WAVELAB ELEMENTS 8

Personal Audio Editing System

steinberg

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This PDF provides improved access for vision-impaired users. Please note that due to the complexity and number of images in this document, it is not possible to include text descriptions of images.

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Table of Contents

Introduction

The Help System

The detailed help system of WaveLab Elements makes it easy to look up interface features and get information from within the program.

Three main types of help are available:

- The help provides detailed information on the features and functionality of WaveLab Elements. You can set bookmarks, and use the search function and index to quickly find information.

- "What's This" tooltips give detailed information on the functionality of a specific user interface element.

- The status bar at the bottom of each workspace window gives detailed information on menu items when moving the mouse over an item.

- In the Audio Montage workspace, the status bar shows what kind of editing can be performed when using the mouse and modifier keys.

Accessing the Help System

There are several ways of accessing the help system.

- To open the WaveLab Elements help, select **Help > Contents**.

- To open the manual in PDF format, browse to the installation folder. The documents are located in the **Documentation** folder.

- To show tooltips, move the mouse over an interface icon.

- To open the help for the active dialog, click the question mark icon on the title bar (Windows) or in the dialog (Mac OS) to show the **Help** button, and then click the **Help** button, or press [F1] (Windows) or [Command]-[?] (Mac OS).

- To use the menu help, move the mouse over a menu item. The help text is displayed on the status bar at the bottom of the workspace window.

- To see information on what kind of editing can be performed when using the mouse and modifier keys in the audio montage window, move the mouse over the montage window. The help text is displayed on the status bar at the bottom of the workspace window.

- To activate/deactivate the help texts on the status bar, select **Options (WaveLab menu on Mac) > Global preferences > Display** tab, and in the **Workspaces** section, select **Display status bar**.

To open the "What's This" help, you have the following possibilities:

- In any workspace, press [Shift]-[F1], and move the mouse over an interface item, or select **Help > What is this?**.

- In a dialog, select the question mark icon on any title bar (Windows) or in the dialog (Mac OS), and move the mouse over an interface item or a menu option.

- Some "What's this" tooltips have a different background color to indicate that a dedicated help topic is available in the WaveLab Elements help. Click the link in the tooltip to open the corresponding information in the help.

About the Program Versions

The documentation covers two different operating systems, Windows and Mac OS X. Some features and settings are specific to one of the operation systems.

This is clearly stated in the applicable cases. If nothing else is said, all descriptions and procedures in the documentation are valid for all WaveLab Elements versions for both Windows and Mac OS X.

The screenshots are taken from the English Windows version of WaveLab Elements.

Typographical Conventions

Many of the default key commands in WaveLab Elements use modifier keys, some of which are different depending on the operating system. For example, the default key command for Undo is [Ctrl]-[Z] on Windows and [Command]-[Z] on Mac OS X.

When key commands with modifier keys are described in this manual, they are shown with the Windows modifier key first, in the following way:

▪   [Win modifier key]/[Mac modifier key]-[key]

For example, [Ctrl]/[Command]-[Z] means "press [Ctrl] on Windows or [Command] on Mac OS X, then press [Z]".

Similarly, [Alt]/[Option]-[X] means "press [Alt] on Windows or [Option] on Mac OS X, then press [X]".

NOTE

This manual often refers to right-clicking, for example, to open context menus. If you are using a Mac with a single-button mouse, hold down [Ctrl] and click.

How You Can Reach Us

On the **Help** menu in WaveLab Elements, you find items linking to additional information.

The menu contains links to various Steinberg web pages. Selecting a menu item automatically launches your browser and opens the page. On these pages, you can find support and compatibility information, answers to frequently asked questions, information about updates and other Steinberg products, etc. This requires that you have a web browser installed on your computer, and a working internet connection.

Setting Up Your System

Before you start working, you need to make some settings.

IMPORTANT

Make sure that all equipment is turned off before making any connections.

Connecting Audio

Your system setup depends on many different factors, for example, the kind of project that you want to create, the external equipment that you want to use, or the computer hardware available to you.

About Audio Cards and Background Playback

When you activate playback or recording in WaveLab Elements, other applications cannot access the audio card. Likewise, if another application uses the audio card, WaveLab Elements is unable to play back. The Windows MME driver is an exception from this.

You can run WaveLab Elements together with other applications and always give the active application access to the audio card.

To do so, select **Options > VST Audio Connections**, and on the **Options** tab, activate **Release driver when WaveLab is in background**.

About Latency

Latency is the delay between when audio is sent from the program and when you actually hear it. While a very low latency can be crucial in a real-time DAW application such as Steinberg Nuendo or Cubase, this is not strictly the case with WaveLab Elements.

When working with WaveLab Elements, the important issues are optimum and stable playback and editing precision. You should not try to reach the lowest possible latency figures.

The latency in an audio system depends on the audio hardware, its drivers, and settings. In case of dropouts, crackles, or glitches during playback, raise the **Buffer Number** setting on the **VST Audio Connections** dialog, or increase the buffer size in the ASIO control panel, specific to the audio card.

Defining VST Audio Connections

To be able to play back and record audio in WaveLab Elements, you must specify how the internal input and output channels in WaveLab Elements are connected to your sound card and which device you intend to use for audio playback and recording.

You can define the buffer settings for your device as well as set up connections to external gear, such as external effects units. You should select at least two channels for stereo playback and recording.

If you have no third-party audio card, you can select the Windows MME driver or Built-in Audio (Mac) options. You can also use MME with most third party audio cards, with the advantage that you can record and play at different sample rates. However, Windows MME drivers do not allow audio monitoring in the **Recording** dialog or multichannel operation, and other drivers generally offer better sound quality and performance.

Selecting an ASIO Driver

Audio Stream Input/Output (ASIO) is a computer device driver protocol for digital audio specified by Steinberg. It provides a low-latency and high fidelity interface between a software application and the soundcard of a computer.

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > VST Audio Connections**.
2. From the **Audio Device** menu, select your ASIO driver.
   The **ASIO plug-ins** tab and the **Control panel** button are activated.
3. Optional: Click the **Control panel** button and make your settings.
4. On the **ASIO plug-ins** tab, select the audio ports that are used for recording and monitor input of the ASIO plug-ins.
5. Click **OK**.

Selecting a Windows MME Driver

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > VST Audio Connections**.
2. From the **Audio Device** menu, select the **Windows MME** driver.
3. On the **Playback** tab, select the audio ports that are used for playback.
4. On the **Recording** tab, select the audio ports that used for recording and monitor input.
5. Click **OK**.

VST Audio Connections Dialog

This dialog allows you to specify how the internal input and output channels in WaveLab Elements are connected to your sound card and which device you want to use for audio playback and recording.

In any workspace, except the Podcast workspace, select **Options > VST Audio Connections**.

Global Settings

Audio device

Here, select the audio device that you want to use for playback and recording audio. If you do not have a third-party audio card, you can select the Windows MME driver or Built-in Audio (Mac) options.

Control panel

When you select an ASIO driver, the **Control panel** button is activated. Click the button to open the settings application of your sound card, which is usually installed with the sound card. Depending on your sound card and driver, this provides settings for buffer size, digital formats, additional I/O connections, etc.

Refresh

This button causes audio devices to be evaluated again to reflect device changes.

Playback Tab

This tab allows you to select and name audio ports that are used for playback.

Recording Tab

This tab allows you to select and name your audio ports that are used for recording and input monitoring. The inputs that you define here are then available in the **Recording** dialog.

Options Tab

This tab allows you to specify the number of buffers and the control driver functionality.

Buffer Number

Increasing this value improves the elasticity of audio streaming to avoid dropouts.

MME Specific - Buffer size

Increasing this value improves the elasticity of audio streaming to avoid dropouts. This is only available when an MME driver is selected.

Initialize streaming engine at first use

Initializes the audio streaming engine when playback or recording are used for the first time. If this option is deactivated, the audio streaming engine is initialized at program startup.

Reset driver when changing sample rate

Resets the driver when sample rate is changed. When playback or recording must be set to a new sample rate, certain audio device drivers must be fully reset to work properly. This operation takes some time.

Perform short fade-in/out when starting/stopping playback

Performs a short fade-in when starting playback and a short fade-out when stopping playback. This avoids clicks that are caused by waveforms that are not starting on a zero-crossing point.

Release driver when WaveLab Elements is in background

Closes the audio device when WaveLab Elements is no longer the front application. This allows other audio applications to use the same audio device.

CD/DVD Recorders

For general instructions on installing internal or connecting external recorders via USB or Firewire, please refer to the instruction manual for your computer or your recorder.

Make sure to have the latest firmware version installed on your recorder unit. For CD recorders, the existing firmware must support disc-at-once mode. In addition, running a unit with older firmware can prevent you from writing sub-index markers into the tracks, for example.

Remote Devices

You can use remote devices to remote-control WaveLab Elements.

Several commands can be controlled with knobs and sliders of your remote control device.

Remote Devices Dialog

This dialog allows you to select a device to remote-control WaveLab Elements, and see the control map of MIDI control devices.

In any workspace, except the Podcast workspace, select **Options > Remote devices**.
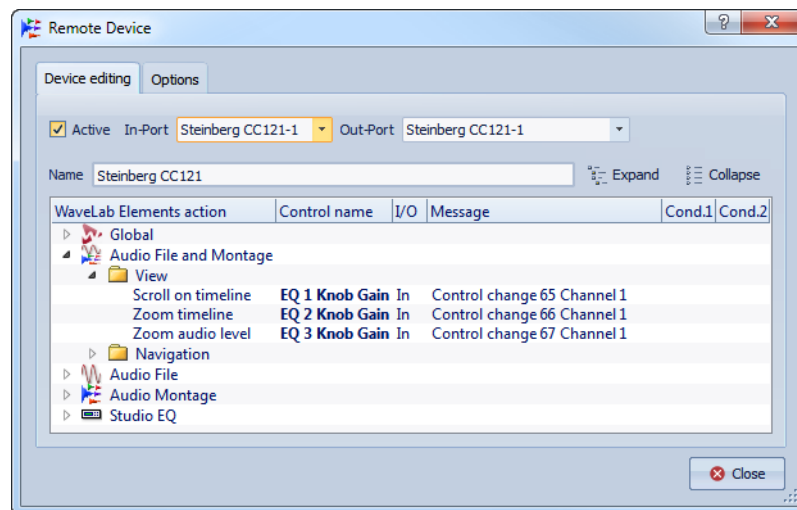
Device Editing Tab

This tab lets you select a MIDI control device and see the control map.

Active

Activates the selected device and scans the MIDI ports.

In-Port/Out-Port

Select the MIDI input/output ports of the device that you want to use.

Name

Lets you enter a map name.

Expand/Collapse

Expands/collapses the folder tree of the control map.

WaveLab Elements action list

This folder tree lists the parameters that you can remote-control. The top folder represent contexts. The related parameters can only be controlled if the context is active. For example, if an audio file is active.

A remote control can be used in several contexts if these are exclusive. For example, parameters that can be used for an active audio file or an active audio montage.

The **Global** folder contain the parameters that can always be controlled.

Options Tab

This tab lets you use the MIDI Learn function to assign a control of a MIDI remote control device to a function.

Emulate mouse wheel

If this option is activated, the AI knob acts as a mouse wheel in the WaveLab Elements user interface, except for plug-ins.

Edit focused numeric field

If this option is activated, the AI knob can be used to edit the focused numeric field that you find in many WaveLab Elements windows and dialogs.

CC121 Advanced Integration Controller

You can use Steinberg's CC121 Advanced Integration Controller to control WaveLab Elements.

This section describes the WaveLab Elements factory preset for the CC121. For detailed information on how to use the controller, refer to the manual that came with the CC121. Note that the CC121 was originally designed for Cubase. The following mapping combines the WaveLab Elements functionality with the CC121 controls. The controls that are not listed in the following paragraph are not assigned to a parameter.

Channel Section

You can use all controls of the CC121 channel section, except the fader, to control the elements of the selected track in a WaveLab Elements audio montage. You can use the fader for the Master Section.

Fader

Controls the Master Section fader.

PAN knob

Controls the gain of the selected track.

Mute

Mutes/unmutes the selected track.

Solo

Activates/deactivates solo for the selected track.

CHANNEL SELECT

Selects the previous/next track in the audio montage.

To move the cursor to the previous/next clip edge in the audio montage, hold [Alt]/[Option]. To move the cursor to the previous/next region edge, hold [Shift]. To move the cursor to the previous/next marker in the Audio Files workspace, hold [Ctrl]/[Command].

EQ Section

With the EQ section you can easily control the Steinberg Studio EQ plug-in.

If the EQ TYPE button is activated on the CC121, you can adjust the parameters of the focused Studio-EQ. All necessary EQ parameters, such as Q/F/G of each band, EQ TYPE selection, and ALL BYPASS on/off can be set. You can switch to WaveLab Elements navigation mode by turning off the EQ TYPE button. In WaveLab Elements navigation mode, you get access to alternative functions, such as scrolling, zooming, and switching between workspaces.

EQ Type activated:

Bandwidth knobs (Q)

Adjusts the Q (bandwidth) of each EQ band.

Frequency knobs (F)

Adjusts the center frequency of each EQ band.

Gain knobs (G)

Adjusts the gain of each EQ band

ON

Activates/deactivates the EQ bands.

ALL BYPASS

Activates/deactivates bypass for all plug-ins in the Master Section.

EQ Type deactivated:

LOW ON

Opens the Audio Files workspace.

LOW-MID ON

Opens the Audio Montage workspace.

HIGH-MID ON

Opens the Batch Processors workspace.

HIGH ON

Opens the Control Window.

EQ-1 knob for the EQ Gain (G)

Scrolls left/right on the timeline.

EQ-2 knob for the EQ Gain (G)

Adjusts the horizontal zoom on the timeline.

EQ-3 knob for the EQ Gain (G)

Adjusts the vertical zoom on the timeline.

EQ-4 knob for the EQ Gain (G)

Scrolls tracks on the Audio Montage workspace or scrolls vertically on the Audio Files workspace.

EQ-1 knob for the EQ Frequency (F)

Scrolls left/right on the overview timeline of the Audio Files workspace.

EQ-2 knob for the EQ Frequency (F)

Horizontally zooms in/out on the overview timeline of the Audio Files workspace.

EQ-3 knob for the EQ Frequency (F)

Vertically zooms in/out on the overview timeline of the Audio Files workspace.

EQ-4 knob for the EQ Frequency (F)

Vertically scrolls on the overview timeline of the Audio Files workspace.

Transport Section

In this section you can control the transport functions of WaveLab Elements.

Previous button

Moves the cursor position to the beginning of the project.

Rewind button

Rewind

Forward button

Forward

Next button

Moves the cursor position to the end of the project.

Cycle button

Activates/deactivates Cycle mode.

Stop button

Stops playback. Press again to move the cursor to the previous start position. Press a third time to move the cursor to the beginning of the project.

Play button

Starts playback.

Record button

Press once to open the **Recording** window. Press again to start the recording. Press a third time to stop recording. The recorded file opens in the Audio Files workspace.

Function Section

In this section, you can adjust certain functions, such as fades and envelope level, by using the VALUE knob.

VALUE knob/button

Rotate this knob to adjust the assigned function. Press the knob to reset the parameter to its default value.

FUNCTION button 1

Adjusts the fade-in settings of the focused clip.

FUNCTION button 2

Adjusts the fade-out settings of the focused clip.

FUNCTION button 3

Adjusts the envelope level of the focused clip.

FUNCTION button 4

The element clicked last on the **Edit > Nudge** menu in the Audio Montage workspace is assigned to this button.

AI Knob Section

WaveLab Elements can be controlled with the AI knob of Steinberg's CC121, CI2+, and CMC-AI controllers. With the AI knob, you can control the parameter that the mouse points to.

NOTE

The AI knob only works on parameters that are automatable.

In this section you can control parameters via the AI knob.

AI KNOB

Controls the VST 3plug-in parameters, emulates the mouse wheel, for example, for scrolling, and lets you edit a focused numeric field. To control a parameter with the AI knob, move the mouse cursor over the parameter that you want to control, and move the AI knob. You can activate/deactivate the emulation of the mouse wheel and the editing of the focused numeric field in the **Options** tab.

LOCK

When the mouse cursor points to a parameter, press LOCK to control this parameter regardless of the position of the mouse cursor.

CUBASE READY Indicator

The CUBASE READY indicator has no function in WaveLab Elements.

Foot Switch Section

The foot switch has the same function as [Shift]. Press and hold the foot switch while turning the AI knob to fine tune parameters.

WaveLab Elements Concepts

This chapter describes general concepts that you will use when working with WaveLab Elements. Getting accustomed with these procedures allows you to work more effectively with the program.

General Editing Rules

The common editing operations can be used in any Steinberg product.

- To select and move interface items, and to select ranges, click and drag with the mouse.

- Use the keys of your computer keyboard to enter numeric values and text, to navigate lists and other selectable interface items, and to control the transport functions.

- Common operations like cut, copy, paste, or the selection of multiple items can be performed using standard keyboard shortcuts.

NOTE

The behavior of your product is also governed by your preference settings.

RELATED LINKS:
"Global Preferences Dialog" on page 324

Basic Window Handling

WaveLab Elements follows the basic guidelines for the Windows/Mac OS interface, which means that Windows/Mac OS standard procedures apply.

Closing Windows

▪   To close a tabbed window, click the "X" button of the corresponding tab or press [Ctrl]/[Command]-[W].

▪   To close a tabbed window without saving your changes, hold [Ctrl]/[Command]-[Shift], and click the "X" button. This avoids having to confirm a warning message whenever you want to close an unsaved window.

▪   To close all tabbed windows at once, right-click a tab, and select **Close all**.

▪   To close all tabbed windows but the selected tabbed window, right-click a tab, and select **Close all but this one**.

▪   To individually select the tabbed windows that you want to close, right-click a tab, and select **Select files to close**. This opens the **Files to close** dialog, where you can select the files that you want to close.

RELATED LINKS:
"Files to Close Dialog" on page 53
"Managing Tabs" on page 53

Switching Between Files

You can have multiple files open and switch between them.

▪   To bring a file to the front, click the corresponding tab.

▪   To cycle between all open files in a workspace, hold [Ctrl]/[Command], and press [Tab] continuously.

▪   To cycle back and forth between the last two active files, press [Ctrl]/[Command]-[Tab]. Between each step you have to release all keys.

▪   To cycle backwards, press [Ctrl]/[Command]-[Shift]-[Tab].

Window Switcher

The window switchers let you easily switch between workspaces, create new workspaces, or open existing projects. There are two types of window switchers: The central switcher bar and the floating window switcher.

The floating window switcher behaves like the central switcher bar, but takes less room and floats above other windows.

- To activate/deactivate the central switcher bar, in the Audio Files workspace or the Audio Montage workspace, select **Workspace > Command bars > Central switcher bar**.
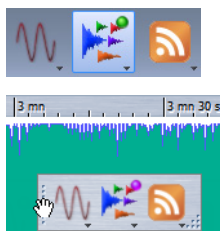
Using the Central Switcher Bar

You can use the central switcher bar to navigate through your workspaces.

- To copy a file from one workspace to another, drag it to the button of the workspace that you want to open, wait until the workspace becomes active, and release the file where you want.

- To create a new file in any workspace, press [Ctrl]/[Command], and click a workspace button.

- To open the **Open** window to select a file, press [Shift], and click a workspace button.

- To display a menu listing the files that have recently been used in a particular workspace, right-click any workspace icon.

- To create a new file or open a file, right-click any workspace icon, and select **New** or **Open**. While left-clicking activates a workspace, right-clicking does not activate a workspace.

Customizing the Central Switcher Bar

You can customize the central switcher bar using the settings menu.

To open the settings menu, right-click an empty part of the central switcher bar.
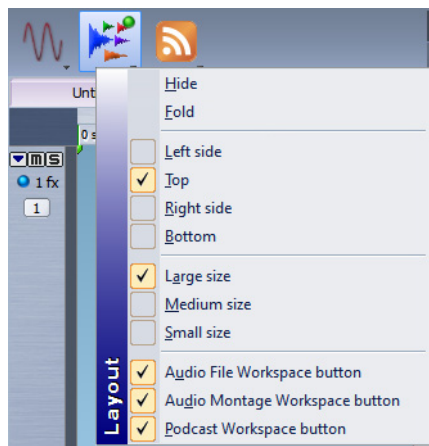
Hide

Hides the central switcher bar.

Fold

Minimizes the central switcher bar to a thin line. To unfold the bar, click the thin line.

Left side/Top/Right side/Bottom

Determines the location of the central switcher bar.

Large/Medium/Small size

Determines the size of the central switcher bar.

Workspace buttons

Determines which workspace buttons are visible on the central switcher bar.

Selecting Audio

Almost all types of editing and processing that you perform in WaveLab Elements operate on the audio selection. There are numerous ways to make an audio selection.

To select the whole audio file, double-click it. If the audio file contains markers, triple-click it.

Selecting a Range by Dragging

The standard way to select a range in a wave window is to click and drag.

If you drag all the way to the left or right side of the window, it scrolls automatically, allowing you to select larger sections than what can be shown in the window. The speed of the scrolling depends on how far from the window edge you are.

Audio Range Selection in an Audio File

You can edit, process, or play back selection of an audio file.

In the Audio Files workspace, select **Edit > Select time range**.

All

Selects the entire waveform.

Toggle

Toggles the current audio selection on/off.

Extend to start of file

Extends the selection to the start of the audio file. If there is no selection, a selection is created from the edit cursor position.

Extend to end of file

Extends the selection to the end of the audio file. If there is no selection, a selection is created from the edit cursor position.

Extend to previous marker

Extends the left edge of the selection to the nearest marker to the left or the start of the audio file. If there is no selection, a selection is extended until the edit cursor position.

Extend to next marker

Extends the right edge of the selection to the nearest marker to the right or the end of the audio file. If there is no selection, a selection is extended until the next marker position.

Extend to cursor

Extends the selection to the edit cursor position.

From start of file until cursor

Selects the range between the start of the audio file and the edit cursor position.

From cursor to end of file

Selects the range between the edit cursor position and the end of the audio file.

From cursor to previous marker

Selects the range between the edit cursor position and the nearest marker to the left or the start of the audio file.

From cursor to next marker

Selects the range between the edit cursor position and the next marker or the end of the audio file.

Playback position => Selection start

Creates a selection range from the playback position to the end of the audio file. If no playback is taking place, the position of the edit cursor is used.

Playback position => Selection end

Creates a selection range from the playback position to start of the audio file. If no playback is taking place, the position of the edit cursor is used.

Double length

Doubles the length of the current selection range.

Halve length

Halves the length of the current selection range.

Extend to all channels

Extends the current selection range to all channels.

Left channel only

Reduces the current selection range to the left channel only.

Right channel only

Reduces the current selection range to the right channel only.

Loop region

Selects the range between the two loop markers that encompass the edit cursor.

Generic region

Selects the range between the two generic markers that encompass the edit cursor.

Selecting in Stereo Files

If you are working on stereo material in the Audio Files workspace, you can apply an operation to one channel only or to the entire stereo material.

Which channel is selected when you click and drag in the wave window depends on where you position the mouse cursor, as indicated by the pointer shape. The pointer shape indicates which channel will be affected.

The following pointer shapes are available:

Pointer Shape	Description
I^L	Clicking in the upper half of the left channel selects the left channel.
I	Clicking in the middle area between the left and the right channel selects both channels.
I_R	Clicking in the lower half of the right channel selects the right channel.

Switching the Selection Between Channels

You can switch the selection that you have made for a channel to all channels or switch the selection to the other channel.

PROCEDURE

1. In the Audio Files workspace's wave window, make a selection range.
2. Select **Edit > Select time range**, and select **Extend to all channels**, **Left channel only**, or **Right channel only**, or press [Tab] to cycle between the different channel selections.

Selecting in the Overview of the Audio Files Workspace

The selection ranges that you make in the overview of the Audio Files workspace also apply to the main view.

PROCEDURE

▪   In the Audio Files workspace's wave window, hold down [Ctrl]/[Command], and click and drag in the overview.

Moving a Selection Range

If a selection range is the right length, but at the wrong position, you can move it.

PROCEDURE

1. In the wave window, hold down [Ctrl]/[Command]-[Shift].

2. Click in the middle of the selection and drag to the left/right.

Extending and Reducing the Selection

You can resize a selection range in the wave window without having to make a new one.

There are several ways to extend/reduce the selection:

- Make a selection range, [Shift]-click outside the selection range, and drag to the left/right, or click and drag the edges of the selection range to the left/right.

- To extend the selection to the previous/next boundary (marker or start/end of file), press [Shift] and double-click the non-selected area between the boundaries.

Extending and Reducing the Selection Using the Cursor Keys

- To move the start/end of a selection in the wave window to the left/right, hold down [Shift] and press the left/right cursor keys. To move it in bigger steps, press the [Page Up]/[Page Down] keys.

- To extend a selection to the previous/next boundary in the wave window (marker or start/end of the audio file), hold down [Ctrl]/[Command]+[Shift] and press the left/right cursor keys.

Deleting Selections

There are several options for deleting a selected time range.

