Instantly | | When the loop is changed, playback immediately restarts from the beginning of the new loop selection. |
| Update Playback > At Next Bar | | When the loop is changed, playback continues to the end of the next bar, then restarts from the beginning of the new loop selection. |
| Update Playback > At Loop End | | When the loop is changed, playback continues to the end of the loop that was previously defined, then restarts from the beginning of the new loop selection. |

| | | |
|---|---|---|
| Loop Ruler > Update Loop | Command+L | The current Timeline selection is applied to the Loop selection and loop length (Loop ruler selection matches the current Timeline selection). |
| Loop Ruler > Loop Select | Shift+Command+L | The current Loop selection is applied to the Timeline (Timeline selection matches the current Loop selection). |

## NAVIGATION MENU

| Item | Key Command | Description |
|---|---|---|
| Zoom In | Command+] | Zoom in on the track horizontally. |
| Zoom Out | Command+[ | Zoom out on the track horizontally. |
| Frame Selection | E | Fill the edit window with the selected clip or clips. If no clip is selected, fills the edit window with the nearest clip. Press E again to revert to the previous view. |
| Return to Zero | Return | Moves the playhead to the start of the session. |
| Go to End | | Moves the playhead to the end of the last clip in the session. |
| Zoom In Audio | Option+Command+] | Zooms waveforms in horizontally. |
| Zoom Out Audio | Option+Command+[ | Zooms waveforms out horizontally. |
| Reset Audio Zoom | Control+Option+ Command+[ | Resets the horizontal zoom for audio waveforms. |

| | | |
|---|---|---|
| Link Edit/Play Selections | | Links the playhead and selections on the Timeline to the play selection on theBars and Beats ruler. |
| Record Enable Follows Selection | | When a track is record enabled, selecting another track record enables that track, and disables the deselected track. If you select multiple tracks, those tracks are record-enabled. |
| Selection > Move Up | P | Moves the selection area from the current track to the track above. |
| Selection > Move Down | ; | Moves the selection area from the current track to the track below. |
| Selection > Extend Up | Shift+P | Extends the selection from the current track to the track above. |
| Selection > Extend Down | Shift+; | Extends the selection from the current track to the track below. |
| Selection > Set Selection Start | ↓ | Starts a selection during playback or with the transport stopped. |
| Selection > Set Selection End | ↑ | Ends a selection during playback. |
| Selection > Move to Next Transient | Tab | Moves the playhead to the next transient in the selected tracks. |
| Selection > Move to Previous Transient | Option+Tab | Moves the playhead to the previous transient in the selected tracks. |
| Selection > Move to Next Bar | ] | Moves the playhead to the next bar. |
| Selection > Move to Previous Bar | [ | Moves the playhead to the previous bar. |

| | | |
|---|---|---|
| Selection > Move to Next Clip Edge | ‘ | Moves the playhead to the next clip edge on the selected track or tracks. |
| Selection > Move to Previous Clip Edge | L | Moves the playhead to the previous clip edge on the selected track or tracks. |
| Selection > Move to Next Marker | Control+Option+‘ | Moves the playhead to the next marker. |
| Selection > Move to Previous Marker | Control+Option+L | Moves the playhead to the previous marker. |
| Selection > Extend to Next Transient | Shift+Tab | Extends the selection to the next transient in the selected tracks. |
| Selection > Extend to Previous Transient | Shift+Option+Tab | Extends the selection to the previous transient in the selected tracks. |
| Selection > Extend to Next Bar | Shift+] | Extends the selection to the next bar on the selected tracks. |
| Selection > Extend to Previous Bar | Shift+[ | Extends the selection to the previous bar on the selected tracks. |
| Selection > Extend to Next Clip Edge | Shift+‘ | Extends the selection to the next clip edge on the selected track or tracks. |
| Selection > Extend to Previous Clip Edge | Shift+L | Extends the selection to the previous clip edge on the selected track or tracks. |
| Selection > Extend to Next Marker | Shift+Control+Option+‘ | Extends the selection to the next marker. |
| Selection > Extend to Previous Marker | Shift+Control+Option+L | Extends the selection to the previous marker. |
| Selection > Extend to Session Start | Shift+Return | Extends the selection to the start of the session. |

| | | |
|---|---|---|
| Selection > Extend to Session End | Shift+Option+Return | Extends the selection to the end of the session. |
| Track Heights > Increase Selected | Control+↑ | Increases the height of selected tracks.<br>**Note:** by default, this key command is mapped to the macOS command for Mission Control. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Keyboard, click Shortcuts and disable this key command, or map it to a different key command. Refer to your macOS documentation for more information. |
| Track Heights > Decrease Selected | Control+↓ | Decreases the height of selected tracks.<br>**Note:** by default, this key command is mapped to the macOS command for Application Windows. You must disable or remap this feature to use this key command. To disable or remap this command, in System Preferences > Keyboard, click Shortcuts and disable this key command, or map it to a different key command. Refer to your macOS documentation for more information. |
| Track Heights > Increase All | Control+Option+↑ | Increases the height of all tracks. |
| Track Heights > Decrease All | Control+Option+↓ | Decreases the height of all tracks. |
| Scroll To > Left Selection | Shift+← | Scrolls the Timeline and centers the left edge of the current selection. |

| | | |
|---|---|---|
| Scroll To > Right Selection | Shift+→ | Scrolls the Timeline and centers the right edge of the current selection. |
| Auto-Scroll | Shift+A | Scrolls the timeline automatically one screen at a time during playback and record. |

## VIEW MENU

| Item | Key Command | Description |
|---|---|---|
| Section > Browser | | Shows or hides the Focus Browser at the left of the screen. Note that when a Focus Browser is required, this opens, regardless of this setting. |
| Section > Focus Channel | | Shows the Focus channel in Timeline view. |
| Section > Track Versions | | Shows the Versions panel in the Timeline track controls. |
| Section > Mixer Navigation | | Shows the Mixer Navigation panel in Mixer view. |
| Section > Control Room | | Shows the Control Room section st the right of the screen. |
| Section > Monitor | | Shows the Monitor section at the right of the screen. |
| Section > Info | | Shows the Info section at the bottom of the screen. |
| Timeline Settings / Rulers / Clips | | Shows the settings for the Timeline, Rulers, and Clips in the Focus Browser. |

| | | |
|---|---|---|
| Notifications | | Shows the Notifications pane at the right of the screen. |
| Compact Monitor Faders | | Makes faders in the Mixer shorter, to allow more visual space for the Mixer rows. You can also click at the top of a fader to compact or expand mixer faders. |
| MIDI Keyboard Mode | Option+Command+M | Toggles MIDI Keyboard Mode, to allow MIDI note input using the typing keyboard. **Note:** MIDI Keyboard Mode overrides many keys that are used as keyboard shortcuts. |
| Toggle Timeline/Mixer | Command+= | Switches between Timeline and Mixer view. |
| Show All Tracks | | Shows all tracks, including hidden tracks. |

## WINDOWS MENU

| Item | Key Command | Description |
|---|---|---|
| New Alternate Window | Shift+Command+= | Opens a second LUNA window. |
| Previous Window | Shift+Command+’ | Cycles to the previous window. |
| Next Window | Command+’ | Cycles to the next window. |
| Show/Hide Floating Windows | Shift+W | Shows or hides floating windows (for example, plug-in windows). |
| Full Screen | Shift+Command+F | Toggles full screen mode for the LUNA app. |

## HELP MENU

| Item | Key Command | Description |
|---|---|---|
| Search | | Allows you to search for items in the menus. |
| LUNA Documentation | | Links to LUNA documentation on the Universal Audio Support site. |
| UAD & Apollo Documentation | | Links to UAD and Apollo documentation on the Universal Audio support site. |
| Give Feedback | | Opens the Feedback form to report issues. |
| Keyboard Shortcuts | | Opens a list of keyboard shortcuts. |

# UAD Instruments

**Note:** Documentation for all UAD Instruments except Shape and Spitfire Audio are available online in the UA Knowledge Base, within the UAD Spark & UADx Plug-In Documentation section.

# Shape

A comprehensive, easy-to-use creative toolkit included free with LUNA, Shape is a painstakingly curated UAD Instrument featuring a collection of album-ready classic keyboards, drums/percussion, guitar/bass, orchestral content, and real time synthesis - with content from Universal Audio, Spitfire Audio, Orange Tree Samples, Soniccouture, Handheld Sound, G-Force, Wavesfactory and Sound Dust.

## Working with the best

When creating the instrument collection for Shape, we relied on our in-house team of professional sound designers as well as many of the industry's top sample content companies including Spitfire Audio, OrangeTree Samples, Soniccouture, Handeld Sound, and others. We refined the collection until we felt it contains the best mix of essential instruments like acoustic pianos, electric guitars and basses, vintage electric pianos and organs, classic synthesizers, drum kits and percussion, orchestral instruments, and atmospheric/ambient sounds. We're confident this full-featured collection will provide excellent coverage for your musical needs.

## More than just samples

Shape is more than a basic sample player. Our underlying technology gives sound designers a great deal of flexibility in how they craft their sounds. For example, each instrument includes four contextual knobs that let you control multiple instrument parameters with one knob. The functionality of these knobs is hand-picked by the designer of each sound and can vary dramatically from instrument to instrument. The contextual knobs give you a curated set of meaningful controls with a simple interface, so you can stay focused on your music.

Shape also includes a full suite of great-sounding effects, including select UA processing not found elsewhere. You can use these effects to refine and sweeten your sounds.

Finally, Shape lets you layer or split up to four instruments (or "parts") into a complex sound and it includes several global controls for fast and easy sculpting of your layered sounds.

## Simple but powerful interface

Don't be fooled by Shape's straightforward design! The clutter-free user interface has just four "views" and we have made it very easy to load and play sounds as-is but there is sonic power and flexibility just under the surface. Each view is covered in detail in its own section.

---

## System Requirements

In addition to overall LUNA Recording System requirements, Shape has the following requirements:

- SSD drive with available storage:
    - 4 GB for Shape
    - Additional 6 GB for Shape Content Expansion 1
- SSD drive must be formatted as APFS (Apple File System)
- External SSD must be within USB 3.0, USB 3.1, PCIe, or Thunderbolt enclosure

Note:

- Spinning hard drives and macOS Fusion drives are unsupported
- SSD drives formatted as ExFAT, FAT, and Mac OS Extended are unsupported

---

## Quick Start

We know you may want to start playing right away, so let's take Shape for a quick test drive before diving into the details. After the UAD Instrument is loaded and input-enabled (see LUNA documentation for these details):

1. Click the Presets button at the top of the instrument to reveal Shape's available presets in LUNA's contextual browser (at the left of LUNA's screen).
2. Click any of the available presets while playing your MIDI controller. You should hear the sound of each preset as you step through the names.
3. When you have found a preset that you like, try rotating the global control knobs at the top of the screen (ATTACK, DECAY, RELEASE, CUTOFF, and so on). These knobs affect all four parts of your sound and let you quickly modify your loaded presets.
4. Now rotate the LEVEL knobs for active parts to re-balance the mix between the parts.
5. Rotate the FX 1 and FX 2 knobs to send more (or less) of a part to the FX engines. The controls at the bottom of the instrument let you select and further refine the effects.
6. Try changing one of the loaded parts by clicking the name of the part. This brings up the Part Browser view, where you can search through all the categories of sounds within Shape and select various instruments within those categories.
7. When you are happy with your results, click outside the Part Browser to return to Main View.
8. Click the part parameter display to be taken to the part's Editor view. In Editor view you can change various parameters relating to the part such as its contextual controls, modulation source, destination, and strength, pan position, and more.
9. When you are satisfied with the edits you have made to the part, click the left-facing chevron at the top left of the screen to return to Main view.

# Main View

Main view is what you see when Shape is launched. It contains the most commonly used controls and consists of three distinct sections:

## GLOBAL CONTROLS

The top of Main view contains a variety of global controls that affect all four parts within Shape.

### About Global Offsets

The Attack, Decay, Release, and Cutoff knobs work by sending offset values to each of the four available instrument parts. This means that the default “12:00” setting lets all loaded sounds play exactly as they are configured. Rotating the knob clockwise or counter-clockwise serves to increase or decrease its associated parameter across all loaded sounds. For example, if you have created a layered sound and generally like what you are hearing but wish it had a longer release time, simply rotate the Release knob clockwise. Doing so will increase the output of all loaded parts simultaneously.

Attack

This knob adjusts the overall attack time of all parts simultaneously.

Decay

This knob adjusts the overall decay time of all parts simultaneously.

Release

This knob adjusts the overall release time of all parts simultaneously.

Cutoff

This knob adjusts the overall filter cutoff of all parts simultaneously.

FX1>FX2

This knob sets how much of the FX1 output is routed to the input of FX2. It can be set from 0-100%. The minimum setting means that the FX1 and FX2 operate independently of each other while turning this knob clockwise sends more and more of the FX1 output to FX2 input.

*Tip: The FX1>FX2 knob can achieve pleasing results, for example, when routing a delay into a reverb effect.*

Master

This knob sets the master output level of Shape. The adjacent level meters provide visual feedback of Shape's output levels. Note that this knob adjusts the overall output of the plug-in. The relative loudness levels of the parts (set by each part's LEVEL knob) are maintained.

## PARTS 1–4

Shape features four Part slots with identical controls. Each slot can load a different sound from the sound library and you can mix, layer and split these parts to suit your musical needs.

Part Name and Browser

If a sound is loaded into one of the four slots, its name will be shown at the top of the display. Clicking on the Part name or its browse icon will open the Part Browser.

Preset Parameters

This section appears just below the part name and includes a brief description and amount for each contextual setting. Hovering over this area will reveal a chevron. Clicking the chevron will take you to the Editor view where you can edit the Part parameters.

FX1 and FX2 Send knobs

These two send knobs set how much of the current part is routed to Shape's two FX slots. They range from 100% dry, 0% effect (fully counter-clockwise) to 0% dry, 100% effect (fully clockwise).

Note that Shape's send knobs operate differently than the typical send knobs found on many mixers. If you rotate these knobs fully clockwise, you will hear 100% of the effect (wet only) and none of the dry signal. This allows you to use a send as an insert effect by rotating the knob fully clockwise. Furthermore, rotating the FX1>FX2 knob global knob fully clockwise lets you have two insert effects in series if desired. Having both send and insert effects available opens up many sound design possibilities.

*Note: The effect must be enabled with its On/Off switch for these knobs to have any effect.*

Learn more about effects in the FX Section.

Level knob

This knob sets the output level for the part.

Mute button

This button mutes and unmutes the part.

Solo Button

This button engages and disengages solo mode for the part and silences other parts.

*Note: Only one part can be in solo mode.*

## MAIN VIEW: FX SECTION

Shape comes with over 40 built-in effects, including select UA algorithms not found elsewhere. You can use up to two effects simultaneously using the FX1 and FX2 slots.

FX Selector and Browser

If an effect is loaded into a slot, its name will appear in the display. Clicking either the name or its browse icon will open the FX Browser view where you can select other effects.

On/Off Switch

This button switches the effect on and off. The button is lit when the effect is active.

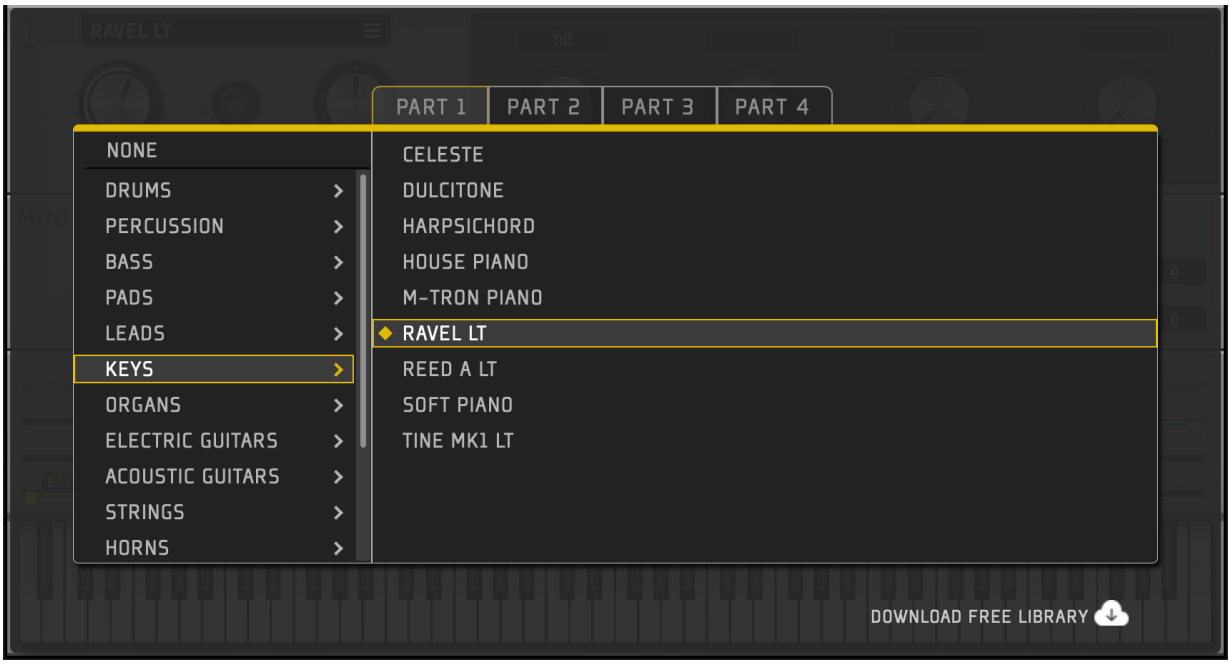
*Note: To hear the effect, increase the effect send level knob for one or more parts.*

FX Knobs

These three knobs control various parameters of your selected effect. The effect's parameter name is displayed below each knob, and its current value is displayed above the knob.

*Note: The function of these knobs varies depending on which effect is currently loaded.*

# Part Browser View




Part Browser View is where you can audition sounds from the library and load them into one of the four part slots available in Shape. To open the Part Browser, click the name or its browse icon at the top of any of the parts in Main View. To exit, click anywhere outside the browser area, or click the X at upper left.

## PART SELECTOR TABS

The PART 1-4 tabs across the top let you select a part in which you can load a sound. These tabs are a convenient way of switching between the four parts without having to exit the Part Browser and re-enter the browser for a different part.

## CATEGORY SELECTOR

The left column lists various categories of instruments found in Shape's library. Select any of the categories to view the individual instruments within that category.

*Note: Selecting NONE will unload any selected file and empty the selected Part.*

## SOUND LIST

Here you will find all of the sounds in the chosen category. You can audition sounds without leaving the browser by simply choosing them and playing your MIDI controller. The currently loaded sound is indicated with a diamond icon.

# Editor View

The Editor View is where you can make more detailed edits to your sounds. Each Part has its own editor. The number of the current part is displayed in the top left corner of the editor.

To enter Editor View, click on the chevron that appears when hovering over the Preset Parameters display in Main View. To exit the editor, click the left-facing chevron at the top left of the screen.

# Primary Controls

## PRESET NAME

If a sound is loaded into this part, its name will be shown here. Clicking on the name or its browse icon will open the Part Browser view.

## LEVEL

This knob sets the output level for the part. This is the same control as the one that appears in Main view.

## SOLO

This button engages and disengages solo mode for the current part. This is the same control as the one that appears in Main view.

### PAN

This knob sets the part's panoramic position within the stereo soundfield.

### CONTEXTUAL CONTROLS 1–4

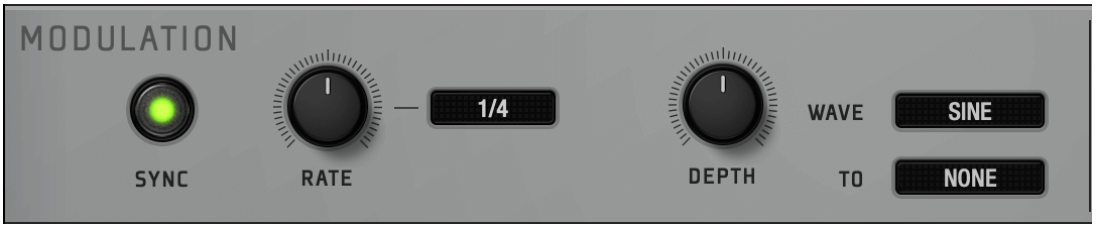
Each of the four contextual knobs can control one or more parameters inside of the part's sound engine. This lets you make complex changes to a sound by simply turning one knob. The exact functionality of each contextual knob is set by the sound designer and can vary greatly from one sound to another.

*Tip: One way to think of the contextual knobs is that they show off what the sound designer felt was the most interesting and tweakable parameter of that sound. Feel free to to experiment as these knobs can take sounds in interesting directions.*

*Note: The sound designers may choose not to use all four contextual knobs. In this case, any unassigned controls do not display a name and their knobs are locked.*

---

## Modulation Section




Controls in this section let you add additional modulation to Shape parts using the Modulation control (MIDI CC1) on your external MIDI controller.

*Note: Parts can have MIDI modulation built-in to the preset sound, so Parts may respond to MIDI modulation even if Depth is set to zero.*

### SYNC

This button switches tempo synchronization on and off in the modulation section. When switched on, the RATE knob will be synchronized to the tempo of your session.

### RATE

This knob sets the speed of modulation. The current value is displayed next to the knob.  If SYNC is enabled, the values are displayed in time divisions (for example, 1/4). If SYNC is disabled, the time value is displayed in milliseconds

### DEPTH

This knob sets the amount or strength of the modulation being applied to your selected target.

Note that the Depth knob is bi-polar and ranges from ±100% with 0% in the centered “12:00” position. This allows you to apply positive or negative (inverted) modulation to your destination.

### WAVE SHAPE

This drop menu lets you select the shape of the modulation waveform. Options include NONE, SINE, TRIANGLE, SQUARE, SAW, S&H (Sample and Hold), and RANDOM.

### TO

This drop menu lets you select the destination of your modulation signal. You can choose from AMP (amplitude), PAN, PITCH, and other parameters that may be exposed by the designer of each part.

---

## Keyboard Section

### PITCH BEND

This parameter sets the pitch bend range of the part, from 0 to 12 semitones.

*Tip: Each part can have its own pitch bend value. Setting this parameter to 0 disables the pitch bend control for its associated part.*

### OCTAVE

This parameter shifts the octave range of the part up or down by up to four octaves.

## Tune Section

### TRANSPOSE

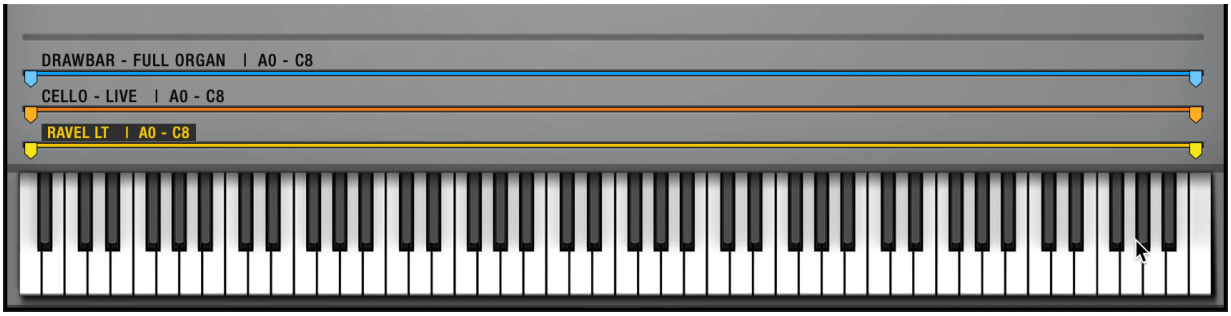
This parameter transposes the pitch of the part up or down by up to ±12 semitones.

### FINE

This parameter fine- tunes the pitch of the part up or down by up to ±50 cents.

---

## Key Range




### KEY RANGE

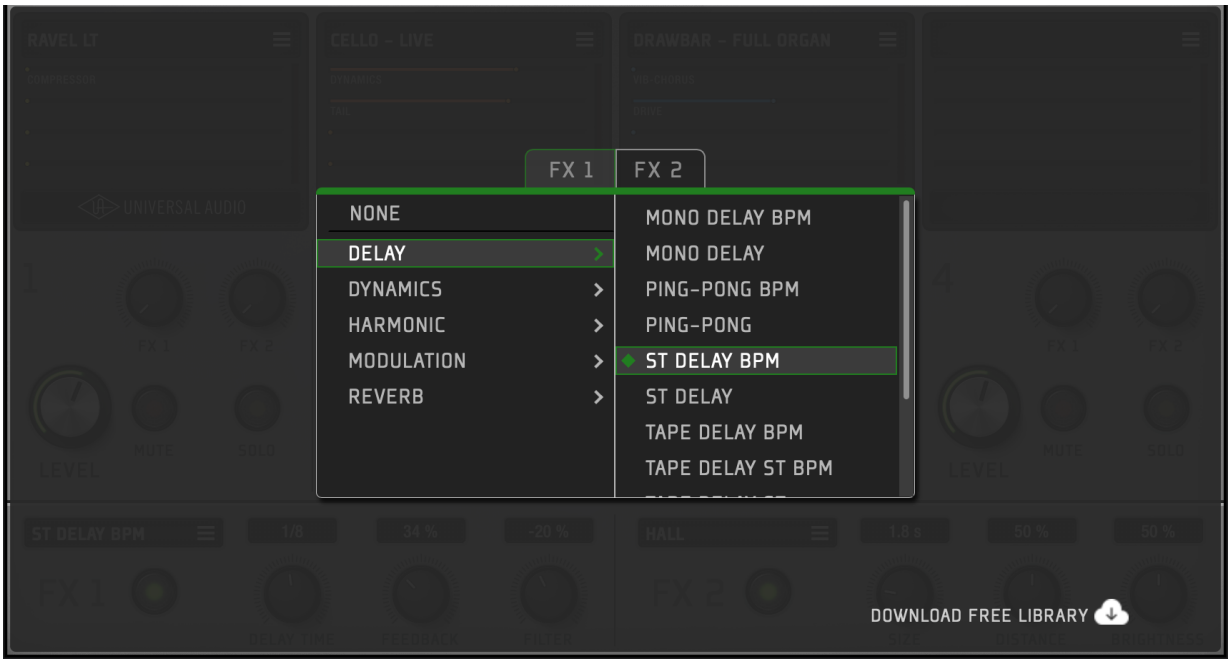
These four rows display the key ranges for each of Shape's four parts. The parts are illuminated in different colors when the part slots are loaded with sounds (a key range is gray and empty when a part's slot is not loaded). You can drag the handles at the end of each key range to set the lowest and highest playable note for each part.

When key ranges overlap, the parts play together as a layered sound. If the parts do not overlap, then they create "splits" over the keyboard, letting you have up to four sounds on separate parts of the keyboard range.

***Note:*** *Shape's key ranges are not individually addressable by different MIDI channels. To have different MIDI channels play different sounds, you can use separate Shape instances.*

---

# FX Browser View




FX Browser view is where you select the effect that you would like to use in each of Shape's two effect slots. To open the FX Browser, click the name or its browse icon from either effect in Main view. To exit, click anywhere outside the browser area, or click the X at upper left.

## FX SLOT SELECTOR TAB

The FX1 and FX2 tabs across the top let you select the FX slot that you would like to modify. These tabs are a convenient way of switching between the two slots without having to exit the FX Browser and re-enter the browser for a different slot.

## FX CATEGORY

The left column lists various categories of effects found within Shape. Select any of the categories to view the individual effects within that category.

*Note: Selecting NONE will unload any loaded effect and empty the selected FX slot.*

## FX PRESET

Here you will find all of the effects from a chosen category. You can select and audition various effects without leaving the browser by clicking on an effect. The currently loaded effect is indicated with a diamond icon.

# Advanced Features (Automation and MIDI CC)

Shape has a simple user interface but we have made sure to include some powerful automation features under the surface. Having access to automation and MIDI CC control can make life easier during a live performance (for example, changing parameters "on the fly" from your MIDI controller without looking at your computer). It can also open up creative sound design possibilities during a mix.

*Note: While some parameters have dedicated ("hardcoded") MIDI CC values for easy automation, most Shape parameters are actually MIDI "Learnable". This means you can use the MIDI Learn function of your music software to map a physical control (knob, slider, etc.) of your MIDI hardware to an on-screen parameter.*

## GLOBAL CONTROLS

| Parameter | MIDI CC Number |
|---|---|
| Attack | 73 |
| Decay | 75 |
| Release | 72 |
| Cutoff | 74 |
| Mod Wheel | 1 |
| Sustain Pedal | 64 |
| All Notes Off | 123* |
| Master Volume | N/A |

- Shape performs an "All Notes Off" (sometimes called "MIDI Panic") procedure any time it receives a non-zero value on MIDI CC123. This means you can, for example, map any momentary button on your MIDI Controller to send a "127" MIDI message on CC123 when pressed, and a "0" message when released. Doing so will convert that button into an All Notes Off control.