Audio Files Workspace

The following options can be found on the **Edit** menu:

Trim

Removes the data outside the selection.

Remove

Removes the selection. The audio to the right of the selection is moved to the left to fill the gap.

Sliders

At various places in WaveLab Elements, slider controls are available to change parameters. There are a number of ways to change the value of a slider.

▪ Position the mouse over the slider and use the mouse wheel (no click is required). Hold [Ctrl]/[Command] while using the mouse wheel to scroll faster. This modifier also applies to the zoom wheels. To move the button of a slider, click and drag it.

▪ To move the slider handle directly to a position, click the slider at any position.

▪ To move the slider handle in smaller steps, right-click or below the handle. Keep the mouse button pressed to automatically step to the next value.

▪ To reset the slider to the default value, if available, [Ctrl]/[Command]-click the slider, or click using the third mouse button, or double-click the handle.

Renaming Items in Tables

You can rename items in tables in the **Markers** window, and in the **CD** window.

▪ To rename an item, double-click it or select it, and press [Return], and enter the new name.

▪ To rename the previous/next item, press [Arrow Up] or [Arrow Down] instead of [Return]. This way you move the focus on the previous/next item, while staying in the edit mode.

File Browser

The **File Browser** window in the Audio Files workspace and the Audio Montage workspace allows you to browse files directly from within WaveLab Elements. It can be very useful in speeding up the process of auditioning sound files.

The **File Browser** window provides you with all the standard browsing functions as well as additional controls to audition audio files and any marker defined regions. You can use it to open or insert files or regions of files by dragging them onto an open workspace.

You can also choose to only view certain types of files.

File Browser Window

In this window, you can browse files and open them in WaveLab Elements.

In the Audio Files workspace or the Audio Montage workspace, select **Workspace > Specific tool windows > File Browser**.
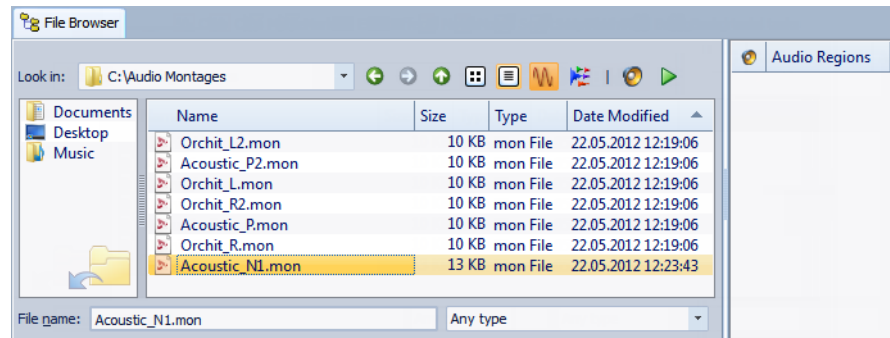
You can add your favorite folders to the left pane by dragging them from the middle pane.

The following options are available in the **File Browser** windows:

Look in

Lets you select a file location to browse and lists the recently used locations.

Back/Forward/Parent Directory

Let you navigate through the list and file hierarchy.

List View

Shows only the file name in the file list.

Detail View

Shows the file name, size, type, and modification date in the file list.

File name

Shows the file name of the selected file.

File format list

Lets you select which file format to display.

The following options are only available in the **File Browser** window in the Audio Montage workspace:

Select Audio Files

Shows only audio files.

Select Audio Montages

Shows only audio montages.

Auto-Play mode

Starts playback automatically for the selected file.

Play selected audio file

Plays the selected audio file.

Tab Groups

With tab groups, you can view the content of different files and meters at the same time, without having to navigate through different windows.
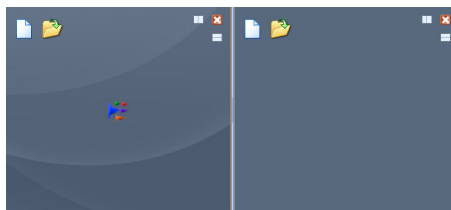
2 empty tab groups in the Audio Montage workspace

You can have two tab groups. Each tab group has its own content and title bar. In the Audio Files workspace, each tab contains an audio file. In the Audio Montage workspace, each tab contains an audio montage.
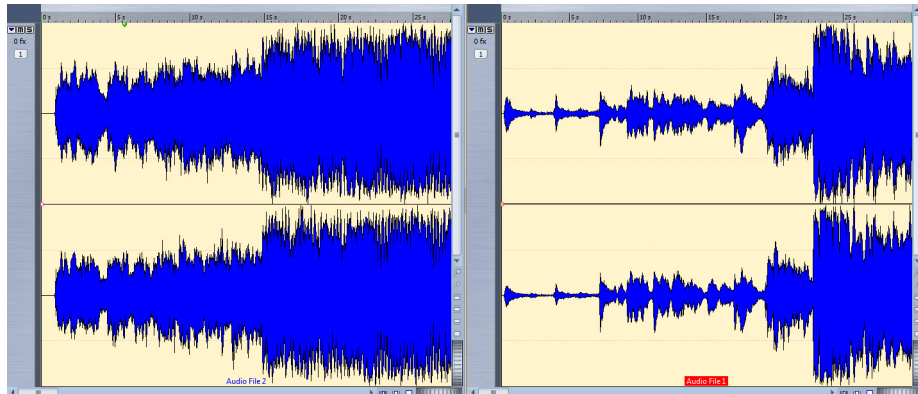
2 tab groups with audio montages in the Audio Montage workspace

Using Tab Groups

Tabs are used differently depending on the type of window.

- To add a tab group, select **Workspace > Add Tab Group at right** or **Workspace > Add Tab Group below**.

- To remove an empty tab group, activate the tab group, and select **Workspace > Remove active Tab Group**.

- To use one of the tab group layout presets, select **Workspace > Tab Group presets**, and select a layout.

- To reorder tabs, drag the tab to a new position on the tab bar.

- To move a tab to another workspace, drag the tab to another workspace.

- To paste the content of a tab into an audio file, drag the tab onto the waveform. The tab is inserted at the cursor position.

- To create an empty file inside a tab group, double-click an empty part of the tab bar. The created file uses the active file as template.

Peak Files

A peak file (extension ".gpk") is automatically created by WaveLab Elements each time an audio file is modified or opened in WaveLab Elements for the first time. The peak file contains information about the waveform and determines how it is drawn in the wave window or the montage window.

Peak files speed up the time it takes to draw the corresponding waveform.

By default, the peak file is stored in the same location as the audio file.

Rebuilding Peak Displays

Normally, peak files are automatically updated when the peak file's date is older than the audio file's date. However, it can happen that the date of the audio file is wrong and therefore not automatically updated. In this case you can force a rebuild of the peak file.

PROCEDURE

- In the Audio Files workspace, select **View > Rebuild peak display**.

Companion Files

Companion files (extension ".vs") store Master Section presets and view settings for audio files. If this feature is activated when you save a file, the stored settings are recreated the next time that you load the file.

Companion files are only available in the Audio Files workspace.

The following view settings are included in companion files:

- Window size and position

- Zoom level

- Scroll position

Storing Companion Files in Another Location

By default, companion files are stored in the same location as the audio file. However, you can select another file location.

PROCEDURE

1. In the Audio Files workspace, select **Options > Folders**.

2. Select **Companion files**, and specify another file location.

Program Overview

Command Bars

Commonly used tools, shortcuts, and commands are represented by command buttons. Related buttons are grouped into various **Command bars**.

Command bars in the Audio Files workspace

You can dock **Command bars** to any window edge or open them in a separate window, and rearrange them freely. Each workspace has an appropriate set of command bars that can be displayed. All the commands that are represented by the command buttons are also available on the menus.

Hiding and Showing Command Bars

You can hide command bars that are irrelevant for your project.

- To view a list of available command bars, in the Audio Files workspace or the Audio Montage workspace, right-click an empty part of the top edge of the workspace, or select **Workspace > Command bars**.

34

Docking Command Bars

Command bars can either be used as separate floating windows or docked at the top, bottom, left, or right side of the workspace window.

- To make a command bar floatable, right-click the bar, and select **Floatable**. Then click the dots on the left side or the top of the command bar to drag the bar to another location.

- To dock a floating command bar, right-click the bar, and select **Floatable**. Then click the dots on the left side of the command bar to drag the bar to the top, bottom, left, or right side of the workspace window.

Status Bar

The status bar at the bottom of the screen of the Audio Files workspace and the Audio Montage workspace shows information about the active window using the units specified in the rulers.

The information displayed on the status bar is updated depending on the cursor position and on the audio selection that you have made.
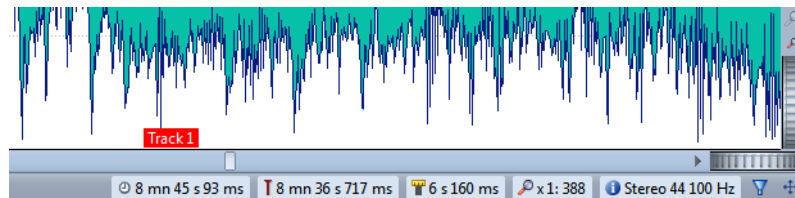
Time/Level (dB)

Displays the time of the audio file at the mouse cursor position. In the Audio Files workspace, it also displays the level.

Audio information at edit cursor

Displays the time at the position of the edit cursor. This information changes when you reposition the cursor.

- To define the cursor position, click the indicator to open the **Cursor position** dialog.

- To focus the cursor position, right-click the indicator.

Audio selection indicator (Audio Files workspace)

In the Audio Files workspace, this displays the length of the current selection, or the total length of the audio file if no selection has been made.

When you have zoomed in, you can right-click the indicator to display the selected audio range, the focused clip, or the whole file. Left-click the indicator to open the **Audio Range** dialog, where you can define or refine a selection.

Zoom indicator

Displays the current zoom factor.

- To open a pop-up menu, where you can make additional zoom settings, click the indicator.

- To open the **Zoom factor** dialog, where you can edit the zoom factor, right-click the indicator.

Sampler key indicator (Audio Files workspace only)

Indicates the key of the current audio file (if defined). Click the indicator to open the **Sample Attributes** window.

Audio properties indicator

In the Audio Files workspace, this displays the bit resolution and the sample rate. It also indicates whether the audio file is mono or stereo. Click the indicator to open the **Audio properties** dialog.

In the Audio Montage workspace, this displays the number of audio channels and the sample rate of the audio montage. Click the indicator to open the **Audio Montage properties** dialog.

Play through Master Section

If this button is activated, the audio is played through the Master Section. If the button is deactivated, the Master Section is ignored.

Document button (drag and drop)

Allows you to drag the current file into another file, for example, an audio file to the Audio Montage workspace. This is equivalent to dragging the file tab.

Background information

The status bar shows the progress of some background operations, such as rendering an effect. The operation can be paused or canceled using the provided buttons.

36
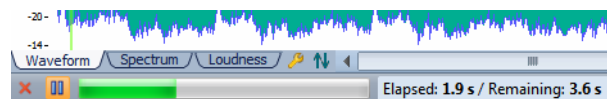
Context Menus

Throughout WaveLab Elements, various context menus are available. These menus group the commands and/or options that are specific to the current working window.

The context menus appear when you right-click certain areas and are useful for speeding up your workflow.

For example, right-click a file tab to open a context menu with some relevant file options. Right-click the ruler of the waveform window brings up the **Time Ruler** context menu that allows you to access a number of options for changing the time ruler display format.

You can find most context menu commands in the main menus, but some commands are only available in context menus. When you search for a function, right-click the current working window to check if it has a context menu.
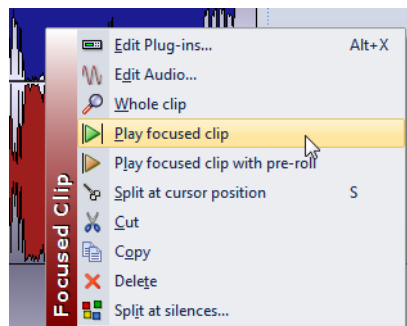
Context menu in the montage window

Time Ruler and Level Ruler

In the Audio Files workspace, you can display a time and a level ruler in the wave window. In the Audio Montage workspace, you can display a time ruler in the montage window.

You can also determine which time and level units the rulers show.

Time ruler	Level ruler (Audio Files workspace only)
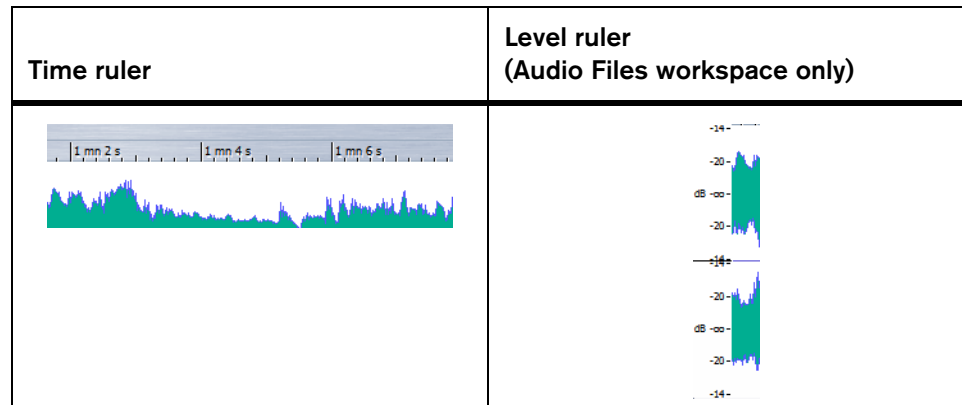
Time Ruler and Level Ruler Options

You can specify the time and level (amplitude) formats for each ruler in each wave window and the time formats for each ruler in the montage window separately by right-clicking the ruler, and selecting a format from the pop-up menu.

Time Ruler Menu

Timecode

Displays a list of frames per second for various SMPTE timecodes and for CD resolution.

Clock

Displays time units.

Samples

Positions are shown as number of samples. The number of samples per second depends on the sample rate of the audio file. For example, at 44.1 kHz, there are 44100 samples per second.

Bars and beats

If this is selected, the ruler is linear relative to the meter position.

File size (Audio Files workspace only)

Shows positions in MegaBytes. Decimals represent KiloBytes.

Show grid (Audio Montage workspace only)

Displays vertical lines in the montage window, aligned with time ruler marks.

Time format

Opens the **Time format** dialog, where you can edit the appearance of the time ruler formats.

Save current settings as default

If this option is activated, the time ruler uses the current time format in all new wave windows or montage windows.

Set ruler's origin to start of file

If this option is activated, the ruler's zero position is set to the beginning of the first sample.

Set ruler's origin at cursor

If this option is activated, the ruler's zero position is set to the current cursor position.

Set ruler's origin to BWF reference (Audio Files workspace only)

If this option is activated, the first sample matches the BWF time reference, provided that the time reference is available.

Level Ruler Menu (Audio Files workspace only)

dB

Sets the level format to decibels.

+-100%

Sets the level format to percentage.

Normalized +1/-1

Sets the level format to a ruler gradation corresponding to 32-bit float audio.

16-bit range

Sets the level format to a ruler gradation corresponding to 16-bit audio.

24-bit range

Sets the level format to a ruler gradation corresponding to 24-bit audio.

Save current settings as default

If this option is activated, the level ruler uses the current level format in all new wave windows.

Time Format Dialog

In this dialog, you can customize the time format. The time format of the ruler is also used in various time fields, for example, the status bar and certain dialogs.

In the Audio Files workspace, depending on whether you want to set the time format for the overview display or the main view display, select **View > Overview display > Time ruler > Time format** or **View > Main view display > Time ruler > Time format**.

In the Audio Montage workspace, select **View > Time ruler > Time format**.

Timecode Tab

On this tab, you can configure the appearance of the **Timecode** option.
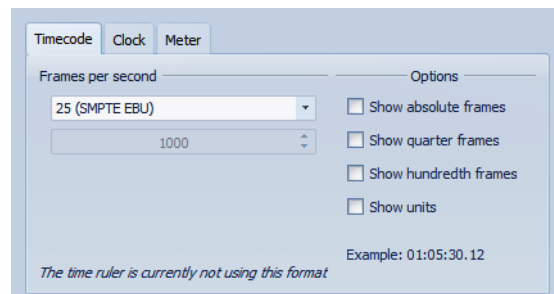
Frames per second

List of standard frame rates. From the drop-down menu, select **Other** to enter a custom frame rate. You can also choose which frames/units are displayed.

Show absolute frames

Shows the time format as a number of frames, without other time elements.

Show quarter frames

Adds the quarter frame number to the time format.

Show hundredth frames

Adds the number of a hundredths of a frame to the time format.

Show units

Adds time units to the time format of the ruler.

Clock Tab

On this tab, you can configure the appearance of the **Clock** option.
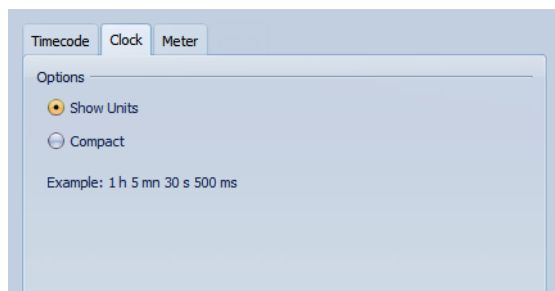
Show Units

Adds time units to the time format of the ruler.

Compact

Shows the time without unit indicators.

Meter Tab

On this tab, you can configure the appearance of the **Bars and beats** option.
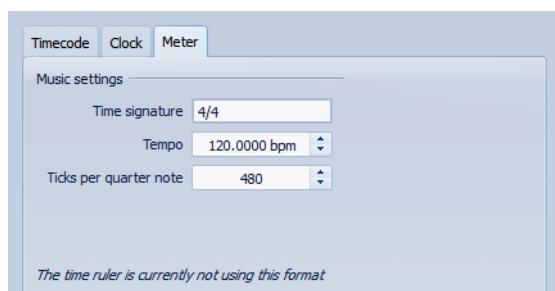
Time signature

Lets you edit the time signature used to display the time represented as a musical notation.

Tempo

Lets you edit the tempo used to display the time represented as a musical notation.

Ticks per quarter note

Lets you edit the number of ticks per quarter note that are used to display times that are compatible with your sequencer.

Setting the Cursor Position

Many operations, such as playback and selection, depend on the current cursor position. For example, playback often starts at the cursor position. The current cursor position is indicated by a vertical flashing line.

There are various ways to move the cursor:

- Click somewhere in the wave window, the montage window, or the time ruler. If you have made a selection, click the time ruler to prevent deselecting.

- Click and drag in the time ruler.

- Use the transport controls.

- Select **View > Move cursor to**, and select an option.

- Use the cursor keys.

- Double-click a marker.

Working With a Meter-Based Display

If your working material is tempo-based, you can select the meter format (bars, beats, and ticks) for the ruler legend. This makes it easier to find musically related cutting points.

PROCEDURE

1. In the wave window or the montage window, right-click the time ruler, and select **Bars and beats**.

2. Right-click the time ruler, and select **Time format**.

3. On the **Meter** tab, set the **Time signature** and **Tempo** to values that match your audio file.

4. Set the **Ticks per quarter note** setting to a number that you feel comfortable with.

   For example, this can be the same value that is used by your MIDI sequencer.

5. Click **OK**.

Value Editing

At various places in the program, numerical values can be edited by using a combination of text fields and spin controls.

These values are sometimes composed of several parts, for example, 12 mn 30 sec 120 ms. Each value can be edited by using any of the following methods:

▪ To change a value, click in a value field and type a new value, or click the small arrows in the value field.

▪ To change the value by one unit at a time, press the [Left Arrow] and [Right Arrow] keys.

▪ To change the value by several units, press the page up and page down keys.

▪ To change the value using the mouse wheel, position the mouse cursor over a value, and spin the mouse wheel, or use the AI knob of your MIDI controller.

▪ To change the value with the mouse, click a value and drag the mouse up or down.

▪ To jump to the maximum and minimum values, press the [Home] and [End] keys.

▪ To move from one part of the value to another, press the [Left Arrow] and [Right Arrow] keys.

Drag Operations

WaveLab Elements makes much use of drag-and-drop techniques to perform various operations, some of which cannot be performed otherwise. These are referred to as drag operations in this documentation.

▪ To drag an object, click and hold with the mouse when positioned on the object and drag it. Drop the object by releasing the button.

Many types of objects can be dragged between different source and destination locations including files, text, clips, items in a list, and markers.

NOTE

It is also possible to drag and drop files from WaveLab Elements to Steinberg's Nuendo.

Drag objects within and between workspaces to perform the following operations:

- To dock a tool window, drag its title bar to any side of the workspace, beside or above another tool window.

- To move a command bar, drag the bar grip at the left-hand end of a command bar and reposition it.

- To reorder a tab within its own tabbed group, drag horizontally. To move a tab to another workspace, drag vertically.

- To drag any object to another workspace, use the Central Switcher bar. Drag the object over the corresponding workspace icon in the Central Switcher bar, wait until the new workspace becomes active, and drag the tab in the target workspace.

- To open a file, drag a compatible file from the **File Browser** window of WaveLab Elements, from the file browser of the operation system, or from another application to the tab bar.

- To create a copy of a file, drag its tab vertically to another position of the tab bar, then press [Ctrl]/[Option], and release the mouse button.

Dragging in the Audio Files Workspace and Audio Montage Workspace

- To insert an audio file in another audio file, drag the title bar tab or document button of the file onto the waveform area of another file. You can also drag an audio file directly from the **File Browser** window, the file browser of your system, or from another application into the Audio Files workspace.

- To move a marker, drag it along the time ruler.

- To create a copy of this marker, press [Shift], and drag it to another position on the time ruler.

- To delete a marker, drag it above the time ruler.

- To copy an audio selection, drag a selected region of audio onto the waveform area of the same file or another file.

- To change the extent of a selection range, position the edit cursor at the start/end of the selection range, and drag to the left or right.

- To move the edit cursor without losing the current selection, and to snap it to an anchor, press [Shift], and move the mouse near the audio file/montage cursor. The mouse cursor shape changes and you can drag the cursor left and right.

- To move the edit cursor without changing or losing the current selection, press [Shift], click the edit cursor, and drag it to another position.

- To scroll the waveform horizontally, click the bar above the time ruler and drag left or right. You can also click anywhere on the waveform using the 3rd mouse button, and drag left or right.

- To create a generic marker from a selected text, drop text that you have selected in an external application onto the time ruler. The text becomes the marker's name.

- To create a stereo copy of a mono file, or a mixed copy of a stereo file, drag a tab to another position of the tab bar, press [Ctrl]-[Alt] (Windows) or [Options]-[Ctrl] (Mac), and release the mouse button.

Dragging in the Podcast Workspace

- To reorder episodes in the episodes list, drag them to another position.

Dragging in the Master Section

- To change the order of processing, drag effects between different effects slots.

Undoing and Redoing

You can undo and redo as many steps as you like. The only limitation is the available hard disk space.

By default, when undoing or redoing any operation in the Audio Files workspace or the Audio Montage workspace, the zoom factor, cursor position, scroll position, clip selection status, and time range are restored to the state before the operation occured.

- To undo a step, in the Audio Files workspace or Audio Montage workspace, select **Edit > Undo**.

- To redo a step, in the Audio Files workspace or Audio Montage workspace, select **Edit > Redo**.

Zooming

There are several zooming functions in the Audio Files workspace and Audio Montage workspace.

Horizontal Zooming

- When you zoom out as far as possible, the entire file fits in the window.

- When you zoom in as far as possible, each sample occupies several pixels on the screen. This allows for single sample-accurate editing of waveforms.

Vertical Zooming

- When you zoom out as far as possible, the height of the wave fits in the window.

- As you progressively zoom in, the display only shows a part of the total height. The vertical scrollbars lets you adjust exactly which section is shown. Check the ruler to see which part of the waveform is currently shown in the display.

- To optimize the vertical zoom of the waveform, press [Ctrl]/[Command], click and hold the time ruler, and move the mouse up or down.

High Zoom Level

- When the zooming level is very high, each sample is shown with a step and a bullet. The steps show the real digitized state, while the bullets make it easier to see the samples, especially for zeroed samples.

- The curve also represents an estimation of the analog reconstructed signal to give hints on true peaks.
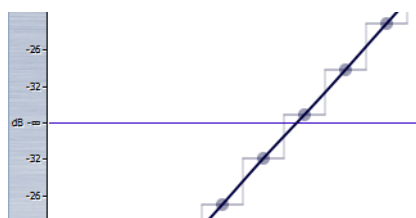
Zooming in the Overview and Main View Sections (Audio Files Workspace Only)

- You can have different zoom levels in the overview and main view section. In the overview, a range indicator on the time ruler indicates which section of the file is currently displayed in the main view. The range indicator is only shown if the option **Sync with other view** is deactivated.
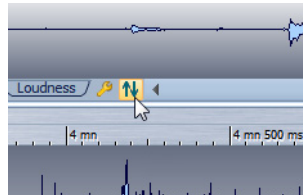
- To adjust the zoom level, drag the edges of the range indicator.

- To scroll in the main view, drag the range indicator.
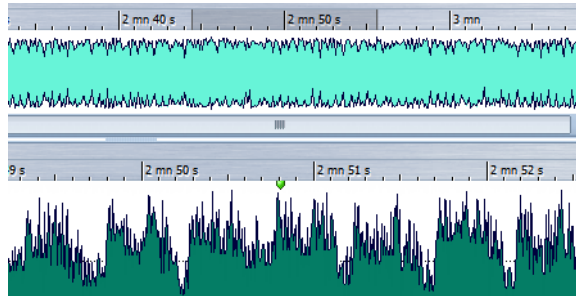
Range indicator at the top of the overview display

- To adjust the zoom level using the scrollbar, drag the edges of the scrollbar.
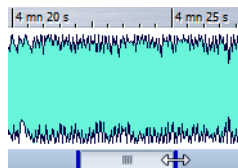
Zooming Using the Zoom Controls

Both the main view and the overview have horizontal and vertical zoom controls.

- To zoom horizontally, click the **Horizontal zoom** control, and drag left or right, or use the mouse wheel.

- To zoom vertically, click the **Vertical zoom** control, and drag up or down, or use the mouse wheel.

- To fully zoom-out, double-click the zoom controls.

Zooming Using the Magnifying Glass Tool

The Magnifying Glass tool is used to zoom in a specific section of the waveform so that is occupies the entire wave window. This is only available in the Audio Files workspace.
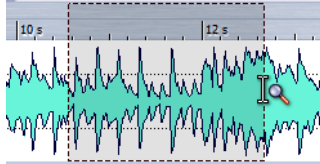
Using the Magnifying Glass Tool in the Main View

The selection that you make in the main view of the wave window is magnified and fills up the entire main view.

PROCEDURE

1. In the Audio Files workspace, activate the Magnifying Glass tool by doing one of the following:
   - Click the Magnifying Glass icon.
   - Hold down [Ctrl]/[Command].

2. In the main view of the wave window, click and drag left or right, and release the mouse button.

   The selected part of the wave now occupies the entire main window.

Using the Magnifying Glass Tool in the Overview

The selection that you make in the overview of the wave window is displayed in the main view.

PROCEDURE

- In the overview of the wave window, click and drag left or right, and release the mouse button.

RESULT

The selected range of the waveform is shown in the main view.

Zooming Using the Mouse

With the mouse, you can change the zoom factor by clicking and dragging or by scrolling the mousewheel.

- To zoom horizontally, in the wave window or the montage window, position the mouse cursor over the time ruler, click, and drag up or down.

- To zoom horizontally while maintaining the cursor position, position the mouse cursor over the time ruler, press [Shift], and drag up or down.

- To zoom horizontally using the mousewheel, press [Ctrl]/[Command], point at a waveform, and move the mousewheel.

- To zoom vertically using the mousewheel, press [Shift], point at a waveform, and move the mousewheel.

Audio Files Workspace Only

- To zoom vertically, in the wave window, position the mouse cursor over the level ruler, click, and drag left or right.

- To reset the vertical zoom to 0 dB, double-click the level ruler.

- To set the vertical zoom to the best value that is the current minimum and maximum displayed samples, make sure that the level ruler is set to 0 dB, and double-click the level ruler.

Zooming Using the Keyboard

A quick way to zoom the active wave or montage window is to use the arrow keys on the computer keyboard.

- To zoom horizontally in the active wave window or montage window, press [Arrow Up] or [Arrow Down].

- To zoom vertically in the active wave/montage window, hold [Shift], and press [Arrow Up] or [Arrow Down].

- To zoom vertically to fit the available height, press [Ctrl]/[Command]-[Shift]-[Arrow Up].

- To zoom out fully, press [Ctrl]/[Command]-[Arrow Down]. To zoom in fully, press [Ctrl]/[Command]-[Arrow Up].

Zoom Menu

The zoom menu allows you to quickly access various zoom settings.

In the Audio Files workspace or the Audio Montage workspace, select **View > Zoom**.

View all

Zooms out as far as possible.

Zoom in on 1 minute/30 seconds/10 seconds/.../500 ms

Adjusts the zoom to display the selected time range.

Zoom in 1:1

Zooms in so that one pixel on the screen represents one sample.

Microscope

Zooms in as far as possible.

Zoom selection

Zooms the window so that the current selection occupies the entire wave/montage window.

Zoom in on selected clips (Audio Montage workspace only)

Zooms in to display all selected clips in the wave/montage window.

Zoom in audio

Zooms in in small steps.

Zoom out audio

Zooms out in small steps.

Edit

Opens the **Zoom factor** dialog, where you can edit the zoom factor.
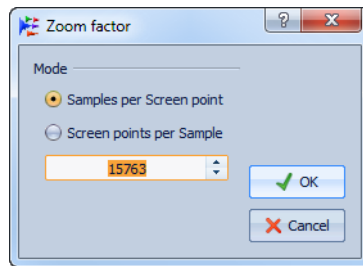
- **Samples per screen point** allows you to specify how many audio samples are summarized in each screen point.

- **Screen points per sample** allows you to specify how many screen points are used to represent a single audio sample.

Reset vertical zoom to 1:1

Adjusts zoom to display audio levels up to 0 dB.

Optimize vertical zoom

Changes the vertical zoom factor so that the peaks are clearly visible. This adjustment is done according to the section of the wave that is currently visible in the wave/montage window.

Optimize vertical zoom (Audio Files workspace only)

Zooms in to display all audio peaks in the wave window.

Zoom to -12db/-24db/…/-96db

Adjusts the zoom to only display samples below the selected dB value.

Zoom in vertically

Zooms in to show waveforms with a lower level.

Zoom out vertically

Zooms out to show waveforms with a higher level.

About Zooming in the Audio Montage Workspace

Zooming options in the Audio Montage workspace are almost similar to those in the Audio Files workspace. However, there are additional zooming options for tracks and the **Zoom** window for displaying a close-up view of the beginning of the focused track.

Zoom Buttons in the Audio Montage Workspace

The zoom buttons in the Audio Montage workspace allow you to apply zoom presets.

- To only display the focused track, or also the tracks below and/or above the focused track, click the corresponding buttons.
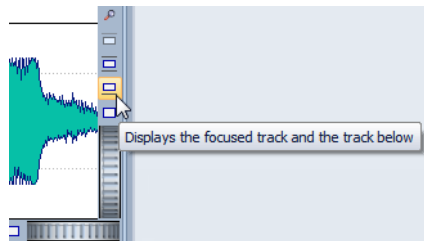
- To set the zoom setting to fit the focused clips in 25%, 50%, or 100% of the available space, click the corresponding buttons.
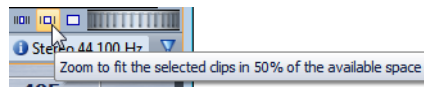
- To select a certain area, click [Ctrl]/[Command], and drag the rectangle over the tracks and clips that you want to zoom in.

Displaying More or Less Tracks

The number of tracks that are displayed in the Audio Montage workspace can be changed with the magnification controls in the lower right corner of the montage window.

- To display more tracks, click the smaller magnifying glass icon.
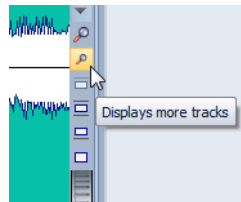
- To display less tracks, click the larger magnifying glass icon.

- To make a single track fit the whole montage window, click the numbered button to the left of a track, and select **Zoom** from the pop-up menu. You can also right-click the lower area of a track, and select **Whole clip** from the pop-up menu.

Managing Tabs

A tab is a container for a file in WaveLab Elements. You can open several tabs, but only one can be active at a time. The **Tabs** menu allows you to sort and close tabs and navigate between the tabs.

Close/Close all but active/Close all

Closes the active tab, all tabs except the active tab, or all tabs.

Select files to close

Opens a dialog in which you can specify the files to be closed.

Sort

Lets you sort the tabs by name, date, or modification date. If several tab groups exist, only the active tab group is sorted.

Activate next/previous

Selects the next/previous tab.

Pick list

Opens a list of all open tabs. To open a tab, double-click it.

Files to Close Dialog

In this dialog, you can specify which files you want to close.

In any workspace, except the Control Window workspace, select **Tabs > Select files to close**.
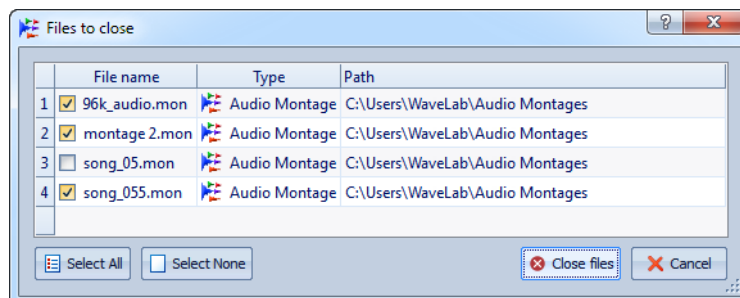
Files list

Displays all open files. You can set a checkmark for the files that you want to close. By default, only the active file will remain open and all other files will be closed.

Select all

Select all files in the list.

Select none

Deselects all files in the list.

Close files

Closes the files.

Presets

You can create presets to save commonly used settings. WaveLab Elements provides a selection of presets that can be used by most dialogs.

You can save customized presets. The next time that you load the program, the presets are available.

Presets are saved as single files and can be organized in subfolders. The root folder of the preset is different for each type of preset and cannot be changed.

Saving a Preset

Saved presets can be used to apply commonly used settings to dialogs or plug-ins.

PROCEDURE

1. Open the dialog that you want to use, and modify the parameters.

2. Select the **Preset** menu, and select **Save as**.

3. Optional: Click the folder icon, and select a name for a subfolder in which you want to save the preset.

4. Type in a name, and click **Save**.

Loading Presets

To apply a saved preset to a dialog or plug-in, you must load the preset.

PROCEDURE

- Inside a dialog, click the **Presets** menu, and select the preset that you want to apply to the dialog.

Modifying a Preset

You can modify a preset and save the changes.

PROCEDURE

1. Open the dialog that you want to use, and load the preset that you want to modify.
2. Modify the parameters of the dialog.
3. Click the **Preset** menu, and select **Save**.

Deleting a Preset

PROCEDURE

1. Open the dialog that you want to use and select the preset that you want to delete.
2. Click the **Presets** menu, and select **Organize presets**.
3. In the Explorer window, select the preset file that you want to delete, and press [Delete].

Storing and Restoring Temporary Presets

Some dialogs allow you to save and load up to 5 temporary presets. This is useful if you want to quickly test and compare different settings.

Storing Presets

PROCEDURE

1. Open the dialog that you want to use, and make your settings.
2. Click the **Presets** menu, and from the **Store temporarily** submenu, select a slot.

Restoring Presets

PROCEDURE

1. Open the dialog in which you have saved a preset.
2. Click the **Presets** menu, and from the **Restore** submenu, select a preset.

Saving a Picture of the Active Window

You can save a picture of the active window in the BMP, JPG/JPEG, or PNG file format, or copy it to the clipboard.

NOTE

Plug-in windows are not included in the picture.

PROCEDURE

1. Click in the window for which you want to save a picture.

   For example, click in the wave window or the montage window.

2. In the Audio Files workspace or the Audio Montage workspace, select **View > Save picture of active window**.

    The **Save picture of active window** dialog opens.
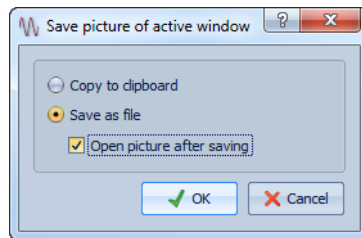
3. In the **Save picture of active window** dialog, you have the following options:

    ▪   To copy the picture to the clipboard, activate **Copy to clipboard**.

    ▪   To save the picture in a specified file format, activate **Save as file**. Optionally, you can activate **Open picture after saving**.

4. Click **OK**.

    ▪   If you have activated **Copy to clipboard**, the picture is copied to the clipboard.

    ▪   If you have activated **Save as file**, the **Save as** dialog opens where you can specify the file location, file format, and file name. Click **Save** to confirm your settings.
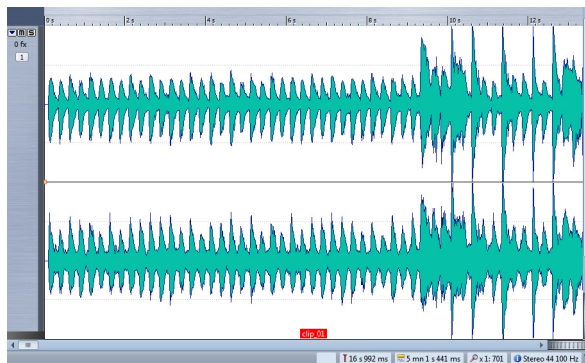
    If you have set the montage window as the active window, the resulting picture could look like this.

File Operations

Recently Used Files

All files that you have recently used in WaveLab Elements are saved in a list. This helps you to gain fast access to recent projects. You can open recently used files via the **File** menu.

Setting the Number of Recently Used Files

PROCEDURE

1. In any workspace, select **Options (WaveLab menu on Mac) > Global preferences > Display**.

2. In the **Miscellaneous options** section, set the maximum number of items that you want to list in the following areas:
   - Recent file menus
   - Recent file manager
   - Recent folders menu

3. Click **OK**.

Save and Save As

- When you save a file for the first time, it does not matter whether you select **Save** or **Save as**.

- Once a file has been saved, select **File > Save**, or press [Ctrl]/[Command]-[S] to update the file and make the changes permanent.

- If you want to specify a new name, location, and/or file format, select **File > Save as**.

- In the Audio Files workspace, all save operations except **Save Copy** clear the undo history, which means that after saving you cannot undo or redo.

About Tab Colors

Tab colors give information on whether a file is saved or not.

The following colors can be shown:

Orange
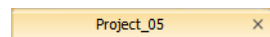
The file is saved.

Green (Audio Files workspace only)
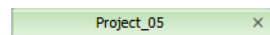
The file uses a decoded file format and is saved.

Purple
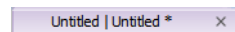
A new file that is not empty but has not been saved yet. For example, when creating a new file and pasting content into it.

Red
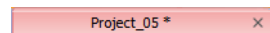
The file has been modified and changes have not been saved yet.

Unsaved Changes Indicator

When you have made changes to a file, an asterisk is displayed next to the file name until you save the file and the tab changes its color.
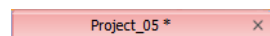
Save Multiple Files at Once

You can save some or all open files at once.

PROCEDURE

1. In any workspace, except the Control Window, select **File > Save all**.
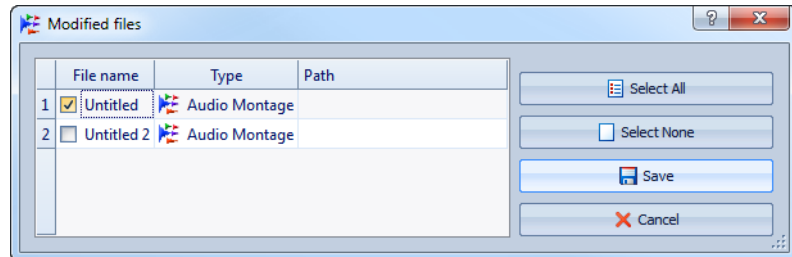
2. Select the files that you want to save.

3. Click **Save**.

Reverting to Saved File

You can revert the file you are working on back to its last saved state. This undoes all the changes made to the file since it was last saved.

PROCEDURE

1. In any workspace, except the Control Window, select **File > Revert to saved**.

2. In the warning dialog, click **Yes** to revert to the last saved state.

RESULT

The last saved version of the file is loaded from disk.

Automatic Backups

Backups are created automatically if a file with the same name already exists.

For example, if you select **Save As** and specify a file name already used in that folder, you will be asked if you want to back up the existing file first. If you click **Yes**, the backup name will be the original name, with ".bak" added at the end.

About Saving Audio Montages

The saving operations for audio montages are the same as for audio files. However, there are things to note when saving audio montages.

- Audio montage files only contain references to audio files. If you want to rename audio files referenced by audio montages, use the **Rename** dialog. All clip references are updated automatically.

- If the audio montage contains clips that refer to untitled audio files, save these audio files before saving the audio montage.

Templates

You can create a template from an active audio montage, audio file, Podcast, or batch processor document and use it as a basis for newly created files.

Creating a Template

Templates are useful when creating new audio files, audio montages, Podcasts, or batch processes.

PREREQUISITE

Set up the audio file, audio montage, Podcast, or batch processor file properties.

PROCEDURE

1. Select **File > Export > Template**.

2. In the **Save Template** dialog, do one of the following.
   - To create a new template, select **New**, enter a name, and click **OK**.
   - To update an existing template, select **Update**.

3. When saving or updating an audio file template or an audio montage template, you can make additional settings.
   - When saving an audio file template, the **Audio File Template Parameters** dialog opens. Here, select whether WaveLab Elements should propose a specific audio file configuration with optional meta-data when saving an audio file.

- When saving an audio montage template, the **Audio Montage Template Parameters** dialog opens. Here, select whether to include track plug-ins, clips, and/or markers. Also select whether WaveLab Elements should propose a specific audio file configuration with optional meta-data when rendering an audio montage.

4. Click **OK**.

Audio File Template Parameters Dialog

This dialog displays the audio properties of the audio file template that you are creating. You can also specify whether to always propose a specific audio file configuration with optional meta-data when creating an audio file template or not.

In the Audio Files workspace, select **File > Export > Template**.
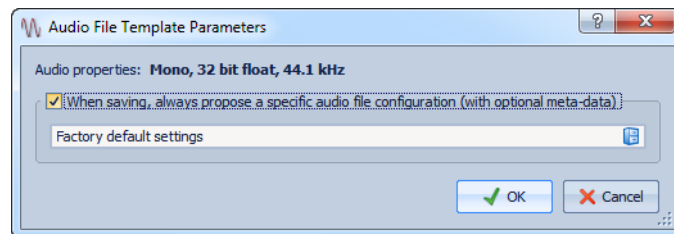
When saving, always propose a specific audio file configuration (with optional meta-data)

If this option is activated, whenever you open the **Render** or **Save as** dialogs, the audio file configuration specified below is proposed by default.

Audio Montage Template Parameters Dialog

In this dialog, you can set various options when creating an audio montage template.

In the Audio Files workspace, select **File > Export > Template**.
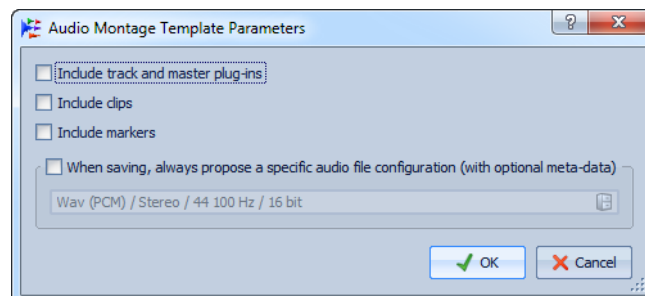
Include track and master plug-ins

If this option is activated, track plug-ins and master plug-ins are saved in the template.

Include clips

If this option is activated, clips are saved in the template.

Include markers

If this option is activated, markers are saved in the template.

When saving, always propose a specific audio file configuration (with optional meta-data)

If this option is activated, whenever you open the **Render** dialog, the audio file configuration specified below is proposed by default.

Setting a Template as Default

You can set a template as default template.

PREREQUISITE

Create a template with the settings that you want to use as default settings for a file.

PROCEDURE

1. In any workspace, except the Control Window, select **File > New from**.

2. From the templates list, select the template that you want to use as the default template.

3. Click **Set as default**.

4. Click **OK**.

RESULT

When you select **New**, a file based on the selected template is created. To remove the default template setting, click the **Do not set as default** button.

Creating a File From a Template

You can create a file from a template to use its settings.

PROCEDURE

1. In any workspace, except the Control Window, select **File > New from**.

2. From the list of the available templates, select the template that you want to take as the basis of the new file.

3. Click **Open**.

Create From Template Dialog

This dialog shows all templates. Here, you can open and delete them, and set a default template.

In the any workspace, except the Control Window, select **File > New from**. If no template exists, the dialog will not open.
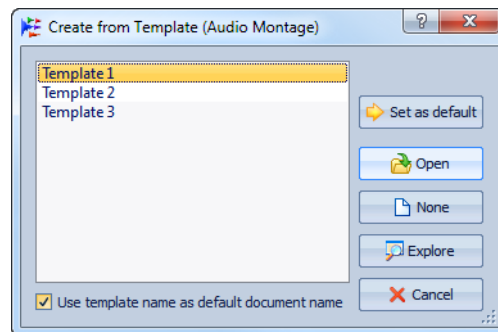
List of the available templates

Lists all saved templates.

Use template name as default document name

If this option is activated, the new file uses the name of the template. If this option is deactivated, the name of the new file is "untitled".

Set as default

Saves the selected template as default template.

Open

Creates a new file from the selected template.

None

Creates a new file without any reference to a template.

Explore

Opens the folder where the template files are located. Here, you can delete templates.

File Renaming

The **Rename** function allows you to rename a file and update all references automatically. For example, if you rename an audio file named "India" to "Sitar", all currently open files that reference the file "India" are updated to reference the file as "Sitar".

Audio files, peak, and marker files are also renamed accordingly.

Renaming a File

PROCEDURE

1. Select the file that you want to rename.
2. In any workspace, except the Control Window, select **File > Rename**.
3. Enter the new name and/or a new file location.
4. Select a file suffix from the drop-down list.
5. Click **OK**.

Rename File Dialog

In this dialog, you can choose a new file name, file extension, and folder location for the active file.

In any workspace, except the Control Window, select **File > Rename**.
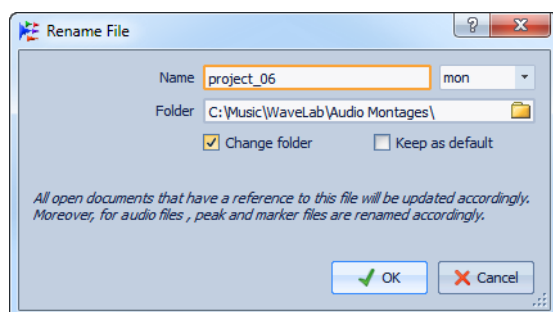
Name

Type in the new name.

File extension drop-down list

Select a case for the file extension.

Change folder

If this option is activated, you can change the folder location of the file.

NOTE

This is only possible within the same drive partition.

Keep as default

If this option is activated, the same path is selected next time you open the dialog. This is useful if you need to move several files successively.

Deleting Files

You can delete the currently active file from within WaveLab Elements.

PREREQUISITE

The file that you want to delete is not copied to the clipboard, is not pasted into another file that is open, and is not open in another application.

PROCEDURE

1.   Select the file that you want to delete.

2.   In any workspace, except the Control Window, select **File > Delete**.

3.   Click **OK**.

RESULT

The file including its peak and marker files, is deleted.

Special Menu

From this menu you can select various file related options, for example, you can add the active file to a Data CD/DVD, or Podcast.

In any workspace, except the Control Window, select **File > Special**.

Depending on the workspace, not all options are available.

Information

Displays information about the active file.

Add to Data CD/DVD

Adds the active file and all the related files to a Data CD/DVD.

Add to Podcast

Adds the active file to a Podcast.

Reveal in Windows Explorer/Mac OS Finder

Opens the Windows Explorer/Mac OS Finder to show the location of the active file.

Copy to clipboard

Opens a menu, from which you can select which information about the active file you want to copy to the clipboard.

Create a file link on the desktop (Windows only)

Creates a file link on the desktop. The link opens the file with the default application associated with the file type.

Temporary Files

Temporary files are used for certain operations, such as the undo/redo functions. You can specify where WaveLab Elements saves its temporary files.

For example, if your source files are located on the C: drive, you could specify D:\temp and E:\temp as temporary folders. This improves the performance and reduces disc fragmentation.

RELATED LINKS:

Work Folders vs. Document Folders

WaveLab Elements distinguishes between two types of folders: work folders and document folders.

In work folders, temporary files are stored. Document folders contain WaveLab Elements-specific files, such as wave files, audio montages, etc.

Specifying Folders

You can specify which folder should open when you perform any open or save operation (document folder). You can also specify up to three folders for temporary files (work folder).

PROCEDURE

1. Open the workspace for which you want to specify document folders.
2. Select **Options > Folders**.
3. Click the type of folder for which you want to specify a location.
4. Specify a location in the **Folder** field.
5. Optional: Depending on the selected type of folder, you can make additional settings.
6. Click **OK**.

Folders Dialog

In this dialog, you can specify default document folders and work folders for each workspace.