## PART PARAMETERS

| | MIDI CC Number | | | |
|---|---|---|---|---|
| **Parameter** | **Part 1** | **Part 2** | **Part 3** | **Part 4** |
| Part Volume | 85 | 86 | 87 | 88 |

| | | | | |
|---|---|---|---|---|
| Part Contextual Edit 1 | 48 | 52 | 56 | 60 |
| Part Contextual Edit 2 | 49 | 53 | 57 | 61 |
| Part Contextual Edit 3 | 50 | 54 | 58 | 62 |
| Part Contextual Edit 4 | 51 | 55 | 59 | 63 |

# Spitfire Audio

Spitfire Audio makes inspiring sounds and film scoring tools in collaboration with the world's best composers, musicians and engineers. Recorded in stunning spaces including AIR Studios, the home of blockbuster scores, Spitfire Audio captures and develops the sounds of Hans Zimmer, BBC Symphony Orchestra, Olafur Arnalds and many more, showcased within beautifully crafted interfaces for maximum detail, control and expression.

There are a number of different UAD Instruments available from Spitfire Audio. This manual applies to all Spitfire Audio UAD Instruments.

## System Requirements

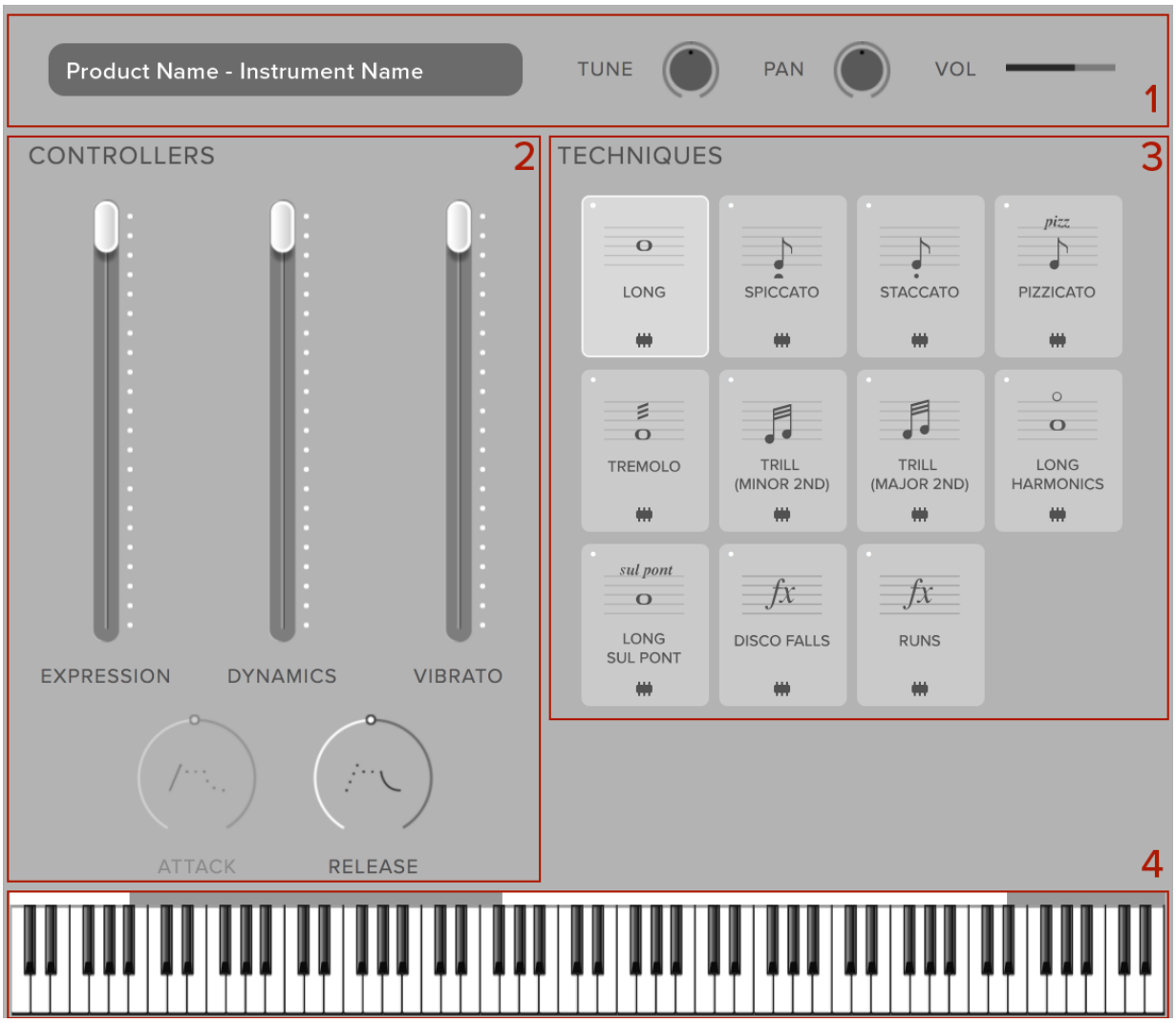
In addition to overall LUNA Recording System requirements, Spitfire Audio UAD Instruments have the following requirements:

- SSD drive with available storage (varies per instrument):
    - 16 GB for Spitfire Chamber Strings Collection
    - 11 GB for Spitfire Symphonic Brass Collection
    - 11 GB Spitfire Symphonic Woodwinds Collection
- SSD drive must be formatted as APFS (Apple File System)
- External SSD must be within USB 3.0, USB 3.1, PCIe, or Thunderbolt enclosure

Note:

- Spinning hard drives and macOS Fusion drives are unsupported
- SSD drives formatted as ExFAT, FAT, and Mac OS Extended are unsupported

# The Interface




## 1. TOP MENU

Patch name:

This shows the name of the loaded instrument.

Master Tune:

This allows you to tune everything (all articulations) ±12 semitones. Cmd+Click resets to default of 0 semitones.

Master Pan:

This allows you to pan everything (all articulations). Cmd+Click resets to default (centre).

Master Volume:

This adjusts the overall volume of the instrument. Range -inf - +12dB. Cmd+Click resets to default of 0dB.

## 2. CONTROLLERS

Greyed-out controllers:

Depending on the articulation selected, some controllers do not have any effect. When a controller doesn't have any effect it becomes greyed out.

Expression:

Instrument trim that adjusts the volume within the dynamics.

Expression is mapped to MIDI CC11.

Dynamics:

Moving this crossfades the different dynamics between loud and soft.

Dynamics is mapped to the modwheel, MIDI CC1.

Vibrato:

Where appropriate this crossfades from no (or senza) to lots (molto) vibrato.

Vibrato is mapped to MIDI CC21.

Attack:

For some articulations this can be used to vary the start of the note. For example, with shorts it can be used to increase the tightness of the performance; with the Rips articulation it will change the length of the run up to the note.

Attack is mapped to MIDI CC22.

Release:

For some articulations this can be used to vary the end of a note. This is

mainly used on Longs articulations to allow control over the tail: at low release values the note will stop more abruptly and at high values the note will stop more gradually (useful for creating smooth transitions between notes/chords).

Release is mapped to MIDI CC23.

## 3. TECHNIQUE SELECTOR

Articulation icons:

These icons can be clicked to allow you to change the articulation currently being played by the instrument. When selected, the icon becomes highlighted.

Purge:

The small “memory” icon below the technique allows you to remove an articulation from memory. This can be useful when using a lot of instances of an instrument. By default all techniques are preloaded into memory. When the technique is purged, the technique will not sound if it is purged and the icon becomes grey, as shown below:

Not purged – The articulation is preloaded into memory.

Purged – The articulation is removed from memory and the “memory” icon is greyed out.

### 4. KEYBOARD

This ranges from C0 to E8 and reflects the keys currently being received via MIDI/ pressed by the user.

Key switches:

On the bar above the keyboard the key switches are shown by the left section of white. All keys under this white section are key switches and can be used to change articulation without clicking the UI. The order of the key switches are reflected by the order of the articulation icons (from left to right, top to bottom).

Playable range:

The right hand section of white shows the playable range. This will vary depending on the articulation and instrument selected.

---

## Glossary of Articulations

The following is an explanation of all of the terms used when naming our 'articulations' in the library. The available articulations will be displayed when an instrument is loaded.

### LONG

The most vanilla of the long notes that we record, a standard sustained note. This is the basic playing style, often recorded with and without vibrato.

### SPICCATO

This articulation can vary! For us, our Spiccato aims to capture a very nice 'tight' sound, with the bow bouncing off the string. This creates a sound that can be used either as a nice short staccatissimo, but also as a sequence of fast short notes or an ostinato.

### STACCATO

Staccato in notation refers to a 'shortened and detached' style of playing. In the case of samples, this usually refers to a single but defined short note.

### PIZZICATO

Plucking the strings with the finger.

### SHORT MARCATO

Marcato in our samples refers to the longest of our short notes, and has a slightly harder attack whilst maintaining a round shape to the note start. Think of this as the longest note in a fanfare passage.

## SHORT TENUTO

The intermediate short length - literally it means ‘hold the note for its full duration or even slightly longer’ and implies some form of accent. We think of this as a nice rounded attack.

## SHORT COL LEGNO

Col Legno means ‘with wood’. This style of playing is to turn the bow over and hit the string with the wood of the bow. Usually players will bring a practice of less expensive bow for this, as their main bows can cost thousands!

## SHORT 0'5

This is a staccato played to the length of approximately half a second.

## LONG SUL PONT

Short for ‘sul ponticello’, meaning to play on the bridge. Here the players bow very close to the bridge, which produces a brittle and edgy sound. Always reminds us of nails on a chalkboard!

## LONG HARMONICS

If a player holds down lightly on the string a perfect fourth interval up from the note they are fingering, you hear what is called an ‘artificial harmonic’ sound - two octaves up from the note being fingered. This is called ‘artificial’ to distinguish it from the natural harmonic series of the open string. These ‘natural’ harmonics can be heard by moving the finger up and down the string while lightly bowing. Note that the playable range is different to the Long articulation.

## TREMOLO

A tremolo is where a player rapidly moves the bow whilst keeping the left hand on the same notes. The effect is a shimmering one when played soft, and a very aggressive and tense sound when played loud.

## TRILLS

A trill is where a player alternates between two notes. These work great as accented performance embellishments, or you can play them very softly to create unique and interesting textures.

## RIPS & FALLS

Either a sweep ‘up’ to the target note, or a fall down to the target note. Sometimes there are different speeds for this, varied with the Attack knob.

## RUNS, DISCO FALLS & FX

A collection of various FX, from slides through to unusual ‘chattering’ and ‘cluster’ sounds, to runs slides and ‘disco falls’. Have an explore through these patches!

# Spitfire Audio UAD Instruments

## SPITFIRE CHAMBER STRINGS – LUNA COLLECTION

We handpicked 16 of the finest string players to perform an encyclopaedia of articulations and techniques, expertly recorded in the world famous Hall at AIR Studios, London. This smaller section gives you more detail and focus than our Symphonic range, while still capturing the beautiful resonance of the hall. This is our definitive chamber range – a hugely versatile classic that will enhance your film, TV and game scores and pop records.

### Instruments

Your purchase of the Spitfire Chamber Strings LUNA Collection includes the individual UAD Instruments below:

- Chamber Strings - Violins 1
- Chamber Strings - Violins 2
- Chamber Strings - Violas
- Chamber Strings - Celli
- Chamber Strings - Basses
- Chamber Strings - Ensembles

### Articulations

Spitfire Chamber Strings for LUNA includes the following articulations.

| **Chamber Strings**<br>**Articulations** | **Violins 1** | **Violins 2** | **Violas** | **Celli** | **Basses** | **Ensembles** |
|---|---|---|---|---|---|---|
| Long | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Long Harmonics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Long Sul Pont | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Pizzicato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Short Spiccato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Staccato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tremolo | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Trill (Major 2nd) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Trill (Minor 2nd) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Runs | ✓ | ✓ | ✓ | ✓ | ✓ | NO |
| Disco Falls | ✓ | ✓ | ✓ | ✓ | NO | NO |

## SPITFIRE SYMPHONIC BRASS – LUNA COLLECTION

Half a decade in the making, this encyclopaedic compendium is our definitive collection of orchestral brass. The UK's finest brass players have been expertly recorded at the world-famous Hall at AIR Studios, London — the same inimitable acoustic as Symphonic Strings and Symphonic Woodwinds, for that highly sought-after blockbuster sound. Symphonic Brass LUNA Collection offers you 46 articulations, adding power and punch to your orchestral scores.

### Instruments

Your purchase of the Spitfire Symphonic Brass LUNA Collection includes the individual UAD Instruments below:

- Symphonic Brass - Horn Solo
- Symphonic Brass - Horns a2
- Symphonic Brass - Tenor Trombone Solo
- Symphonic Brass - Tenor Trombones a2
- Symphonic Brass - Bass Trombones a2
- Symphonic Brass - Trumpet Solo
- Symphonic Brass - Trumpets a2
- Symphonic Brass - Tuba Solo

### Articulations

Spitfire Symphonic Brass for LUNA includes the following articulations.

| Symphonic Brass | Horn Solo | Horns a2 | Tenor Trombone Solo | Tenor Trombones a2 | Bass Trombones a2 | Trumpet Solo | Trumpets a2 | Tuba Solo |
|---|---|---|---|---|---|---|---|---|
| Long | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Marcato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Staccato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Tenuto | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Falls | ✓ | ✓ | ✓ | ✓ | ✓ | NO | ✓ | ✓ |
| Rips | ✓ | ✓ | ✓ | ✓ | ✓ | NO | ✓ | ✓ |

## SPITFIRE SYMPHONIC WOODWINDS – LUNA COLLECTION

Spitfire Audio has taken its decade of experience recording woodwind instruments, expertly sampling the UK's finest players at one of the most sought-after locations in the world: The Hall at AIR Studios, London. This library offers you a wide range of instruments and articulations, from guttural depths of the bass clarinet to the gleaming sound of the piccolo. An essential part of your orchestral palette, the woods are your secret weapon to adding real power to your scores.

### Instruments

Your purchase of the Spitfire Symphonic Woodwinds LUNA Collection includes the individual UAD Instruments below:

- Symphonic Woodwinds - Piccolo Flute
- Symphonic Woodwinds - Flute Solo
- Symphonic Woodwinds - Flutes a2
- Symphonic Woodwinds - Clarinet Solo
- Symphonic Woodwinds - Clarinets a2
- Symphonic Woodwinds - Bass Clarinet
- Symphonic Woodwinds - Oboes a2
- Symphonic Woodwinds - Bassoon a2

### Articulations

Spitfire Symphonic Woodwinds for LUNA includes the following articulations.

| **Symphonic Woodwinds** | **Piccolo Flute** | **Flute Solo** | **Flutes a2** | **Clarinet Solo** | **Clarinets a2** | **Bass Clarinet** | **Oboes a2** | **Bassoons a2** |
|---|---|---|---|---|---|---|---|---|
| Long | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short Staccato | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Trill (Major 2nd) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NO |
| Trill (Minor 2nd) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NO |
| Short Tenuto | ✓ | ✓ | ✓ | NO | ✓ | ✓ | NO | ✓ |
| Short Marcato | ✓ | ✓ | ✓ | NO | ✓ | NO | ✓ | ✓ |

# LUNA Extensions

## Unlock Analog Sounds and Workflows

LUNA Extensions are UA add-ons that run exclusively inside LUNA. LUNA includes the free Oxide Tape LUNA Extension. The optional API Vision Console, Studer A800, Ampex ATR-102, API Summing, and Neve Summing LUNA Extensions are available for purchase from within LUNA. The included free ARP LUNA Extension provides arpeggiation effects on Instrument tracks.

### API Vision Console Emulation

API analog consoles are at the heart of some of the best-sounding albums ever recorded. From Fleetwood Mac's Rumours to Radiohead's In Rainbows, API desks add character, color, and punch to everything that passes through them. The API Vision Console Emulation Bundle turns LUNA into a full API console.

### Neve® Summing

Create with precisely emulated analog summing from the famed Neve 80-Series consoles. Far beyond a simple “summing plug-in,” this optional LUNA Extension will transform a clean, sterile mix to sound as if it was mixed on a classic Neve desk.

### API Summing

Developed in partnership with API, exclusively for LUNA Recording System, the API Summing Extension emulates the 2520 op-amp and custom output transformers found in legendary API consoles over the past 50 years — giving your LUNA mixes all the attitude and tone of API's esteemed analog desks.

### Ampex® ATR-102 Master Tape

With its cohesive sound, punch, and ability to provide subtle-to-deep tape saturation and color, the Ampex ATR-102 is a fixture in major recording and mastering studios — and is considered by many engineers to be the best-sounding tape machine for final mixdown. Now you can apply that rich sound to the Main track and to buses in LUNA. You can apply individual Master Tape machines for each track, and you can adjust controls like Tape Formula, Tape Speed, Head Width, EQ, and calibration.

### Studer® A800 Tape

Get the rich warmth, punch, and texture of magnetic tape on any audio or instrument track with the optional Studer A800 Tape Extension. Simply adjust the per-track Saturation control for the desired amount of harmonics and tape character, and tweak further with master controls like Tape Formula, Tape Speed (IPS), and calibration settings.

## Oxide Tape

The Oxide Tape LUNA Extension provides UA's revolutionary tape emulation technology in a simple package — with all of the essential tape sound — for free. By harnessing the musical, mixable sound of tape, Oxide Tape LUNA Extension imparts essential "sounds like a record" clarity, punch, and warmth to input tracks.

## ARP MIDI Arpeggiator

LUNA's feature rich arpeggiator is a powerful tool that can help you discover new and interesting musical note patterns while composing and performing.

# Using Presets with LUNA Extensions

You can choose and save presets for LUNA Extensions with a preset browser that provides deep and comprehensive ways to work with presets. The following LUNA Extensions use the preset browser:

- API Vision Console
- Ampex ATR-102 Master Tape
- Studer A800 Tape
- Oxide Tape
- ARP MIDI Arpeggiator

Note that you can access and save Oxide Tape presets with the preset browser, but you cannot edit the Oxide Tape extension in LUNA. You can, however, edit an Oxide Tape preset in the UAD plug-in and access those presets in the LUNA Extension.

When you open a LUNA extension in the browser, the search bar takes keyboard focus so you can find presets and tags. LUNA Extensions include a number of factory presets. For API Vision Console, presets include tags for Type and Artist. The preset browser appears at the bottom of the Extension for most extensions.

For API Vision Console, the preset browser appears at the bottom of the console browser on narrower screens, and to the left of the console browser on wider screens. You can drag the console browser edge in or out to resize the browser, and arrange the presets at the bottom or to the left of the browser.

## Loading a preset

1. Hover over the Extension row entry and click the square to open the Extension in the browser.

2. From the Preset browser, select the preset.

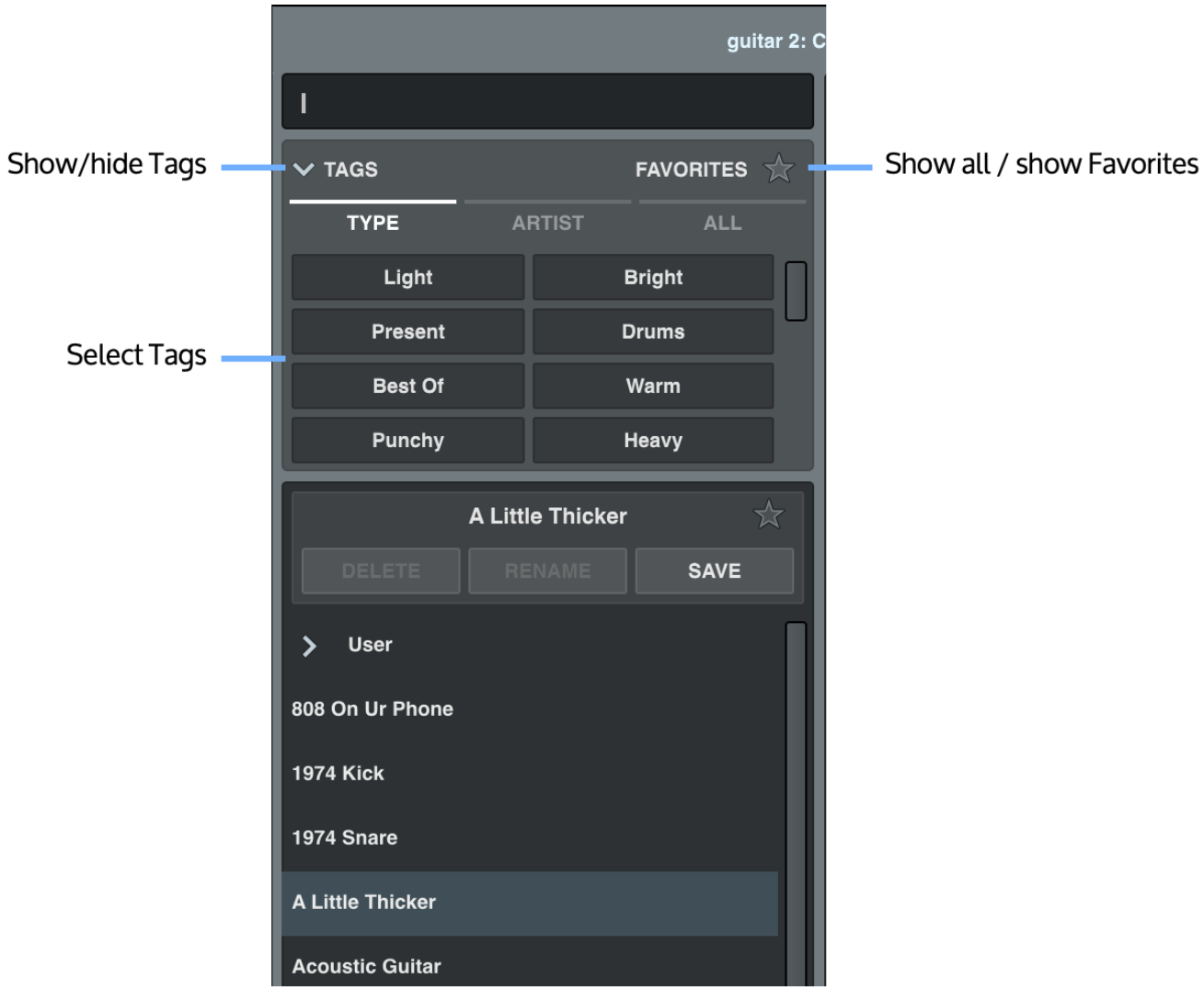
Use the Up and Down arrows to navigate through presets. To search for a preset, click next to the magnifying glass at the top of the browser, and begin typing.

To search for a preset by name or tag, type in the search bar. The list of presets is filtered as you type. Press Enter to load the first preset in the list, or navigate up/down with the arrow keys, then press Enter.

# Using Tags to find a preset by characteristics

The Tags feature in the API Vision Console allows you to find presets by type and by artist.

- To show the list of tags, click TAGS.
- To close the list of tags, click TAGS again.
- To filter the list of presets by a tag, click the tag. Click one or more tags to narrow the list of presets. Each tag you add narrows the list of results further, and also reduces the list of tags.
- To remove a tag, click one of the selected tags.
- To stop filtering by tags, click the X next to TAGS.




# Saving a preset

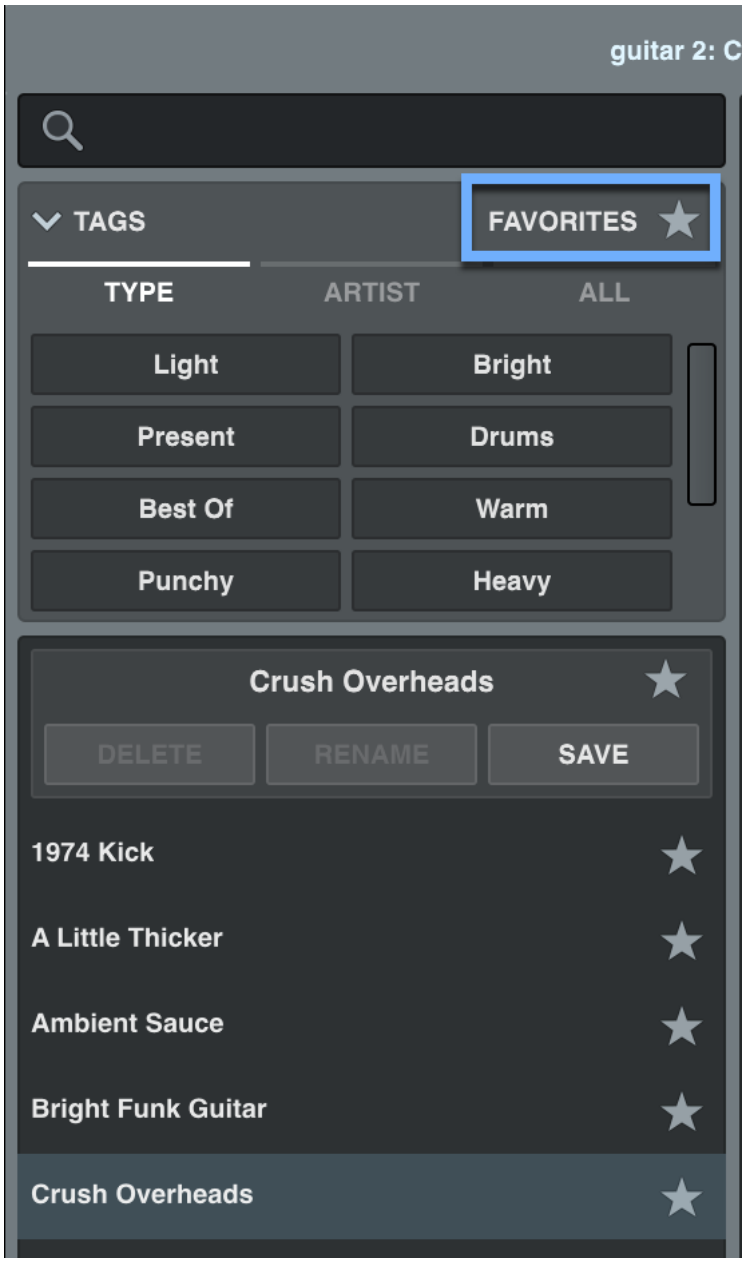
You can save a preset from the Preset Browser. Note that you cannot make changes to the Oxide Tape LUNA Extension, so saving a preset is not recommended.

1. Select a preset from the Preset Browser.
2. Make changes to the preset as required.
3. Click Save. The Save Preset As dialog opens.
4. Click Save to save the changes to the existing preset, or type a name for the preset to save a new preset, then click Save.

## Favoriting a preset

You can favorite presets, and filter the list of presets by your favorites.

- To favorite a preset, hover over the preset name, and click the star to the right of the preset name.
- To unfavorite a preset, hover over the preset name, and click the favorite star again.
- To show only favorites in your preset list, click Favorites in the Tags bar.


guitar 2: C
TAGS
FAVORITES
TYPE
ARTIST
ALL
Light
Bright
Present
Drums
Best Of
Warm
Punchy
Heavy
Crush Overheads
DELETE
RENAME
SAVE
1974 Kick
A Little Thicker
Ambient Sauce
Bright Funk Guitar
Crush Overheads

# API® Vision Console Emulation

## Transform LUNA Recording System into API's flagship analog console

API analog consoles are at the heart of some of the best-sounding albums ever recorded. From Fleetwood Mac's Rumours to Radiohead's In Rainbows, API desks add character, color, and punch to everything that passes through them.

The API Vision Console Emulation Bundle turns LUNA into a full API console. Track in real time through API preamp and channel modules, then mix with API's illustrious analog summing and bus compression —

seamlessly switching between low-latency tracking using Apollo DSP (Apollo mode only), and high-powered native mixing within LUNA. You can create new audio, instrument, and bus tracks with API Vision Console elements pre-assigned, building sessions within the complete Vision console emulation experience.

---

# LUNA Integration

API Vision extensions integrate into a unique Console row within the LUNA mixer, on the focus channel, and in the Console Browser. When API Vision extensions are instantiated, they appear in the Console row, and also as plug-in icons in the Inserts area. This allows you to re-order API Vision extensions with other plug-ins in the inserts.

On an audio track, instrument track, bus, or the Main track, you can assign API Vision or API 2500.

With API Vision, you can toggle between the views for Input/Filter, Gate/Comp, and EQ on a track or globally for the session. You can also toggle the views based on selection grouping or a track group.

With the API 2500 Bus Compressor, the most import controls are shown in compact form. You can expand API Vision Console or API 2500 to full width and see all controls in the focus browser.