In any workspace, select **Options > Folders**.
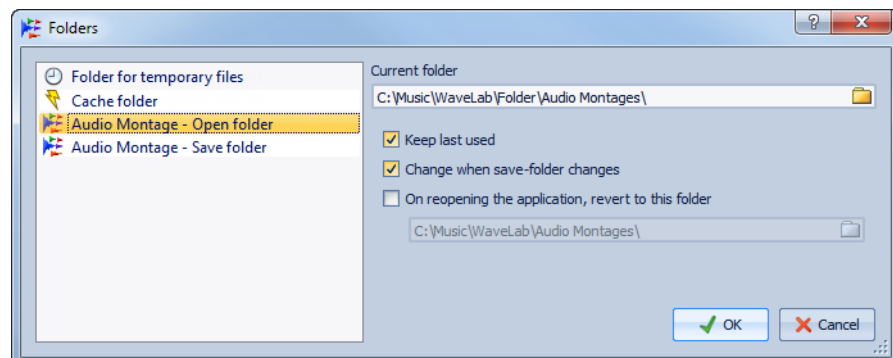
In the list to the left, you specify the folder type that you want to make settings for. The following options are available:

Folder for temporary files

Specify a folder for storing temporary files.

Companion files

Specify a folder for storing the companion files, that is Master Section presets and view settings for audio files.

Cache folder

Activating **Use cache folder for decoded files** allows you to specify a cache folder. The cache folder contains wave files that are created when you are working with files in compressed file formats, such as MP3 files. To prevent the cache folder to grow indefinitely, WaveLab Elements checks the date of each file in this folder and deletes files that were created before a certain number of days.

When **Use cache folder for decoded files** is deactivated, the compressed files are decoded each time they are opened.

Audio File - Open Folder/Save Folder

The default open and save folders for audio files.

Audio Montage - Open folder/Save folder

The default open and save folders for audio montage files.

Depending on the selected item, different settings are available on the right side of the dialog:

Current Folder

In this field, the folder that is currently used as default is displayed. You can click the folder button to the right to navigate to a folder, or to create a new folder.

Keep last used

Uses the last folder for saving or opening files of the selected type.

Change when save-folder/open-folder changes

Updates the default open folder when you change the default save folder, and vice versa. Activate this option for both the save folder and the open folder for a specific file type to use the same folder for saving and for opening this type of file.

On opening the application, revert to this folder

Activate this option to restore a specific folder each time you open WaveLab Elements. This way changes to save/open folders are only temporary and reset when you restart WaveLab Elements.

Setting the Focus on the Current File

If you are editing inside a floating window or a tool window and want to switch back the focus to a wave/montage window, you can use the **Set focus on current file** option.

PROCEDURE

- In any workspace, press [Win]/[Ctrl]-[ESC], to set the focus on the wave/montage window.

About Workspaces

A workspace provides an editing and playback environment for a particular audio file type. Each type of workspace has functions for its specific file types.

In WaveLab Elements, each file type has its own workspace designed for a specific purpose:

- Audio Files workspace for viewing and editing audio files.

- Audio Montage workspace for assembling and editing audio montages.

- Podcast workspace for preparing and uploading Podcasts.

A workspace is highly customizable to match your workflow. A workspace can appear as a simple window with a single menu or as a sophisticated arrangement of command bars, tool windows, tab groups, and active meters.

When a file is opened from a given workspace, it is added to the active tab group of this workspace.

You can drag files between workspaces if their formats are compatible. For example, you can drag an audio file from the Audio Files workspace to the Audio Montage workspace by using its tab bar or its document button.

Elements of a Workspace

The center of the workspace is about the data that you want to edit, and all the menus, command bars, tool windows, controls, and tools to help you with that.

Each workspace contains the following elements:

- A menu bar. Each workspace has a different menu bar, but certain menus are common for all workspaces and each menu can be customized in various ways. The workspace menu has a submenu to show/hide the available Command bars and tool windows.

- One or more **Command bars** with buttons for instant access to functions. Command bars can be customized extensively.

- **Tab groups** to host the files to edit. This is the central part of the workspace. You can move a tab to another workspace, create a new empty tab, display the file path, and access other functions by right-clicking.

- A set of **Specific tool windows**. Which tools are available depends on the workspace. They can be activated/deactivated individually.

- A set of **Shared tool windows**. The shared tools vary according to the workspace, and can be turned on or off individually. A shared tool window is a global window that is located in one workspace at a time.

Audio Files Workspace

This workspace provides tools and functions for sample-accurate audio editing, high-quality analysis, and processing. It is the environment commonly known as an audio editor.

It includes various metering tools.

The wave window gives you a graphical representation of the audio file and allows you to view, play back, and edit the file.

Audio Montage Workspace

In this workspace, you assemble audio clips into a montage. You can arrange, edit, and play back clips on both stereo or mono tracks.

Features include both track- and clip-based effects, volume and pan automation, and wide-ranging fade and crossfade functions.

You can place any number of clips, on an audio track. A clip contains a reference to a source audio file on your hard disk, as well as start and end positions in the file.

The montage window gives you a graphical representation of clips on tracks. In it you can view, play back, and edit the tracks and clips.

Podcast Workspace

In this workspace, you assemble, define, and publish your Podcast to the internet.

RELATED LINKS:
"Podcasts" on page 293

Opening Files in a Workspace

You can open files in the workspace that you are working in and in any other workspace, without having to switch workspaces first.

- To open a file in a workspace, select **File > Open**. From the file browser, select the workspace file that you want to open, and click **Open**.

- On the **Central switcher bar**, click a workspace icon, and select **Open**. From the file browser, select the file that you want to open, and click **Open**.

Organizing Workspace Windows

For working with several workspace windows, WaveLab Elements offers functions to organize the windows.

- To lock a workspace layout, activate **Workspace > Lock layout**. This prevents you from moving or closing tool windows.

- To automatically move the shared tool windows to the newly activated workspace, every time you switch between workspaces, activate **Workspace > Auto move shared tool windows**.

- To activate full screen view, select **Workspace > Full screen view**.

- To specify the workspace position on the screen, select **Workspace > Position on screen**, and select an option.

- To bring all workspace windows to front, select **Workspace > Bring all to front**.

- To cascade all workspace windows, select **Workspace > Cascade all**.

- To switch between the previously selected workspace window and the active workspace window, select **Workspace > Switch to previous workspace**, or press [F5].

- To close the active workspace, select **Workspace > Close**.

About Tool Windows

Throughout WaveLab Elements there are various tool windows available that allow you to view, analyze, and edit the active file.
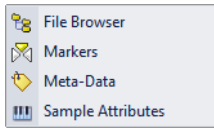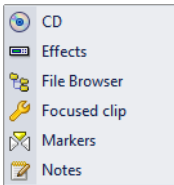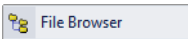
Generally, the content of a tool window is synchronized with the active file, with the exception of the audio meters which displays the audio file being played back. Tool windows can be docked and undocked, and saved in your custom layouts. There are two types of tool windows available:

- Specific tool windows

- Shared tool windows

The tool windows can be accessed via the **Workspace** menu.

Specific Tool Windows

Specific tool windows are windows that are specific to the current workspace. The following specific tool windows are available:

Audio Files workspace	Audio Montage workspace	Podcast workspace
File Browser Markers Meta-Data Sample Attributes	CD Effects File Browser Focused clip Markers Notes	File Browser

Shared Tool Windows

The difference between specific and shared tool windows is that there can only be a single instance of a shared window in WaveLab Elements. For example, a single Master Section, or a single level meter.

When you open a shared tool window in another workspace it undocks and moves from its original workspace, if this option is activated. An empty tab container with a title bar remains in its previous workspace. You can set the moving behavior by activating/deactivating **Workspace > Auto move shared tool windows**.

A shared tool window, if docked, can only appear in a single workspace at a time. To retrieve a shared tool window from another workspace, click the tool window. For example, if you have the Level Meter displayed in the Audio Montage workspace and you want to display it in the Audio Files workspace, click the icon in the Level Meter window of the Audio Files workspace.

The following shared tool windows are available:

Audio Files workspace and Audio Montage workspace
Level Meter Spectroscope Oscilloscope Master Section

Opening and Closing Tool Windows

You can close all tool windows you do not need for your project.

- To open or close a specific tool window, select **Workspace > Specific tool windows**, and select a tool window, or use the **Specific Tool Windows** command bar.

- To open or close a shared tool window, select **Workspace > Shared tool windows**, and select a tool window, or use the **Shared Tool Windows** command bar.

- To close a tool window, move the mouse on the left side or the top of the window, and on the toolbar that appears, click **Close**.

Tool Windows Command Bar

On the **Specific Tool Windows** and **Shared Tool Windows** command bars you can quickly switch tool windows on and off, without having to navigate through a menu.

To open or close the **Shared Tool Windows** command bar, select **Workspace > Command bars > Shared Tool Windows**.

Shared Tool Windows command bar in the Audio Montage workspace

To open or close the **Specific Tool Windows** command bar, select **Workspace > Command bars > Specific Tool Windows**.

Specific Tool Windows command bar in the Audio Montage workspace

Docking and Undocking Tool Windows

Tool windows can be used as docked windows or as floating windows. They can be freely dragged around and docked at various locations. Command bars can also be freely moved around and docked along the edges of most windows.

To dock/undock a tool window, use one of the following methods:

▪ Double-click the title bar, located on the left or the top of the tool window.

▪ Click the double window icon at the top left corner of the window.

▪ Drag the tool window title bar of a specific tool window. To dock the tool window, drag it by its title bar to another position.

To prevent an undocked tool window from docking, use one of the following methods:

▪ Hold down [Ctrl]/[Command] before dragging the tool window.

▪ Activate the **Floating versus docking priority** icon on the left or the top of the tool window.

Differences Between Windows and Mac OS

Floating windows behave slightly different on Windows and Mac OS.

- On Windows systems, a floating window is hidden when its dependent workspace is minimized or covered by another window. If WaveLab Elements is not the active application, all its independent floating windows are hidden.

- On Mac OS X systems, a tool window is always on top of all other windows and a floating window remains visible even if its dependent workspace is not active or is minimized. If WaveLab Elements is not the active application, all its floating windows are hidden.

Playback

WaveLab Elements offers numerous playback functions.

There are 4 playback modes available:

- Traditional playback, with playback starting from the cursor position and stopping anywhere when stopping playback.

- Play range, where playback starts from a given point and stops at another point of interest.

- Play from anchor, where playback starts from a specific point of interest.

- Play until anchor, where playback starts anywhere but stops at a given point of interest.

RELATED LINKS:

Transport Bar

With this command bar you can control playback of an audio file or audio montage, navigate between various positions in an audio file or audio montage, and open the **Recording** dialog.

In the Audio Files workspace or the Audio Montage workspace, select **Workspace > Command bars > Transport bar**.

Transport bar in the Audio Files workspace

Transport bar in the Audio Montage workspace

Presets

Lets you save and apply transport bar presets.

Skip range

If this option is activated, playback skips the selected range and any region surrounded by exclusion markers.

On stop, move cursor back

If this option is activated, the edit cursor jumps back to the start position when playback stops. If you want to activate this option for the options **Play from anchor**, **Play until anchor**, and **Play range**, right-click this button, and activate **On alternate playback stop, move cursor back to start**.

Perform pre-roll

Activates pre-roll for the commands **Play from anchor**, **Play until anchor**, and **Play range**.

Right-click the button to select the pre-roll length and to specify to which commands you want to apply pre-roll to. To edit the pre-roll times, select **Edit pre/post-roll**.

Perform post-roll

Activates post-roll for the commands **Play from anchor**, **Play until anchor**, and **Play range**.

Right-click the button to select the post-roll length and to specify to which commands you want to apply post-roll to. To edit the post-roll times, select **Edit pre/post-roll**.

Auto selection

If this option is activated, the anchor and/or range are automatically selected according to the editing actions. Right-click to open a menu with related options and auto selection modes.

Ranges

Lets you select one of the following ranges:

- Selected time range

- Marked region where edit cursor is located

- Range of focused clip (audio montage only)

- Crossfade range (audio montage only)

- Fade-in range (audio montage only)

- Fade-out range (audio montage only)

Play range

Plays the selected range. Post-roll and Pre-roll settings are taken into account.

Anchors

> Lets select which anchor to use as reference for the commands **Play from anchor** and **Play until anchor**. When there are multiple possibilities, for example, multiple markers, the last selected item is taken into account as a reference anchor or the closest marker near the edit cursor position if no marker is selected.
>
> You can select one of the following anchors:

- Start of file

- Start of selected time range

- End of selected time range

- Any marker

- Region start marker

- Region end marker

- Clip start (audio montage only)

- Clip end (audio montage only)

- Selected envelope point in focused clip (audio montage only)

> When an anchor is detected, for example, a region marker pair, this is indicated by a green anchor marker.
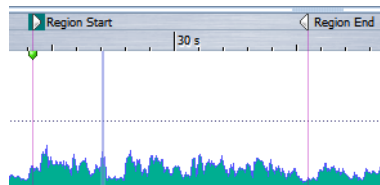
Play from anchor

> Plays from anchor. Pre-roll and post-roll settings are taken into account.

Play until anchor

> Plays until anchor. Pre-roll and post-roll settings are taken into account.

Move cursor to previous/next anchor

> Moves the edit cursor position to the previous/next anchor. To set the type of anchor, right-click the next anchor button and select an option from the menu. If you click during playback, playback continues from the anchor position.

Move playback position backwards/forwards

Moves the edit cursor position to the left/right. If you click during playback, playback jumps to the new edit cursor position.

To move the edit cursor to the start/end of the file, press [Ctrl]/[Command], and click the **Move playback position backwards/forwards** button.

Loop

Activates the loop mode. Right-click the loop button to select whether to loopforever or only a few times.

Stop

Stops the audio being played. If playback is already stopped, the edit cursor is moved to the previous start position.

Play

Starts playing the active audio file or audio montage from the edit cursor position.

If the audio being played back is not the active audio file, the **Play** button has a different color. This happens if you switch to another workspace during playback, for example.

The playback button when playing back in the active window (left) and when playing in another window or workspace (right).

Record

Opens the **Recording** dialog.

Time display

Displays the edit cursor or playback position. Click to select another time unit.

Fold bar

Minimizes the transport bar. To unfold the transport bar again, click the thin line where the transport bar was located.

Settings

Opens layout menu of the transport bar and lets you edit shortcuts for the transport bar. You can also right-click the transport bar to open this menu.
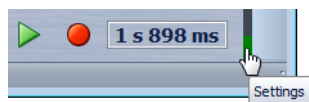
Transport Bar in the Podcast Workspace

In the Podcast workspace, a simplified transport bar allows you to play back the selected Podcast episode.

Play Button

Clicking the Play button on the transport bar starts playing back the active audio file or audio montage from the edit cursor position.

You can also use the Space bar or the Enter key on your keyboard to start playback. Pressing the Space bar during playback stops playback, while pressing Enter during playback makes playback restart from the last start position.

When loop is activated, the audio selection is looped, if available. Otherwise, the region defined by loop markers is looped, if available. If there are no selection ranges or loop markers, the entire file is looped.

The standard Play command is not influenced by the **Play range**, **Play from anchor**, and **Play to anchor** options.

Stop Button

The result of clicking the **Stop** button or on the transport bar or [0] on your numeric keypad depends on the current situation.

- If you trigger **Stop** in stop mode, the edit cursor moves either to the previous Playback start marker, or to the selection start (whatever is closer), until the start of the file is reached.

- If there is no selection or if the edit cursor is positioned to the left of the selection, it is moved to the beginning of the file instead.

Playing Back Audio Ranges

You can play back audio ranges using the **Ranges** options on the transport bar.

PROCEDURE

1. On the transport bar, select the type of range that you want to play back.

2. Optional: Activate pre-roll and/or post-roll.

3.   Position the edit cursor inside the range that you want to play back or make a selection range.

     This selected range and, if activated, the pre-roll and post-roll times are displayed on the time ruler.
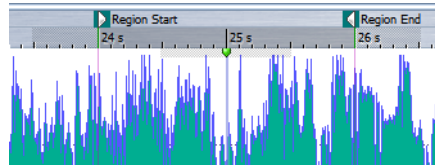
4.   To play back the selected range, click the **Play range** button on the transport bar or press [F6].

RESULT

The selected range is played back. Pre-roll and post-roll settings are taken into account. When the **Loop** mode is active, pre-roll is used before the first loop only, and post-roll is only used after the last loop.

Playing Back From an Anchor or Until an Anchor

You can play back audio from an anchor or until a specified anchor using the **Anchor** options on the transport bar.

PROCEDURE

1.   On the transport bar, select an anchor type

     If nothing is selected and you use the **Play from anchor** button, the edit cursor is the default anchor.

2.   Depending on the selected anchor type, position the edit cursor in the wave window or montage window inside the range that you want to play back.

     For example, if you have selected **Region start marker**, click somewhere in the area of the region marker pair from which you want to play back from/to. The green anchor marker jumps to the selected anchor.
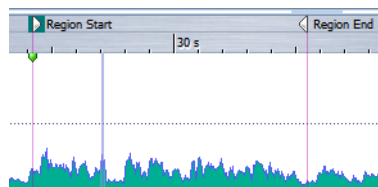
3.   Optional: Activate pre-roll and/or post-roll.

4.   To play back from the anchor marker, click the **Play from anchor** button on the transport bar or press [F7]. To play back until the anchor marker, click the **Play until anchor** button on the transport bar or press [F8].

Play back starts from the anchor/until the anchor. Pre-roll and post-roll settings are taken into account.

About the "Play From Anchor" and "Play Until Anchor" Functions

You can play back audio from an anchor or until an anchor using the **Play from anchor** or **Play until anchor** functions on the transport bar. These playback functions behave differently depending on the pre-roll and post-roll settings.

Play from anchor

- If post-roll is selected, playback starts at the anchor position and stops after the post-roll time. If no post-roll is selected, playback continues until the end of the audio file or audio montage.

- If pre-roll is selected, playback starts from the selected anchor, minus the pre-roll time.

- If pre-roll and post-roll are selected, playback starts from the selected anchor, minus the pre-roll time and stops after the anchor point plus the post roll time.

- If the loop mode is activated, the pre-roll and post-roll settings are taken into account. This way you can play a loop around the edit cursor position, without having to make further range settings.

Play until anchor

- Playback starts from the cursor, and stops at the selected anchor. If the cursor is beyond the selected anchor, playback starts at the selected anchor. If pre-roll is activated, it is taken into account.

- If pre-roll is selected, playback starts from the selected anchor minus the pre-roll time, until the selected anchor.

- If there is no selected anchor, **Play until anchor** is disabled.

- The loop settings have no effect.

Using the Auto Selection Mode

You can use the auto selection mode in combination with the playback shortcuts to play back audio ranges or anchors, without needing to interact with the transport bar. This makes it easy to monitor your editing actions.

PROCEDURE

1. On the transport bar, activate **Auto selection mode**.

2. In the wave window or the montage window, do one of the following:
    ▪   Make a selection range.
    ▪   Click inside the area of a marker pair.
    ▪   Click a fade-in, fade-out, or crossfade.
    ▪   Click anywhere in the wave/montage window.
    ▪   Drag a marker.

    Depending on your action, the most appropriate range, or anchor is selected. For example, if you click inside a marker pair, this region is selected as playback range.

    The time ruler shows the selected range or anchor.

    NOTE

    In **Auto selection mode**, you can still change some range and anchor options in the transport bar to play a different range/anchor. However, the range/anchor will be reselected when you starting editing again with the mouse.

3. Use the playback shortcuts to start playback.
    ▪   To play back the selected audio range, press [F6].
    ▪   To play back from an anchor, press [F7].
    ▪   To play back until an anchor, press [F8].

    You can also use the **Play range**, **Play from anchor**, and **Play to anchor** buttons on the transport bar.

RESULT

The selection range is played back, or play back starts from the anchor/until the anchor. Pre-roll and post-roll settings are taken into account.

NOTE

A selection range has priority over any other range. To allow other ranges to be auto-selected, deselect the selection range.

Using Auto Replay While Editing

You can have playback automatically re-triggered while editing audio with the mouse. This is useful if you want to monitor the adjustment of a selection boundary, for example.

PROCEDURE

1. On the transport bar, right-click the **Auto selection mode** icon, and activate **Auto replay while editing**.

2. In the wave window or the montage window, make a selection range and hold the mouse button pressed.

3. Start playback by using one of the following shortcuts:
   - To play back the selected audio range, press [F6].
   - To play back from an anchor, press [F7].
   - To play back until an anchor, press [F8].

4. Drag the cursor to the right or left.

   The selection range is adjusted and played back until you release the mouse button. When playback ends, the new selection range is played back.

Automated Selection Mode Settings

You can select whether the automated selection mode should select only ranges, only anchors, or both. To use the selected settings, activate **Auto selection of anchor and range, based on editing actions**.

To open the automated selection mode settings menu, right-click the **Auto selection of anchor and range, based on editing actions** icon on the transport bar, and make your selection.
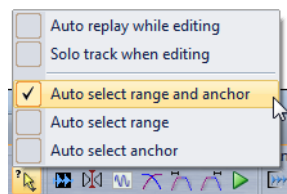
Auto replay while editing

If this option is activated, playback is automatically restarted when you hold down the mouse button while editing ranges or anchors, and used the shortcuts to trigger playback. This is useful to find a loop, for example.

This option works even when the automated selection mode is deactivated.

Solo track when editing

If this option is activated, when holding down the mouse button when editing ranges or anchors in the montage window, the track is soloed when playing back via the shortcuts for **Play range**, **Play from anchor**, or **Play until anchor**. This option is only available in the Audio Montage workspace.

This option works even when the automated selection mode is deactivated, because it is independent from this mode.

Auto select range and anchor

If this option is activated, ranges and anchors are automatically selected.

Auto select range

If this option is activated, ranges are automatically selected.

Auto select anchor

If this option is activated, anchors are automatically selected.

Skipping Sections During Playback

You can automatically skip a selected audio range during playback. This way, you can audition what the material would sound like with certain sections cut out.

PROCEDURE

1. On the transport bar, activate **Skip range**.
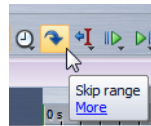
2. Activate **Use Pre-Roll** and **Use Post-Roll**.

3. If you want to use the **Play range** function, activate one of the **Ranges** modes.

4. Depending on the **Ranges** mode, do one of the following:
   - If you have activated **Selected audio range**, make an audio selection in the wave window.
   - If you have activated **Marked region where edit cursor is located**, click the section between a marker pair.

   The audio range that will be skipped is displayed on the time ruler along with the pre-roll and post-roll times.
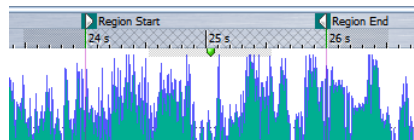
5.   Select **Play range**, or press [F6]

RESULT

The selected range is skipped during playback.

You can also use the factory preset for skipping selections during playback. Activate **Skip range**, make an audio selection, and press [Shift]-[F6].

NOTE

This mode also works with the standard **Play** button, if there is a time selection or if exclusion start and end markers are set. In this case, the pre-roll and post-roll times are ignored.

About Loops

Loop points are updated continuously during playback. If you change the loop start or end during playback, the loop changes. This way you can audition selection points for rhythmic material.

If you loop a section in an audio montage, playback loops within the boundaries of the current selection range. This selection range may be on any track, even if empty. The vertical position of the selection range is of no relevance for loop playback, only the left and right selection boundaries matter.

Pre-Roll and Post-Roll

You can start playback slightly before a specific position (pre-roll) and stop playback slightly after another position (post-roll). This gives you a brief context if you are auditioning a clip, for example.

The position can be an anchor or the start or end of a range. The pre-roll and post-roll times are displayed in the time ruler.
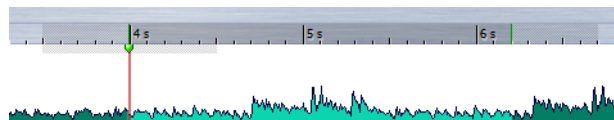
To activate pre-roll and/or post-roll, activate the **Use Post-Roll** and **Use Pre-Roll** buttons on the transport bar.

When right-clicking the pre-roll or post-roll icon on the transport bar, you can select a pre-roll/post-roll time. Here, you can also select which play option you want to apply the pre-roll/post-roll to, and you can open the **Edit Times** dialog.
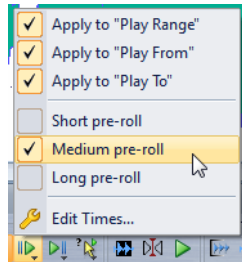
Pre-Roll and Post-Roll Times Dialog

This dialog allows you to define a short, an average, and a long pre-roll and post-roll time. These settings are global to WaveLab Elements.

In the wave window or the montage window, on the transport bar, right-click the pre-roll or post-roll icon, and select **Edit pre/post-roll**.
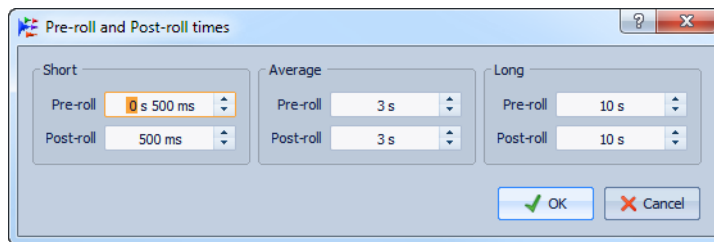
Playback Shortcuts

In addition to the buttons on the transport bar, there are shortcuts that can be used even when the wave window or montage window is not the active window.