---

# UAD Plug-In Integration (Apollo mode only)

When instantiated on a record or input-enabled track or on an ARM-enabled bus, in Apollo mode only, API Vision runs as a UAD plug-in on your Apollo DSP. When the track or bus is no longer ARM-enabled, API Vision runs natively. In this way, you can use a large number of API Vision processors, while only consuming UAD resources when required for real-time tracking and AUX-enabled buses.

## API PREAMP UNISON INTEGRATION

When API Vision is instantiated on a track, LUNA loads the API Preamp into the Unison insert, if there is no other Unison preamp loaded. The API Preamp, like any Unison plug-in, appears in Unison insert view only when the track is record-enabled or input-enabled. API Preamp controls appear inline in the Unison insert. The Gain control changes from blue to gray to indicate mic or line gain ranges in Unison insert view.

**Note:** Unison inserts are available only in Apollo mode.

API Preamp does not automatically open as a separate plug-in window when it is automatically instantiated. For access to all features, hover your mouse over the API Preamp plate in the Unison row and click the square icon.

API Preamp controls available inline

*API Preamp (Unison insert view)*

*API Preamp (expanded view)*

## Control Descriptions

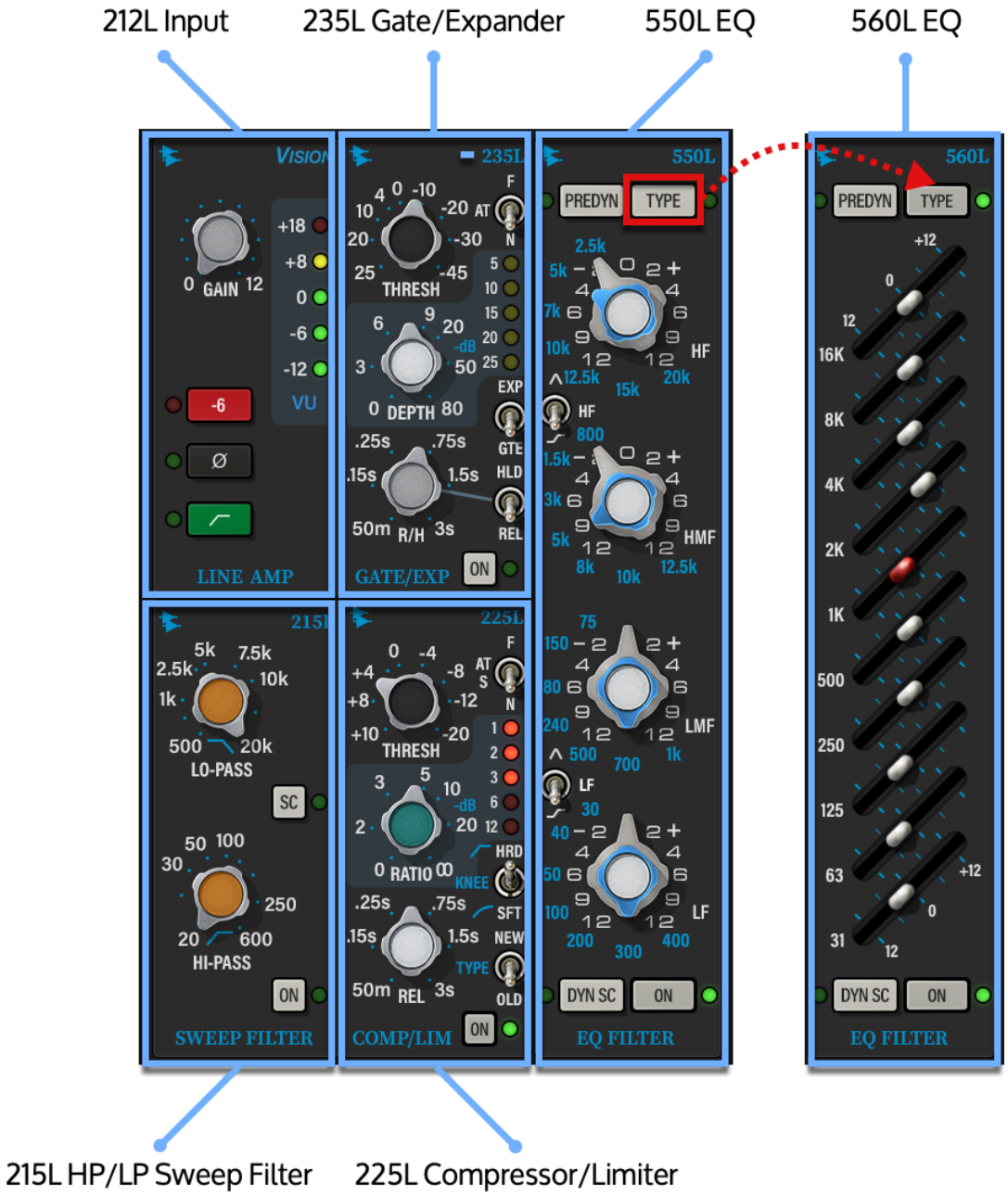
Individual API Vision control functions are detailed in the API Vision Channel Strip Parameters and API 2500 Bus Compressor Parameters sections.

---

# API Vision Console Emulation Extensions

### API VISION CHANNEL STRIP

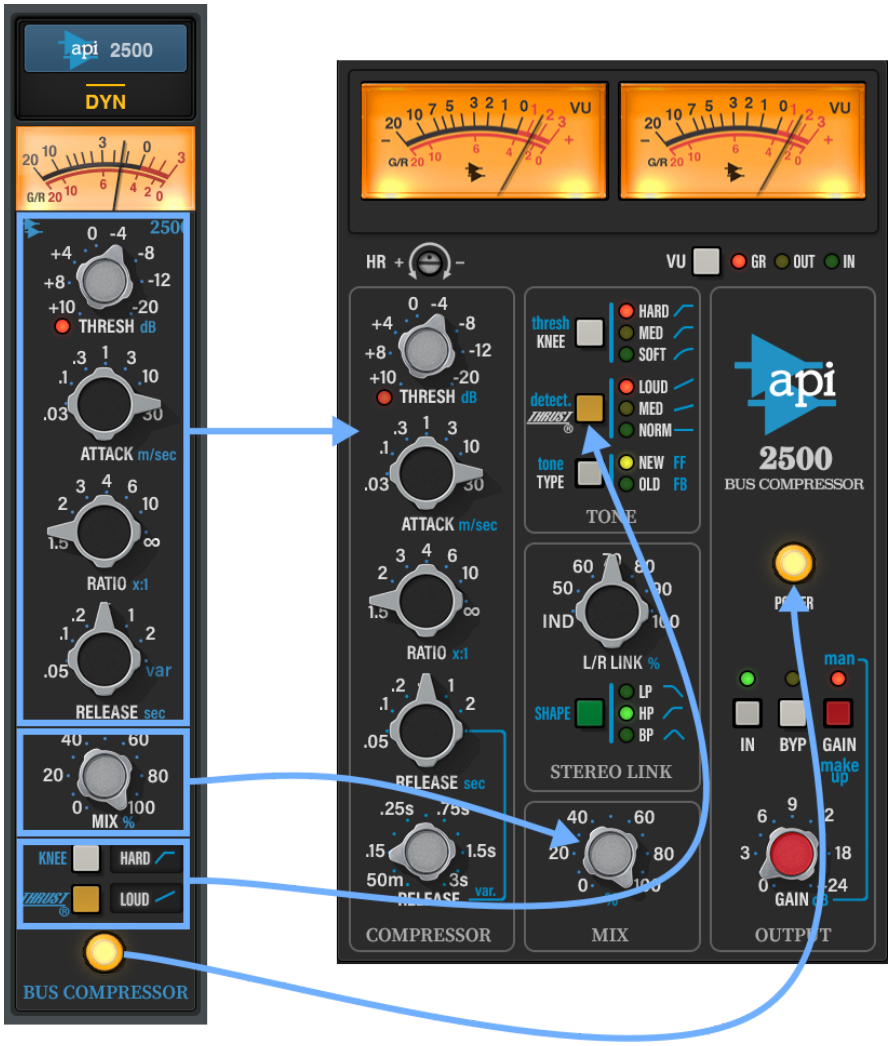
When instantiated, API Vision appears as a channel strip, including Input gain, Input filters, Gate/Expander, Compressor/Limiter, and EQ. You can change the EQ module from the default 550L (parametric) to the 560L (graphic) EQ.




You can open the full channel strip in the Console browser by hovering your mouse over the API Vision plate in the Console row and clicking the square icon.

## API 2500 BUS COMPRESSOR

API 2500 is instantiated as a compact version of the API 2500 Bus Compressor, with the most important controls of the hardware shown.



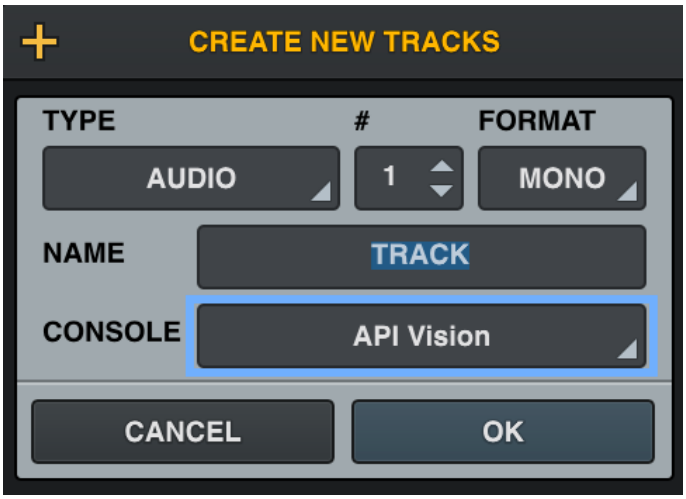

To see the full set of controls, you can open the API 2500 Bus Compressor in the Console browser by hovering your mouse over the API 2500 plate in the Console row and clicking the square icon.

## Assigning API Vision to Tracks

There are several ways to assign API Vision to your tracks.

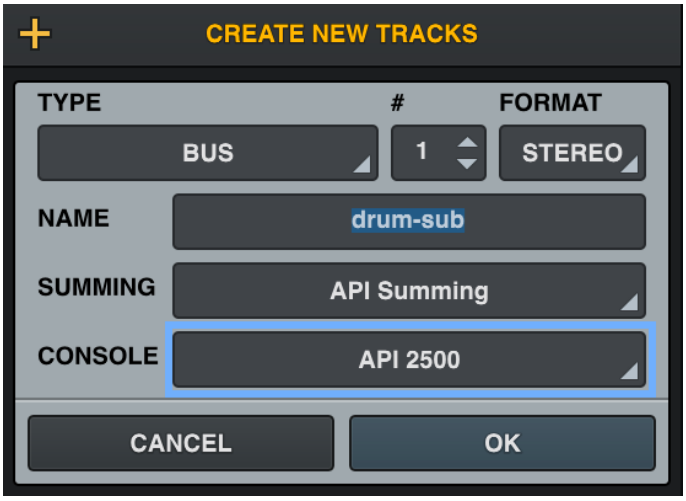
### CREATING TRACKS WITH API VISION

1. In the Tracks Focus Browser, select a track type, in the Create New Tracks dialog (Track Menu > New Tracks or Shift+Command+N) and select a track type, or click the plus (+) next to Tracks and select a track type.
2. Choose the number of tracks to create and the format (MONO or STEREO). You can optionally type a name for the track or tracks here if desired.
3. For an instrument track, select the instrument.
4. From the Console item, select API Vision.
5. Click OK to create the tracks, or Cancel to stop track creation.



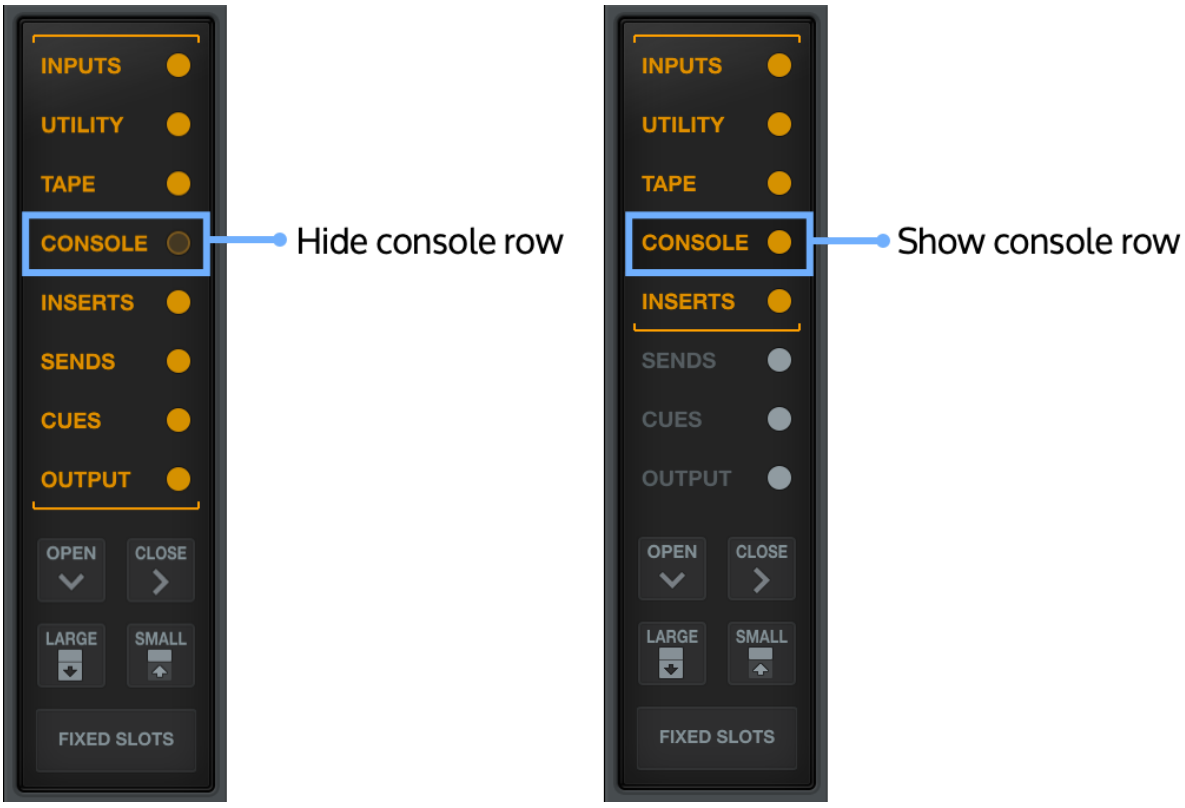
## CREATING TRACKS WITH API 2500

1. In the Tracks Focus Browser, select a track type, in the Create New Tracks dialog (Track Menu > New Tracks or Shift+Command+N) select a track type, or click the plus (+) next to Tracks and choose a track type.
2. Select the number of tracks to create and the format (Mono or Stereo), and type a name for the track or tracks.
3. To enable API 2500, select API 2500 from the Console list.
4. To enable API Summing on a bus track, select API Summing from the Summing list.
5. Click OK to create the tracks.

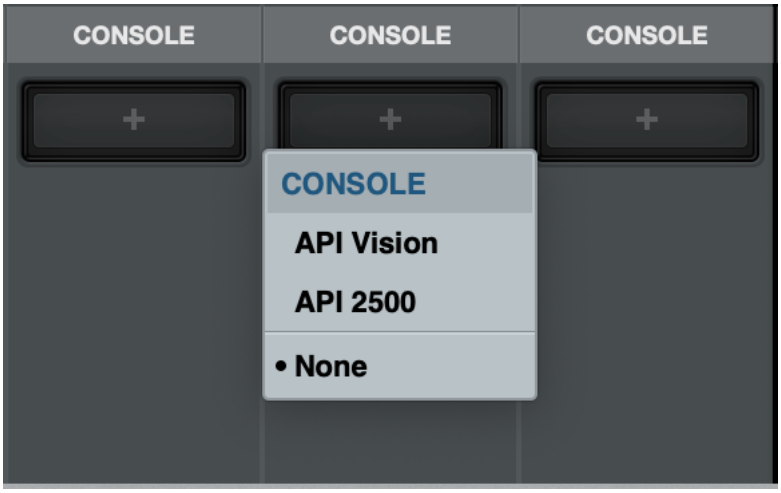



## ASSIGNING API VISION OR API 2500 TO A TRACK

1. Make sure the Console row is showing in the LUNA mixer.




2. Click on the Console row on a track and choose API Vision or API 2500.




API Vision or API 2500 is assigned to the track, and appears inline in the mixer, and in the Console browser.

*API Vision assigned to a track*

*API 2500 assigned to a track*

You can assign API Vision or API 2500 to multiple tracks with track selection groups or track groups:

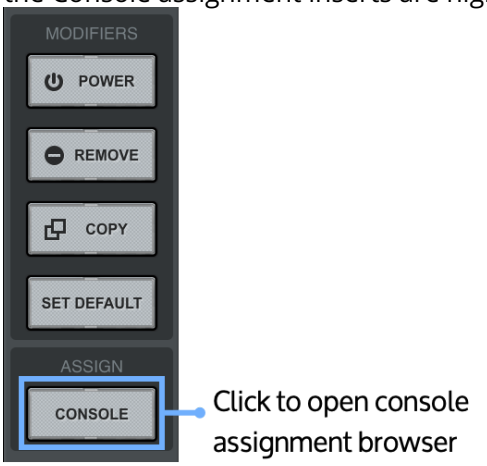
- Assign API Vision or API 2500 to a track in an enabled selection group to assign to all tracks in that selection group.
- Assign API Vision or API 2500 to a track in an enabled track group with the Mixing property enabled to assign to all tracks in that track group.

## ASSIGNING API VISION TO MULTIPLE TRACKS AND BUSES

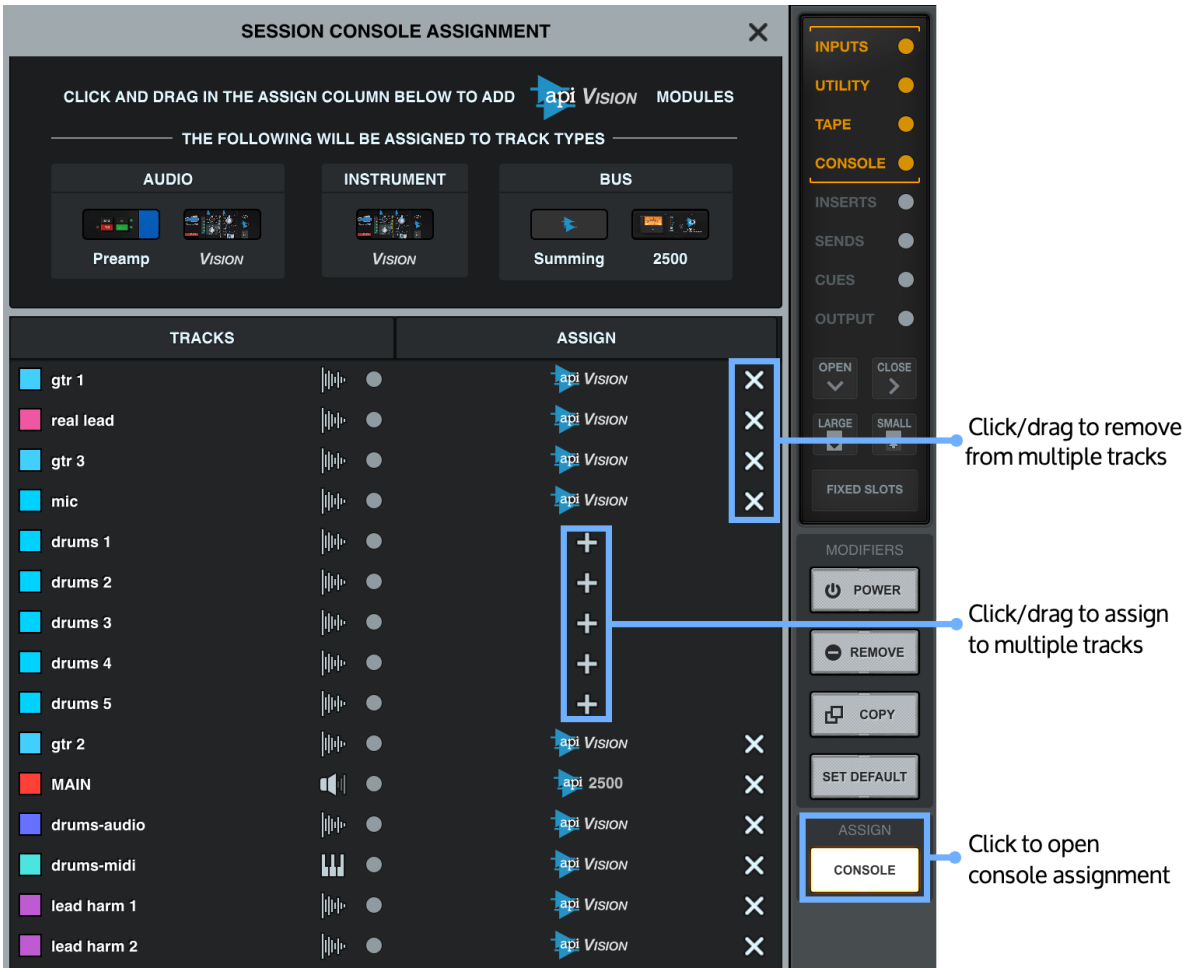
You can assign API Vision to multiple tracks and buses with a menu item or with the Console button in the Mixer navigation panel.

Assign API Vision to multiple tracks with Session Console Assignment browser

1. Press the Console button in the Assign area (it will blink when activated), or choose Mixing > Assign Console Extension from the LUNA menus. The console assignment browser opens, and the Console assignment inserts are highlighted with green icons in the Mixer.



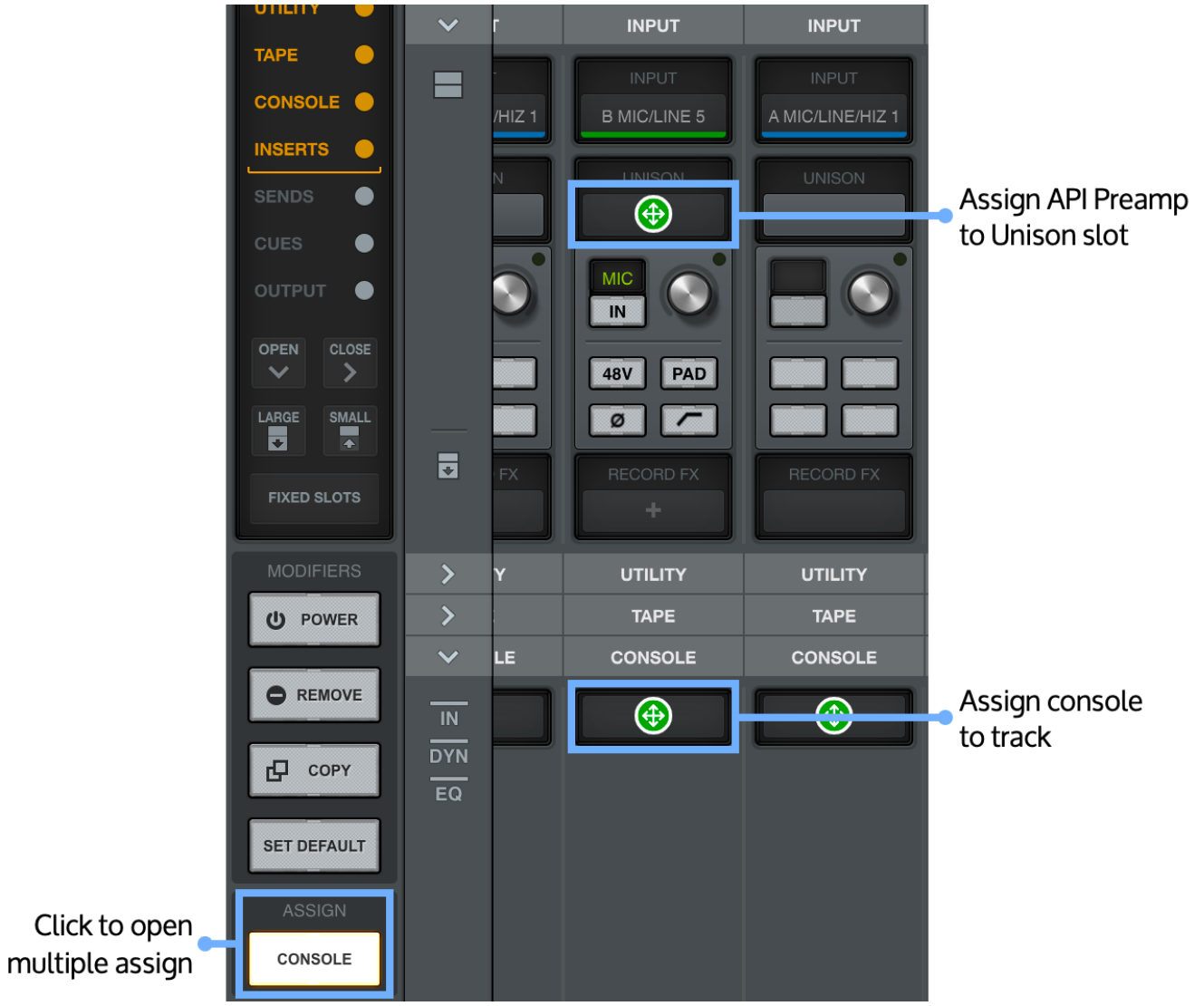

2. In the Session Console Assignment browser, click the plus (**+**) next to a track name to assign API Vision to that track. Click the **X** next to a track name to remove API Vision from that track.
3. Click and drag to assign API Vision to multiple tracks, or to remove API Vision from multiple tracks.




4. When you are finished, click the Console button again to stop assigning API Vision to tracks.

Assign API Vision to multiple tracks in the Mixer

1. Press the Console button in the Assign area (it will blink when activated). The console assignment browser opens, and the Console assignment inserts are highlighted with green icons in the Mixer.
2. In the Mixer in the Console row, click on the green icons to assign API Vision to a track.
3. Click and drag to assign API Vision to multiple tracks.
4. In the Input row, click to assign API Preamp to the Unison insert on any record-enabled or input-enabled audio tracks (Apollo mode only).
   **Note:** When you assign API Vision to an audio track with a mic, line, or Hi-Z input (in Apollo mode only), API Preamp is automatically assigned to the Unison insert on that track, if there is no other Unison preamp assigned to that track. Unison plug-ins are instantiated only when the track is record-enabled or input-enabled.
5. When you are finished, click the Console button again to stop assigning API Vision to tracks.



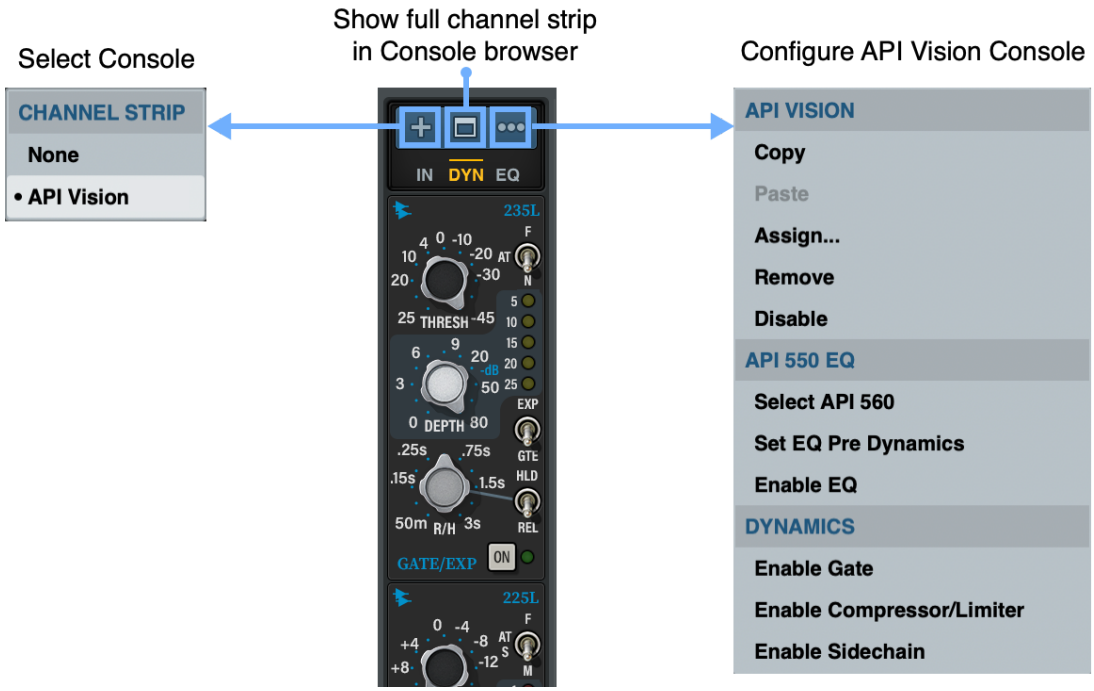

## Using API Vision

After API Vision is loaded on a track, there are a number of ways you can work with it. You can enable individual modules on a single track or on multiple tracks. Individual controls for each module or multiple modules can be adjusted, and presets can be loaded and saved.