Space bar

Start/stop playback.

0 on numeric keypad.

Stop. If the program is stopped and you trigger **Stop** again, the edit cursor moves either to the previous Playback start marker, or to the selection start (whatever is closer), until the start of the file is reached. This is the same as clicking the **Stop** button on the transport bar.

Enter

> Starts playback. If pressed during playback, playback restarts from the previous start position. This is the same as clicking the **Play** button on the transport bar.

[F6]

> Starts playback of the selected range, depending on the selected option in the **Ranges** section of the transport bar.

[F7]

> Starts playback from the selected anchor, depending on the selected option in the **Anchors** section of the transport bar.

[F8]

> Starts playback until the selected anchor, depending on the selected option in the **Anchors** section of the transport bar.

Save Transport Bar Presets Dialog

In this dialog, you can save a transport bar setup as preset.

On the transport bar, click the preset icon, and select **Save as**.
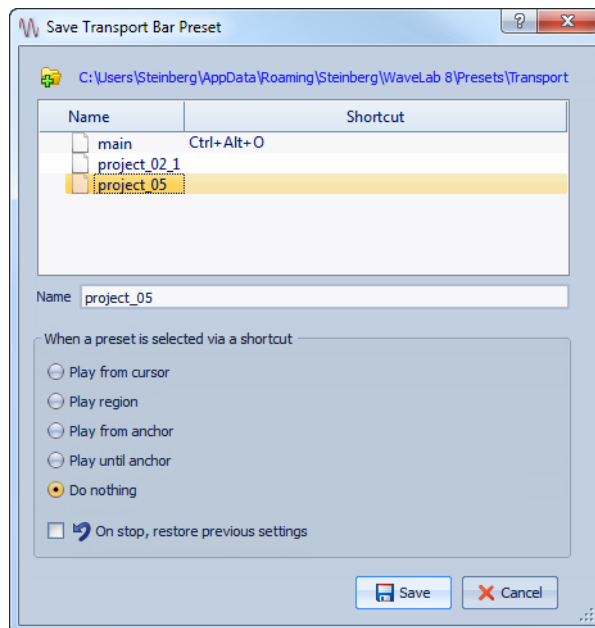
Path name

> Opens the root folder of the preset in the Windows Explorer/Mac OS Finder. Here, you can create subfolders for your presets.

Presets list

> Lists all existing presets.

Name

Lets you specify a name for your preset.

When preset is selected with shortcut

This lets you assign a customized playback command to a shortcut. For example, you can set a shortcut to play a range with a short pre-roll/post-roll, and another shortcut to play a range without a pre-roll/post-roll.

On stop, restore previous settings

If this option is activated, the settings are restored as they were before playback start. This is useful to trigger a special play task, and automatically switch back to the standard settings, as soon as playback is finished.

Transport Bar Settings

In the transport bar settings menu, you can customize the transport bar. This is useful to optimize the transport bar according to the available screen space.

To open the settings menu, right-click the transport bar, or click the **Settings** button on the transport bar.
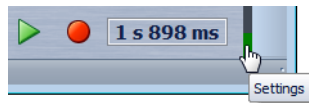
Hide

Hides the transport bar. To make it visible again, select **Workspace > Command bars > Transport bar**.

Fold

Minimizes the transport bar. To unfold the transport bar again, click the thin line where the transport bar was located.

Top/Bottom

Aligns the transport bar at the top/bottom of the wave window or the montage window.

Large transport buttons/Small transport buttons

Determines the size of the transport bar buttons.

Align buttons left/Align buttons right/Center button

Moves the transport bar buttons to the corresponding position.

Show time display

Shows/hides the time display.

Show alternate play buttons

Shows/hides the alternate play buttons in the **Ranges** and **Anchors** section of the transport bar.

Show all Range and Anchor buttons

Shows/hides the full range of **Ranges** and **Anchors** buttons. If this option is deactivated, only one range and one anchor button is visible. The other buttons can be accessed via shortcuts or when you right-click this button.

Show Preset button

Shows/hides the **Presets** button.

Show Skip button

Shows/hides the **Skip mode** button.

Edit shortcuts

Opens the **Customize commands** dialog, where you can edit the shortcuts for the transport bar commands.

Playing Back Only One Channel

You can choose to play only the left or the right channel of an audio file in the Audio Files workspace.

PROCEDURE

- In the Audio Files workspace, select **Options**, and activate/deactivate **Play left channel** and/or **Play right channel**.

Starting Playback From the Ruler

You can use the ruler to quickly jump to a position and start playback from there.

- Double-clicking the ruler starts playback from that position. Playback continues until you click **Stop** or until the end of the audio file or audio montage.

- To set the playback position to a certain position, click the ruler during playback. This also applies for clicking the time rulers of another audio file or audio montage, which allows you to quickly switch playback between audio files or audio montages.

- To start playback from a marker position, press [Ctrl]/[Command] and double-click a marker.

Using the Play Tool

This tool allows you to play back from any position on one or both stereo channels.

PROCEDURE

1. In the Audio Files workspace, select the **Play** tool from the **Edit tools** command bar, or press and hold [Alt]/[Option].
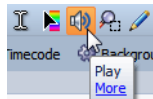
2. In the wave window, click at the position where you want playback to start.

   The cursor shape indicates whether the left (L), the right channel (R), or both channels are played back.

RESULT

Playback continues for as long as you keep the mouse button pressed, or until the audio file ends. After playback has stopped, the cursor is moved to the playback start position.

Playback Scrubbing

Playback scrubbing helps you find a certain position in an audio file, by restarting playback repeatedly when you click and drag on the time ruler during playback or use the **Play** tool.

Scrubbing Using the Play Tool

PROCEDURE

1. In the Audio Files workspace, select the **Play** tool from the **Edit tools** command bar, or press and hold [Alt]/[Option].

2. Click in the wave window, or click and drag the time ruler.

    If you click in the wave window, playback starts at the position where you clicked. If you click and drag in the time ruler, the audio is played back from the edit cursor position and a small section is looped once.

Scrubbing Using the Time Ruler

PROCEDURE

1. Optional: In the Audio Files workspace, activate **Options > Stop after playback scrubbing**, to stop playback after scrubbing.

    The edit cursor then jumps back to the start position.

2. Start playback.

3. Click the time ruler and hold the mouse button pressed, and drag left or right.
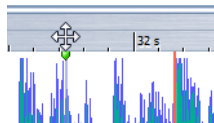
4. When you are done scrubbing, release the mouse button.

Playback Scrubbing Preferences

You can define the behavior of the **Play** tool in the **Audio file editing preferences**.

In the Audio Files workspace, select **Options > Audio file editing preferences > Editing** tab.

- If **Restrict to Play Tool** is activated, scrubbing is not available when you click and drag on the time ruler during playback.

- The **Sensitivity** setting determines the length of the audio loop that is played once when click and drang on the time ruler with the **Play** tool activated.

Scroll During Playback

You can determine how the view should be scrolled in **Play** mode.

In the Audio Files workspace or the Audio Montage workspace, select **View > Scroll during playback**.

The following options are available:

Immobile view

Disables scrolling.

View follows cursor

The view automatically changes to keep the playback cursor visible.

Scroll view (partial)

The view only scrolls when necessary to keep the playback cursor visible.

Scroll view (always)

Scrolls the view to keep the playback cursor centered.

NOTE

If you get dropouts during playback, do not use the scroll options.

About Playback in the Audio Montage Workspace

Playback in the Audio Montage workspace works the same way as in the Audio Files workspace. However, there are some things to note.

Mute and Solo Tracks

You can mute or solo tracks in an audio montage by using the corresponding buttons in the track control area.

- When a track is muted, the mute button is yellow.

- When atrack is soloed, the solo button is red.

- **Solo** can only be activated for one track at a time. However, you can unmute other tracks when **Solo** is active if you want to listen to a combination of tracks.

Playing Back Individual Clips

You can play back an individual clip on a track. Overlapping clips or clips on other tracks are muted.

PROCEDURE

1. In the Audio Montage workspace, right-click the lower part of the clip that you want to play back.

2. On the menu, select one of the following play options:
   - To play back the clip, select **Play focused clip**.
   - To play back the clip with pre-roll, select **Play focused clip with pre-roll**.

Audio File Editing

Audio file editing refers to opening, editing, and saving audio files.

Wave Window

The wave window displays audio files graphically. Here, you view, play back, and edit individual audio files.
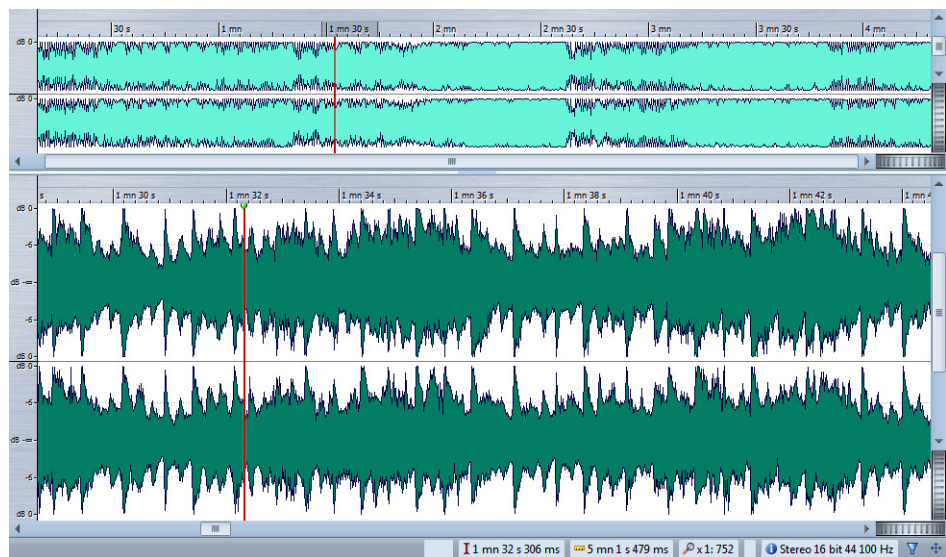
The wave window consists of two displays. You can use one display as an overview to navigate through the project and the other as the main view for editing.

You can synchronize the waveform displays so that they display the same part of the audio file, by clicking the **Sync with other view** button.
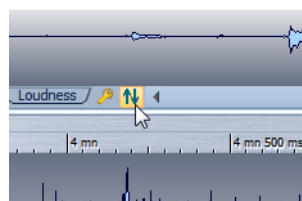
Magnetic Bounds in Audio Files

Certain positions, such as markers or selection edges, can be defined as magnetic. Dragged elements can snap to these positions. This makes it easier to position items accurately.

For example, when you move a marker and it gets close to one of the magnetic bounds, the marker snaps to this position. A label is displayed, indicating the snap position.
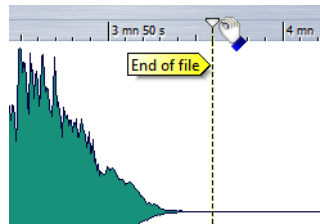
Magnetic Bounds Menu

On this menu, you can specify which positions should be magnetic. When **Snap to magnetic items** is activated, items that you move snap to these positions.

In the Audio Files workspace, select **Options > Magnetic bounds**.

You can let items snap to the following positions:

Start/End of file

Moved elements snap to the start/end of the file when they are moved near these positions.

Time ruler marks

Moved elements snap to the time ruler grid when they are moved near these positions.

Markers

Moved elements snap to marker positions when they are moved near these positions.

Selection edges

Moved elements snap to the selection edges when they are moved near these positions.

Cursor

Sets the edit cursor magnetic when moved near this position.

Zero Crossing

A zero crossing is a point where the waveform crosses the zero level axis.

If you cut out a portion of a wave and paste it in somewhere else, there often is discontinuity where the two waves are joined. This discontinuity results in a transient in the wave, which is perceived as a click or bump in the sound.
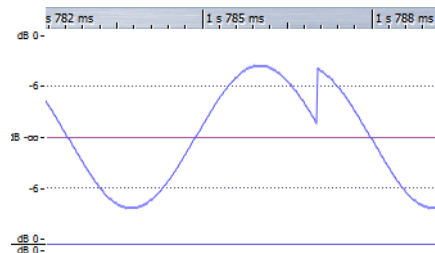
To avoid this, you must make the splice at a zero crossing, especially if you do not use crossfades.
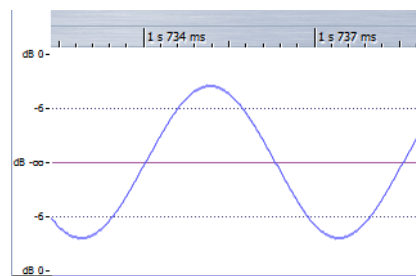
If you activate **Options > Snap selection to zero crossings**, the selections that you make are always adjusted so that they start and end at the nearest zero crossing.

WaveLab Elements can automatically search for zero crossings and extend the selection outwards so that it begins and ends at a zero crossing. This helps avoid clicks, pops, and bumps.

When you perform editing operations, such as cutting, pasting, or dragging, make sure that the material is inserted at a zero crossing.

Setting Up the Zero Crossing Detection

You can let selection edges automatically snap to the nearest zero crossing point when making a selection. In the **Audio file editing preferences** dialog, you can specify whether to allow snap at high zoom factors, and specify the scan range for the zero crossing detection.

PROCEDURE

1. In the Audio Files workspace, select **Options > Snap selection to zero crossing**.

2. Select **Options > Audio file editing preferences**.

3. On the **Editing** tab, fill out the **Snap selection to zero crossing** options.

4. Click **OK**.

Moving the Cursor Position to the Closest Zero Crossing

You can automatically move the cursor position to the closest zero crossing.

PROCEDURE

1. In the Audio Files workspace, position the cursor in the waveform.

2. Select **View > Move cursor to > Snap position**.

File Handling in the Audio Files Workspace

About Mono/Stereo Handling

WaveLab Elements is very flexible in its handling of stereo. All editing operations can be performed on either one channel or on both.

Supported File Formats

WaveLab Elements can open and save audio files in a number of file formats.

The following table gives you some basic information about the formats:

Format	Description
Wave (.wav)	The following bit resolutions are supported: 8 bit, 16 bit, 20 bit, 24 bit, and 32 bit (float)
AIFF (.aif, .aiff, .snd)	Audio Interchange File Format, a standard defined by Apple Computers Inc.. The following bit resolutions are supported: 8 bit, 16 bit, 20 bit, and 24 bit
MPEG-1 Layer 3 (.mp3)	The most common audio compression format. The major advantage of MPEG compression is that the file size is significantly reduced, while there is little degradation of sound quality. WaveLab Elements can both open and save files in this format. **NOTE:** When you open an MPEG compressed file in WaveLab Elements, the file is converted to a temporary wave file. On saving, the temporary wave file is converted back to MP3.
MPEG-1 Layer 2 (.mp2, .mpa, .mpg, .mus)	MP2 (sometimes referred to as "Musicam files") is a common file format in the broadcast industry. With regard to file sizes, the same applies for MP3 files.
Original Sound Quality (.osq)	This is the proprietary lossless compressed audio format of WaveLab Elements. By saving files in this format, you can save considerable disk space without compromising audio quality.
Sound Designer II (.sd2)	This audio file format is used by Digidesign applications (such as Pro Tools). The following bit resolutions are supported: 8 bit, 16 bit, and 24 bit

Format	Description
U-LAW (.ulaw, .vox)	This is an audio encoding and compression technique supported by Windows and Web phones, using 8 bit resolution. The U.S. telephone system uses U-law encoding for digitization.
A-LAW (.alaw, .vox)	This is an audio encoding and compression technique for telephony, using 8-bit resolution. The EU telephone system uses A-law encoding for digitization.
Sun/Java (.snd, .au)	This is an audio file format used on Sun and NeXT computers. The following bit resolutions are supported: 8 bit, 16 bit, and 24 bit
ADPCM – Microsoft/Dialogic (.vox)	This is a format commonly used for games and telephony applications. It offers a lower bit rate than linear PCM and thus requires less storage space/bandwidth.
Ogg Vorbis (.ogg)	Ogg Vorbis is a compressed file format that is open, patent-free, and creates very small audio files maintaining comparatively high audio quality.
Text/Excel (.txt)	This is a text representation of a waveform. By saving an audio file as a text file and then opening it in a spreadsheet application such as Excel, you can view it in textual, decimal form, and edit the sample values. When you open a text file representing a waveform in WaveLab Elements, it is decoded and opened as an audio file. Note that these files are not compressed in any way, so they become get very large. Note that when using 32-bit float files, the .txt format is not 100% lossless. This is because it is not possible to express a binary floating point value in textual decimal form without some precision loss.
Windows Media Audio (.wma, .asf)	Microsoft's own compressed format. WaveLab Elements lets you import/export audio in this format (Windows only). To import/export audio in WMA surround format, Windows Media Player 9 or later must be installed on your system.
Ensoniq Paris (.paf)	Used by the Ensoniq Paris™ system. The following bit resolutions are supported: 16 bit and 24 bit
FLAC (.fla)	Free Lossless Audio Codec (FLAC) is a codec which allows digital audio to be losslessly compressed.
Apple formats (.aac, .m4a, .mp4, .m4b, .caf, .3gp, .3g2, .caf)	If Quicktime is installed on your system, these formats are available (read-only and only on 32-bit Windows or MAC systems).

The "$$$" file type is a temporary file format of WaveLab Elements. In case you experience a computer, crash you may restore some of your work by opening any stray "$$$" files on your hard disk.

About 20-bit, 24-bit, and 32-bit Float Files

You do not need a 20-bit or 24-bit audio card to take advantage of the fact that WaveLab Elements can handle 20-bit and 24-bit audio files. Any processing or editing performed on the files is always done at full resolution (32-bit float), even if your card does not support the full resolution.

For playback, WaveLab Elements automatically adapts to the card that you have installed.

Creating a New Audio File

You can create an empty audio file, to assemble material from other audio files, for example.

PROCEDURE

1. In the Audio Files workspace, select **File > New**.

2. In the dialog, specify the audio properties, and click **OK**.

Saving an Audio File

PROCEDURE

1. In the Audio Files workspace, do one of the following:
   - To save an audio file that has never been saved before, select **File > Save as**.
   - To save an audio file that has been saved before, click the **Save** button, or select **File > Save**.

2. In the **Save Audio File** dialog, specify a file name and location.

3. Set up the available options:
   - Keep this format for next time
   - Save copy
   - Open standard file selector before this dialog

4. Click **Save**.

Saving in Another Format

You can change the file format, sampling frequency, bit resolution, and stereo/mono status when saving.

PROCEDURE

1. In the Audio Files workspace, select **File > Save as**.
2. Specify the file name and location.
3. Click in the **Output Format** field.
4. In the **Audio File Format** dialog, set the file format and specify the properties.
5. Click **OK**.
6. Click **Save**.

RESULT

A new file is created. The original file is not affected by the operation.

Audio File Format Dialog

In this dialog, you can change various file settings when saving.

In the Audio Files workspace, select **File > Save as**, and click the **Output Format** field. This dialog can also be opened from various other locations in WaveLab Elements.
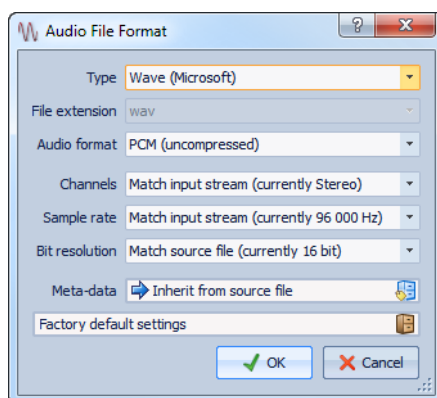
Type

Select an audio file type. This affects the options available on the **Audio format** menu.

File extension

Select a file extension compatible with the current file type.

Audio format

Select an audio format compatible with the current file type.

Channels

Specify the number of audio channels for the files to be created. For multichannel audio montages, you can create multiple files.

Sample rate

Select a sample rate for the audio file. If you change this setting, a sample rate conversion takes place.

IMPORTANT

Use this only for simple conversions. For professional results, use the **Resample** plug-in to add limiting and dithering.

Bit resolution

Select a bit resolution for the audio file. This option is only available for certain file types.

IMPORTANT

Reducing the bit resolution is only advised for simple conversions. For professional results, it is recommended to add dithering in the Master Section.

Meta-data

Lets you make meta-data settings that are saved with the file. This option is only available for certain file types.
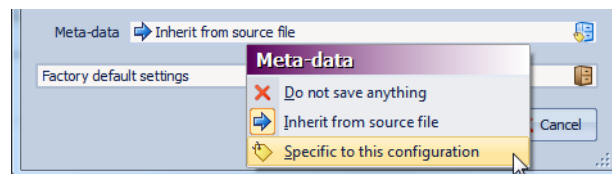
The following options are available:

- When **Do not save anything** is selected, no meta-data are saved with the file.

- When **Inherit from source file** is selected, the meta-data of the source file are used. If this option is selected and the source meta-data is empty, the default meta-data will be used, if available.

- When selecting **Specific to this configuration**, you can edit the meta-data, or replace it with a meta-data preset. To edit the meta-data, open the meta-data pop-up menu again, and select **Edit**.

About Changing the Format

When changing the sample rate, bit resolution, and number of channels of an audio file, several operations are performed.

Property	Action
Sample rate	If a new sample rate is specified, a sample rate conversion is performed.
Bit resolution	If a different bit resolution is specified, the file is either "truncated" down to 8 bits, or "padded" up to 24 bits. If you are converting to a lower bit resolution, you should consider adding dithering.
Mono/ Stereo	If the file is converted from mono to stereo, the same material is used in both channels. If the conversion is from stereo to mono, a mix of the two channels is created.

- If you only want to change the bit resolution, you can do this directly in the **Edit > Audio properties** dialog instead, and then save the audio file.

- For high quality mastering purposes, it is not recommended to change the sample rate and number of channels using the **Audio properties** dialog, but instead use plug-ins and functions of the Master Section.

- For the available compressed file formats (MP3, MP2, WMA, and Ogg Vorbis), you can specify various options, such as bit rate and compression method, and also enter text tags for the file.

Saving as OSQ File

OSQ (Original Sound Quality) is a lossless audio compression format, which can significantly reduce the audio file size without affecting the audio quality.

PROCEDURE

1. In the Audio Files workspace, select **File > Save as**.
2. Specify the file name and location.
3. Click in the **Output Format** field.
4. In the **Audio File Format** dialog, set the type to **Original Sound Quality (OSQ)** and specify the properties.
5. Click **OK**.
6. Click **Save**.

Saving a Selection as an Audio File

You can save a selection in the currently open audio file as a new audio file.

PROCEDURE

1. In the wave window, make a selection range.

2. Select **File > Export > Selected time range**.

3. Specify a file name, location, and output format.

4. Click **Save**.

Saving Left/Right Channel as Audio File

You can save each channel individually into a separate file. Use this option when you have been editing dual mono files, for example.

PROCEDURE

1. In the Audio Files workspace, select **File > Export > Left channel** or **Right channel**.

2. Specify a file name, location, and output format.

3. Click **Save**.

Encoding Audio Files

Audio can be stored in different formats. The process of converting audio to another format is called encoding. When saving audio files, you can specify various encoding options for some file formats.

MP3 Encoding Dialog

You can edit the encoding options when you save an MP3 audio file.

You can open the **MP3 encoding** dialog from most places where you can select an output file format. For example, in the Audio Files workspace, select **File > Save as**, click the **Output Format** field, select **MPEG-1 Layer 3 (MP3)** as type, click the **Encoding** field, and select **Edit**.
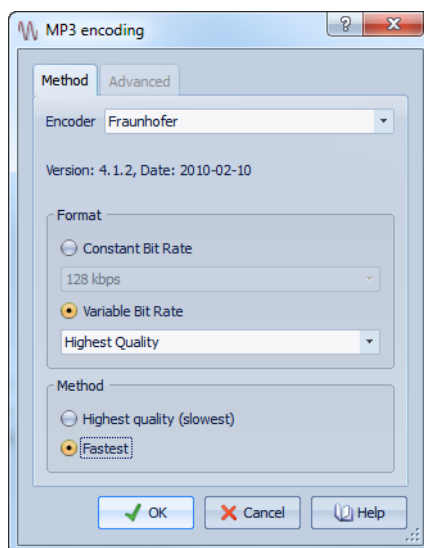
Encoder

Lets you select the encoder (**Fraunhofer** or **Lame**).

Constant/Variable Bit Rate

The bit rate is related to the quantity of data used to encode the audio signal. The higher the value, the better the quality, but the larger the output file. If you choose **Variable Bit rate**, the rate changes, according to the complexity of the audio material.

Highest quality (slowest)/Fastest

Select the quality that you want to achieve. The higher the quality, the more resources and time are required to analyze and compress the audio signal.

> NOTE
>
> When selecting **Highest quality (slowest)**, this can enforce a certain sample rate for the audio file. If this is the case and the sample rate is different from the input sample rate, a message is displayed.
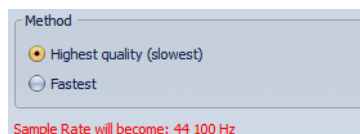
When using the **Lame** encoder, additional settings can be made on the **Advanced** tab.