In ARM mode in Apollo mode only, API Vision automatically runs on UAD DSP, when a track is record or input-enabled. When mixing or not in ARM mode, API Vision runs natively.

## USING API VISION

You can use the option menus on the Console row in the Mixer or on the Focus channel to enable, disable, and configure API Vision, and to show the full channel strip in the Console browser. To use these options, hover your mouse over the top of the console row then click an icon.




- Click the plus (**+**) on the left of the console row to select API Vision.
- Click the square icon in the center of the console row header to open the full channel strip in the Console browser on the left of the LUNA window.
- Click the three dots (**•••**) to open the API Vision Console configuration menu. This menu allows you to copy, paste, remove, and disable API Vision, and to enable and disable individual modules and configure routing options. These module options are also available within the module interface.

## ENABLING AND DISABLING MODULES

When you first instantiate API Vision on an audio or instrument track, all modules are disabled. You must enable any modules you want to use on a track. Only those modules that are enabled use processor resources. You can enable modules on an individual track, on multiple tracks with selection or track grouping, and on all tracks to which API Vision is assigned.

**Note:** The API 2500 Bus Compressor is enabled when assigned, unlike the API Vision channel modules.

To enable or disable a module, click the ON button in a module to toggle the state, or use the menu items.

To power off all modules on a channel, click the Power button in the console browser.

## MODULE NOTES

- The API Line Amp is always enabled, so you can add gain, enable the pad, flip the polarity, or apply the low cut filter without enabling the module. All other API Vision modules must be enabled.
- To enable the side chain (SC) on the 215L Sweep Filter module, the 235L Gate/Expander or 225L Compressor/Limiter modules must be enabled.

## ENABLING OR DISABLING AN API VISION MODULE ON MULTIPLE TRACKS

To enable or disable a module on multiple tracks you can use selection grouping or track groups.

- With selection grouping enabled, select the tracks on which you want to enable or disable the module, then enable the module on one track. The module is enabled on all tracks in the selection group.
- With a track group, make sure that the Mixing property is assigned in the track group's settings menu, and the track group is enabled. Enable or disable a module on a track in the track group to enable or disable that module on all tracks in the track group.

### ENABLING OR DISABLING AN API VISION MODULE ON ALL TRACKS

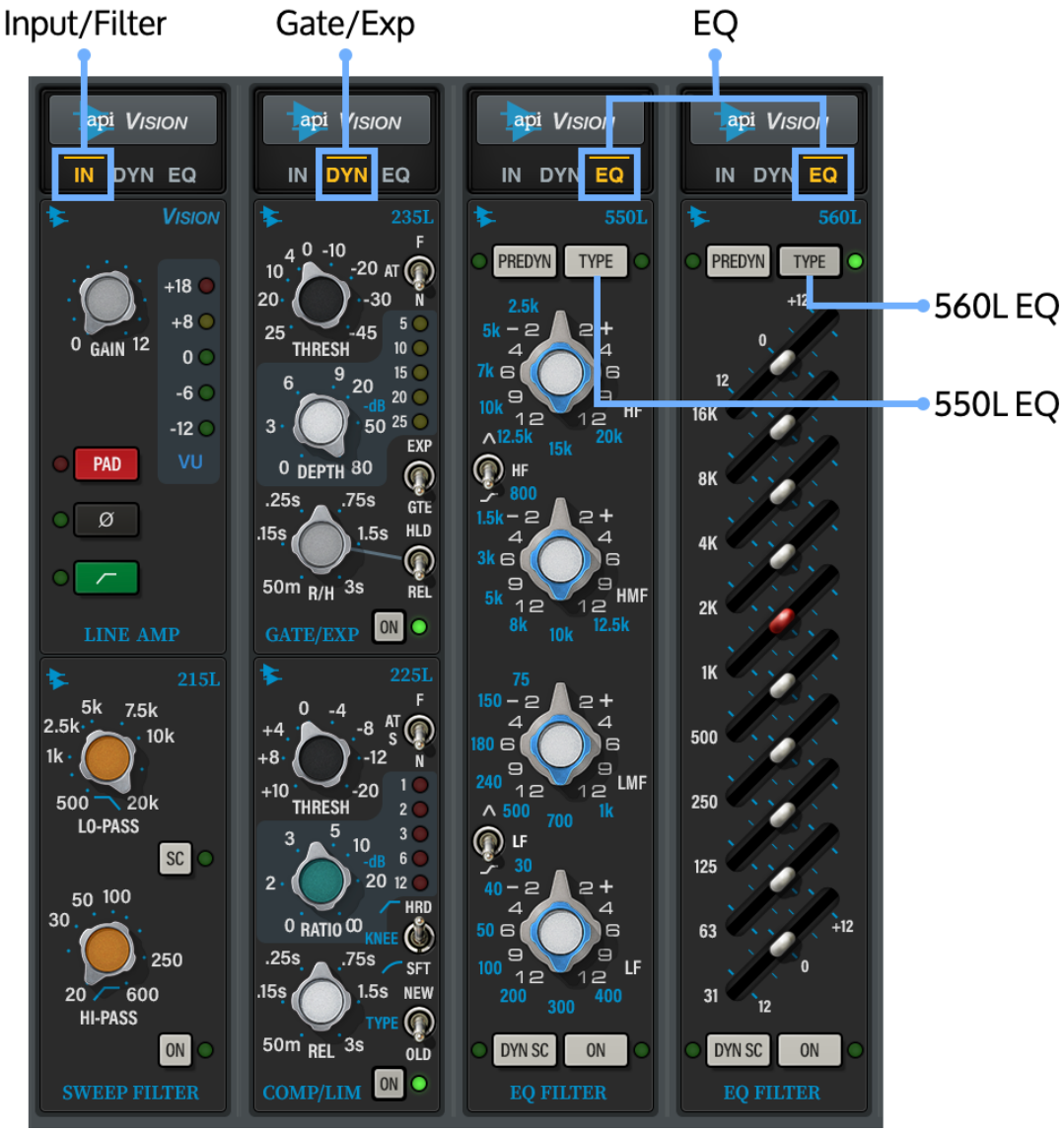
To enable or disable a module on all tracks on which API Vision is instantiated, Option-Click the On button on the module. The module state is toggled on all modules.

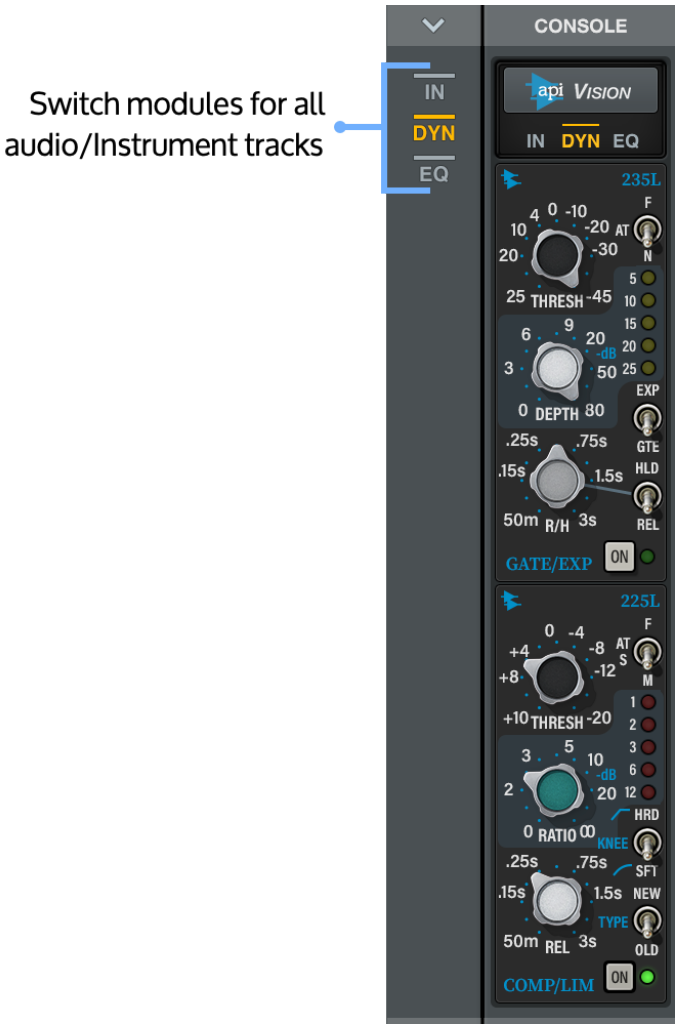
---

## Switching Between API Vision Modules

In the Console browser, all modules for the track are shown in one layout. However, on a track in the Mixer or in the Focus channel, only one row of modules is shown at a time. You can choose which modules to show on one or more tracks.

- To switch between modules, click IN, DYN, or EQ at the top of the module row.
- To switch between modules with selection grouping enabled (in the Groups browser), select the tracks, then click IN, DYN, or EQ at the top of the module row.
- To switch between modules with a track group enabled, make sure that the track group includes the Mixing property, then on a track in the group, click IN, DYN, or EQ at the top of the module row.
- To switch between modules on all audio and instrument tracks, click IN, DYN, or EQ to the left of the tracks in the Console row.
- To switch between modules by clicking and dragging, click a module type on one track and then drag left or right to switch the view to that module on adjacent tracks.

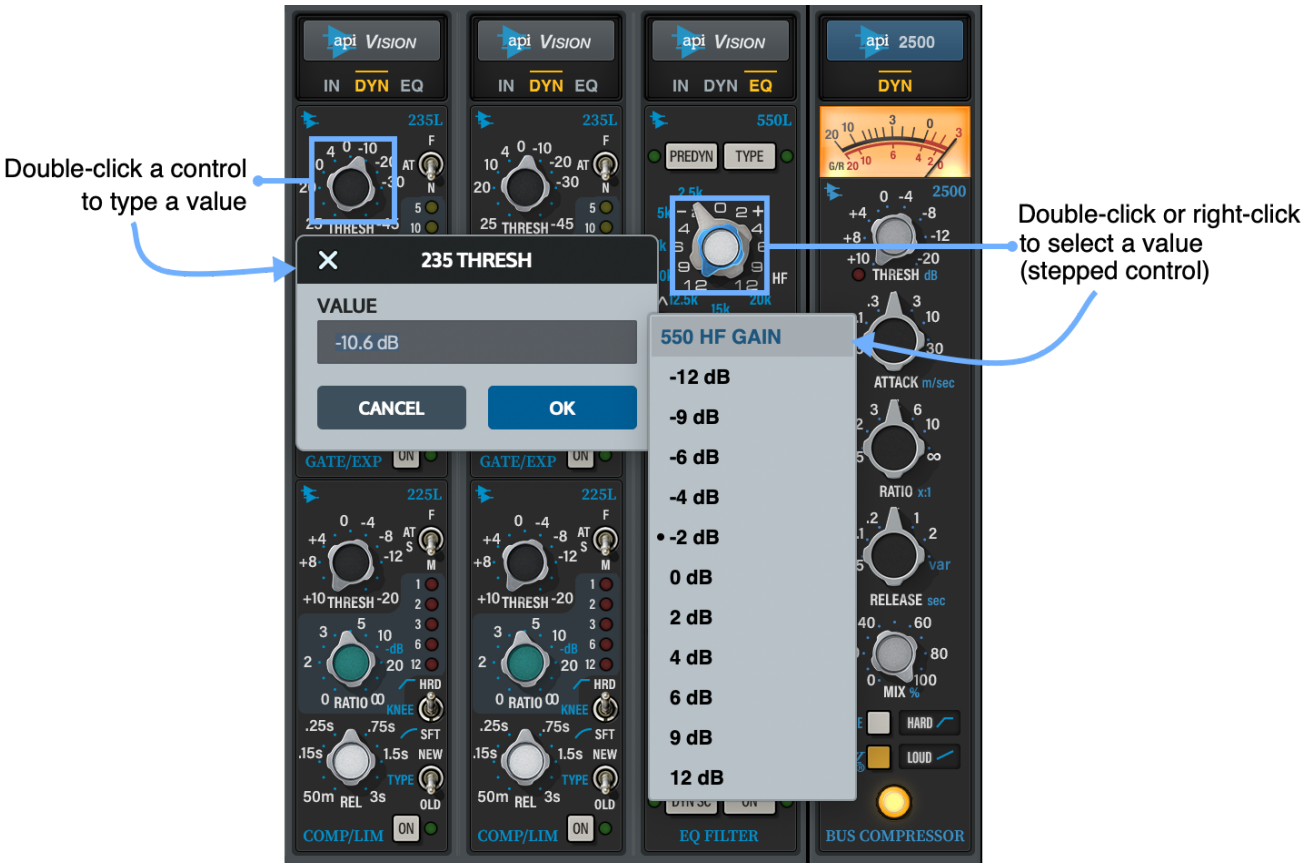

Input/Filter
Gate/Exp
EQ
IN
DYN
EQ
560L EQ
550L EQ
LINE AMP
SWEEP FILTER
GATE/EXP
COMP/LIM
EQ FILTER
EQ FILTER




## CHANGING CONTROLS

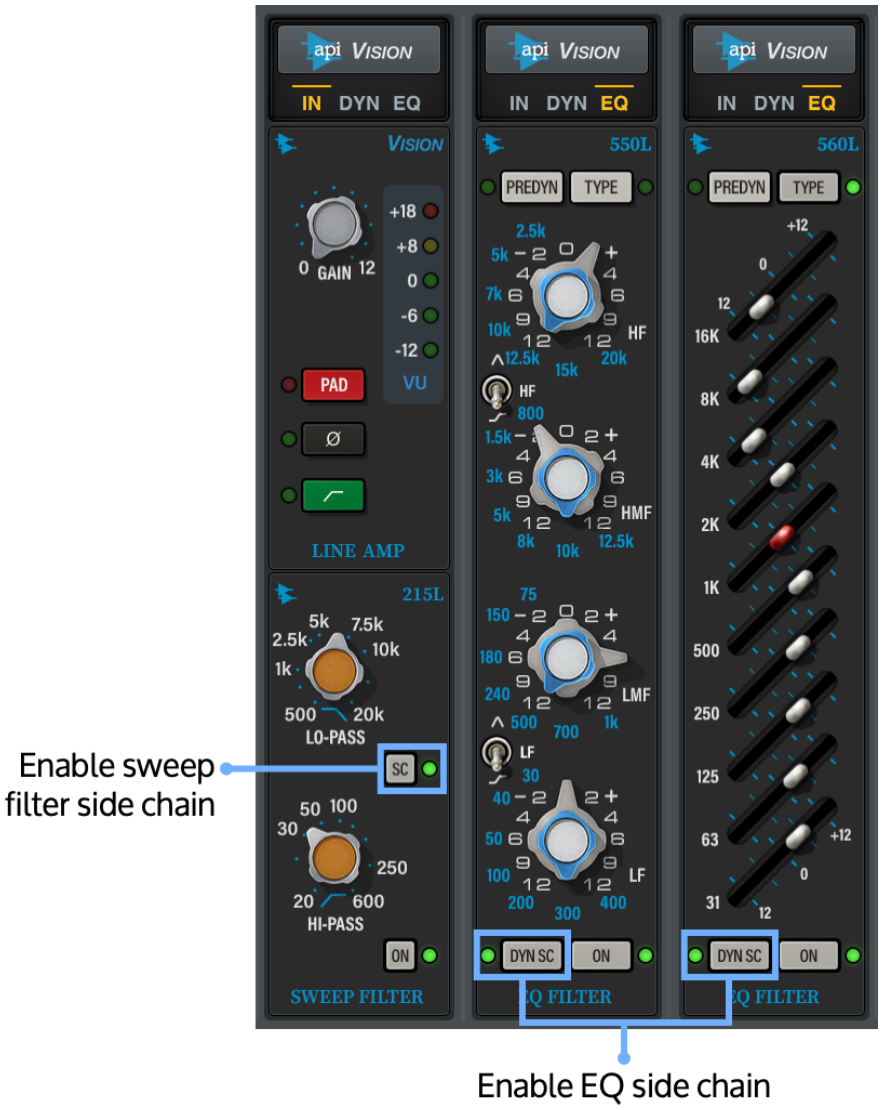
You can change controls on an API Vision module or on multiple modules by using the mouse and mouse+key combinations.

- To change a control, click and drag the control.
- To adjust a control with finer resolution, Shift-click and drag the control.
- To return a control to the default setting, Option-Click on the control.
- To change a control on all channel strips, Command-Click and drag the control.
- To enter or select a precise value for a control, double-click the control.
- On a stepped control, right-click or double-click to select a value from the list.




## Using Sweep Filter and EQ Side Chains

You can enable dynamic side chaining for the 215 Sweep Filter, and/or for the 550L or 560L EQ. This moves the sweep filters and/or EQ out of the audio path and into the dynamics side chain path, so the compressor is keyed to those frequencies that are emphasized or reduced.




## ENABLING THE 215L SWEEP FILTER SIDE CHAIN

You can enable the side chain on the 215L Sweep Filters. The side chain routes the filters into the dynamic processors. For more information, see 215L Side Chain (SC).

- To enable the 215L Sweep Filter side chain, on the Input module, click the SC button.

**Note:** The side chain can only be enabled when one or both dynamics processors (Gate/Expander or Compressor/Limiter) are enabled.

## ENABLING THE 550L/560L EQ SIDE CHAIN

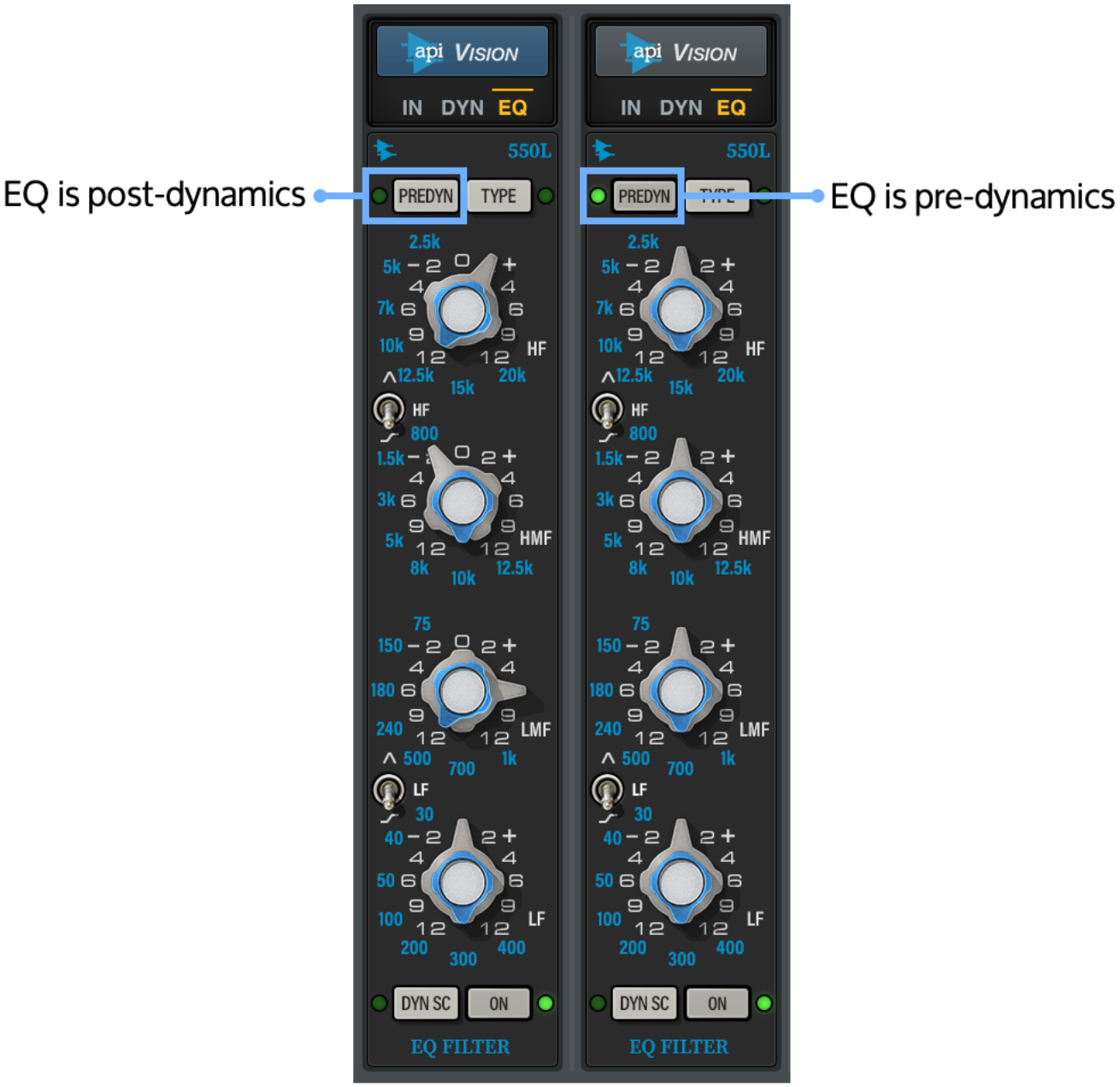
You can enable the dynamic side chain on the 550L or 560L EQ. The side chain routes the output of the EQ module into the dynamic processors. For more information, see EQ Dynamics Side Chain (DYN SC).

- To enable the 550L or 560L EQ dynamic side chain, on the 550L or 560L module, click the DYN SC button.

## Inserting EQs Before Dynamics

By default, the 550L or 560L EQ is routed after the dynamics processors. You can change the routing so the 550L or 560L process audio before the dynamics processors.

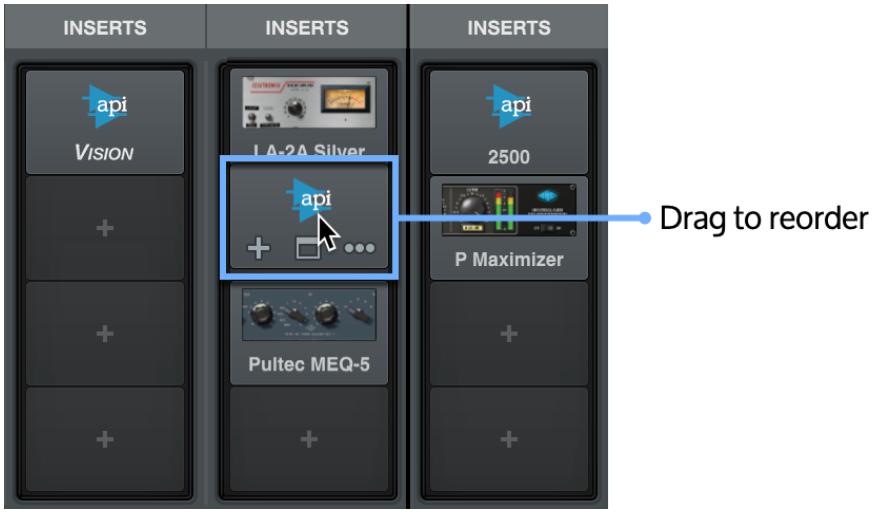
- To route the 550L/560L EQs before the dynamics processors, click the PREDYN button on the EQ module. For more information, see EQ Pre-Dynamics (PREDYN).




## Reordering API Vision Extensions with Plug-In Inserts

API Vision extensions are built into the Console row in LUNA. However, the API Vision extensions can be reordered with other plug-ins in the Insert section, to allow for mixing flexibility. On audio and instrument tracks, Console processing occurs after Tape extension processing. On buses and the Main track, console processing is ordered before or after Master Tape extension processing, according to the Pre-Fader or Post-Fader setting.

To reorder the console item, drag the API Vision or API 2500 insert plate to reorder it with other insert plug-ins.




## Using Presets

API Vision Console extensions include a preset browser that provides deep and comprehensive ways to work with presets.

When you open an API Vision Console extension in the browser, the search bar takes keyboard focus so you can find presets and tags. API Vision includes a number of factory presets, sorted with tags for Type and Artist. The preset browser appears at the bottom of the console browser on narrower screens, and to the left of the console browser on wider screens. You can drag the console browser edge in or out to resize the browser, and arrange the presets at the bottom or to the left of the browser.

## LOADING A PRESET

1. Hover over the Console row entry and click the square to open the API Vision channel strip or the API 2500 Bus Compressor in the Console Browser.

2. From the Preset browser, select the preset.

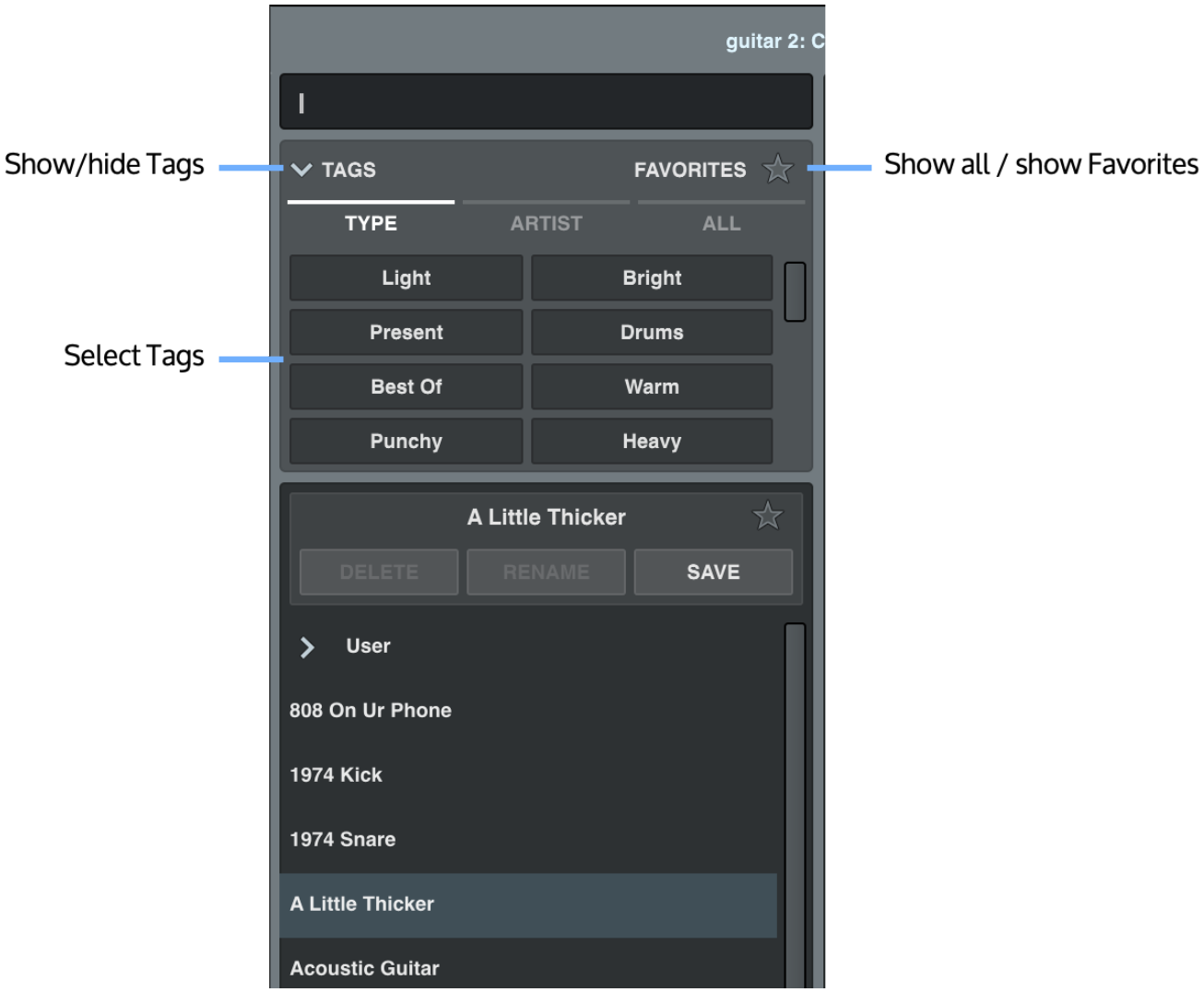
Use the Up and Down arrows to navigate through presets. To search for a preset, click next to the magnifying glass at the top of the browser, and begin typing.

To search for a preset by name or tag, type in the search bar. The list of presets is filtered as you type. Press Enter to load the first preset in the list, or navigate up/down with the arrow keys, then press Enter.

## USING TAGS TO FIND A PRESET BY CHARACTERISTICS

The Tags feature allows you to find presets by type and by artist .

- To show the list of tags, click TAGS.
- To close the list of tags, click TAGS again.
- To filter the list of presets by a tag, click the tag. Click one or more tags to narrow the list of presets. Each tag you add narrows the list of results further, and also reduces the list of tags.
- To remove a tag, click one of the selected tags.
- To stop filtering by tags, click the X next to TAGS.



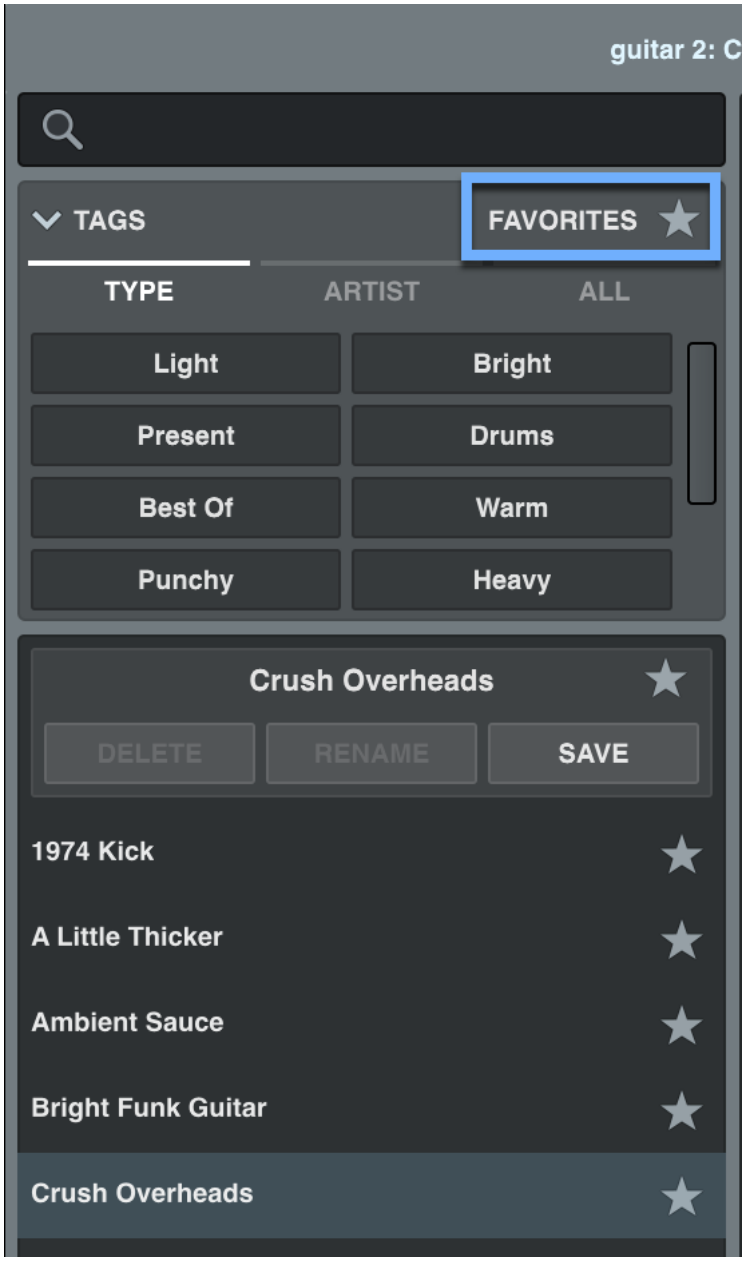

## SAVING A PRESET

1. Select a preset from the Preset Browser.
2. Make changes to the preset as required.
3. Click Save. The Save Preset As dialog opens.
4. Click Save to save the changes to the existing preset, or type a name for the preset to save a new preset, then click Save.

## FAVORITING PRESETS

You can favorite presets, and filter the list of presets by your favorites.

- To favorite a preset, hover over the preset name, and click the star to the right of the preset name.
- To unfavorite a preset, hover over the preset name, and click the favorite star again.
- To show only favorites in your preset list, click Favorites in the Tags bar.



# API Vision Channel Strip Parameters

Individual control functions are detailed in this section, along with an overview of the design and signal flows.

## MODULAR DESIGN

As with the original hardware, API Vision has a modular design. Each module controls a different signal processing function, and associated controls are grouped within each module. The following modules are contained in API Vision:

- 212L Microphone Preamplifier
- 215L High/Low Sweep Filters
- 235L Gate/Expander
- 225L Compressor/Limiter
- 550L Four-Band Equalizer
- 560L Ten-Band Graphic Equalizer

## SELECTABLE EQ

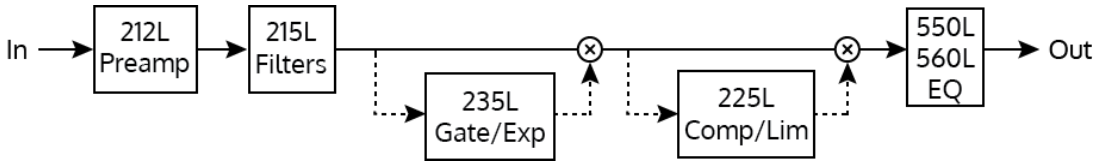
API Vision Channel Strip

The EQ module can be switched between the 550L and 560L equalizers with the TYPE button in the EQ module. In these operating instructions, “EQ” represents the 550L/560L EQ module in API Vision channel strip.

The channel strip stores the current settings in both EQ modules, allowing for convenient comparisons of both EQ types or other creative uses.

## SIGNAL FLOWS

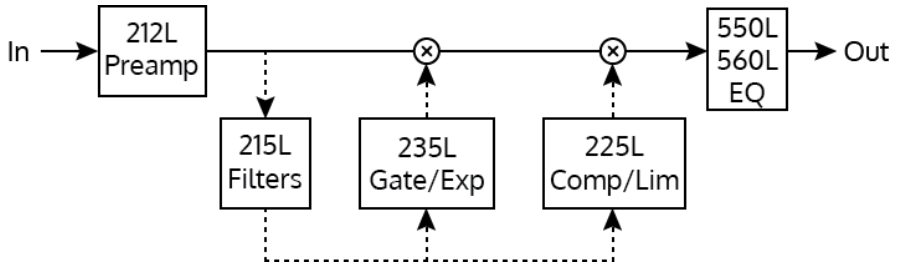
A simplified view of the default signal flow routing within the channel strip is illustrated in the diagram below. The audio path is shown with solid lines, and the side chain control keys for the 235L and 225L dynamics modules are shown with dashed lines.




*Simplified default API Vision signal flow*

Signal flows can be re-routed via options in the channel strip. The EQ module can be placed before the dynamics modules via the PREDYN (pre-dynamics) button, and the sweep filters and/or EQ can be moved out of the audio path and into the dynamics side chain path via the SC (side chain) buttons in those modules.

Note that the side chains for the dynamics modules are in series by default (as in the diagram above). However, when the sweep filters and/or EQ are moved into the side chain via their SC buttons, the side chain inputs for the dynamics modules are in parallel, as shown in the diagram below with 215L SC enabled.



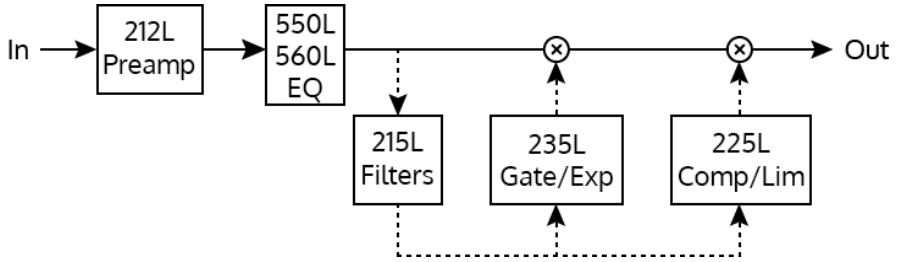

*Simplified signal flow illustrating parallel side chain inputs with 215L SC enabled*

## 215L SIDE CHAIN (SC)

The SC button in the 215L module routes the sweep filters into the dynamics processing side chain. Click the SC button or its LED to toggle the setting.The default value is Off.

When the 215L side chain is active, signal output from the 215L module is removed from the audio path, and is instead routed to control the 235L and 225L dynamics modules in parallel as shown in the diagram below. To listen to the 215L side chain key, simply disengage 215L SC to hear the equalized signal.

**Note:** The 215L module must be enabled for the 215L side chain to function.



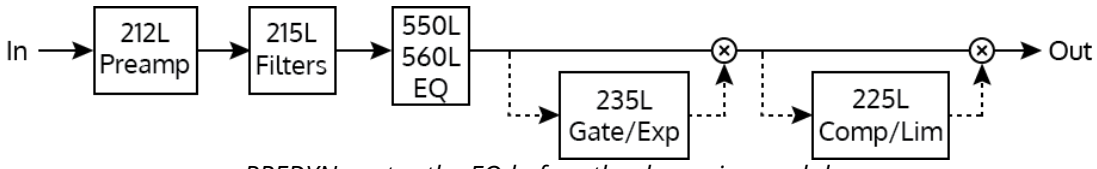

*Signal flow with 215L Sweep Filters SC enabled*

EQ Pre-Dynamics (PREDYN)

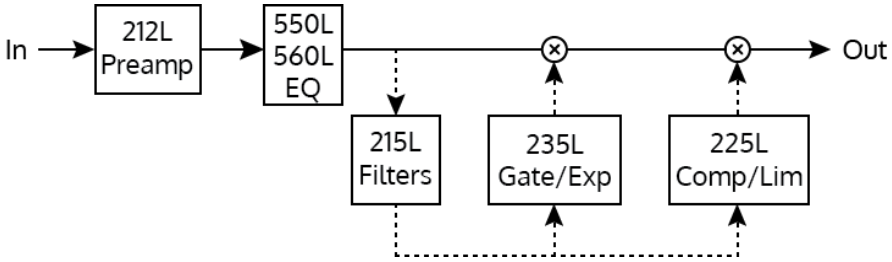
The Pre-Dynamics button (PREDYN) in the EQ module re-routes the EQ. By default, the audio signal is routed into the EQ after dynamics processing. When PREDYN is enabled, this routing is swapped, and the EQ precedes the dynamics modules instead.

When PREDYN is active, the dynamics side chain is always tapped after the EQ module, regardless of the state of the 215L module's SC function. The effect of the PREDYN button is shown in the diagrams below.

**Note:** PREDYN has no effect when the EQ's DYN SC button is active.



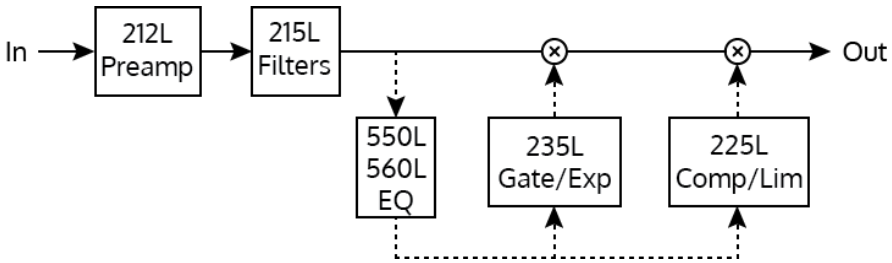

*PREDYN routes the EQ before the dynamics modules*




*EQ always precedes the side chain tap when PREDYN is active*

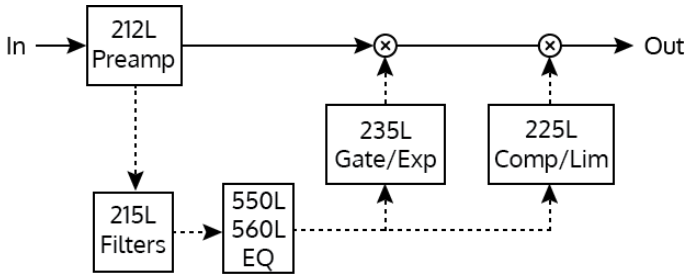
EQ Dynamics Side Chain (DYN SC)

The DYN SC button in the EQ module routes EQ into the dynamics processing side chain. When the EQ side chain is active (when the DYN SC LED is lit), signal output from the EQ module is removed from the audio path, and is instead routed to control the 235L and 225L dynamics modules.




*Signal flow with EQ SC enabled*

Note that both the EQ and 215L modules can both be routed simultaneously to the dynamics side chain. In this case, the 215L precedes the EQ in the side chain path, as shown below.




*Signal flow with SC enabled in both 215L and EQ modules*

## DISPLAYED VALUES

Knob settings, when compared to the interface silkscreen numbers, may not match the actual parameter values. For example, in the 215L Sweep Filters module, the highest value shown in the interface is 20 kHz. However, the actual value when the knob is at maximum is 40 kHz.

This behavior is identical to the original hardware, which is modeled exactly. When viewing control parameters (for example, by double-clicking a control), the actual parameter values are displayed.

## API PREAMP - 212L MICROPHONE PREAMPLIFIER

*API Preamp (Unison insert view)*

*API Preamp (expanded view)*

212L Input Select

The INPUT button switches between the mic and line input gain knobs. Press the button to toggle the active selection.

Unison Interaction

Software and hardware control is mirrored and can be changed with LUNA software controls or with Apollo's hardware button (MIC/LINE on Apollo rackmount models, or INPUT on Apollo Twin models).

212L Mic Gain

This knob adjusts the amount of gain applied to the mic input signal. The available range is 30 dB to 65 dB. The default value is 40.5 dB (unity gain).

**Tip:** Click the API logo atop the API preamp (when opened from the Unison insert) to return the gain to its default value.

#### Unison Interaction

Apollo's hardware preamp knob can be used to adjust this parameter when Input Select is set to Mic, and/or when this parameter is selected in Gain Stage Mode.

### 212L Line Gain

This knob adjusts the amount of gain applied to the line input signal. The available range is 0 dB to 12 dB. The default value is 0 dB (unity gain).

The available Line Gain range is adopted from API VIsion Console's dedicated Line input functions and is not present on the original 212L hardware module.

#### Unison Interaction

Apollo's hardware preamp knob can be used to adjust this parameter when Input Select is set to Mic, and/or when this parameter is selected in Gain Stage Mode.

### 212L Pad

PAD can be engaged to reduce signal levels when undesirable overload distortion is present at low preamp gain levels. PAD is engaged when its red LED is lit. Click the PAD button or its LED to toggle the setting.

#### Mic Pad

When PAD is enabled with mic input, the input signal level is attenuated (lowered) by -20 dB.

#### Line Pad

PAD is unavailable when a LINE or HI-Z input is selected.

### 212L Phase

The Phase (ø) button inverts the polarity of the signal. The polarity is inverted when the button is depressed (inline view) or when the button's green LED is lit (expanded view). Leave the button off (unlit) for normal polarity.

#### Unison Interaction

Software and hardware control is mirrored and can be changed within the module interface, with Console/LUNA software controls, or with Apollo's hardware button.

### 212L Cut Filter

This button activates a 50 Hz low cut filter that has a slope of 6 dB per octave. This rumble filter is adopted from the API Vision console's dedicated Line input functions and is not present on the original 212L hardware module.

#### Unison Interaction

Software and hardware control is mirrored and can be changed with LUNA software controls or with Apollo's hardware button.

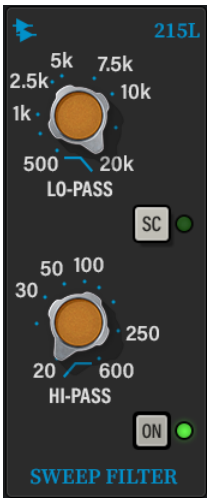
212L Meter (inline view)

The LED next to the gain control knob lights green, yellow, or red to indicate the signal level at the output of the 212L preamp module. The LED is unlit below -27 dB, green from -27 dB to -6 dB, amber from -6 dB to below 0 dB, and red when the converter is clipping.

212L Meter (expanded view)

The LED ladder VU Meter indicates the signal level at the output of the 212L preamp module.

## 215L HIGH/LOW SWEEP FILTERS




The 215L offers two sweepable cut filters, one each for low and high frequencies. The original hardware is transformer coupled and uses a passive filter circuit design for smooth tone.

215L Lo-Pass

The Lo-Pass (high cut) filter has a continuous range of 643 Hz to 40.8 kHz. The slope of this filter is 6 dB per octave. The default value is 40 kHz.

215L Hi-Pass

The Hi-Pass (low cut) filter has a continuous range of 12 Hz to 596 Hz. The slope of this filter is 12 dB per octave. The default value is 12 Hz.

215L SC (Dynamics Side Chain)

The SC button enables the 215L side chain filtering for the dynamic processors. Click the SC button or its LED to toggle the setting. The default value is Off.

For related information, see 215L Side Chain (SC).

215L On

This button enables the 215L module. The filters module is active when the button's green LED is lit. Click the ON button or its LED to toggle the setting.

**Tip:** Processing load is reduced when this module is inactive.

## 235L GATE/EXPANDER

The 235L Gate/Expander module operates in either gate or expansion mode. Two attack speeds and a continuously variable release time are available in both modes.

### 235L Threshold

Threshold defines the input level at which expansion or gating occurs. The available range is from +25 dB to -47 dB. The default value is -47 dB.

Signals below the threshold level are processed by the module. Signals above the threshold are unaffected. Rotate this control counterclockwise to increase the gate/expand effect.

### 235L Depth

Depth controls the gate/expansion amount, or more technically, the difference in gain between the gated/expanded and non-gated/expanded signal. Higher values increase the attenuation of signals below the threshold. When set to zero, no gating or expansion occurs. The available range is 0 dB to -80 dB. The default value is -80dB.

### Scaled Control

Although the Depth control has a full range of -80 dB, the scale is expanded in the first half of rotation so 0 to -9 dB is available for fine tuning of subtle, undetectable gating. The second half of rotation is from -10 to -80 dB for more drastic noise reduction.

### 235L Attack

This two-position switch determines how quickly the onset of gating/expansion occurs when the signal exceeds the threshold. Normal (25 milliseconds) and Fast (100 microseconds) settings are available. The default setting is Normal.

### 235L Release/Hold Knob

The function of Release/Hold knob (R/H) depends on the setting of the Release/Hold switch (Rel/Hld). With both switch settings, the available range of the knob is 50 milliseconds to 3 seconds. The default value is 0.5 seconds.

**Note:** Hold mode is only available when the 235L module is set to Gate mode with the Gate/Expander switch.

#### Release

When the input signal drops below the threshold level and the Release/Hold switch is set to Release, this knob sets the amount of time it takes for signals to decay to the Depth level.

Slower release times can smooth the transition that occurs when the signal dips below the threshold, which is especially useful for material with frequent peaks.

Fast release times are typically only suitable for certain types of percussion and other instruments with very fast decays. Using fast settings on other sources may produce undesirable results.

#### Hold

When the input signal drops below the threshold level and the Release/Hold switch is set to Hold, this knob sets the amount of time that signals are held at normal levels before signals return to the Depth level.

**Note:** When set to Hold, the release time is fixed at 100 milliseconds.

### 235L Release/Hold Switch

This two-position switch (REL/HLD) determines the behavior of the Release/Hold knob when the 235L module is set to Gate mode with the Gate/Expander switch. The default value is Release.

**Note:** This switch is locked in the Release position when the module is in Expander mode (Hold mode is unavailable in Expander mode).

### 235L Gate/Expander Switch

This switch (GTE/EXP) toggles the module between Gate and Expander modes. The default value is Expander.

#### GTE

When set to Gate mode, signals below the threshold are attenuated by the Depth amount.

#### EXP

When set to Expander mode, the gate applies downward expansion at a fixed 1:2 ratio, with the amount of gain reduction determined by the Depth control.

Expansion allows the signal to “sneak up” to the full signal level without any loss of “under threshold” nuances.

235L Meter

This meter displays, in dB, the amount of gain attenuation (downward expansion) occurring in the 235L module.

235L On

This button enables the 235L module. The module is active when the button's green LED is lit. Click the ON button or its LED to toggle the setting.

**Tip:** Processing load is reduced when this module is inactive.

## 225L COMPRESSOR/LIMITER

The 225L Compressor/Limiter offers a continuously variable ratio between 1:1 (no compression) and infinity:1 (limiting). Three attack speeds and continuously variable release times are available. A hard/soft knee setting and a unique new/old setting are also available in the module.

225L Threshold

Threshold defines the input level at which compression begins. The available range is +13 dB to -18 dB. The default value is 13 dB.

Signals that exceed the threshold are processed by the Ratio value. Signals below the threshold are unaffected. Rotate this control clockwise to increase the compression effect. Double-click to type a precise value.

**Note:** The 225L compressor automatically increases makeup gain to compensate for levels that are reduced during compression (aka reciprocal gain). However, as with the original hardware, the compensated makeup gain levels are not perfectly linear.

225L Ratio

Ratio defines the amount of gain reduction applied to signals above the threshold. For example, a value of 2 (expressed as a 2:1 ratio) reduces the signal level above the threshold by half, with an input signal level of 20 dB being reduced to 10 dB.

A value of 1 yields no gain reduction. When the control is at maximum (∞), the ratio is effectively infinity to one, yielding the limiting effect. The available range is 1:1 to infinity. The default value is 4:1.

Rotate this control to change the ratio. Double-click to type a precise value.

#### 225L Attack

This three-position switch defines the attack time of the compressor. Available values are Fast (2 milliseconds), Medium (18 milliseconds), and Slow (75 milliseconds). The default value is Medium.

#### 225L Release

Release sets the amount of time it takes for processing to cease once the input signal drops below the threshold level. The available control range is 50 milliseconds to 3 seconds. The default value is 0.5 seconds.

**Note:** Actual release times are program dependent.

Slower release times can smooth the transition that occurs when the signal dips below the threshold, which is especially useful for material with frequent peaks. However, if the release is too long, compression for sections of audio with loud signals may extend to sections of audio with lower signals.

Fast release times are typically only suitable for certain types of percussion and other instruments with very fast decays. Using fast settings on other sources may produce undesirable results.

Rotate this control to change the release time. Double-click to type a precise value.

#### 225L Knee

The knee (onset) characteristic of the compressor/limiter can be set to Soft (SFT) or Hard (HRD) with this two-position switch. The default value is Hard.

Soft provides a more subtle compression resulting in a very natural, less compressed sound. Hard results in a more typical, sharp knee type compression that has a more severe limiting effect.

#### 225L Type

The Type control switches the 225L compressor's control side chain signal to use either a feed-back (OLD) or feed-forward (NEW) design, providing two types of gain reduction. The default value is Old.

Compressors typically have a side chain control signal based on either feed-back or feed-forward designs. NEW feed-forward gain reduction is typical of newer VCA type compressors that rely on RMS detectors for the side chain circuit. The OLD feed-back method is what most classic compressors use for the side chain circuit.

**Note:** Unlike the original hardware, side chain processing via the 215L and EQ modules can be performed with this switch in the OLD position (the hardware cannot use side chain filtering with feedback compression).

#### 225L Meter

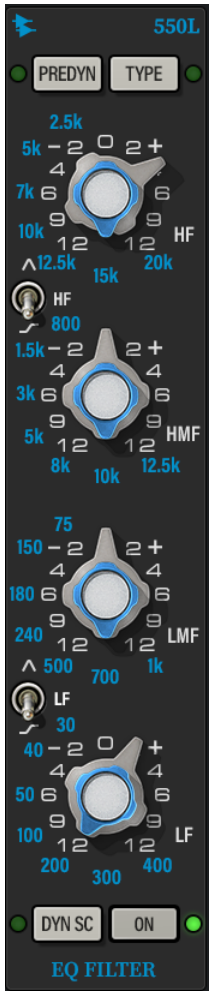
This meter displays, in dB, the amount of gain attenuation occurring in the 225L module.

225L On

This button enables the 225L module. The module is active when the button's green LED is lit. Click the ON button or its LED to toggle the setting.

**Tip:** Processing load is reduced when this module is inactive.

## 550L FOUR-BAND EQUALIZER




The 550L EQ is divided into four frequency bands: High Frequency (HF), High Midrange Frequency (HMF), Low Midrange Frequency (LMF), and Low Frequency (LF).

The 550L features API's "Proportional Q" which continuously narrows the bandwidth of the filter as band gain is increased, providing (as stated by API) "an uncomplicated way to generate acoustically superior equalization." The boost and cut characteristics are identical, allowing previous actions to be undone if desired.

### Band Controls

The four EQ bands (HF/HMF/LMF/LF) are controlled by dual-concentric rotary switches. The inner knob controls the band frequency (values in blue text) and the outer knob controls the band gain (values in white text). Available values for these controls are listed in the table below.

### 550L Frequency and Gain Values

| **Band** | **Frequency Values** | **Gain (±dB)** |
|---|---|---|
| High Frequency (HF) | 20, **15**, 12.5, 10, 7, 5, 2.5 (kHz) | **0**<br>2<br>4<br>6<br>9<br>12 |
| High Mid Frequency (HMF) | 12.5, **10**, 8, 5, 3, 1.5 (kHz), 800 (Hz) | |
| Low Mid Frequency (LMF) | 1000, **700**, 500, 240, 180, 150, 75 (Hz) | |
| Low Frequency (LF) | 400, **300**, 200, 100, 50, 40, 30 (Hz) | |
| Default Values are indicated in **bold** | | |

### Frequency

Frequency determines the center frequency of the band when the band is in peak mode (all bands) and the cutoff frequency when the band is in shelf mode (available with HF/LF bands only). The frequency for the band can be set using any of these methods:

- Drag the inner concentric knob to the desired value
- Click directly on the frequency value label to switch to that value
- Double-click or right-click the inner concentric knob to select the value from a list

### Gain

The gain for each band can be set using any of these methods:

- Drag the outer concentric knob handle to the desired value
- Double-click or right-click the outer concentric knob to select the value from a list

### Peak/Shelf Switches

The HF and LF bands are in shelf mode by default (switches in “down” position). When the Peak/Shelf switch is engaged for the band (in “up” position), the band is changed to peak mode.

### PREDYN (EQ Pre-Dynamics)

By default, the audio signal is routed into the EQ after dynamics processing. When PREDYN is enabled (when its green LED is lit), this routing is swapped, and the EQ precedes the dynamics modules instead. For related information, see EQ Pre-Dynamics (PREDYN).

**Note:** PREDYN has no effect when the EQ’s DYN SC button is active.

### DYN SC (Dynamics Sidechain)

When DYN SC is active (when its green LED is lit), signal output from the EQ module is removed from the audio path, and is instead routed to control the 235L and 225L dynamics modules. For related information, see EQ Dynamics Side Chain (DYN SC).

### EQ Type

The 550L EQ module is active when the TYPE button’s green LED is unlit. Click the TYPE button or its LED to switch to the 560L EQ module.

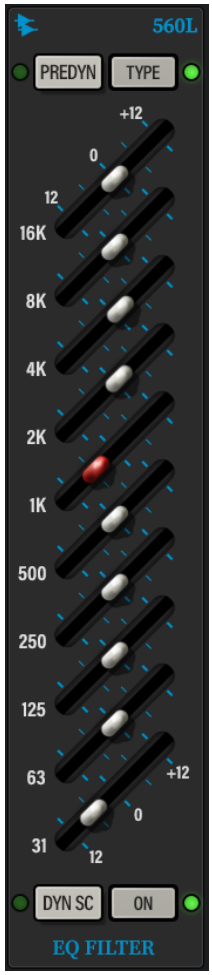
**Tip:** The values are stored in both EQ modules, allowing for convenient comparisons of both EQ types or other creative uses.

### EQ On

This button enables the EQ module. The module is active when the button’s green LED is lit. Click the ON button or its LED to toggle the setting.

**Tip:** Processing load is reduced when this module is inactive.

## 560L TEN-BAND EQUALIZER




With ten bands of graphic EQ, the 560L EQ is ideal for shaping your mix with surgical precision. API's proprietary "Proportional Q" intuitively widens bandwidth at lower boost/cut levels and narrows it at higher levels, giving you more musical control over precise bands of your mix.

**Note:** As with the original 560L hardware, the signal is boosted by approximately 0.4 dB even when all gain sliders are set to 0 dB.

### Gain Sliders

Each of the 10 sliders controls the gain for one frequency band. Each band can be adjusted to boost or cut the frequency by up to ±12 dB. The band center frequencies are listed below.

### 560L Frequencies

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 31 Hz | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz | 16 kHz |

**Tip:** To return a slider to the 0 dB position, click the slider's frequency text label, or Option-click the slider. To reset all sliders to 0 dB, click the "0" text label above the sliders.

PREDYN (EQ Pre-Dynamics)

By default, the audio signal is routed into the EQ after dynamics processing. When PREDYN is enabled (when its green LED is lit), this routing is swapped, and the EQ precedes the dynamics modules instead. For related information, see EQ Pre-Dynamics (PREDYN).

**Note:** PREDYN has no effect when the EQ's DYN SC button is active.

DYN SC (Dynamics Sidechain)

When DYN SC is active (when its green LED is lit), signal output from the EQ module is removed from the audio path, and is instead routed to control the 235L and 225L dynamics modules. For related information, see EQ Dynamics Side Chain (DYN SC).