Allow intensity stereo coding

Decreases the bit rate by reorganizing the intensity information between the channels.

Specify as "Original Recording"

Marks the encoded file as the original recording.

Write private bit

This is a custom flag.

Write copyright flag

Marks the the encoded file as copyright protected.

Write check-sum

Allows other applications to check the integrity of the file.

Create long frames

Saves space by writing fewer headers in the file (not compatible with all decoders).

MPEG-1 Layer 2 Encoding Dialog

You can edit the encoding options when you save an MPEG-1 Layer 2 (MP2) audio file.

You can open the **MPEG-1 Layer 2 encoding** dialog from most places where you can select an output file format. For example, in the Audio Files workspace, select **File > Save as**, click the **Output Format** field, select **MPEG-1 Layer 2** as type, click the **Encoding** field, and select **Edit**.
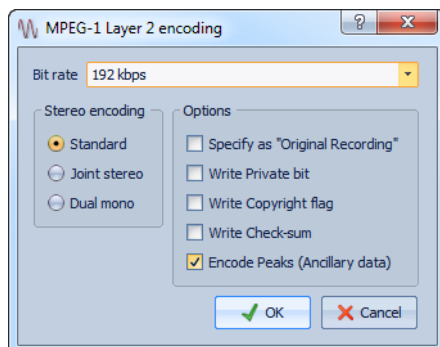
Bit rate

Lets you select the bit rate. The bit rate is related to the quantity of data used to encode the audio signal. The higher the value, the better the quality, but the larger the output file.

Stereo encoding - Standard

In this mode, the encoder does not use the correlation between channels. However, the encoder can take space from a channel that is easy to encode and use it for a complicated channel.

Stereo encoding - Joint

In this mode, the encoder uses existing correlations between the two channels to increase the ratio quality/space.

Stereo encoding - Dual

In this mode, both channels are independently encoded. This mode is recommended for signals with independent channels.

Specify as "Original Recording"

Marks the encoded file as the original recording.

Write private bit

This is a custom flag.

Write copyright flag

Marks the encoded file as copyright protected.

Write check-sum

Allows other applications to check the integrity of the file.

Encode peaks (ancillary data)

This must be activated for compatibility with certain system, for example, DIGAS.

FLAC Encoding Dialog

You can edit the encoding options when you save a FLAC audio file.

You can open the **FLAC Encoding** dialog from most places where you can select an output file format. For example, in the Audio Files workspace, select **File > Save as**, click the **Output Format** field, select **FLAC** as type, click the **Encoding** field, and select **Edit**.
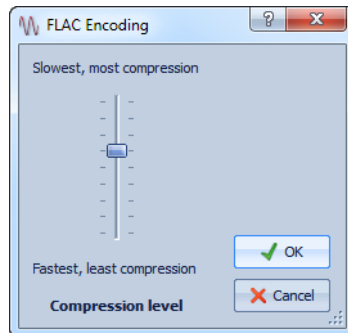
Compression level

Lets you specify the compression level. The more compression, the slower the encoding.

Ogg Vorbis Dialog

You can edit the encoding options when you save an Ogg Vorbis audio file.

You can open the **Ogg Vorbis** dialog from most places where you can select an output file format. For example, in the Audio Files workspace, select **File > Save as**, click the **Output Format** field, select **Ogg Vorbis** as type, click the **Encoding** field, and select **Edit**.
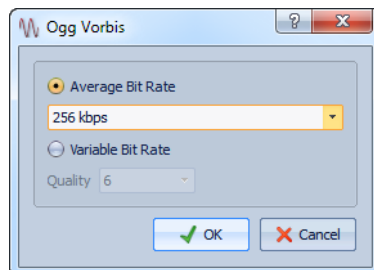
Average bit rate

> If this option is activated, the average bit rate in the file remains constant during encoding. Because the file size is proportional to time, the localization of a given point is easier, but it can result in a lower quality compared to the **Variable bit rate** option.

Variable bit rate

> If this option is activated, the bit rate in the file will vary during encoding, depending on the complexity of the material. This can give a better quality/size ratio in the resulting file.

> In the **Quality** field, select the quality. Lower quality settings result in smaller files.

Windows Media Audio Encoding Dialog

> You can edit the encoding options when you save a Windows Media Audio (WMA) audio file. This dialog is only available in on Windows systems.

> You can open the **Windows Media Audio** dialog from most places where you can select an output file format. For example, in the Audio Files workspace, select **File > Save as**, click the **Output Format** field, select **Windows Media Audio (WMA)** as type, click the **Encoding** field, and select **Edit**.
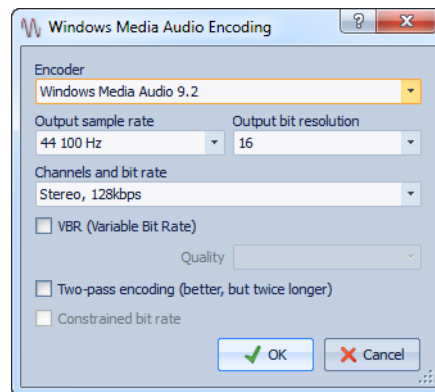
Encoder

> Lets you select the encoder.

Output sample rate

> Lets you specify the output sample rate of the encoded file. The higher the sample rate, the higher the quality, but the larger the output file.

Output bit resolution

> Lets you specify the output bit resolution of the encoded file. This parameter is not available for all encoders.

Channels and bit rate

The available items here depend on the selected encoding method and the output sample rate.

VBR (Variable bit rate)

If this option is activated, the bit rate in the file will vary during the encoding, depending on the complexity of the material. This can produce a better quality/size ratio in the output file.

In the **Quality** field, select the quality. Lower quality settings result in smaller files.

Two-pass encoding (better, but twice as long)

If this option is activated, the encoding quality increases, but the process takes twice as long.

Constrained bit rate

This option is available when the VBR and Two-pass encoding options are activated. This is used to maintain the bit rate within limits to avoid peaks. This is recommended for certain media, such as CD or DVD.

Creating an Audio Montage from an Audio File

You can export audio files to an audio montage, including all markers that you have set in the audio file.

PROCEDURE

1. Optional: If you only want to use a certain time range of the audio file, create a selection range in the wave window.

2. In the Audio Files workspace, select **File > Export > Create audio montage from active file**.

3. Select whether to export the whole file or the selected time range.

4. Optional: Decide if you want to perform any of the following marker operations:
   - **Transcribe markers**
   - **Split at generic region markers**

5. Click **OK**.

Inserting Audio Files into Another Audio File

You can assemble an audio file from several audio files.

PROCEDURE

1. In the Audio Files workspace, open the audio file in which you want to insert another audio file.

2. If you want to insert an audio file at the edit cursor position, select **View > Move cursor to > Snap position**.

    The edit cursor snaps to the nearest zero crossing. This avoids glitches.

3. Select **File > Import** and choose one of the following options:
    ▪   **Insert audio file at start**
    ▪   **Insert audio file at end**
    ▪   **Insert audio file at cursor position**

    When you select **Insert audio file at cursor position**, the audio file is cut at the insert position. The part after the cut is moved to the right.

4. Select the audio file that you want to insert, and click **Open**.

Turning Selections Into New Files

You can turn selections into new files via dragging, or by using the **Edit** menu.

Turning Selections Into New Files By Dragging

PROCEDURE

1. In the Audio Files workspace, make a selection in the wave window.

2. Drag the selection to the WaveLab Elements tab bar, and release the mouse button.

RESULT

The selection appears in a new stereo window.

Turning Selections Into New Files Using the Menu

PROCEDURE

1. In the Audio Files workspace, make a selection in the wave window.

2. Select **Edit > Copy selection to new window > As is**.

RESULT

The selection appears in a new stereo window.

Special File Format Dialog

When opening files via the **Unknown audio file** option, you can specify how to interpret the format of the audio file that you want to open.

In the Audio Files workspace, select **File > Import > Unknown audio file**.
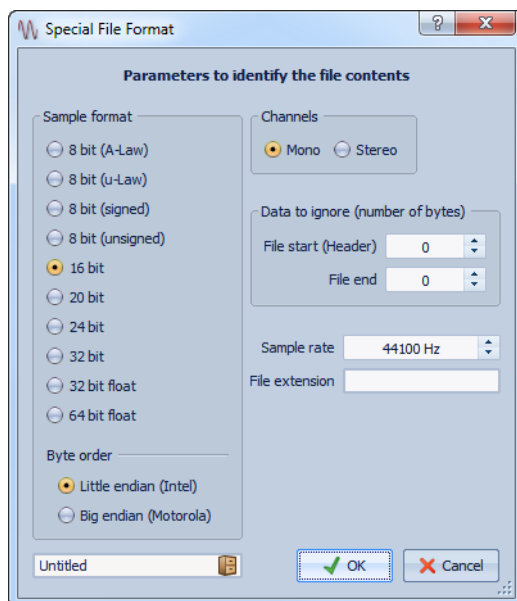
Sample format

Specifies the binary representation of the samples in the file.

Byte order

Specifies the order in which bytes should be interpreted. This only applies for 16 bit or more.

Channels

Specifies the number of audio channels in the audio file.

115

Data to ignore (number of bytes)

Specifies how many bytes WaveLab Elements should ignore at the start and end of the audio file.

Sample rate

Specifies the sample rate of the audio file.

File extension

Specifies the default file name extension for the audio file. When the file selector opens after closing this dialog, only the file with this extension is displayed.

Converting From Stereo to Mono and From Mono to Stereo

You can convert audio files from mono to stereo and from stereo to mono. Converting a mono file into a stereo file produces an audio file that contains the same material in both channels, for example for further processing into real stereo.

Converting a Selection From Stereo to Mono Using the Menu

PROCEDURE

1. In the Audio Files workspace, make a stereo selection in the wave window.

2. Select one of the following options:.
    -   To mix the left and right stereo channels when converting to mono, select **Edit > Copy selection to new window > Convert to Mono (Mix)**.
    -   To mix the left channel with the inverse of the right channel when converting to mono, select **Edit > Copy selection to new window > Convert to Mono (Subtract right channel from left channel)**. The resulting mono wave contains the difference between the channels. For example, this allows you to verify that a wave file really is a true stereo file rather than a mono file converted to stereo format.

RESULT

The selection appears in a new stereo window.

Converting From Stereo to Mono While Saving

PROCEDURE

1.   In the Audio Files workspace, select **File > Save as**.

2.   Click in the **Output Format** field.

      The **Audio File Format** dialog opens.

3.   From the **Channels** menu, select one of the mono settings.

      For example, when selecting Mono (Mix -3 dB), the resulting audio file is attenuated by 3 dB. Because mixing two channels into mono can introduce clipping. These two settings can be used to remedy this.

4.   Click **OK**.

5.   Click **Save**.

Converting a Selection From Mono to Stereo

PROCEDURE

1.   In the Audio Files workspace, make a mono selection in the wave window.

2.   Select **Edit > Copy selection to new window > Convert to Stereo**.

RESULT

The selection appears in a new stereo window.

Swapping Channels in a Stereo File

You can move the audio in the left channel to the right channel, and vice versa.

▪   To swap the channels of the whole audio file in the Audio Files workspace, select **Edit > Swap stereo channels**.

▪   To swap only a selected range of the audio file, make a selection range in the wave window, and select **Edit > Swap stereo channels**.

Special Paste Operations

On the **Paste special** menu, you find additional paste options.

In the Audio Files workspace, select **Edit > Paste special**.

Overwrite

Overwrites data in the destination file, rather than moving data to make room for the inserted audio. How much is overwritten depends on the selection in the destination file:

- If there is no selection in the destination file, a section with the same length as the pasted selection is overwritten.

- If there is a selection in the destination file, the pasted selection replaces that selection.

Append

Adds the pasted audio after the end of the file.

Prepend

Adds the pasted audio before the beginning of the file.

Multiple copies

Opens a dialog in which you can enter the number of copies that you want to create.

Mix

Blends two files into each other, starting at the selection or, if there is no selection, at the cursor position.

- When you select the **Mix** option, a dialog opens, allowing you to specify the gain for the audio on the clipboard and at the destination.

- All the data on the clipboard is always mixed in, regardless of the length of the selection.

Moving Audio

You can rearrange the order of audio in a file by dragging, and cutting and pasting.

Moving Audio by Dragging

PREREQUISITE

Decide whether you want to use **Snap selection to zero-crossing**.

PROCEDURE

1. In the wave window, make a selection.

2. Click in the middle of the selection.

3. Drag to a position outside the selection in the same file, or to another wave window.

4. Release the mouse button.

Moving Audio Using Cut and Paste

PREREQUISITE

Decide whether you want to use **Snap selection to zero-crossing**.

PROCEDURE

1. In the wave window, make a selection.

2. Use one of the following copy methods:
    ▪   Select **Edit > Cut**.
    ▪   Press [Ctrl]/[Command]-[X].
    ▪   Drag the selection onto the **Cut** icon.

3. Select how you want to insert the selection:
    ▪   If you want to insert the audio, click once at the position in the same file or in another file.
    ▪   If you want to replace a section of audio, select it.

4. Select **Edit > Paste** or press [Ctrl]/[Command]-[V].

RESULT

The selection is removed from its original position and inserted where you drop it.

NOTE

To completely undo a move between two files you must first undo the paste in the destination window and then undo the cut in the source window.

Moving Audio by Nudging

The Nudge left/right tools can be used to move the audio in small steps within a file.

PROCEDURE

1. In the wave window, make a selection.

2. Depending on whether you want to nudge the selection to the left or to the right, select one of the following tools:
    ▪   Select **Edit > Tools > Nudge left**, or click the **Nudge left** icon on the toolbar.
    ▪   Select **Edit > Tools > Nudge right**, or click the **Nudge right** icon on the toolbar.

3. Click the selection.
    Pressing [Shift] switches nudge left to nudge right and vice versa.

4. To exit the nudge tool mode, click anywhere outside of the selection.

RESULT

The audio is moved one pixel. Exactly how much this is depends on how far you are zoomed in. For example, if the status bar displays **x1:256**, the selection is moved 256 samples. The moved section overwrites the audio at that position.

Copying Audio

You can copy sections of audio within the same file or between audio files.

Stereo/Mono Handling

Stereo/mono is handled as follows when you drag between files:

Dragged section	Drop wave	Action
Stereo	Stereo	The dragged audio is always inserted into both channels.
Stereo	Mono	Only the left channel is inserted.
Mono	Stereo	What happens depends on the vertical drop position. This is indicated by the cursor shape. The selection can be inserted into only one of the channels, or the same material can be inserted into both channels.

Stereo/mono is handled as follows when you copy and paste files:

Copied section	Paste wave	Action
Stereo	Stereo	If the wave cursor extends across both channels of the destination file, the material is inserted into both channels.
Stereo	Stereo	If the wave cursor is only in one channel, the audio is only pasted in that channel. Material from the left channel is pasted in the left channel and vice versa.
Stereo	Mono	Only the left channel is pasted.
Mono	Stereo	What happens depends on whether the wave cursor is in one channel or both. The audio is either pasted in one of the channels, or the same material is inserted into both channels.

Sample Rate Conflicts

If you copy or move audio from one window to another, and the sample rates of the two files are not the same, the copied/moved sound plays back at the wrong pitch (speed). The program warns you if this is about to happen.

While mixing sample rates can be used as an effect, it is most often not intended. There are two ways to get around this:

- Convert the sample rate of the source file to the same rate as the destination file before editing.

- Convert the sample rate of the destination file to the same rate as the source file before adding the audio.

Copying Audio Using Copy and Paste

PREREQUISITE

Decide whether you want to use **Snap selection to zero-crossing**.

PROCEDURE

1. In the Audio Files workspace, make a selection.

2. Use one of the following copy methods:
   - Select **Edit > Copy**.
   - Press [Ctrl]/[Command]-[C].
   - Drag the selection onto the **Copy** icon.

3. Select how you want to insert the selection:
   - If you want to insert the audio, click once at the position in the same file or in another file.
   - If you want to replace a section of audio, select it.

4. Select **Edit > Paste**, or press [Ctrl]/[Command]-[V].

Copying Audio by Dragging

PREREQUISITE

Decide whether you want to use **Snap selection to zero-crossing**.

PROCEDURE

1. In the Audio Files workspace, make a selection.

2. Click the middle of the selection, and drag it to a position outside the selection in the same file, or to another wave window.

3. Release the mouse button.

RESULT

The selection is inserted at the indicated point. The audio that previously began at that point is moved to the right.

Information About the Active Audio File

You can open a dialog that shows the name, file location, size, date, and file format of the active audio file.

PROCEDURE

▪   In the Audio Files workspace, select **File > Special > Information**.

Changing the Audio Properties

You can change the declared sample rate and sample accuracy of audio files.

Changing these values does not process the audio file in any way (in contrast to using **Save as**). However, the following rules apply:

▪   If you change the sample rate, the file plays back at a new pitch.

▪   If you change the bit resolution, the file is converted to the new resolution the next time you save it.

NOTE

There is no undo for this. If you save with a lower bit resolution, the file is converted permanently.

123

PROCEDURE

1.   In the Audio Files workspace, open an audio file.

2.   Select **Edit > Audio properties**.

3.   Specify a new **Sample rate** and/or **Accuracy**.

4.   Click **OK**.

Audio Properties Dialog

This dialog reports the audio properties of the active audio file. It allows you to change the number of audio samples per second (sample rate) and the accuracy of samples in the audio stream (bit rate).

In the Audio Files workspace, select **Edit > Audio properties**.
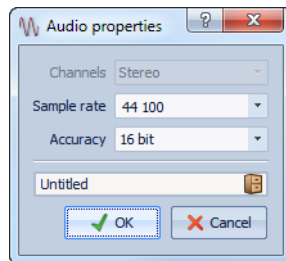
Channels

The number of audio channels (mono/stereo).

Sample rate

The number of audio samples per second.

Accuracy

The accuracy of samples in the audio stream.

Meta-Data

Meta-data consists of attributes that describe the audio contents, for example, the title of the track, the author, and the date the track was recorded. Depending on the file format of the selected audio file, this data varies.

When opening an audio file or audio montage, the meta-data found in the file is loaded. You can also create different meta-data presets for audio files and audio montages. When creating a new file from a template, this file can inherit the meta-data of the preset, if available.

A preview of the meta-data is displayed in the **Meta-data** window. To view the complete meta-data of the file and edit the meta-data, select **Edit > Meta-data**, or click the **Edit** button in the **Meta-data** window.
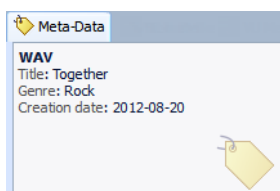
Not all file formats can store meta-data. Depending on the output file format, all meta-data or only part of the meta-data will be stored in the audio file. The following file formats can contain meta-data:

- .wav

- .mp3

- .ogg

- .wma

- .flac

For MP3, the following meta-data types are available:

- ID3 v1 and ID3 v2, including picture support

For WAV, the following meta-data types are available:

- RIFF

- BWF

- CART (AES standard, dedicated to broadcast needs)

- ID3 v2, including picture support

When saving or recording an audio file in the **Audio File Format** dialog, you can specify whether not to use any meta-data, inherit the meta-data from the source file, or edit the meta-data of the file.
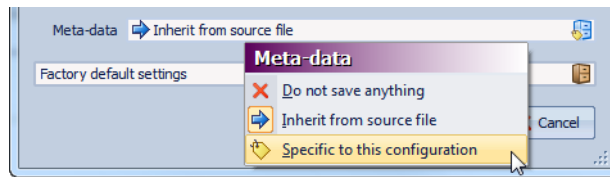
Meta-data can be entered manually or generated automatically.

The following options can be generated automatically:

▪ Time markers (CART)

▪ USID (BWF, **Basics** tab)

(*) These options cause a file analysis while the file is written, which means that the file writing process can take longer.

WaveLab Elements includes several meta-data presets. They are used as examples and can be customized for your needs. You can load meta-data presets from the **Meta-data presets** pop-up menu in the **Audio File Format** dialog, or from the **Meta-data** dialog.

RELATED LINKS:

Meta-Data Dialog

This dialog allows you to define the meta-data to be embedded in your audio file.

In the Audio Files workspace or the Audio Montage workspace, select **Edit > Meta-data**. Depending on the workspace, the meta-data is handled differently.

When opening the **Meta-data** dialog in the Audio Files workspace, you can edit the meta-data that is stored in the audio file. This meta-data is saved to disk later.

When opening the **Meta-data** dialog in the Audio Montage workspace, you can edit the meta-data for the audio files when rendering the audio montage. If you render to WAV or MP3 formats, the meta-data will be be associated to these files.
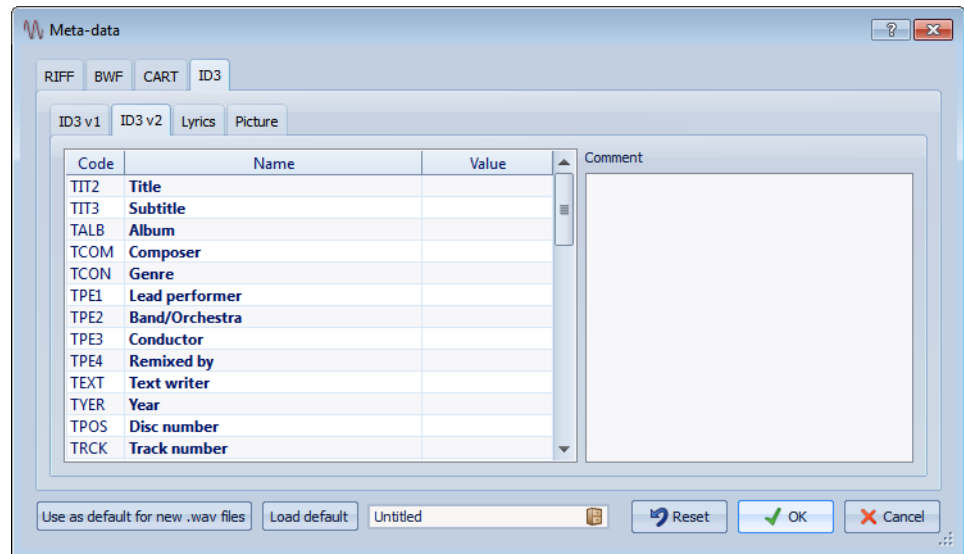
Meta-data dialog for a WAV file
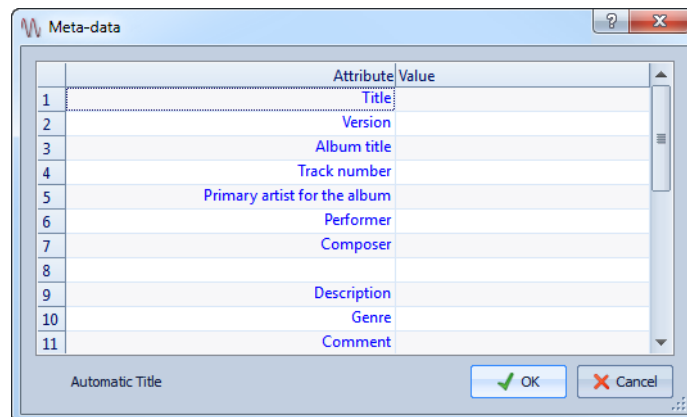
Meta-data dialog for a WMA file

Meta-Data Presets

In the **Meta-data** dialog, you can save meta-data presets and apply these presets to other files. Meta-data presets can be applied to WAV and MP3 files.
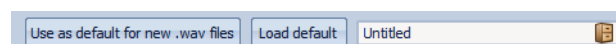
The **Use as default for new .wav files** option allows you to define a set of meta-data as default.

When you create a new file, and do not add any meta-data, this default meta-data is applied to the file when saving it. For example, you can save or record WAV files with BWF meta-data and automatically add a Unique Material Identifier.

To edit the default meta-data preset, select **Load default**, and edit the preset.

About CART and Markers

WaveLab Elements reads the CART markers, if any, and merges them with the existing markers of the file.

The CART standard can contain up to 8 markers. WaveLab Elements stores them if their names obey the CART standard.

When **Generate time markers** is activated in the **CART** tab of the **Meta-data** dialog, the markers are generated if at least one CART text field has content. Otherwise the CART data is meant to be unused.

When rendering a file, the render option **Copy markers** must be activated in the **Render** dialog.

Silence Generator Dialog

This dialog allows you to insert silence or background noise in an audio file.

In the Audio Files workspace, select **Edit > Silence (advanced)**.
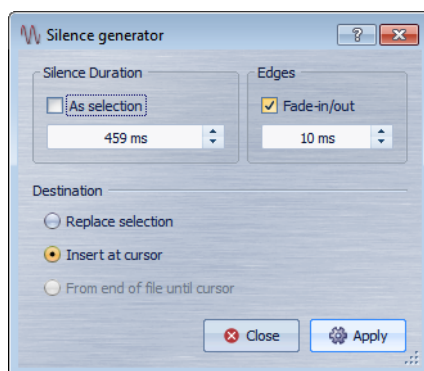
Silence Duration - As selection

> Uses the duration of the active audio selection as the duration of the silent section. Specify the duration of the silent section in the value field below.

Edges - Fade-in/out

Performs a crossfade at the start and end of the silent section for smoother transitions. Specify the fade time in the value field below.

Destination - Replace selection

Replaces the current audio selection with the silent section.

Destination - Insert at cursor

Inserts the silent section at the cursor position.

Destination - From end of file until cursor

Extends the audio file with silence up to the cursor position. Activating this option also defines the silence duration and ignores the **Silence Duration** setting.

Replacing a Selection with Silence

You can replace a section of an audio file with silence.

PROCEDURE

1. In the Audio Files workspace, make a selection.
2. Select **Edit > Silence (advanced)**.
3. Set the silence duration to **As selection**, and the destination to **Replace selection**.
4. Click **Apply**.

Inserting Silence

You can insert a specified length of silence at any position of the audio file.

PROCEDURE

1. In the Audio Files workspace, set the cursor where you want the inserted silence to begin.
2. Select **Edit > Silence (advanced)**.
3. Deactivate **As selection**, and specify the length.
4. Set the destination to **Insert at cursor**.
5. Click **Apply**.

Fast Muting a Selection

The **Fast mute** function replaces the selection with true silence without needing to write any audio sample to the media.

PROCEDURE

▪ In the Audio Files workspace, make a selection, and select **Edit > Fast mute**.

Waveform Restoration with the Pen Tool

The Pen tool allows you to redraw the waveform directly in the wave window. This can be used to quickly repair waveform errors.

The Pen tool can be used if the zoom resolution is set to 1:8 (one pixel on the screen equals 8 samples) or higher.
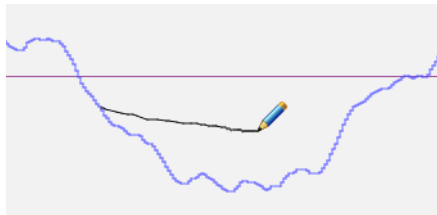
▪ To redraw the waveform, select the Pen tool, click in the waveform, and draw the new waveform.

▪ To redraw the waveform of both channels at once, press [Shift] during the drawing process.

Audio Analysis

WaveLab Elements provides you with a comprehensive set of tools for analyzing your audio and for detecting any errors.

For example, you can use the suite of audio meters, or the 3D Frequency Analysis. There are also several tools that help you examine any sample of your audio for errors or anomalies.

Global Analysis

In WaveLab Elements you can perform advanced analysis on your audio to identify areas with specified properties. This helps you find problem areas such as glitches or clipped samples. You can also check general information, such as the pitch of a sound.

When you analyze a section of an audio file, WaveLab Elements scans the section or the audio file and extracts information which is displays in the dialog. WaveLab Elements also marks sections of the file that meet specific characteristics, for example, sections that are very loud or almost silent. You can then browse between these points, set markers, or zoom in on markers. On most of the tabs, you find settings that determine exactly how the analysis is performed. Each tab focuses on a particular analysis area.

You perform the global analysis in the **Global Analysis** dialog. This dialog consists of the following tabs that provide different analysis types:

- The **Peaks** tab lets you find individual samples with very high values.

- The **Loudness** tab lets you find sections with high intensity.

- The **Pitch** tab lets you find the exact pitch of a sound or section.

- The **Extra** tab provides information about DC offsets and the significant bit resolution.

- The **Errors** tab lets you find glitches and sections where the audio has been clipped.

Most of the analysis types provide a number of positions in the file that indicate peaks, glitches, etc. These points are called "hot points".

Opening the Global Analysis Dialog

The **Global Analysis** dialog provides various analysis options.

PROCEDURE

1. In the Audio Files workspace, select a range in the audio file that you want to process.

   If you want to analyze the entire file, press [Ctrl]/[Command]-A. If **Process whole file if there is no selection** is activated in the **Audio file editing preferences** dialog, the whole file is processed automatically provided that no selection has been made.

2. Select **Analysis > Global analysis**.

RELATED LINKS:
"Audio File Editing Preferences Dialog" on page 332

Choosing the Analysis Type

Several types of analysis can be performed. Each of them takes some time, so make sure that only the types that you need are included in the analysis.

Select the analysis types by activating them in the corresponding tabs.

- To include the Peaks analysis, activate **Find Peaks**.

- To include the Loudness analysis, activate **Analyze Loudness**.

- To include the Pitch analysis, activate **Find Average Pitch**.

- To include the Extra analysis, activate **Find DC Offset**.

- To include the Errors analysis, activate **Find Possible Glitches** and **Find Clipped Samples**.

Global Analysis - Peaks Tab

This tab is used to find digital peak values in the audio, that is, single samples with very high values.

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the **Peaks** tab.
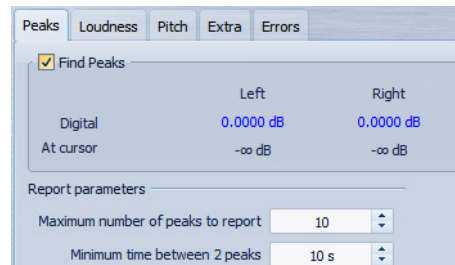
Find Peaks

Enables peak analysis.

Digital

Displays the highest peak in the analyzed section. When you click this value, the number of peaks that are found in the selection is shown in the **Number of hot points** section in the lower left corner of the dialog. You can use the hot points to move the cursor between the peaks.

At cursor

Displays the level at the current audio file cursor position at the time of the analysis.

Maximum number of peaks to report

Restricts the number of reported peaks. For example, setting this to "1" reports only the highest peak.

Minimum time between 2 peaks

Controls the distance between points, so they do not appear too close to each other. For example, setting this to "1 s" ensures that there is always at least one second between reported points.

Results of the Analysis

The **Find Peaks** fields show the highest peak in the analyzed section and the level of the sample at the wave cursor position at the time of the analysis.

Global Analysis - Loudness Tab

This tab is for finding sections that are perceived by the human ear as louder or weaker in volume. To find sections that the ear perceives as significant in volume, you must look at a longer section of audio.

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the **Loudness** tab.

Loudness Settings

Analyze Loudness

Enables RMS loudness analysis.

Average

Displays the overall loudness of the analyzed selection.

Maximum

Displays the level of the loudest section in the analyzed selection. Clicking this value displays the number of loud sections found within the selection, in the **Number of hot points** section in the lower left corner of the dialog.

Minimum

Displays the level of the quietest section in the analyzed selection. Clicking this value displays the number of weak sections that are found within the selection in the **Number of hot points** section in the lower left corner of the dialog. This provides adequate information about the signal-to-noise ratio (SNR) of the audio material.

Around cursor

Displays the loudness at the audio file cursor position at the time of the analysis.

Resolution

The length of audio to be measured and averaged. If this value is lowered, short passages of loud/weak audio are detected. When it is raised, the sound must be loud/weak for a longer period to result in a hot point.

Threshold (for the average)

Ensures that the average value is calculated correctly for recordings with pauses. The value that you set here determines a threshold below which any found audio is considered to be silence, and is therefore excluded from average value calculations.

Maximum number of loudness points to report

Restricts the number of reported hot points. The highest points are reported. For example, setting this to "1" reports only the loudest section or one of the sections with the same highest value.

Minimum time between 2 points

Controls the distance between points, so they do not appear too close to each other. For example, setting this to "1 s" ensures that there is always at least one second between reported points.

Global Analysis - Pitch Tab

This tab is for finding the average pitch of an audio section.

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the **Pitch** tab.
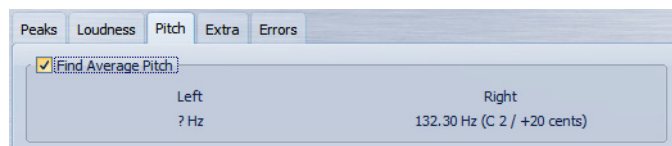
You can use this tab to gather information for pitch shifting, for example, to get one sound in tune with another. The display shows the pitch for each channel, both in Hertz (Hz) and as semitones and cents (hundredths of a semitone). Since the display shows an overall value for the entire analyzed section, the hot point controls in the lower section of the dialog are not used on this tab.

Usage guidelines for the Pitch tab:

▪ The result is an average value for the whole selection.

▪ The method only works on monophonic material, not on chords or harmonies.

▪ The algorithm assumes that the analyzed section has a reasonably stable pitch.

- The material must be relatively well isolated from other sounds.

- It is preferable to analyze the sustain portion of a sound rather than the attack. The pitch is usually not "stable" during the attack.

- Some synthetic sounds may have a weak fundamental (first harmonic) which can irritate the algorithm.

Global Analysis - Extra Tab

This tab shows the average DC Offset of the analyzed section and the **Apparent Bit Resolution**.

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the **Extra** tab.
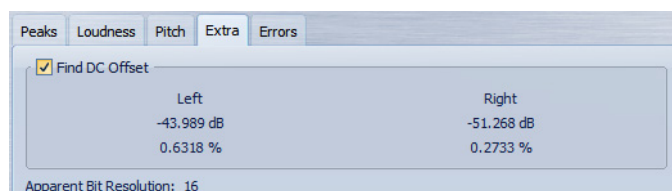
The **Apparent Bit Resolution** attempts to detect the actual resolution in the audio. This is useful, for example, if you want to check, whether a 24-bit file really uses 24 bits or if it was actually recorded with 16-bit resolution and then expanded to 24 bits.

Errors Detection

You can detect errors, such as glitches and sections where the audio has clipped.

Glitches

- These are disruptions in the audio. Glitches may occur after problematic digital transfers, after careless editing, etc. They manifest themselves as "clicks" or "pops" in the audio.

Clipping

- A digital system has a finite number of levels that it can represent properly. When recorded sound levels are too high or when the system cannot handle levels that have been raised by digital processing, hard clipping occurs that you can hear as strong distortion.
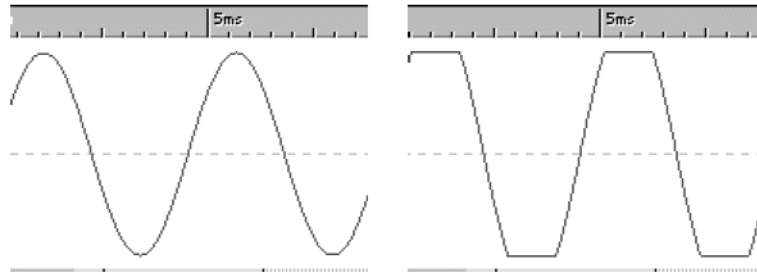
A sine waveform before clipping and after.

Result of the Analysis

This reports the number of glitches and clipping instances that have been found.

Global Analysis - Errors Tab

This tab helps you find glitches and sections where the audio has clipped.

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the **Errors** tab.
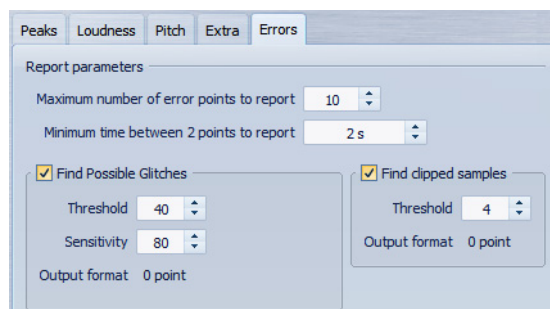
Maximum number of error points to report

Allows you to restrict reported numbers of hot points.

Minimum time between 2 points

Controls the distance between points, so they do not appear too close to each other. For example, setting this to "1 s" ensures that there is always at least one second between reported points.

Find possible glitches

Enables glitch analysis.

Find possible glitches - Threshold

Sets the value at which a change in level is considered to be a glitch. The higher the value, the less sensitive the detection.

Find possible glitches - Sensitivity

Length value that represents the length of time in which the waveform must exceed the threshold to be reported as a glitch. The higher the value, the less sensitive the detection.

Find possible glitches - Output format

Displays the number of clipping occurrences that are found by the analysis. Clicking this value displays the number of clips in the **Number of hot points** section in the lower left corner of the dialog.

NOTE

Make sure that the points that are found by the algorithm are real glitches. Zoom in and play back to check whether the found points really indicate a problem.

Find clipped samples

Enables clipping analysis.

Find clipped samples - Threshold

Checks for a number of consecutive samples at full value, to determine whether clipping has occurred. The Threshold setting determines the exact number of these consecutive samples that must occur for the program to report clipping.

Find clipped samples - Output format

Displays the number of clipping occurrences that are found by the analysis. Clicking this value displays the number of clips in the **Number of hot points** section in the lower left corner of the dialog.

Performing a Global Analysis

In the Audio Files workspace, select **Analysis > Global Analysis**, and select the tab that you want to include in the analysis.

PROCEDURE

1. In the **Global Analysis** dialog, set up the parameters.

   Most of the tabs have settings that determine how the analysis should be performed.

2. If the **Peak** or **Loudness** tab is selected, move the cursor to the position that you want to analyze.

   The Peak and Loudness tabs report values specifically for the position of the cursor.

3. Click **Analyze**.

Results of the Global Analysis

Depending on the analysis type, one or several values are returned for the analyzed audio.

For the Pitch and Extra analyses, only one value is returned. The other analysis types provide a number of positions in the file that indicate peaks, glitches, etc. These points are called "hot points".

Checking the Results of the Global Analysis

The results of the global analysis are marked with hot points. You can browse through these points to see the results of the analysis.

PREREQUISITE

In the Audio Files workspace, select **Analysis > Global Analysis**, and perform the analysis.

PROCEDURE

1. In the **Global Analysis** dialog, click the tab that represents the values that you want to check.

2. Check the display for maximum/minimum values in the entire analyzed section.

3. Decide which of these values you want to browse.

4. Click the button that currently displays this value.

5.   Check the **Number of hot points** value at the bottom of the dialog.

The value shows the number of positions that were found by the analysis.

6.   Use the scrollbar below the **Number of hot points** value to browse between the found positions.

The edit cursor shows the position in the wave window.

7.   To browse another property, click the corresponding tab, and then the value button.

NOTE

The result of the analysis is saved until you close the dialog or click **Analyze** again.

Creating Markers at Hot Points

Creating markers at hot points simplifies browsing the results of the global analysis.

PREREQUISITE

In the Audio Files workspace, select **Analysis > Global Analysis**, and perform the analysis.

PROCEDURE

1.   In the **Global Analysis** dialog, select the analysis type for which you want to create markers at hot points.

You can add markers for only one channel at a time.

2.   Click the **Create markers at hot points** button.

Temporary markers are added at all hot points.

RESULT

The markers are named using the following principle: "Hot point number (Channel)". For example, a marker at the third hot point in the left channel would be labeled "3 (L)".

Focusing Hot Points

After a global analysis, you can focus the display on a certain hot point.

PREREQUISITE

In the Audio Files workspace, select **Analysis > Global Analysis**, and perform the analysis.

PROCEDURE

1. Use the **Number of hot points** scroll bar to move the position indicator to the position in which you are.

2. Click the **Focus** button.

    The wave window zooms in on the selected point. The Global Analysis dialog is reduced to the bottom part.

3. To return to the unzoomed view and return to the full view of the **Global Analysis** dialog, click the **Focus** button again.

3D Frequency Analysis

Using the 3D Frequency Analysis, you can view an audio file in the frequency domain.

Use the 3D Frequency Analysis to:

- See how the frequency spectrum is distributed in a mix.

- Identify which frequencies to reduce or boost as a basis for equalizing.

- See which parts of the frequency spectrum are occupied by a certain background noise that you want to filter out.

A wave display (time domain) informs you about the start and end of a sound in a file, but lacks information about the timbral contents of the file that a frequency graph (frequency domain) provides. The graph that is used in WaveLab Elements is often referred to as an FFT (Fast Fourier Transform) plot. If you select a stereo recording, a mix of the two channels is analyzed.

The wheel control allows you to view the frequency spectrum from different angles. For example, you can open several 3D Frequency Analysis windows, each with a different perspective. This allows you to get a better view of an otherwise crowded graph.
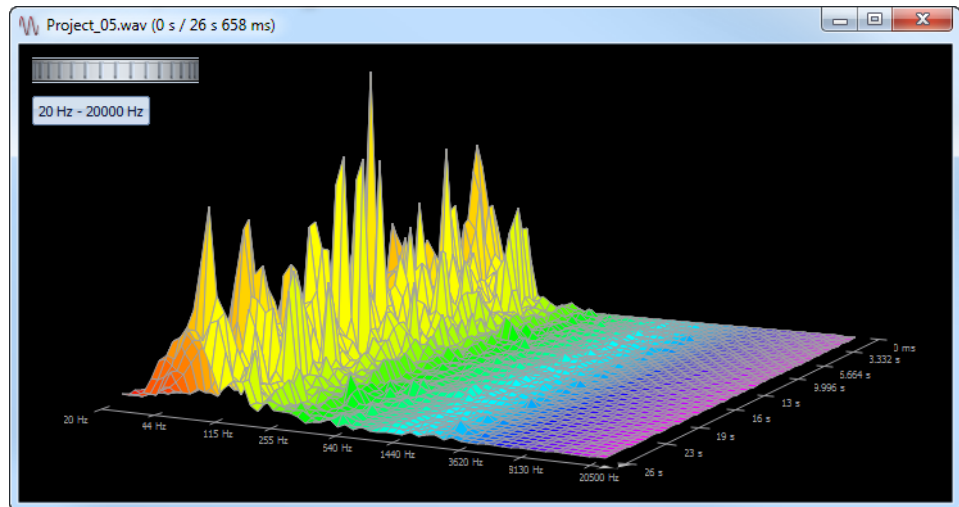
Creating a Graph for 3D Frequency Analysis

The length of the selected audio affects the accuracy of the analysis. For short selections, the result is more detailed. Consider making a separate analysis of the attack in which the most drastic variations occur.

PROCEDURE

1. In the Audio Files workspace, select the section of the file that you want to analyze.

    If you make no selection, the whole audio file is analyzed.

2. Select **Analysis > 3D Frequency Analysis**.

    The audio is analyzed.

3. To edit the analysis parameters, click the **3d analysis options** button.
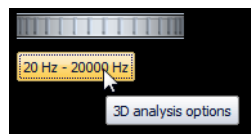
4. Adjust the parameters, and click **OK**.

    The audio is re-analyzed.

3D Analysis Options

In the options dialog of the **3D Frequency Analysis** dialog, you can define which frequency range is analyzed and modify the appearance of the graph for the 3D frequency analysis.

In the Audio Files workspace, select **Analysis > 3D Frequency Analysis**, and click the **3D analysis options** button.
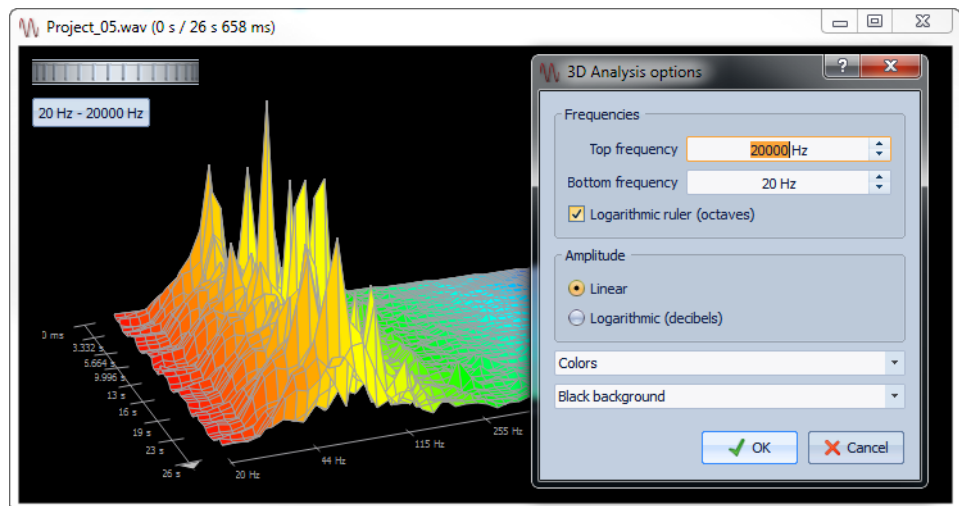
Top/Bottom frequency

Specifies the highest/lowest frequency of the range.

Logarithmic ruler (octaves)

Divides the frequency ruler in equally spaced octaves.

Amplitude

Select whether you want the peaks to be proportional to their amplitude (**Linear**) or to their power (**Logarithmic with decibel scale**).

Colors

Defines the color scheme of the graph.

Background

Defines the background color.

Offline Processing

Offline processes are useful for a variety of editing purposes and creative effects. For example, when the computer is too slow for real-time processing or when the editing requires more than one pass.

After the processing the audio file is permanently altered.

Applying Processing

Processing can be applied to a selection or to a whole file. For certain operations processing the entire file is necessary.

NOTE

If **Process whole file if there is no selection** is activated in the **Options > Audio file editing preferences > Editing** tab, the whole file is automatically processed if no selection exists.

PROCEDURE

1. In the wave window, make a selection

2. Select the type of processing that you want to apply from the **Process** menu.

3. If a dialog appears, make the settings.

4. Click **Apply** to render the effect to file.

Gain Dialog

In this dialog, you can apply a gain to change the level of an audio file.

In the Audio Files workspace, select **Process > Gain**.
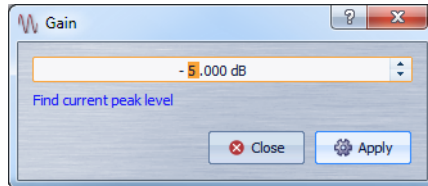
Click **Find current peak level** to obtain a report on the peak level of the audio selection, or the whole file if there is no selection. This is useful if you want to calculate how much you can increase the overall gain of a file without clipping (exceeding 0 dB), for example.

This processor also lets you add clipping. Clipping is when the gain is raised to a point where distortion is added. While this is normally not wanted, mild clipping can add some punch, for example, to accentuate the attack of a drum sound.

Normalize Level Dialog

In this dialog, you can change the peak level of an audio file.

In the Audio Files workspace, select **Process > Level Normalizer**.
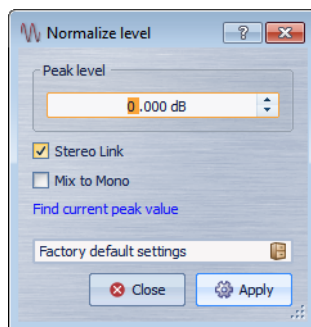
Peak level

Enter the peak level (in dB) that you want the audio selection to have.

Stereo Link

Applies the gain to both channels.

Mix to Mono

> Mixes the left and the right channel. The resulting mono file will have the specified peak level. This ensures a mix without clipping.

Find current peak value

> Creates a report on the peak level of the current audio selection, or the whole audio file if there is no selection.

Basic Envelope Operations

By adding points to the envelope curve you can create an envelope curve that changes the volume of the material over time. When you point the mouse in the display or move a point, the current position and level change is shown in the field above the display.

- To add a point, double click the envelope curve.

- To select a point, click it.

- To select several points, click and drag the selection rectangle.

- To move a point, click and drag it. If more than one point is selected, all points are moved.

- To move the whole curve up or down, click the envelope curve, and drag up or down.
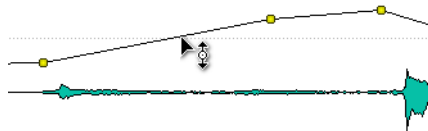
- To move the curve segment between selected points, select the points, click the envelope curve between the points, and drag up or down.

- To move two points horizontally, press [Shift], click the curve segment between two points, and drag left or right.
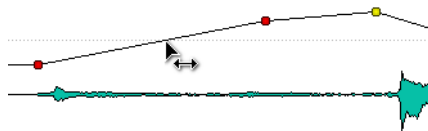
- To move the segment between 2 points vertically, press [Ctrl]/[Command], click the segment, and drag up or down.
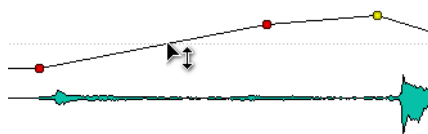
Fades in Audio Files

A fade-in is a gradual increase in level and a fade-out is a gradual decrease in level.

You can create fades by selecting an individual fading type for each fade-in/fade-out, or by using the **Easy Fade** function.

Creating a Fade-In and Fade-Out

PROCEDURE

1. In the Audio Files workspace, make a selection.

2. Depending whether you want to create a fade-in or a fade-out, select one of the following:
    - To create a fade-in, select **Process > Fade-in**.
    - To create a fade-out, select **Process > Fade-out**.

3. Select the type of fade that you want to create.

    A graph in the waveform indicates the resulting shape.

Applying Easy Fades

The **Easy Fade** function allows you to quickly apply a default fade-in or fade-out to an audio file.

The shape of the fade is governed by the default fade/crossfade setting in the **Options > Audio file editing preferences > Editing** tab, in the **Default fade/crossfade** section.

PROCEDURE

1. In the Audio Files workspace, make one of the following selections:
    - From the start of the audio file to where you want the fade-in to end.
    - From the position where you want the fade-out to start to the end of the audio file.