EQ Type

The 560L EQ module is active when the TYPE button's green LED is lit. Click the TYPE button or its LED to switch to the 550L EQ module.

**Tip:** The values are stored in both EQ modules, allowing for convenient comparisons of both EQ types or other creative uses.

EQ On

This button enables the EQ module. The module is active when the button's green LED is lit. Click the ON button or its LED to toggle the setting.

**Tip:** Processing load is reduced when this module is inactive.

## GLOBAL CONTROLS

SC Link (Side Chain Link)

When the module is used on a stereo signal, this button links the side chains of the left and right channels of the 225L and 235L dynamics modules so both channels are compressed by the same amounts. SC Link is active when the button's green LED is lit. The default value is ON.

Linking the side chains prevents signals which appear on only one channel from shifting the stereo image of the output. For example, any large transient on either channel will cause both channels to compress, and the amount of compression will be similar to the amount of compression for a transient which appears on both channels at the same time.

**Note:** The SC Link button only appears on stereo tracks.

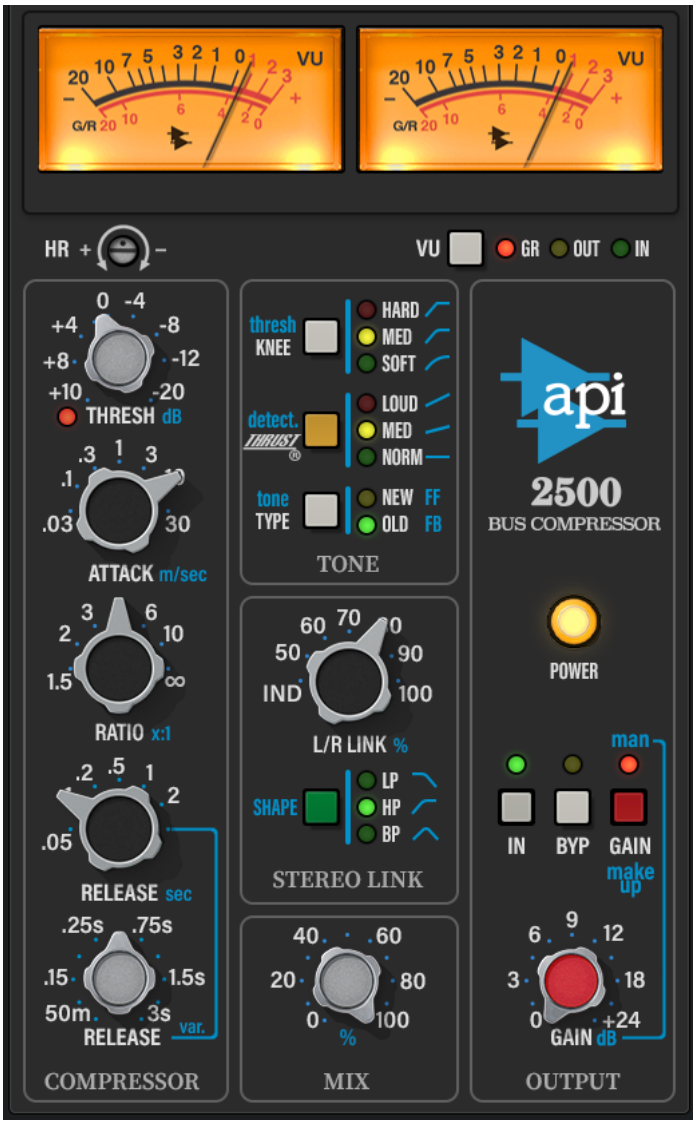
Power

The module is active when one or more LEDs are lit. When power is off, all LEDs are unlit and processing is disabled.

# API 2500 Bus Compressor Parameters

API 2500 Bus Compressor in LUNA presents a reduced set of controls in the channel strip view, and the full set of controls in the console browser.

*Channel strip view*




*Console browser view*

**Note:** Some knob settings, when compared to the graphical user interface silkscreen numbers, may not match the actual parameter values. This behavior is identical to the original hardware, which is modeled exactly. When you right-click on a control or double-click a control to select or type a value, the actual settings can be specified

## COMPRESSOR SECTION

THRESHOLD

This continuously variable knob determines the amount of compression to be applied to the input signal. Rotate THRESHOLD clockwise to lower the threshold and increase compression. Signals below the threshold are not compressed. The available range is +10 to -20 dB.

THRESHOLD LED

The red LED above the THRESH knob indicates when gain reduction is occurring in the compression circuit. The LED glows brighter as compression increases.

ATTACK

The ATTACK knob sets the amount of time that must elapse after the input signal reaches the THRESHOLD level before compression is applied.

Seven fixed rates are available. The faster the attack, the more rapidly compression is applied to signals above the threshold. Slower attacks allow a signal's attack transients (for example, the pluck of a string) to pass without compression, which can produce a punchier sound.

Available Attack Times

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 µs | 100 µs | 300 µs | 1 ms | 3 ms | 10 ms | 30 ms |

RATIO

The RATIO knob defines the amount of gain reduction to be processed by the compressor. For example, a value of 2 (expressed as a 2:1 ratio) reduces the signal above the threshold by half, with an input signal of 20 dB being attenuated to 10 dB.

**Note:** Signals must exceed the THRESHOLD value before they are attenuated by the RATIO amount.

Seven ratios are available. Higher ratios produce a more compressed sound. When the control is at maximum (∞), the ratio is effectively infinity to one, producing a limiting effect.

Available Ratio Values

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.5:1 | 2:1 | 3:1 | 4:1 | 6:1 | 10:1 | ∞:1 |

RELEASE (fixed)

The first RELEASE knob (to the left of variable knob) sets the amount of time that must elapse after the input signal drops below the THRESHOLD before compression processing is ceased.

Six rates are available. When this control is set to the fully clockwise position, continuously variable release times can be adjusted with the RELEASE (variable) knob.

Available Fixed Release Times

| | | | | | | |
|---|---|---|---|---|---|---|
| 50 ms | 100 ms | 200 ms | 500 ms | 1 sec | 2 sec | Variable |

RELEASE (variable)

The second RELEASE knob (rightmost knob in compressor section) continuously adjusts the compressor's release time if the RELEASE (fixed) knob to the left of this control is at the fully clockwise position. The available range is 50 milliseconds to 3 seconds.

**Note:** This control has no effect unless RELEASE (fixed) is set to the fully clockwise position.

## TONE SECTION

KNEE

The threshold knee (the compression onset characteristic) of the API 2500 can be set to SOFT, MEDIUM, or HARD. To change the KNEE setting, click the desired value or click the KNEE button to cycle through the available values.

Available KNEE Values

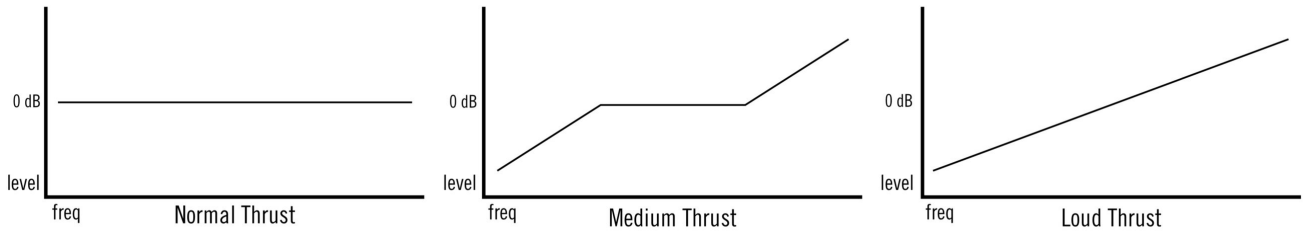
- SOFT – Provides a subtle transition into compression, resulting in a less obvious effect.
- MEDIUM – Provides a slight "fade-in" transition into compression.
- HARD – Provides a more typical, sharp transition into compression.

THRUST

THRUST can be set to NORMAL, MEDIUM, or LOUD. To change the THRUST setting, click the desired value or click the THRUST button to cycle through the available values.

THRUST is an API-patented circuit that inserts a high-pass filter in the control sidechain at the input of the RMS detector, limiting its response to lower frequencies.

The THRUST filter has a slope of 10 dB per decade, which is the inverse of the pink noise energy curve. THRUST adjusts the sidechain frequency response so each octave has the same amount of energy, creating a unique compression effect that reduces pumping and maintains punch.



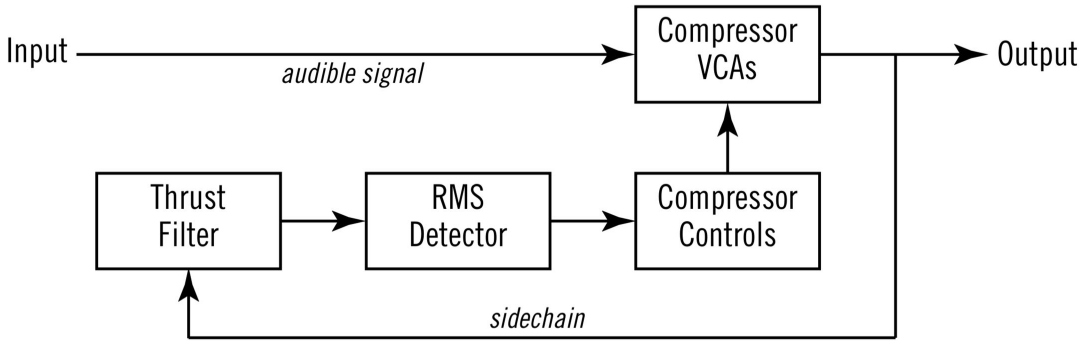

Available THRUST Values

- NORMAL – The sidechain is unfiltered and compression response is uniform across the frequency spectrum. Behaves as most compressors do.
- MEDIUM – The sidechain is slightly attenuated at low frequencies and slightly boosted at high frequencies. Midrange frequencies are unfiltered and remain flat. Reduces low frequency pumping and increases compression on upper frequency peaks.
- LOUD – A gradual, linear filter is applied to the sidechain. Frequencies are attenuated 15 dB at 20 Hz and boosted 15 dB at 20 kHz, equalizing the energy entering the RMS detector. Noticeably increases low frequency punch.

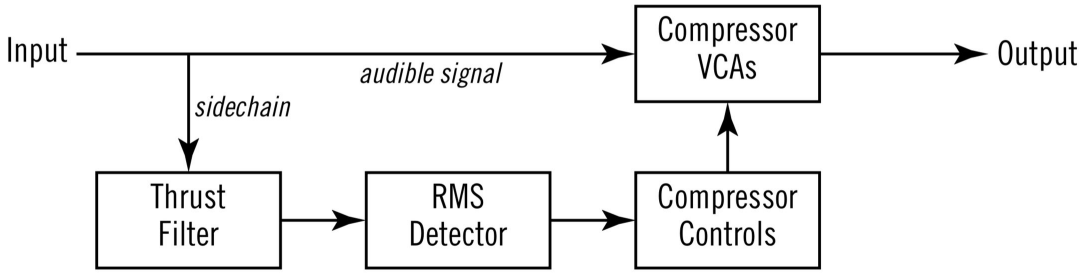
TYPE

TYPE changes the routing of the control sidechain signal within the compressor circuit. To change the TYPE setting, click a value or click the TYPE switch to cycle through the available values.

**Tone Type: OLD (feed-back)**




**Tone Type: NEW (feed-foward)**




Available TYPE Values

- NEW – Feed-forward sidechain routing typical of modern VCA-based compressors. The control sidechain input signal is tapped from the uncompressed audio signal. Harder compression with more transparency.
- OLD – Feed-back sidechain routing typical of vintage compressors such as the API 525. The control sidechain input signal is tapped from the compressed audio signal. Smoother compression with more character.

**Note:** Unlike typical compressors, when tone TYPE is set to OLD (feed-back), the gain circuit is within the control sidechain. In this state, gain adjustments (whether automatic or manual), can change the compression amount.

### STEREO LINK Section

#### L/R LINK

When the API 2500 is used on a stereo bus or the Main track, the stepped LINK knob allows the dynamics processors of both channels (left and right) to always be compressed in equal amounts (100%, fully linked), completely independently (0%, unlinked), or blended with a mix percentage (e.g., 50%, partially linked).

By de-linking the sidechains, dynamic interaction between the channels can be reduced or eliminated, enabling greater control of movement within the stereo field.

**Note:** When the API 2500 Bus Compressor used in a mono-in configuration, this switch is locked in the IND (independent) position.

##### Available L/R LINK Values

- 100% – The sidechains are stereo linked and the amount of compression is always the same for both channels. Stereo imaging at the input is maintained by preventing left- right shifting at the output when one channel has higher signal peaks compared to the other channel.
- IND (0%) – The sidechains are not linked and the amount of compression occurring is completely independent in both channels. If one channel has higher signal peaks than the other channel, the left-right imaging may shift.
- 50% – 90% – The sidechains are partially linked and the amount of compression occurring is a mixed blend of the left and right channels. The amount of blend can be set to 50, 60, 70, 80, or 90%.

#### STEREO LINK SHAPE

The SHAPE switch adjusts filtering of the control signal used by the L/R LINK parameter. Two SHAPE filters are available: HP (high pass/low cut) and LP (low pass/high cut). By enabling both filters, a bandpass filter shape is created.

By excluding frequencies from the L/R LINK control signal, sounds in only one channel that contain those frequencies will not cause the other channel to compress, while still linking the preferred frequency range.

To change the SHAPE setting, click a value or click the green SHAPE switch to cycle through the available values. The filter(s) is active when its LED indicator is lit.

**Note:** When the API 2500 Bus Compressor is used in a mono-in configuration, this switch has no effect.

## OUTPUT SECTION

IN

The IN switch enables the compression circuit. The compressor is active when the green LED above the IN switch is lit. To toggle the IN/OUT state, click the IN switch, label, or LED.

When IN is disengaged, the compression circuit is bypassed while still routing the signal through the rest of the circuitry. With this "soft" bypass control, the signal is no longer compressed but the sound of the amplifiers, transformers, and other components are heard.

**Note:** If the BYP switch is engaged, the IN switch has no effect.

BYP (BYPASS)

The BYP button bypasses all hardware circuitry. In the original hardware unit, this switch controls a relay that hard-wires the inputs directly to the outputs.

The compressor is bypassed when the yellow LED above the BYP button is lit. To toggle the BYPASS state, click the BYP button, label, or LED.

**Tip:** To disable the API 2500 Bus Compressor and conserve processor resources, use the POWER switch.

GAIN

The API 2500 has automatic or manual make-up gain to compensate for the lowered output levels that result from signal compression. To toggle between automatic and manual make-up gain, click the red make-up GAIN switch, label, or LED.

**Note:** Unlike typical compressors, when tone TYPE is set to OLD (feed-back), the gain circuit is within the control sidechain. In this state, gain adjustments (whether automatic or manual), can change the compression amount.

#### AUTO GAIN

Automatic make-up gain is active when the red MAKE-UP GAIN switch is in the “out” position and the red LED above the switch is unlit.

When automatic make-up gain is active, the compressor’s output level is increased reciprocally as the compression amount increases, and decreases reciprocally as the compression amount decreases.

Automatic make-up gain facilitates easier adjusting and auditioning of the processor’s sound by keeping the output volume consistent as the compressor’s THRESHOLD and RATIO controls are adjusted. This function is especially useful in situations where adjustments need to be made without disturbing the output level to a recording or broadcast system.

#### MANUAL GAIN

When manual make-up gain is active, the red dB GAIN knob continuously adjusts the compressor’s output level. The available range is 0 to +24 dB.

**Tip:** Click the “0” text label to return the value to 0 dB.

Manual make-up gain is active when the red MAKE-UP GAIN switch is in the “in”position and the red LED above the switch (below the “man” text label) is lit.

**Note:** This control only operates when the make-up GAIN switch is engaged.

## OTHER CONTROLS

POWER

The POWER switch determines whether the API 2500 Bus Compressor is active or not. To change the power state, click the yellow POWER switch or the POWER text label.

When set to off (switch unlit), the VU meters go dark to indicate signal processing has ceased. In this state, API 2500 Bus Compressor processing is disabled.

MIX

A blended output balance between the signal processed by the API 2500 Bus Compressor and the original dry source signal can be adjusted with the MIX control. Mix facilitates parallel compression techniques without having to create additional routings in the DAW.

**Note:** The MIX control does not exist in the original hardware.

When MIX is set to 0%, only the unprocessed (dry) source signal is output. When set to 100% (the default value), only the processed (wet) signal is output. When set to 50%, an equal blend of both the dry and wet signals is output. The balance is continuously variable, and phase accurate, throughout the control range.

**Tip:** Click the 0 text label to set the control to the minimum position. Click the 100% text label to set the control to the maximum position.

### VU METERS

The calibrated VU Meters can display either input levels, output levels, or gain reduction levels. The levels being displayed are determined by the VU METER SOURCE switch.

Each channel (left and right) has its own VU Meter. When the API 2500 is used in a mono-in configuration, both meters display the same levels.

**Note:** The VU Meters display average loudness and do not display signal peaks.

#### METER SCALES

The VU Meters have two different text scales printed on the meter background. The active scale is set with the VU METER SOURCE switch.

- IN/OUT Scale – The upper scale (ranging from -20 dB to +3 dB) is used to display input and output levels. With this scale, 0 VU represents +4 dBu.
- GR Scale – The lower scale (ranging from 20 dB to 0 dB) is used to display gain reduction levels.

#### VU METER SOURCE

This switch determines what is displayed by the VU Meters. To change the VU Meters source setting, click a value, or click the METER switch to cycle through the available values.

##### Available METER SOURCE Values

- GR – The VU Meters display the amount of gain reduction occurring in each channel.
- OUT – The VU Meters display signal levels at the output of the API 2500 Bus Compressor.
- IN – The VU Meters display signal levels at the input of the API 2500 Bus Compressor.

#### HEADROOM (HR)

The Headroom control is a UA-only feature that is not available in the original hardware. Headroom enables adjustment of the internal operating reference level for the API 2500 Bus Compressor so that the API 2500 Bus Compressor is not “pushed” into gain reduction as much. Headroom enables best practice operating level matching, or it can be used creatively to expand the sonic range of the processor.

By fine-tuning Headroom, the nonlinear I/O distortion and compression response characteristics can be tailored independently of signal input levels. Increasing Headroom (by rotating the control counter-clockwise) allows signals at the input to be pushed higher before they compress.

Headroom can be set (in dB) to 4, 8, 12, 16, 20, 24, or 28. The default value is 16 dB (when the set screw “dot” is in the straight up 12 o’clock position). Note that Headroom is increased as the dB value decreases.

**Tip:** Option-click the “HR” knob to return the control to the default value.

At higher dB values (clockwise rotation), signals will push the API 2500 Bus Compressor into gain reduction (and more non-linearity and "good" harmonic distortion color) more easily. Set the control to a lower value (counter-clockwise rotation) when less gain reduction and less color is desired.

**Note:** To avoid the temporary gain increases that can result when adjusting Headroom, automating this control is not recommended.

HR replaces the L/R TILT control that is available on the original hardware. Because L/R TILT is used to compensate for analog component tolerances and drift, it is not needed with the API 2500 Bus Compressor.

# API Summing

The sound behind five decades of landmark albums, API consoles are legend for good reason. From Stevie Wonder's *Talking Book* and Fleetwood Mac's *Rumours*, to The Cure's *Pornography* and Radiohead's *Hail to the Thief* — the mid-forward punch of API's classic analog consoles breathe aggressive, multi-dimensional color into your mixes.

Developed in partnership with API, exclusively for LUNA Recording System, the API Summing Extension emulates the 2520 op-amp and custom output transformers found in legendary API consoles over the past 50 years — giving your LUNA mixes all the attitude and tone of API's esteemed analog desks.

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## Genuine API Summing for your Mixes

Taking you beyond any summing plug-in, the API Summing Extension is built into LUNA's mixer, capturing the sonic detail of API's iconic bus channels. This workflow eliminates the need to manage multiple plug-in windows. Simply push up faders and use the per-bus Headroom control to add character and dynamic enhancement.

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## Why API Summing?

When audio sources flow through an API console — specifically the 2520 op-amp and custom output transformer — random analog nonlinearities work together, producing complex, musical harmonics and transient clipping. These summed signals add punch, depth, and character for a mid-forward, lively mix.

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## Getting it Right

UA dissected and studied multiple API consoles — pouring over original service manuals and gaining crucial insight into their discrete Class A operation and hybrid voltage/current summing circuitry — in contrast to the Neve 80 series pure current summing. UA's team of engineers throughly emulated all of the

nonlinearities and clipping characteristics, plus API console fader taper and pan law, giving you the same chart-topping results as API's flagship consoles.

## Get API Summing

You can purchase the optional API Summing LUNA Extension from within LUNA's Manage panel. After purchasing, there is nothing to download, as the extension is built into the fabric of LUNA.

## Using API Summing

API Summing imparts the sound and headroom characteristics of an API console bus channel directly into the LUNA summing buses. You can add API Summing to Bus and Main tracks.

When you change the API Summing setting for a bus, the faders for the bus and for all tracks that feed the bus will change position because of the difference in fader taper between LUNA native summing bus and Main channels and API Summing bus and Main channels.

### TO ADD API SUMMING:

- In the Input row of a bus or the Main track, click the Summing button, and choose API Summing.
- If desired, set the controls for Headroom (HR) and Trim.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. A Track Group (Command+G) or Selection Grouping (Track > Selection Grouping, or Control+G) must be enabled to adjust API Summing settings on multiple tracks at one time.API Summing Controls

## HEADROOM (HR)

The headroom setting increases or decreases the amount of headroom in the channel, and the amount of saturation. You can rotate the knob or double-click it to choose a value from the drop menu. The Headroom control is gain-compensated, so the volume changes are minimal when changing the headroom control. Headroom enables adjustment of the internal operating reference level for API Summing so that the signal is not “pushed” into processing as much. Headroom enables best practice operating level matching, or it can be used creatively to expand the sonic range of the summing processor.

By fine-tuning Headroom, the nonlinear I/O distortion and compression response characteristics can be tailored independently of signal input levels. Headroom can be set in 2 dB steps from 4 dB to 28 dB by rotating the HR knob. When the HR knob is in the 12 o’clock noon position (the default position), the HR value is 16 dB.

At higher dB values (clockwise rotation), signals will push into nonlinearity more easily. Set the control to a lower value (counter-clockwise rotation) when less color is desired.

**Tip:** Headroom is *increased* as the dB value *decreases*.

**Note:** The headroom control value is maintained when you switch between console summing models (from API Summing to Neve Summing and vice versa).

## TRIM

The trim setting allows you to compensate for gain changes introduced by the summing headroom and allows you to increase or decrease the overall level of the summing bus. You can rotate the knob or double-click it to type a value. This continuous knob lets you adjust the level at the output from the line amplifier. The available range is ±6 dB.

**Note**: The trim control value is maintained when you switch between console summing models (from API Summing to Neve Summing and vice versa).

## BYPASS

The Bypass button (labeled IN) allows you to toggle API summing on and off to audition the audio effects, for comparing the processed signal to the original, unprocessed signal. Click the IN switch to toggle the bypass state. When bypassed, the VU meter is unlit and native CPU resources are conserved.

**Note**: The Bypass state is maintained when you switch between console summing models (from API Summing to Neve Summing and vice versa).

## METERING

The API Summing LUNA Extension VU meters are calibrated to register 0 at -12dBFS.

## CONSOLE SUMMING FADER TAPER

Console Summing LUNA Extensions change the behavior and appearance of the LUNA buses and Main track to display accurate fader tapers. When you route tracks to a bus with a summing model enabled, the fader tapers of the bus or Main track and the source tracks change.

When you change the summing model selection for a bus, the faders for the bus and for all tracks that feed the bus will change position because of the difference in fader taper between the LUNA native summing bus and Main channels and API Summing bus and Main channels.

**Note:** When you assign a bus to another bus, the taper of the source bus is retained and not overwritten by the summing model of the destination bus.

# Neve® Summing

A major ingredient behind thousands of influential, chart-topping records, Neve 80 series consoles are without equal. These classic analog desks — made famous in the Sound City documentary — deliver three-dimensional nonlinearities and analog heft that infuses your mixes with vibrancy and color.

Developed in partnership with AMS Neve exclusively for LUNA Recording System, Neve Summing Extension emulates the entire summing circuit of an iconic Neve 80 series console — including its coveted 1272 bus amplifiers — giving your LUNA mixes all the color of Neve's most cherished analog desk.

## Genuine Neve Summing for your Mixes

Far beyond a “summing plug-in,” Neve Summing is an Extension built into LUNA's mixer that emulates every characteristic of both the source and bus channels — including original Neve 80 series’ console fader taper and pan law. This workflow eliminates the need to manage multiple plug-in windows. Simply use the per-bus Headroom control to add color and dynamic enhancement, then season even more with the selectable Impedance switch.

## Why Neve Summing?

When audio sources flow through the transformers and custom-built op-amps of a classic Neve 80 series desk — in particular its coveted 1272 line amplifiers — random analog nonlinearities combine to produce harmonic magic. These summed signals add character, depth, and dimension, for a more cohesive and vibrant mix.

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## Authentic Down to the Last Detail

For more than two years, UA dissected and studied multiple vintage Neve 80 series consoles and their components — pouring over original service manuals and gaining crucial insight into its Class A transformer/transistor circuitry. UA's team of engineers impeccably emulated all of the original hardware's nonlinearities and clipping characteristics, yielding results that are virtually indistinguishable from the original console.

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## Get Neve Summing

You can purchase the optional Neve Summing LUNA Extension from within LUNA's Manage panel. After purchasing, there is nothing to download, as the extension is built into the fabric of LUNA.

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## Using Neve Summing

Neve Summing imparts the sound and headroom characteristics of a Neve console bus channel directly into the LUNA summing buses. You can add Neve Summing to Bus and Main tracks.

When you change the Neve Summing setting for a bus, the faders for the bus and for all tracks that feed the bus will change position because of the difference in fader taper between LUNA native summing bus and Main channels and Neve Summing bus and Main channels.

### TO ADD NEVE SUMMING:

- In the Input row of a bus or the Main track, click the Summing button, and choose Neve Summing.
- Set the controls for Headroom (HR), Trim, and Impedance.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. A Track Group (Command+G) or Selection Grouping (Track > Selection Grouping, or Control+G) must be enabled to adjust Neve Summing settings on multiple tracks at one time.

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## Neve Summing Controls

### HEADROOM (HR)

The headroom setting increases or decreases the amount of headroom in the channel, and the amount of saturation. As you turn this up to the top of the range, you can get saturation and even distortion characteristics. You can rotate the knob or double-click it to choose a value from the drop menu. The headroom control is gain-compensated, so the volume changes are minimal when changing the headroom control. The Low impedance setting is louder than unity gain, even with gain compensation.Headroom enables adjustment of the internal operating reference level for Neve Summing so that the signal is not “pushed” into processing as much. Headroom enables best practice operating level matching, or it can be used creatively to expand the sonic range of the summing processor.

By fine-tuning Headroom, the nonlinear I/O distortion and compression response characteristics can be tailored independently of signal input levels. Increasing Headroom (by rotating the control counter-clockwise) allows signals at the input to be pushed higher before they are processed.

Headroom can be set in 2 dB steps from +4 dB to +28 dB by rotating the HR knob. When the HR knob is in the straight up 12 o’clock noon position (the default position), the HR value is 16 dB.

At higher dB values (clockwise rotation), signals will push into processing more easily. Set the control to a lower value (counter-clockwise rotation) when less processing and less color is desired.

**Tip:** Headroom is *increased* as the dB value *decreases*.

### TRIM

The trim setting allows you to compensate for gain changes introduced by the summing headroom and impedance controls, and allows you to increase or decrease the overall level of the summing bus. You can rotate the knob or double-click it to type a value. This continuous knob lets you adjust the level at the output from the 1272 line amplifier. The available range is ±6 dB.

### IMPEDANCE

This setting changes the impedance character of the bus or Main channel from low to high impedance. The default is high impedance. The Low and High bus impedance settings provide different audio character and gain levels, and one or the other might be more appropriate for your audio material and bus. Generally, the Low impedance setting is louder than the unprocessed audio. Impedance offers different tonal options by switching the input impedance of the 1272 line amplifier. 300 Ohm (LO) and 1200 Ohm (HI) values are available. Click the Impedance switch to toggle the value.

### BYPASS

Bypass is useful for comparing the processed signal to the original, unprocessed signal. Click the OUT/IN switch to toggle the bypass state. When bypassed, the VU meter is unlit and native CPU resources are conserved.

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## Fader appearance

Console Summing LUNA Extensions change the behavior and appearance of the LUNA buses and Main track to display accurate fader tapers. When you route tracks to a bus with a summing model enabled, the fader tapers on the bus or Main track and the source tracks change.

# Ampex® ATR-102 Master Tape

## It's Not a Record Until it's Mastered on an Ampex® Tape Machine

The UAD Ampex ATR-102 Mastering Tape Recorder plug-in and LUNA Extension provides the final "analog polish" to your music, turning your recordings into records. Fully authenticated by the Ampex Corporation and trusted by Platinum-selling professionals the world over, the ATR-102 plug-in faithfully captures the unique dynamics, colorful frequency response, and tape saturation of this industry-standard Ampex machine.

### THE MOST POPULAR PROFESSIONAL 2-TRACK EVER MADE

With its cohesive sound, punch, and ability to provide subtle-to-deep tape saturation and color, the ATR-102 has remained a fixture in major recording and mastering studios worldwide since 1976.

The ATR-102 Mastering Tape Recorder LUNA Extension faithfully replicates the unique dynamics, frequency response, and saturation characteristics of the original hardware. Scrutinized and fully authenticated by

the Ampex Corporation, the sound of the UAD ATR-102 LUNA Extension is virtually indistinguishable from its analog ancestor.

### NOW FULLY INTEGRATED INTO LUNA RECORDING SYSTEM

With LUNA Recording System, you can now use the Ampex ATR-102 as a LUNA Extension, where it's built into the fabric of the mixer without the need to manage separate plug-in windows. This gives you rich, album-ready Ampex tape tones on LUNA's master fader and buses — with all the authentic dynamics, frequency response, and saturation characteristics of the original machine.

### AUTHENTIC CALIBRATION CONTROLS AND TAPE TYPES

Like the ATR-102 hardware, the plug-in allows you to choose between various Signal Paths (Input, Sync, Repro), different Tape Speeds / Emphasis EQs (NAB, CCIR, AES) and Tape Formula (GP9, 456, 900, 250) combinations, including home/consumer tape.

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## Purchasing Ampex ATR-102 Master Tape

You can purchase the optional Ampex ATR-102 Master Tape LUNA Extension from within LUNA's Manage panel. Your purchase of the Ampex ATR-102 Master Tape LUNA Extension includes both the UAD plug-in (Mac/Windows) and the LUNA Extension (Mac only).

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## LUNA Extension Parameters

The Ampex ATR-102 Master Tape LUNA Extension allows you to choose between different Tape Speeds / Emphasis EQs and Tape Formula combinations, even including home/consumer tape. The Input (Record) Gain knob and the Cal button are the primary controls for regulating levels, and even saturating the tape, and can be used to deliver a heavily colored sound if desired.

Other Ampex ATR-102 Master Tape LUNA Extension features include: 1/4," 1/2," or 1" Head Width, Calibration Level, Biasing, EQ, and Noise Off/On.

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## Using ATR-102

With the Ampex ATR-102 Master Tape LUNA Extension, you can access the sound and mechanical parameters of an Ampex ATR-102 tape machine, integrated directly within the LUNA mixer buses and the Main track. The LUNA Extension features all of the tone and character of the Ampex circuit design and tape formulas. The Ampex ATR-102 Master Tape LUNA Extension runs natively in the LUNA mixer, and allows for placement of the tape machine either at the end of the processing chain (post-fader) for traditional console to mix down deck signal flow, or before other processors (pre-fader). The Ampex ATR-102 Master Tape LUNA Extension provides dramatically reduced latency and a streamlined, customized feature set

compared to the UAD-2 version. The Ampex ATR-102 Luna Extension retains the head-stacks, speeds, tape formulas and gain and control cards of the UAD-2 plug-in version, but removes some features such as Tape Delay, and user-adjustable Wow and Flutter. Independent L/R control, Manual Calibration (Test Tones, MRL Mode, Distortion Display), user-adjustable Crosstalk, and adjustable Hiss and Hum are also removed.

The ATR-102 can be added to the Master Tape row on a bus or on the Main track. Each Bus track and the Main track may have its own unique Master Tape deck. Set up the ATR-102 by first adjusting Tape Speed, Tape Formula, Cal Level, and Head Width, or select a preset. Note that as you lower the tape speed (i.e. 15 IPS, 7.5 IPS), the tape "sound" becomes more audible. Once this basic setup is made, adjust the Record input gain levels for more or less tape/circuit coloration and saturation. Ampex ATR-102 Master Tape LUNA Extension can be applied pre-fader or post-fader. By default,the extension is applied pre-fader on the Main track, and post-fader on bus tracks.

In the Master Tape Browser, you can set all aspects of the Master Tape deck's sound, including tape speed, head width, and tape formula, as well as bias settings and EQ settings. On the channel in the LUNA mixer or on a Focus channel, a streamlined set of controls (tape speed, head width, and tape formula) is available.

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# Operational Overview

## MAIN TRACK AND BUS TRACKS

The primary purpose of the Ampex ATR-102 Master Tape LUNA Extension is to obtain tape mixdown sonics within the LUNA environment. To obtain the classic tape mixdown sound, instantiate the LUNA Extension in the Master Tape row on the Main track. To apply the tape sound to buses, instantiate the LUNA Extension in the Master Tape row on each bus.

## MULTIPLE TAPE FORMULAS

The Ampex ATR-102 Master Tape LUNA Extension models seven popular magnetic tape formulas. Each type has its own subtle sonic variation, distortion onset, and tape compression characteristics. The tape formulas that can be selected depend on the active tape speed and head width; all tape formulas are not available for all tape speeds and head widths. Lower fidelity types are included to facilitate more signal coloration options.

## MULTIPLE TAPE HEADS

The original hardware machine was manufactured with an interchangeable head block system which enabled the system to be quickly converted to use either 1/4” or 1/2” tape stock by simply swapping out the heads and recalibrating the electronics. As track width increases, subtle improvements to stability, fidelity, and noise become apparent. A popular custom aftermarket tape head is available which enables the use of 1” tape stock, enabling even higher fidelity with its greater track widths. All three tape head widths are accurately modeled and selectable in the Ampex ATR-102 Master Tape LUNA Extension.

## MULTIPLE TAPE SPEEDS

All four tape speeds in the original hardware are modeled in the Ampex ATR-102 Master Tape LUNA Extension. Speeds of 3.75, 7.5, 15, and 30 inches per second (IPS) are available. Each speed provides

distinct frequency shift, head bump, and distortion characteristics. Higher speeds have higher fidelity; 3.75 IPS has a distinctively “lo fi” character.

## MULTIPLE CALIBRATION LEVELS

Tape machines can be set up with different calibration levels, which entails setting unity gain from input through output based on the magnetic flux (amount of magnetic field) of a given tape formulation. Different calibration levels provide different tape response characteristics for a given level into the recorder. Four selectable calibration levels are available in the Ampex ATR-102 Master Tape LUNA Extension.

## ANCILLARY NOISES

Tape recorders have inherent signal noises that are a by-product of the electro- mechanical nature of the machine. While “undesirable” tape system noise is historically considered a negative and was an attribute that pushed the technical envelope for better machine design and tape formulas (and ultimately, “noiseless” digital recorders), noise is still an ever-present characteristic of the sound of using tape and tape machines.

The Ampex ATR-102 models the hum, hiss, wow, flutter, and crosstalk characteristics of the original hardware. These noise components can be disabled.

## MODELED TRANSFORMER

The original hardware was manufactured with isolation transformers, which can color the signal. Ampex ATR-102 simulates the behavior of the transformers in the hardware.

### Automatic Calibration

The ability of a magnetic tape recorder, which has inherently non-linear response characteristics, to accurately reproduce an audio signal with a minimum of noise and distortion requires precise adjustments to the system electronics. The calibration settings are based on the current tape speed, formulation, emphasis EQ, and tape width. The hardware must be meticulously re-adjusted each time a different tape, speed, emphasis EQ, or head width is used (and for system wear and drift, even if these variables are not changed). Ampex ATR-102 Master Tape LUNA Extension has an automatic calibration feature that tunes all calibration electronics with a single button.

### Low Level Tuning

Even though automatic calibration is available, the individual controls that adjust calibration are exposed for sonic manipulation. Playback EQ, record (tape) EQ, and record bias can easily be altered for manual calibration and/or creative purposes.

### Quick Setup

Set up the extension by first adjusting Tape Speed, Tape Formula, and Tape Speed. Note that as you lower the tape speed, the tape “sound” becomes more audible. Once this basic setup is made, adjust the Record (gain) levels, for more or less tape/circuit coloration/saturation.

## CONFIGURING AMPEX ATR-102

You can add Ampex ATR-102 to a Bus track or the Main track. You can configure each instance of Ampex ATR-102 Master Tape LUNA Extension with manual controls and presets.

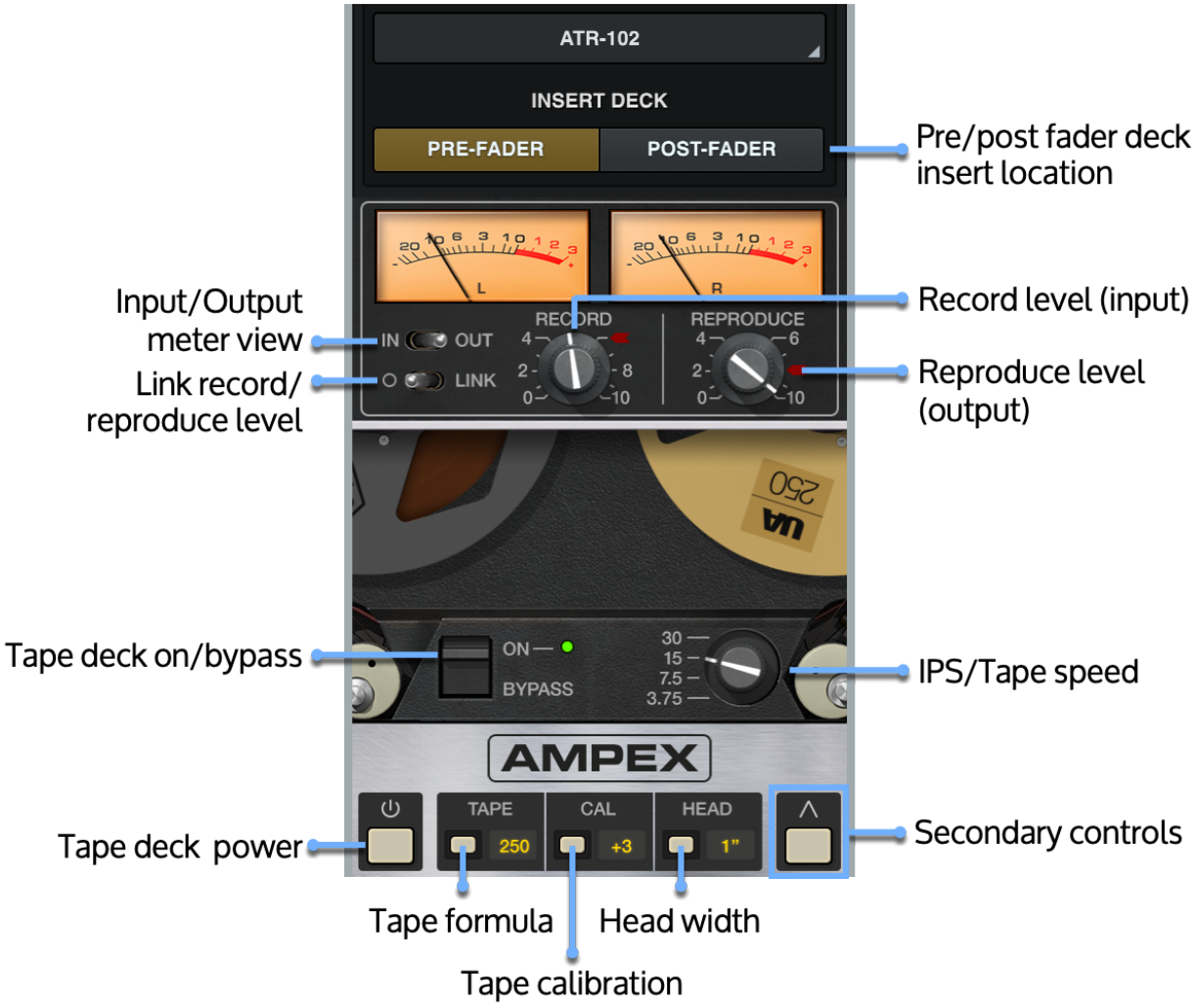
### Assign Ampex ATR-102 to a track

1. Click the Master Tape insert on a bus track or the Main track, and select the ATR-102.

2. The primary set of tape machine controls appear in the Master Tape slot, and the Master Tape deck appears in the browser on the left of the screen.

In the Master Tape slot, you can configure the most important features: tape formula, tape speed, and tape head width. You can also toggle the Master Tape deck on and off. You can further configure the Master Tape deck in the Browser on the left of the screen.

Master Tape Deck controls in Browser




To configure Ampex ATR-102 in the Browser:

1. Hover over the Master Tape insert on a track, and click the box to open the Master Tape Deck.

2. The Master Tape Deck opens on the left of the screen.
3. Adjust the controls manually, or choose a Preset to configure the global sound of the Ampex ATR-102

Click the Open (^) button to open the secondary machine controls.

To adjust a rotary tape control, you can click and drag on the control to rotate it to the desired position, or double-click the control to choose from a list of values. You can toggle through push-button controls by clicking the buttons, or toggle switches by clicking them,

## INSERTING THE TAPE DECK PRE FADER OR POST FADER

The Ampex ATR-102 Master Tape LUNA Extension can be configured as either a pre-fader or post-fader effect. By default, the Ampex ATR-102 is pre-fader on the Main track and post-fader on buses. On the Main track, the ATR-102 is configured pre-fader to enable modern workflows where a master brickwall limiter or other processor is positioned after it. The Master Tape machine on a bus is configured post-fader by default to apply the sound of the tape after other bus processing. The use of a Master Tape machine on buses allows for sonic exploration beyond what would normally be available with a single mixdown tape deck.

To configure the Ampex ATR-102 Master Tape LUNA Extension as pre or post fader:

1. Click in the Master Tape row and assign the ATR-102 LUNA Extension to a bus or the Main track,
2. Hover over the Master Tape slot, and click on •••.
3. To insert the tape deck pre-fader, select Insert Pre-Fader. An indicator to the left of the option indicates that the option is enabled.
4. To insert the tape deck post-fader, deselect Insert Pre-Fader.

You can also switch between the pre and post fader tape deck location by clicking the option in the Master Tape Browser.

## PRESETS

The Ampex ATR-102 Master Tape LUNA Extension includes presets created in collaboration with prominent ATR-102 users. The available presets range from Classic and Clean mastering-oriented presets that provide the sound of tape with minimal coloration, to higher-input Pushed presets for mix situations that call for more saturation. Lastly, a collection of Vintage tones are available when distinct coloration is desired.

# Primary and Secondary Controls

The graphical interface panel has two modes; Open and Closed. In Closed mode, the primary controls (those that are typically most used) are available on the main panel interface and the tape reels are visible. Additional (typically less used) controls are available on the secondary panel in Open mode. The secondary controls panel is accessed by clicking the button labeled **^** beneath the AMPEX label.

## PRIMARY CONTROLS

### Meters

The two Meters display signal levels of the extension for the left and right channels. Meter ballistics of the original hardware are modeled. The Meters can be switched to display input or output levels in peak or VU modes.

The extension operates at an internal level of -12 dBFS. Therefore a digital signal with a level of -12 dB below full scale digital (0 dBFS) at the extension input will equate to 0 dB on the Meters when Reproduce is in its calibrated position, which is marked with the “red arrow sticker.”

### Input/Output

These switches change the Meter to display levels at the input or output of the extension. Input metering is a feature which is unavailable in the original hardware.

### Input

When in Input mode, the Meter reflects the signal before the processor.

### Output

When in Output mode, the meter reflects the signal level at the output of the extension, which is just after the Reproduce (output) gain.

### Record

Record adjusts the signal level into the extension and the tape circuitry. The Record control’s available range is -∞ dB (off) to +9.3 dB. The default value is 0 dB.

**Tip:** Option-click the “RECORD” knob to return the Record value to 0 dB.

**Note:** The graphical interface panel values, which range from 0 - 10, are arbitrary and do not reflect a particular dB value.

Record is a primary “color” control for the extension. Just like genuine magnetic tape, lower Record levels will have a cleaner sound, while higher levels result in more harmonic saturation and coloration. Higher Record levels will also increase the output level from the extension. The Reproduce control can be lowered to compensate if unity gain operation is desired.

### Reproduce

Reproduce adjusts the signal level coming off the virtual tape before the signal is sent to the Meters. The available range is -∞ dB (off) to +9.48 dB. The default value of 0 dB is the “calibrated position” which is marked with a “red arrow sticker.” Reproduce is not affected by Auto Cal.

**Tip:** Option-click the “REPRODUCE” knob to return Reproduce to 0 dB.

**Note:** The graphical interface panel values for Reproduce, which range from 0 - 10, are arbitrary and do not reflect a particular dB value.

### Link

Link adjusts the Record and Reproduce levels reciprocally, so as you turn one up, the other is turned down. Enable this to prevent volume increases or drops when adjusting the Record or Reproduce level.

## SECONDARY CONTROLS

The secondary controls are accessed by clicking the button marked with a **^** beneath the AMPEX label. Conversely, the panel is closed by clicking this button again.

### Emphasis EQ

The Emphasis EQ buttons determine the active Emphasis EQ values and the frequency of the Hum noise. NAB or CCIR curves can be selected when the Tape Speed is 7.5 or 15 IPS. When the Tape Speed is 30 IPS, neither value is available (the LEDs are disabled) because the EQ is fixed with the AES emphasis curve, per the original hardware. At 3.75 IPS, only NAB is available (as it is with the hardware).

### NAB

When the value is set to NAB (traditionally the United States standard), the Hum Noise frequency is 60 Hz. When set to CCIR (traditionally the standard in Europe and other regions), the Hum Noise frequency is 50 Hz.

Tape Speed and Emphasis EQ were originally practical controls for recording duration versus noise and local standards. Historically, the origin of the tape machine (US or European) dictated the built-in EQ emphasis, but later machines like the Ampex ATR102 had both circuits available.

### CCIR

CCIR (also known as IEC1) is the EQ pre-emphasis made famous on British records and is considered the technically superior EQ; many say this EQ was part of the “British sound” during tape’s heyday. NAB (also known as IEC2) was the American standard with its own sound. AES is truly standardized at 30 IPS and is the sole EQ found on the Ampex ATR-102 at 30 IPS.

### Bypass

Bypass disables extension processing and cleanly transitions between the extension’s bypassed and enabled state. Bypass is useful for comparing the processed settings to the original signal. Meters are still active, however, in this state, the Meters indicate signal levels at the input of the extension prior to processing.

### Power

This is the Master Tape extension Power control. When set to Off, emulation processing is disabled, the Meters and control LEDs are dimmed, knobs and buttons are disabled, and resource usage is reduced.

### Tape Speed

The Tape Speed control determines the speed of the tape transport, in inches per second (IPS). Tape Speed affects the recorder's fidelity and associated "head bump" sonics. Head bump is bass frequency build-up that occurs with magnetic tape; the dominant frequencies shift according to transport speed.

To change the Tape Speed value, click the IPS text values, or drag the knob.

15 IPS is considered the favorite for rock and acoustic music due to its low frequency "head bump" (low frequency rise) and warmer sound, while 30 IPS is the norm for classical and jazz due to its lower noise floor, greater fidelity and flatter response. 7.5 and 3.75 IPS are also available for an even more colored experience, with even greater frequency shift and other artifacts.

**Note:** The available parameter ranges of Tape Formula, Head Width, and Emphasis EQ are affected by Tape Speed.

### Tape Formula

Tape Formula selects the active tape stock formulation. Seven Tape Formulas are modeled in the Ampex ATR-102 Master Tape LUNA Extension. To select the Tape Formula, click the TAPE button to cycle through the available types, or click directly on the Tape Formula value label. The active Tape Formula is highlighted in yellow.

**Note:** The available Tape Formulas and defaults are dependent on the current Tape Speed and Head values. See Tape Speed, Formula, and Emphasis EQ settings for more information.

Each formula has its own subtle sonic variations, distortion onset, and tape compression characteristics. Generally speaking, the lower the Cal Level for each formula, the higher the signal level required to reach saturation and distortion.

### Cal Level

Cal Level automatically sets tape calibration/fluxivity. The Cal Level setting takes care of the setup one would need to make under equivalent hardware operation, and sets the reference tape/flux level without disturbing the (unity) gain of the extension.

To select the Cal Level, click the CAL button to cycle through the available levels, or click directly on the calibration value label. The active Cal Level is highlighted in yellow. The default value is +6 dB.

Because Cal Level affects the operating levels in the extension, it can be used to compensate for overly high (or low) levels at the input of the extension. For example, if the input is too hot, lowering the Cal Level will reduce the signal level without changing Record, which can affect the tape saturation characteristics.

**Note:** The noise floor is affected by the Cal Level when Noise Enable is active.

As tape formulas advanced, their output level increased, thus lowering relative noise floor. Under normal use, the machine would be calibrated to the tape's output level. However, sometimes the machine is under-calibrated to leave more headroom for a broader sweet spot or to prevent electronics from clipping. Therefore, one can "go traditional" and calibrate to the recommended levels, or select a non-corresponding calibration setting.

As an example, if 456 is the selected Tape Formula and when Cal is set at +6 (6 dB higher than the NAB tape standard), the reference flux level is 355 nWb/m (nanoweber per meter) and is 10 dB below the point where THD reaches 3% (referred to as the maximum operating level). Therefore, with a 1 kHz test tone at -12 dBFS sent to the extension, with Tape Formula set to 456, Cal set to +6, and Auto Cal enabled, output levels of the extension will match the input level and fluxivity on the tape will be 355 nWb/m.

The tape manufacturer's recommended calibration settings for each Tape Formula are shown in the table below.

Tape Manufacturer's Recommended Calibration Levels

| Tape Formula | Calibration | Flux Level |
|---|---|---|
| 111 | +0 dB | 77 nWb/m |
| 35-90 | +3 dB | 251 nWb/m |
| 250 | +3 dB | 251 nWb/m |
| 456 | +6 dB | 355 nWb/m |
| 468 | +6 dB | 355 nWb/m |
| 900 | +9 dB | 502 nWb/m |
| GP9 | +9 dB | 502 nWb/m |

**Tip:** The Ampex ATR-102 Master Tape LUNA Extension default presets bank offers a variety of preset Tape Formula, Tape Speed, CAL level, and EQ configurations that are commonly used for recording with each of the popular Tape Formulas.

### Head Width

This control specifies the active tape head model. Head Widths of 1/4," 1/2," or 1" can be selected.

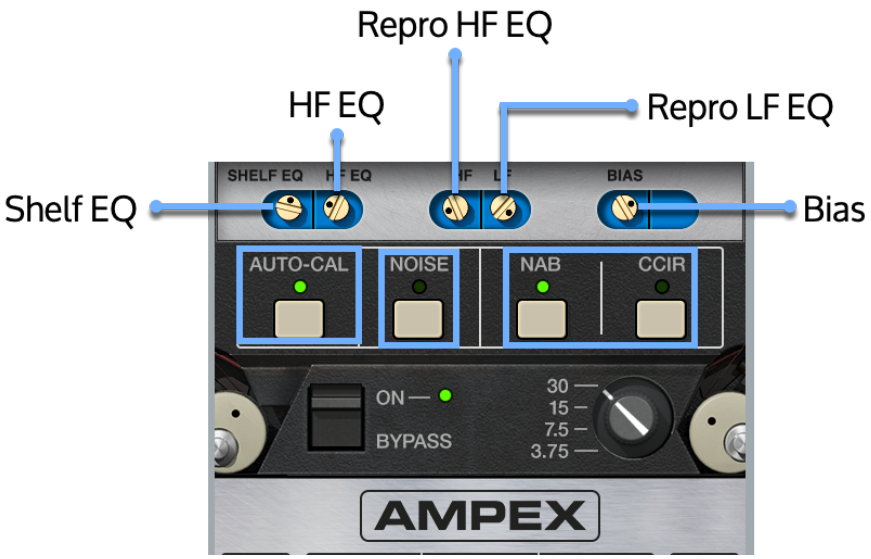
To select the Head Width, click the HEAD button to cycle through the available values, or click directly on the value label. The active Head Width is highlighted in yellow.

**Note:** At tape speeds of 3.75" and 7.5" only the 1/4" head can be used. At these speeds, the 1/2" and 1" heads cannot be selected.

### Tape Reels Animation

When the secondary controls panel is closed, the graphical tape reels "spin" if the LUNA transport is running.

The tape reels animation can be disabled by clicking the capstan graphic. Re-clicking the capstan will re-start the animation.




Auto Cal

The Ampex ATR-102 has individual calibration controls for adjusting sync (record) EQ, reproduction (playback) EQ, and record bias, which are used to compensate for the inherent non-linearities of tape systems. On the hardware, these controls are typically adjusted to calibrate the system for optimum response compensation due to tape nonlinearities whenever the tape formula, tape speed, emphasis EQ, or head width are changed.

When the Auto Cal (Automatic Calibration) ON button is clicked, the calibration EQ and bias controls are automatically adjusted to their "flat" calibrated position for the currently active Tape Formula, Tape Speed, Emphasis EQ, and Head Width. The Auto Cal ON LED illuminates green when the calibration parameters (Shelf EQ, HF EQ, Repro HF, Repro LF, and Bias) are in their calibrated position.

Auto Cal is OFF by default. When Auto Cal is ON, the calibration parameters (Shelf EQ, HF EQ, Repro HF, Repro LF, and Bias) change values whenever Tape Formula, Tape Speed, Emphasis EQ, or Head Width is modified. When Auto Cal is OFF, the calibration parameters do not change values when Tape Formula, Tape Speed, Emphasis EQ, or Head Width is modified.

**Important:** Any calibration settings made manually are lost when Auto Cal is activated. Consider saving manual settings as a preset before activating Auto Cal. After Auto Calibration occurs, the automatically adjusted parameters can be modified to any other value if desired. If a calibration parameter is adjusted while Auto Cal is ON, the ON LED illuminates in red instead of green, indicating that the system is no longer in the calibrated state. If the moved controls are subsequently returned to their original position, the LED will return to its green state, indicating the unit is back in calibration.

**Tip:** To return any of the individual calibration controls to their "flat" (calibrated) position, click the label text adjacent to the control (or, simply re-click Auto Cal to return all calibration controls to their "flat" position).

Record EQ

The Record EQ controls (HF EQ and Shelf EQ) are applied in the tape recording circuit and affect tape saturation characteristics. They compensate for common residual HF loss due to bias optimization and system filtering, and affect HF content in the signal prior to the tape non-linearity.

HF EQ

HF EQ provides high frequency emphasis in the signal recorded to tape.

Shelf EQ

Shelf EQ is another control (in addition to HF EQ) provided to compensate for tape nonlinearity. Although adjustment of this control is not part of the Ampex factory calibration procedure, it can be used for customized manual calibrations or creative purposes.

Repro EQ

The Repro EQ controls (Repro HF and Repro LF) are post-head controls for tape playback calibration. They affect the signal coming out of the tape circuitry in both Repro and Sync modes.

The Repro EQs are used as filters to shape the frequency response of the system in maintaining a flat response and enable compensation for any tape frequency loss or head wear.

Repro HF

Adjusts the tape playback high frequency content when Path Select is set to Sync or Repro.

Repro LF

Adjusts the tape playback low frequency content when Path Select is set to Sync or Repro.

Bias

This control adjusts the amount of bias in the record signal. Bias is defined as an oscillator beyond the audible range applied to the audio at the record head, allowing for adjustment of the record behavior. Ideal bias voltage settings provide maximum record sensitivity and low distortion. Intentionally overbiasing is a common technique especially for “tape compression” which produces a warmer, gently saturated sound. Underbiasing can also be used to add distortion and other nonlinear responses, similar to gate chatter or cold solder joints; extremely low voltages may even cause audio to drop out entirely.

Bias voltage, HF/Shelf EQ, and Emphasis EQ (CCIR, NAB, AES) all work together to provide a linear response to the recorded signal. The “flat” (calibrated position) is determined by tape speed, tape formula, emphasis EQ, and head width.

Noise Enable

This is a global enable control for the Hum and Hiss effect. When Noise is enabled, a preset level of Hum and Hiss is added, depending on the tape speed .

# Tape Speed, Formula, and Emphasis EQ settings

This table includes all the combinations of tape speed, head width, tape formula, and Emphasis EQ.

| Speed (IPS) | Head Width | Form. 1 | Form. 2 | Form. 3 | Form. 4 | Emphasis EQ |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | 1" | 250 | 456 | 468 | GP9 | AES* |
| 30 | 1/2" | 250 | 456 | 900 | GP9 | AES* |
| 30 | 1/4" | 250 | 456 | 900 | GP9 | AES* |
| 15 | 1" | 250 | 456 | 468 | GP9 | NAB |
| 15 | 1" | 250 | 456 | 468 | GP9 | CCIR |
| 15 | 1/2" | 250 | 456 | 900 | GP9 | NAB |
| 15 | 1/2" | 250 | 456 | 900 | GP9 | CCIR |
| 15 | 1/4" | 250 | 456 | 900 | GP9 | NAB |
| 15 | 1/4" | 250 | 456 | 900 | GP9 | CCIR |
| 7.5 | 1/4" | 250 | 456 | 35-90 | 111 | NAB |
| 3.75 | 1/4" | 250 | 456 | 35-90 | 111 | NAB |

- When the tape speed is 30IPS, the NAB and CCIR indicators are both powered off to indicate that AES emphasis EQ is used.

# Studer® A800 Tape

## The rich analog sound of the world's most popular multichannel tape machine.

For more than 30 years, artists and engineers alike have been drawn to the warm analog sound, solid low-end, and overall presence of the Studer® A800 Multichannel Tape Recorder. The sheer number of albums recorded on this legendary 2" analog tape machine — including classics from Metallica, Stevie Wonder, Tom Petty, A Tribe Called Quest, and Jeff Buckley — serve as shining examples of the musicality of analog tape.

Fully authenticated by Studer, and modeled by UA's world-renowned team of DSP engineers and magnetic recording expert Jay McKnight, the Studer A800 Multichannel Tape Recorder for UAD hardware, Apollo interfaces, and LUNA Recording System is the first product of its kind. By faithfully modeling the entire circuit path of the famous A800 machine from Allen Sides' collection at Ocean Way Studios, this is the most accurate representation of multitrack analog tape recording available.

WIth LUNA Recording System, you can use the Studer A800 as a LUNA Extension, and easily get magnetic tape character on every audio and instrument track. The Studer A800 Multichannel Tape Recorder Extension lets you intuitively tweak settings across all channels. As you build up your mix, you'll hear the cumulative "cohesive" effect of mixing from magnetic tape. Far beyond a simple tape plug-in, the Studer LUNA Extension is woven into the fabric of LUNA Recording System's mixer, giving Apollo interface users an analog inspired workflow with bona fide analog sonics to match.

## A Groundbreaking Tape Machine

Introduced in 1978, the Studer A800 was the first microprocessor-controlled tape machine. Years ahead of its time, the A800 remains a sonic benchmark, and can still be found in studios worldwide. However, with their massive steel frame and meter bridge, twin half-horsepower motors and cast alloy deck plates, original A800 units tip the scales at a backbreaking 900 pounds. The Studer A800 Multichannel Tape Recorder poses none of the hardware hassles, yet retains all the beautiful sonics that make tape a beloved recording medium.

## Capturing the Magic of Tape

Just like magnetic tape, you can dial in a clean sound, or just the right amount of harmonic saturation using the Studer A800's Input and Output controls. The IPS control steps through tape speed choices (7.5, 15, or 30 IPS), each with distinct frequency shift, head bump and distortion characteristics. The tape Type control lets users choose from four of the most popular magnetic tape formulas — each with their own subtle sonic variation. There is also a secondary set of controls like Noise, EQ, and Bias for an even more jaw-dropping palette of tape textures.

456
250 456 900 GP9
TAPE
OFF 7.5 15 30
IPS
+3 +6 +7.5 +9
CAL
STUDER
MULTICHANNEL TAPE RECORDER
A800
POWER
OPEN

0
-12 +24
INPUT
0
-24 +12
OUTPUT
HF DRIVER 712/713
REPRO EQ 710
HF
BIAS
HF DRIVER
HF
LF
REPRO EQ
AUTO CAL
LINK
NOISE
250 456 900 GP9
TAPE
OFF 7.5 15 30
IPS
+3 +6 +7.5 +9
CAL
STUDER
MULTICHANNEL TAPE RECORDER
A800
POWER
OPEN

### STUDER A800 TAPE MACHINE WITH CONTROLS VIEW CLOSED (LEFT) AND CONTROLS VIEW OPEN (RIGHT)

*Studer A800 Tape as it appears on an input track*

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## Get Studer A800 Tape

You can purchase the optional Studer A800 Tape LUNA Extension from within LUNA's Manage panel. Your purchase of the Studer A800 Multichannel Tape Recorder includes both the UAD plug-in (Mac/Windows) and the LUNA Extension (Mac only).

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# Using Studer A800 Tape

Studer A800 Tape LUNA Extension can be enabled on any instrument or audio track. Studer A800 Tape LUNA Extension is applied only during playback on audio tracks. Studer A800 Tape LUNA Extension is applied on instrument tracks that are playing back, record-enabled, and input-enabled, with or without ARM enabled.

Studer A800 Tape includes global settings for the tape machine, and per-track settings for saturation. In this way, the tape machine emulation is similar to a true recording and mixing tape signal path.

LUNA is designed with the capability to use up to four “machines” for tape emulation. You can configure each machine slot with different global tape characteristics, and apply any one of the four machines to a track or group of tracks in your session. Overall tape characteristics are determined by each machine. You can then set the saturation individually for each track to which tape is applied, and other settings for each Studer A800 channel. In this way, you can configure separate machines within your session, and still set individual “tape channel” characteristics for each track.

For example, a typical scenario could include two machines, with one machine more aggressively driven than the other. You can assign drums, bass, and guitars to the more aggressively driven machine, and vocals and backgrounds to the cleaner machine. You can add a third and a fourth machine with even more diverse characteristics. The ability to configure up to four machines provides wide flexibility in the range of tape sounds you can apply in a session.

## STUDER A800 CONFIGURATION

The Studer A800 LUNA Extension allows you to load presets and adjust manual controls. Settings like bias, tape speed, and tape type are configured on the tape machine globally for the session, and in addition, each track has its own level (saturation) control, as well as control over the individual track’s HF Driver and Repro EQ settings. You can use presets that you save in the UAD Studer A800 plug-in with the Studer A800 LUNA Extension.

To configure a Tape Machine in a tape deck slot:

1. On an audio or instrument track in Mixer view, or on a Focus track in Timeline view, click the Tape slot. The Tape browser opens.

1. Double-click a tape slot (A-D) in which you want to configure the tape machine.

1. From the Machine list, select a tape machine type (Oxide or Studer A800). Studer A800 is only available if you have the Studer A800 LUNA Extension licensed and installed. The tape machine configuration is displayed in the browser.

1. Configure the tape machine through presets (Oxide, Studer A800) or configure the tape machine settings (Studer A800).

Once you have configured a tape machine in a slot, you can assign that tape machine to any number of audio or instrument tracks. You can configure a total of four tape machines, each with unique settings, for each LUNA session.

To assign Studer A800 to a track:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.
2. Choose the tape machine from the list in the Tape Machine browser. A tape machine Saturation knob appears on the track, along with a VU meter and a Power button. In the Mixer, with Large View enabled for the tape row, additional settings for the Studer A800 LUNA Extension appear.
3. Use the Saturation knob to increase or decrease the amount of tape saturation applied to the track.
4. You can configure the HF Driver HF setting, Bias, Repro LF, and Repro HF settings, and enable noise on a per-track basis, in addition to the overall machine controls.
5. Click the power button to enable or disable tape emulation on the track.

**Tip:** If you have the UAD Studer A800 Tape plug-in, you can use presets you have created in the plug-in with LUNA tape tracks, and vice-versa.

To configure the global sound of a Studer A800 tape machine:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.
2. Double-click the A800 tape machine that you want to configure.
3. Choose a Preset to configure the global sound of the Studer A800, or adjust the controls manually. Click Open to open the additional machine controls.

To adjust a tape control, you can click and drag on the control to rotate it to the desired position, or you can double-click the control to choose from a list of values.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. Selection Grouping (Mixing > Selection Grouping, or Command+G) must be enabled to adjust tape settings on multiple tracks at one time.

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## Studer A800 Tape Controls

| Control | Description |
|---|---|
| Input | Input acts like a gain control, and adjusts the signal level going to the tape emulation. The available range is -12 dB to +24 dB. As with magnetic tape, lower Input levels have a cleaner sound, while higher levels result in more harmonic saturation and coloration. Higher Input levels also increase the output level from the plug-in. The Output control can be lowered to compensate, or you can achieve this result automatically with the Link control. |
| Output | Output acts like a gain control and adjusts the gain at the output of the plug-in. The available range is -24 dB to +12 dB. You can turn this down to compensate for higher Input levels. Click Link to automatically adjust the Input and Output controls together. |
| Auto Cal | The Studer A800 has individual parameters for Bias, HF Record EQ, and Sync and Repro EQ. On the hardware tape machine, these calibration controls are usually adjusted whenever Tape Type or Tape Speed is changed. When Auto Cal is on in the plug-in, these controls are automatically adjusted to the calibrated values whenever the Tape Type or Tape Speed are changed. After you click Auto Cal, or any parameter that causes auto calibration to occur, you can then adjust any individual parameters that change. When Auto Cal is off, the calibration parameters do not change values when Tape Type or Tape Speed are modified. |
| Link | Link decreases the Input or Output inversely to one another to prevent large volume changes when adjusting Input or Output gain. |

| | |
|---|---|
| Noise | The Noise button is a global enable/disable control for hum and hiss in the A800 model. The amount of hum and hiss varies depending on the configured tape type and speed settings. |
| HF Driver: HF | HF (High Frequency) Driver EQ is provided to make up for common residual high frequency loss due to Bias optimization and system filtering. It is used to tune HF content into the incoming signal prior to the tape non-linearity. The control boosts high frequency content before it hits the virtual tape, and affects tape saturation characteristics. Note that this filter is prior to the tape record circuit, while the other EQs are post-tape. |
| HF Driver: Bias | Bias uses an inaudible oscillator beyond the audible range applied to the audio at the record head, to allow for adjustment of the record behavior. Ideal bias voltage settings provide maximum record sensitivity and low distortion. Intentionally overbiasing is a common technique to achieve “tape compression” on instruments like drums, giving a warmer, more saturated sound. Underbiasing can also be used to add distortion and other nonlinear responses, similar to gate chatter and audio dropouts, or cause audio to drop out entirely. Bias voltage, HF Record EQ, and fixed Emphasis EQ (CCIR, NAB, AES) work together to provide a linear response to the recorded signal. |
| Repro EQ: HF | With the hardware machine, Repro EQ controls enable compensation for any tape frequency loss or head wear. You can use the HF (High Frequency) Repro EQ filters to shape the frequency response of the system to be more accurate, or to add or remove high end. |
| Repro EQ: LF | With the hardware machine, Repro EQ controls enable compensation for any tape frequency loss or head wear. You can use the LF (Low Frequency) Repro EQ filters to shape the frequency response of the system to be more accurate, or to add or remove low end. |
| Tape | Selects the active tape stock formulation. Four of the most popular 2” magnetic tape formulas are modeled in the A800 plug-in: 250, 456, 900, and GP9. Each type has its own subtle sonic variation, distortion onset, and compression characteristics. |
| IPS | The IPS (Inches Per Second) control determines the speed of the tape transport and the associated “head bump.” Head bump is bass frequency build-up that occurs with magnetic tape where the dominant frequencies shift according to transport speed. 15 IPS is considered the favorite for rock and acoustic music due to its low frequency “head bump” (low frequency rise) and warmer sound, while 30 IPS is the norm for classical and jazz due to its lower noise floor, greater fidelity and flatter response. 7.5 IPS is also available for even more tape color, with greater frequency shift. |

| | |
|---|---|
| Cal | Cal Level automatically sets tape calibration/fluxivity. The Cal Level setting takes care of the setup one would need to make under equivalent hardware operation, and sets the reference tape/flux level without disturbing the (unity) gain of the plug-in. The record, repro, and sync gain trims found on the A800 channel cards are not present on the plug-in. When Auto Cal is enabled, the record, repro, and sync gain trims are amalgamated into this single Cal Level gain control.<br><br>As tape formulas advanced, their output level increased, thus lowering relative noise floor. +3, +6 and +9 dB output formulas were available in the 2" format. Under normal use, the machine would be calibrated to the tape's output level. However, users would sometimes under-calibrate to leave more headroom for a broader sweet spot or to prevent electronics from clipping. With this tape plug-in, the user can go traditional and calibrate to the recommended levels, or select a non-corresponding calibration setting with Cal Level. For example, if 456 is the selected Tape Type and when Cal Level is set at +6 (6 dB higher than the NAB tape standard), the reference fluxivity level is 355 nW/m (nanoweber per meter) and is 10 dB below the point where THD reaches 3% (referred to as the maximum operating level). Therefore, with a 1 kHz test tone at -12 dBFS sent to the plug-in, with Tape Type set to 456, Cal Level set to +6, and Auto Cal enabled, output levels of the plug-in will match the input level and fluxivity on the tape will be 355 nW/m.<br><br>The manufacturer's recommended calibration settings for each Tape Type are as follows:<br><br>• 250: +3 Calibration (251 nWb/m)<br>• 456: +6 Calibration (355 nWb/m)<br>• 900: +9 Calibration (502 nWb/m)<br>• GP9: +9 Calibration (502 nWb/m)<br><br>Note: The noise floor is affected by the Cal Level when Noise is enabled.<br><br>Tip: The UAD Studer A800 default bank offers a variety of preset Tape Type, Tape Speed, CAL level, and EQ configurations that are commonly used for the recording of specific genres. |

# Oxide Tape

The Oxide Tape LUNA Extension provides UA's revolutionary tape emulation technology in a simple package — with all of the essential tape sound — for free. By harnessing the musical, mixable sound of tape, Oxide Tape LUNA Extension imparts essential "sounds like a record" clarity, punch, and warmth to input tracks.

## Groundbreaking Tape Emulation Technology

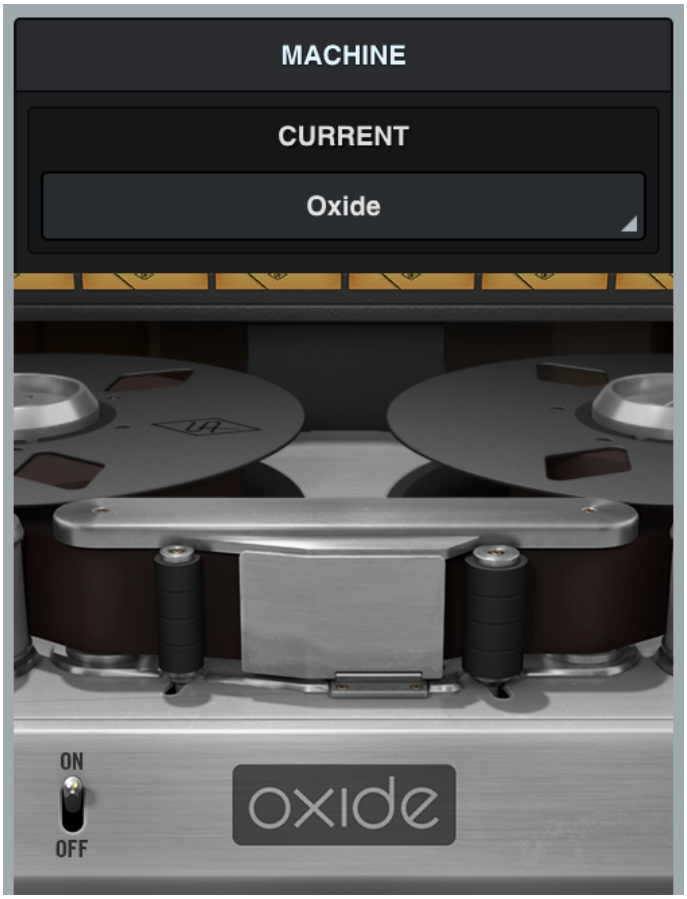
The Oxide Tape LUNA Extension was designed by the same team behind the industry-leading UAD Ampex ATR-102 Mastering Tape Machine and Studer A800 Multichannel Tape Machine plug-ins. Designed in conjunction with AES magnetic recording expert Jay McKnight, Oxide gives your tracks and mixes the warmth, presence, and vibe of professional analog tape.

# Easy to Use

Oxide's intuitive control deliver musical results for beginners and pros alike. By emulating fat tape compression and colorful circuit behaviors, Oxide gives your LUNA tracks a cohesive glue that only analog tape can.

Oxide provides all of a magnetic tape recorder's desirable analog sweetness. As with magnetic tape, a clean sound, or just the right amount of harmonic saturation, with the simple Saturation control. Oxide operates at a tape/fluxivity calibration level of +6 dB.

The main point to understand about Oxide operation is that the Saturation control adjusts the signal level recorded to tape, and is therefore a color parameter. As with hardware tape recorders, lower VU levels result in a cleaner, warmer sound with more headroom, while increasing VU levels results in more tape saturation, compression, and bite.




## OXIDE TAPE MACHINE

*Oxide Tape as it appears on an input track*

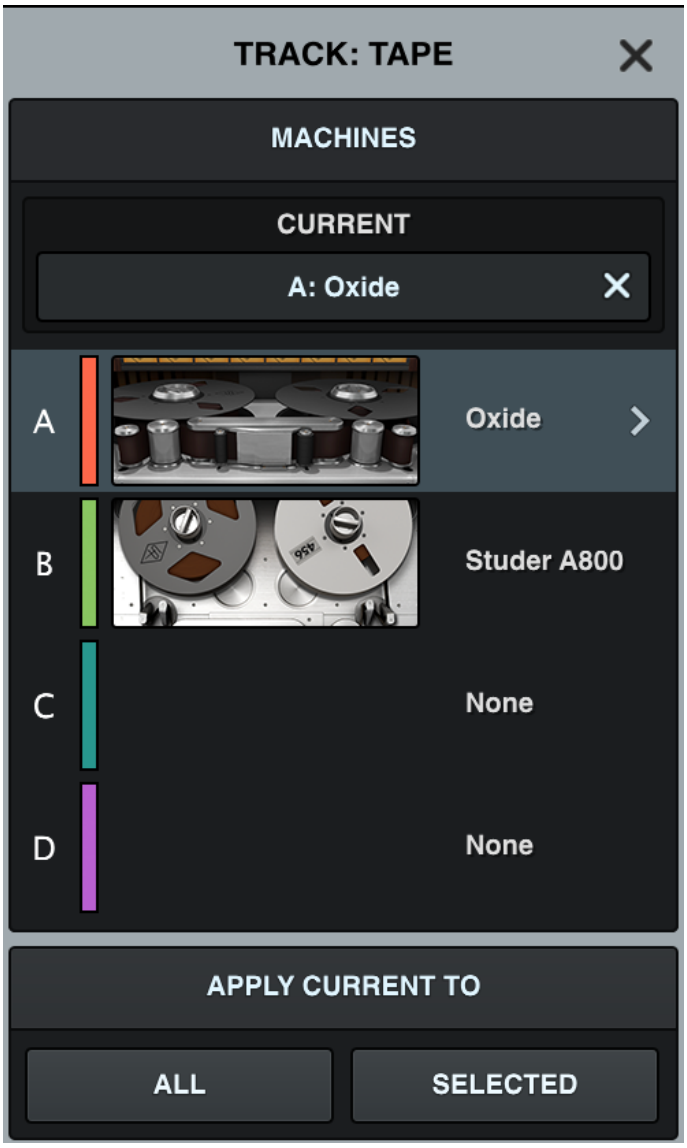
## Using Oxide Tape

Oxide Tape can be enabled on any instrument or audio track. Oxide Tape is applied only during playback on audio tracks. Oxide Tape is applied on instrument tracks that are playing back, record-enabled, and input-enabled, with or without ARM enabled. Oxide Tape has simple one-knob tape emulation.

Oxide Tape includes a global bypass control for the tape machine that applies for all instances in the LUNA session, and per-track settings for on/off and saturation. In this way, the tape machine emulation is similar to a true recording and mixing tape signal path.

### TO CONFIGURE OXIDE TAPE MACHINE IN A TAPE DECK SLOT:

1. On an audio or instrument track in Mixer view, or on a Focus track in Timeline view, click the Tape slot. The Tape browser opens.




1. Double-click a tape slot (A-D) in which you want to configure the tape machine.

1. From the Machine list, select Oxide Tape. Studer A800 is only available if you have the Studer A800 LUNA Extension licensed and installed.

Once you have configured the Oxide Tape machine in a machines slot, you can assign that tape machine to any number of audio or instrument tracks.

## TO ASSIGN OXIDE TAPE MACHINE TO A TRACK:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.

2. Choose the Oxide Tape machine from the list in the Tape Machine browser. A tape machine Saturation knob appears on the track, along with a VU meter and a Power button.
3. Use the Saturation knob to increase or decrease the amount of tape saturation applied to the track.
4. Click the power button to enable or disable tape emulation on the track.

### TO CONFIGURE THE GLOBAL SOUND OF AN OXIDE TAPE MACHINE:

1. Click the Tape insert on a track. The Tape Machine selector opens on the left of the screen.
2. Choose an Oxide tape machine from the list.
3. Choose a preset to configure the global sound of the Oxide tape machine in the session.

**Tip:** If you have the UAD Oxide Tape plug-in, you can use presets you have created in the plug-in with LUNA tape tracks.

To adjust a tape control, you can click and drag on the control to rotate it to the desired position, or you can double-click the control to choose from a list of values.

To adjust controls on multiple tracks, select multiple tracks, then change the controls on one track. Selection Grouping (Mixing > Selection Grouping, or Command+G) must be enabled to adjust tape settings on multiple tracks at one time.

# ARP MIDI Arpeggiator

## Welcome

Thanks for checking out ARP. This feature rich arpeggiator is a powerful tool that can help you discover new and interesting musical note patterns while composing and performing. It can bring excitement and life to your synthesizers and we hope it will help your musical creativity.

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## Quick Start

**Tip:** If a MIDI controller is not available, you can program notes into the LUNA track containing Shape and play the track, or use LUNA's onscreen keyboard when MIDI workflow mode is active.

Let's take ARP for a quick test drive before diving into the details. We can use it with LUNA's included Shape instrument. After Shape is loaded and input-enabled (see LUNA application documentation for these details):

1. Click the MIDI FX on the instrument track that contains Shape.
2. Choose ARP from LUNA's focus browser.

1. Hold one or more notes on your MIDI controller and you will hear those notes being played in an arpeggiated pattern.

**Note:** ARP always plays notes monophonically (one at a time), even if a chord is played.

1. Change the ARPEGGIATION TYPE by clicking one of the 12 available options.

1. Adjust the RATE controls (drop menu and radio buttons) to select the time division at which the arpeggiator advances to the next note in the pattern.

1. Change the GATE TIME parameter to shorten or lengthen each note in the pattern.

1. The SWING parameter injects some metronomic swing into the arpeggiated pattern.

1. Finally, the four RATE PRESETS provide quick access to stored rate settings. You can learn how to set the four presets in the Arpeggiation Controls section of this guide.

The Quick Start only scratches the surface of what ARP can do. Read on to learn about all its various features and how they work together.

## ARP Controls

ARP has a simple user interface and all of its controls are located on one screen. The on-screen controls can be subdivided into three logical groups: Synchronization and Tempo, Arpeggiation, and Keyboard.

## SYNCHRONIZATION AND TEMPO CONTROLS

Sync

This button synchronizes ARP to the master tempo of your session. The button is illuminated when synchronization is enabled.

**Note:** When this feature is activated, the TEMPO and TAP buttons are deactivated since ARP receives tempo information from LUNA. When SYNC is disabled, the TEMPO and TAP controls become active and can be used.

Start Grid

When the LUNA transport is running and SYNC is enabled, this drop menu determines when an arpeggiation will start playing back relative to the master transport of LUNA. For example, setting the start grid to 1/1 causes an arpeggiation to only begin playback when LUNA's transport control reaches the beginning of the next bar, even if you play notes ahead of the start point. Setting this to 1/4 causes an arpeggiation to play back at the start of the next quarter note.

**Note:** This control is only active when SYNC is enabled and LUNA's transport is running. If the transport is stopped, notes trigger the arpeggiator immediately.

Tempo

When SYNC is disabled, the tempo of the arpeggiator is displayed here and it can be modified by dragging the number up or down or by double clicking it and entering a value directly. When SYNC is enabled, the tempo of the arpeggiator is locked to the master tempo track of the session and cannot be changed.

**Tip:** Tempo can be automated for interesting rhythmic effects.

Tap

This button lets you enter a tempo by tapping the button. Note that this button is only active when SYNC is disabled. When SYNC is enabled, this button does not change ARP's tempo.

## ARPEGGIATION CONTROLS

Arpeggiation Type

ARP allows for 12 different methods of arpeggiation:

- **UP:** Notes are played from the lowest note to the highest note and repeated.
- **DOWN:** This setting provides the reverse of the *UP* option.
- **UP DOWN:** Notes are played from the lowest note to the highest note and back down to the lowest note before repeating.

- **DOWN UP:** This setting provides the reverse of the *UP DOWN* option.
- **UP HOLD DOWN:** Notes are played from the lowest note to the highest note and back down to the lowest note before repeating. The highest and lowest notes are played two times.
- **DOWN HOLD UP:** This setting provides the reverse of the *UP HOLD DOWN* option.
- **IN OUT:** Notes are arpeggiated "inside out" starting with the note nearest to the center of the notes played and progressing to the outer notes before repeating.
- **OUT IN:** This setting provides the reverse of the IN OUT option.
- **ALT LOW:** This setting alternates between the lowest note played and progressively higher notes in the pattern before repeating.
- **ALT HIGH:** This setting provides the reverse of the ALT LOW option.
- **AS PLAYED:** Notes are arpeggiated in the order they were played.
- **RANDOM:** Notes are arpeggiated in random order.

### Gate Time

This knob sets the length of the arpeggiated notes in the sequence, from 1–200%. A 100% setting means that each arpeggiated note is the length set in the RATE drop menu. For example: Notes at 1/4 rate and 100% gate time play as original 1/4 notes, but notes at 1/4 rate and 50% gate time play as 1/8 notes (one-half as long).

**Note:** GATE TIME settings greater than 100% result in an overlap of subsequent notes. This can have interesting (and sometimes unexpected) results when working with monophonic synthesizers.

### Rate

This drop menu determines the rate at which the arpeggiator advances to the next note in a pattern. Note that the values displayed in this menu will vary depending on whether *whole note*, *dotted* or *triplet* is selected from the Note Division buttons.

### Note Division

These three radio buttons let you choose from *whole note*, *dotted* or *triplet* beat divisions in your arpeggiation pattern.

### Swing

This knob sets the amount of metronomic swing, from 0–100%. Swing changes the rhythmic feel of the pattern.

### Rate Presets

ARP has four presets that let you quickly change between various RATE settings. The currently selected preset is highlighted and you can select a different preset by clicking on it. Making any change to the RATE settings (the drop menu or the radio buttons) automatically save that new value to the currently selected preset.

**Note:** Rate presets are only for storing the RATE and NOTE parameters.

## KEYBOARD CONTROLS

Octaves

This drop menu lets you automatically repeat notes or chords in octave bands above what you have played. At the default setting (1), played notes are arpeggiated exactly as played. At higher values (2-5), your played notes are repeated 1 to 4 octaves above where you have played before the pattern repeats.

**Note:** Certain instruments (such as Minimoog) have limited note ranges by design. With these instruments, selecting high or low octave ranges may result in occasional silences as ARP plays the extended notes. These silences are normal and expected. They can be eliminated by reducing the Octave value.

### Latch

When latching is engaged, the arpeggiator continues to run when keys are released. The exact behavior of the latching is set by the LATCH MODE menu.

### Latch Mode

This drop menu determines the behavior of the latching function.

- **RESET:** Notes are latched and continue repeating until latching is disabled or different notes are played.
- **TRANSPOSE:** Notes are latched and continue repeating until latching is disabled or different notes played. If notes are being arpeggiated, playing a single note will cause the pattern to be transposed and the lowest note of the arpeggiated pattern becomes the note played.
- **NOTE ADD:** Notes are latched and continue repeating until latching is disabled. While the arpeggiator is running, playing more notes will add those new notes to the arpeggiated pattern.
- **LIVE ADD:** Notes are latched and continue repeating until latching is disabled. While the arpeggiator is running, playing more notes will temporarily add those new notes to the arpeggiation pattern as long as those notes are held. Releasing the held notes will cause the arpeggiator to revert back to its original pattern.
- **THRU:** Notes are latched and continue repeating until latching is disabled. While an arpeggiated pattern is playing back, any new notes played are not arpeggiated, letting you play along with the arpeggiated pattern.

### Key Range

This parameter sets the key range in which ARP is active. Notes that fall inside the low and high limits are arpeggiated whereas notes that fall outside of this range bypass the arpeggiator and playback as normal (non-arpeggiated) notes. You can adjust the ranges by dragging the vertical handles or double-clicking the low and high note values and entering new values directly. Held notes are shown in the display area for visual reference.