2. Select **Process > Easy Fade**.

Crossfades

A crossfade is a gradual fade between two sounds, where one is faded in and the other faded out. You can automatically create a crossfade when pasting an audio section into another.

Creating Crossfades

The material that you want to crossfade can either be in two different sections of the same audio file, or in two different audio files.

PROCEDURE

1.   In the Audio Files workspace, select the section that you want to fade-in.

2.   Select **Edit > Copy**, or press [Ctrl]/[Command]-C.

3.   Select the section that you want to fade-out.

     The length of this selection determines the length of the actual crossfade (check the length on the status bar). The section can be within the selected audio file or in another wave window. However, the selection must not be longer than the selection that you just copied.

4.   Select **Edit > Paste and crossfade**, and select one of the crossfade types.

5.   Play back the file and adjust the crossfade if necessary.

RESULT

The crossfade is created. Any material that originally appeared after the selection in the file into which you paste, is moved so that it now appears after the pasted material.

Any excess material in the copied selection appears after the fade at full level.

NOTE

If both files already have full level sections in the crossfade area (for example, if you have normalized both files), clipping and distortion might occur. If this happens, reduce the amplitude of both files by 3 to 6 dB and try again.

Paste and Crossfade Options

These options allow you to select a crossfade type for pasting.

In the Audio Files workspace, select **Edit > Paste and crossfade**.

Linear (equal gain)

Level changes linearly.

Sinus (equal power)

Level changes according to a sine curve, the power of the mix remains constant.

Square-root (equal power)

Level changes according to the square-root curve, the power of the mix remains constant.

Inverting the Audio Phase

Inverting the phase turns the signal upside down. The most common use for this function is to fix a stereo recording where one of the channels has been recorded out of phase with the other.

PROCEDURE

1. Optional: If you only want to invert the phase for a certain time range of the audio file, create a selection range in the wave window.

2. In the Audio Files workspace, select **Process > Invert phase**.
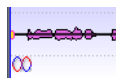
   An inverted phase is indicated by an icon in the wave window.

Reversing Audio

You can reverse an audio file or a part of an audio file as if playing a tape backwards.

PROCEDURE

1. Optional: If you only want to reverse a certain time range of the audio file, create a selection range in the wave window.

2. In the Audio Files workspace, select **Process > Reverse**.

DC Offset

A DC offset is when there is too large a DC (direct current) component in the signal. This most often appears due to mismatches between various types of recording equipment.

A DC offset is problematic for the following reasons:

- It affects where the zero crossing positions.

- Certain processing options do not give optimal results when performed on files with a DC offset.

Removing DC Offset

PROCEDURE

1. In the Audio Files workspace, open the audio file that you want to check for DC offset and fix.

2. Select **Process > Remove DC offset**.

   A dialog appears, stating the amount of DC offset in the audio file. You can also create a selection range in the wave window and then select this option, to only show the DC offset in the selection range.

   NOTE

   This function should be applied to whole files, since the problem is normally present throughout the entire recording.

3. Click **OK** to remove the DC offset.

Time Stretching

Time stretching is an operation that allows you to change the length of a recording without affecting its pitch.

With time stretching you can make audio material longer or shorter. This function is most often used to make a section of audio fit in with some other material. You select the material to be stretched and use the options in the **Time stretching** dialog to find a stretch factor. This is done by specifying a length or a tempo, according to what the situation requires.

Time Stretching Dialog

In this dialog, you can change the duration of an audio selection, usually without changing its pitch. You can stretch a selection to a specified duration (in minutes, seconds, and milliseconds), tempo (in bpm), or stretch factor (as percentage).

In the Audio Files workspace, select **Process > Time stretching**.
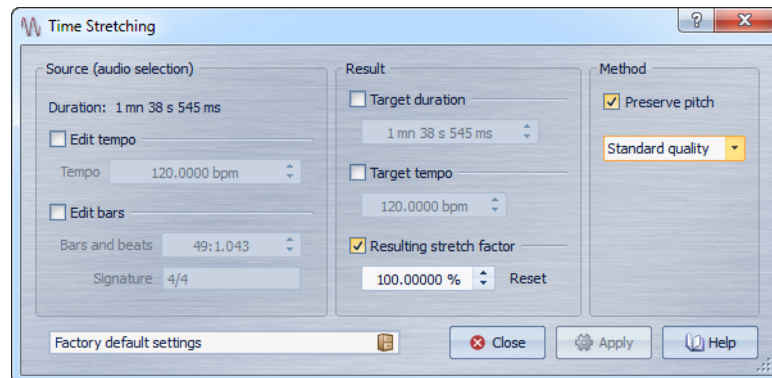
Source (Audio Selection)

Duration - Edit tempo

If this option is activated, you can change the tempo of the audio source. The number of bars and beats and the stretch factor is updated automatically.

Duration - Edit bars

If this option is activated, you can set the number of bars and beats and the signature for the audio source. The source tempo and according the stretch factor is automatically updated.

151

Result

Target duration

If this option is activated, the audio source changes its duration.

Target tempo

If this option is activated, the audio changes its tempo. For this to work, you must specify the original tempo or the number of bars and beats.

Target stretch factor

Lets you see how much the audio duration changes. This parameter is automatically updated when you edit the other parameters, but you can also activate this option to edit it manually.

Reset

Resets the stretch factor to 100% (no stretch).

Method

Preserve pitch

If this option is activated, the pitch of the audio material is not affected when you apply time stretch. If this option is deactivated, the pitch changes proportionally with the time stretch ratio.

Quality pop-up menu

Select whether you want to use the **Standard quality** or the **Quick process**.

Time Stretching Limitations

Time stretch is a complicated Digital Signal Processing (DSP) operation, that always affects the sound quality to some extent.

- For speech, stretch factors within a ±30% limit provide good results.

- For composite music, try to limit the range to ±10%.

- For sensitive material, like solo piano, try to limit the range to ±3%.

About the DIRAC Time Stretching Processor

The DIRAC engine is a high quality time stretcher. It produces the best quality results possible, but takes longer to process.

Pitch Shift

Pitch shift allows you to detect and to change the pitch of a sound, with or without affecting its length. This is useful for fixing an off-key vocal note in a live recording, or tuning the pitch of a kick drum sample to fit a particular song, for example.

Pitch Shift Dialog

In this dialog, you can change the pitch of a sound.

In the Audio Files workspace, select **Process > Pitch shifting**.
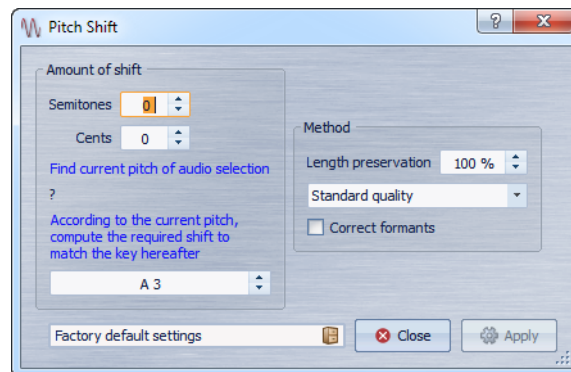
Amount of Shift - Semitones

Specifies the amount of pitch change in semitones.

Amount of Shift - Cents

Specifies the amount of pitch change in cents.

Find current pitch of audio selection

Analyzes the pitch of the selected audio and displays it below.

According to the current pitch, compute the required shift to match the key hereafter

Click to adjust **Amount of Pitch** parameters automatically, based on the currently detected pitch and the pitch specified in the value field below this button.

Pitch field

Specifies the resulting pitch.

Length preservation

Specifies how the length of the selection is affected by the operation:

- A setting of 100 means that the length of the audio remains unchanged.

- A setting of 0 means that the program behaves like a tape recorder, when the speed of its tape is changed. For example, if you raise the pitch by one octave, the audio is half as long.

- Intermediate values give results in between these two extremes.

  For large transposition values, the lower this setting, the better the quality of the effect.

Quality pop-up menu

Select whether you want to use the **Standard quality** or the **Quick process**.

Correct formants

If this option is activated, changing the pitch of vocal material gives a more realistic result. When processing non-vocal material you should leave this option deactivated, since it uses a slightly slower processing algorithm.

NOTE

This Algorithm might cause a noticeable increase in signal level.

Resample

You can change the sample rate of a recording. This is useful if the file that you want to use in a certain audio system was recorded at a sample rate that this system does not support.

Note the following:

- Sample rate conversion from a low frequency upwards does not improve the sound quality. The high frequencies that were lost cannot be restored by a conversion.

- When you resample to a lower frequency, high frequency material is lost. Therefore, converting down and then up again leads to a degradation in sound quality.

NOTE

Using the Crystal Resampler in the quality mode **High** to change the sample rate results in the same quality as when using **Process > Resample** in the Audio Files workspace. However, that is only the case if the sample rate in the **Sample rate** dialog exists in the values of the Crystal Resampler **Sample rate** menu. If you choose a custom sample rate, another algorithm is used, which results in a lower quality of what the Crystal Sampler can achieve.

Converting a Sample Rate

NOTE

Sample rate conversion is always applied to the entire file.

PROCEDURE

1. In the Audio Files workspace, select **Process > Resample**.
2. In the **Sample Rate** dialog, select a sample rate from the pop-up menu.
3. Click **OK**.

Audio Montage

The audio montage is a multitrack non-destructive editing environment, which allows you to arrange, edit, play back, and record audio clips on multiple tracks.

Non-destructive means that when you delete or change a part of an audio file, the audio is not deleted or permanently changed. Instead, a set of pointers keeps track of all the edits, so these can be readily reversed. WaveLab Elements provides comprehensive facilities for non-destructive editing.

Features include both track- and clip-based effects, volume and pan automation, and wide-ranging fade and crossfade functions.

The audio montage is a great tool for Audio CD creation, mastering, multimedia work, radio spot production, etc.

Basic Terminology

Audio montages can contain up to 3 stereo or mono audio tracks. You can use them to structure the work graphically, but do not see them as virtual tape tracks.

On an audio track, you can place any number of clips. These are containers for the audio, and include a number of settings and functions such as volume and pan curves, fades, etc.

A clip contains a reference to a source audio file on your hard disk, as well as start and end positions in the file (allowing clips to play back smaller sections of their source audio files). Any number of clips can reference the same source file.

Montage Window

The montage window in the Audio Montage workspace is where you assemble your audio montage. This is where you view, play back, and edit audio montages.

The montage window gives you a graphical representation of the tracks and clips.
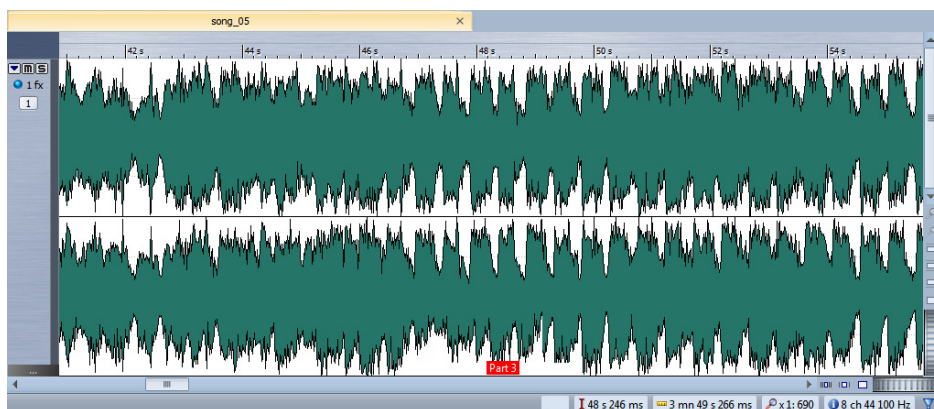
Track Control Area

The track control area offers several options regarding the track.

Fold/Unfold

Folds/unfolds the track.

Mute

Mutes the track.

Solo

Solos the track.

FX

Opens the **Effects** menu in which you can select effects for the track. A blue icon indicates that a track has track effects.

Track menu

Opens the track menu that contains track-related options.

Track name

> Opens the **Track name** dialog where you can enter a name for the
> track.

Track Menu

This menu contains all track-related options. In the Audio Montage
workspace, open the **Track** menu, or click the number button of a track.
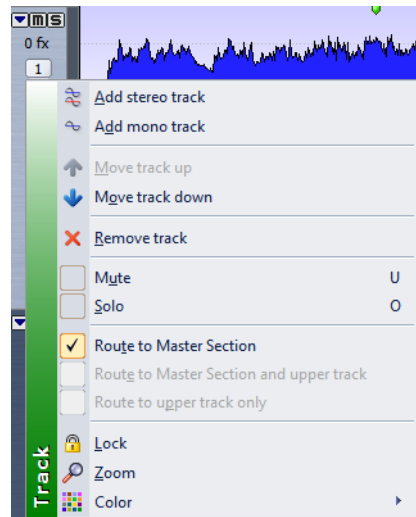
Add stereo track

> Adds a stereo track below the active track.

Add mono track

> Adds a mono track below the active track.

Move track up

> Moves the track one position up in the track list.

Move track down

> Moves the track one position down in the track list.

Remove track

> Deletes the active track.

Mute

> Mutes the active track.

Solo

> Solos the active track.

Route to Master Section

> Routes the audio signal of the active track to the Master Section
> input.

Route to Master Section and upper track

Routes the audio signal of the active track to the Master Section input and to the modulation input of the Ducker plug-in.

Route to upper track only

Routes the audio signal of the active track to the modulation input of the Ducker plug-in.

Lock

If this option is activated, you cannot edit the track.

Zoom

Shows the active track in the full available height.

Color

Opens a submenu where you can select a color for the active track.

Signal Flow in the Audio Montage

The audio signal flow goes through the various sections of WaveLab Elements in a certain way.

- Read audio clip samples

- Clip envelope

- Clip effects

- Clip pan

- Clip individual gain (**CD** window)

- Clips are mixed into the track slot (for example, overlapping clips)

- Track effects

- Track leveling

- Each track is mixed into a stereo bus

- This stereo channel is processed through the plug-ins of the master output

- This stereo bus is then sent to the Master Section input

Master Section:

- Channels/sample rate might change at each plug-in slot

- Master Section meters

- Master Section Dithering slot
- Independent meters
- Playback or file format rendering

Creating a New Audio Montage

You can add tracks and clips to your new audio montage.

PROCEDURE

1. In the Audio Montage workspace, select **File > New**.
2. In the **Audio montage properties** dialog, select a **Sample rate**.
3. Click **OK**.

Audio Montage Properties Dialog

In this dialog, you can set the sample rate of the audio montage.

This dialog open when you create a new audio montage.

To change the settings for the currently opened audio montage, select **Edit > Audio montage properties**.
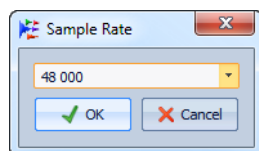
Alternative Ways of Creating a New Audio Montage

There are several ways to create a new audio montage.

- Import audio CD tracks to an audio montage
- Convert wave files to an audio montage
- File > Clone
- Press [Ctrl]/[Option], and drag a montage tab on the tab bar
- Double-click an empty section of the tab bar

Creating an Audio Montage from an Audio File

You can export audio files to an audio montage, including all markers that you have set in the audio file.

PROCEDURE

1.   Optional: If you only want to use a certain time range of the audio file, create a selection range in the wave window.

2.   In the Audio Files workspace, select **File > Export > Create audio montage from active file**.

3.   Select whether to export the whole file or the selected time range.

4.   Optional: Decide if you want to perform any of the following marker operations:
      ▪   **Transcribe markers**
      ▪   **Split at generic region markers**

5.   Click **OK**.

Import Options for Audio Montages

You can import audio files and Audio CD tracks into your audio montage.

In the Audio Montage workspace, select **File > Import**. The following import options are available:

Insert audio files

Opens the file browser where you can select one or more audio files to insert at the edit cursor position on the focused track.

Audio CD

Opens the Import Audio CD dialog where you can browse for audio CD tracks to extract.

Missing Files in Audio Montage Dialog

This dialog opens when you open an audio montage, and some audio files that the audio montage refers to could not be found. You can then search for the files or select a replacement.
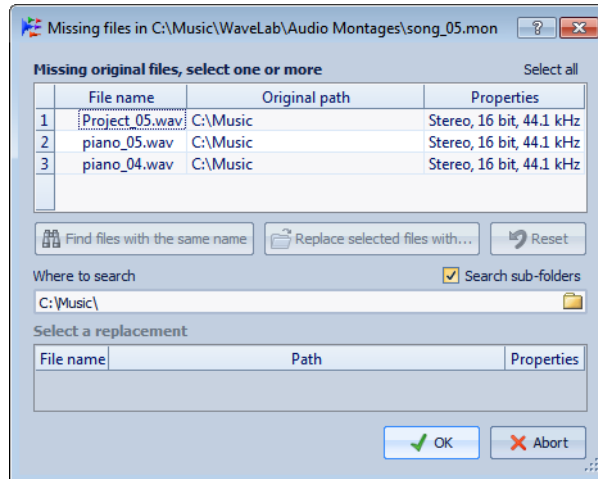
Missing files list

Lists the files that could not be found. Each file can be replaced by an existing file. To search replacements for multiple files, select the files and specify a new path in the **Where to search** field.

A file with a green checkmark is associated with a valid replacement. A file with a red checkmark is not yet associated with a valid replacement, but there are possible replacement candidates available at the bottom of this dialog.

Find files with the same name

Instructs WaveLab Elements to find all files with the same name in the folder specified in the **Where to search** field.

Replace selected files with

Replaces the missing files with a single specific file.

Reset

Removes all possible replacements for the selected missing files.

Where to search

Lets you specify a location for searching files. Click **Find files with the same name** to start the search.

Replacement list

Lists the files that can be used as a replacement. You can also drag a file into the list from the Windows Explorer/Mac OS Finder.

Assembling the Audio Montage

You assemble your audio montage by adding tracks and clips.

In the audio montage, only one track can be focused at a time. This focused track has a different color for the header. Certain WaveLab Elements functions are always applied to the focused track.

About Tracks

Tracks are the structure used to organize clips. They can be mono or stereo audio tracks.

- Audio tracks allow you to add clips to an audio montage.

Adding Tracks

You can add stereo tracks and mono tracks.

- In the Audio Montage workspace, click the number button of a track to open the **Track** menu, and then select the type of track that you want to add to your audio montage.
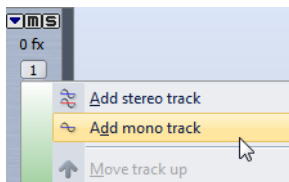
NOTE

By default, the new track is added below the focused track. If you want to place it above the focused track, press [Ctrl]/[Command] when adding the new track.

Moving Tracks in the Track View

You can change the order of the tracks in the montage window.

PROCEDURE

1.   In the Audio Montage workspace, click a track's number button.

2.   Select **Move track up/Move track down**.

Removing Tracks

Removing a track with clips also removes the clips. However, the audio files to which the clips refer are not affected.

PROCEDURE

1. In the Audio Montage workspace, click the number button of the track that you want to remove.

2. Select **Remove track**.

Folding and Unfolding Tracks

To save screen space in the Audio Montage workspace, you can fold tracks that do not need to be visible.

- To fold a track, click the arrow button at the top left corner of the track control area.
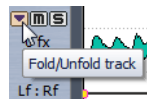
- To unfold a folded track, click the button again, or double-click anywhere in the folded track.

Locking and Unlocking Tracks

You can lock tracks to prevent them from being accidentally moved, edited, or deleted.

- To lock a track, click the number button of the track, and activate **Lock**. The waveform is marked with stripes to indicate that the track is locked.
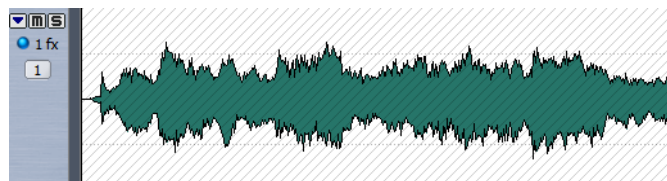
- To unlock a track, click the locked track, and confirm the dialog, or click the number button of the track, and deactivate **Lock**.

About Clips

A clip contains a reference to a source audio file on your hard disk as well as start and end positions in the file, volume and pan curves, fades, etc. This allows clips to play back smaller sections of their source audio files.

Any number of clips can reference the same source file. Since a clip only references to the original source file, it contains no audio data. Any number of clips can reference the same source file.

You can also use envelopes and effects on clips.

You can see the clips of the active audio montage in the **CD** window.
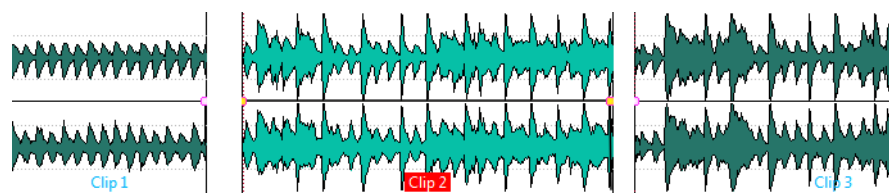
3 clips on a track

Adding Audio Clips to the Audio Montage

You create clips by copying audio selections into the audio montage. There are several ways to do this.

NOTE

You cannot add a mono clip to a stereo track or vice versa.

Dragging from the Wave Window

PROCEDURE

1. In the wave window of the Audio Files workspace, select the audio section that you want the clip to refer to.

2. Drag the selection on a track of the audio montage.

    If you want to add the whole audio file, drag the tab on a track.

RESULT

A clip is created, named after the original file.

Inserting From Open Wave Windows Using the Insert Menu

PREREQUISITE

In the Audio Files workspace, open the audio files that you want to insert as clips.

PROCEDURE

1. In the Audio Montage workspace, right-click an empty part of a track.
2. From the pop-up menu, select the audio file that you want to insert as clip.

Using Copy and Paste

PROCEDURE

1. In the wave window of the Audio Files workspace, select the audio section to which you want the clip to refer to.
2. Select **Edit > Copy**, or press [Ctrl]/[Command]-[C].
3. In the Audio Montage workspace, select the track where you want to insert the clip.

   The clip insert position is indicated by the edit cursor.
4. Select **Edit > Paste**, or press [Ctrl]/[Command]-[V].
5. Select an insert option from the pop-up menu.

Dragging Audio Files From the File Browser Tool Window

NOTE

The following can also be done from the Windows Explorer/Mac OS Finder.

PROCEDURE

1. In the Audio Montage workspace, open the **File Browser** window.
2. Select the audio files to which you want the clip to refer, and drag them on a track, or double-click the file to insert it.

Dragging Regions From the File Browser Tool Window

If you have defined marker regions in an audio file, you can drag these regions directly from the File Browser onto a track.

PROCEDURE

1. In the Audio Montage workspace, open the **File Browser** window.

2. Select the audio file to which you want the clip to refer.

   On the right side of the **File Browser** window, a list shows the available audio regions of the selected file.

3. Drag any region to the track.

Importing Audio Files

PROCEDURE

1. In the Audio Montage workspace, select the track on which you want to put the clip.

   The clip insert position is indicated by the edit cursor.

2. Right-click an empty area on the track, and select **Insert audio files** from the pop-up menu.

3. Select the audio files that you want to import as clips, and click **Open**.

Copying Clips From Another Audio Montage

If you have opened more than one audio montage, you can copy clips from one audio montage to another, either by using drag and drop or by using copy and paste.

Mismatched Sample Rates When Inserting Audio Files

When inserting audio files with a different sample rate than the sample rates of the audio montage, WaveLab Elements can create and use resampled versions of the files.

The resampled file versions are created in the implicit folder that is defined in the **Audio montage preferences**. The name of the file is the name of the original file name with the new sample rate as suffix. If the resampled file already exists, it is not recreated. However, you can also activate the option **Recreate resampled files** in the **Mismatched sample rates** dialog.

The created file is a 32-bit float file without any dithering process.

Mismatched Sample Rates Dialog

This dialog opens when you insert an audio file with a different sample rate than the sample rate of the audio montage. This dialog lets you create a resampled copy of the audio file.
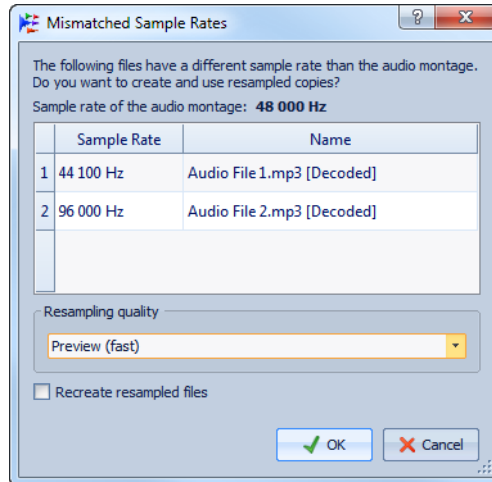
Resampling quality

This option allows you to select the resampling quality.

Recreate resampled files

If this option is activated and a resampled file exists, it is recreated. Otherwise, the existing version is used. Activate this option if the original audio file has been modified and you want to recreate its resampled version.

Rearranging Clips

You can freely arrange clips in the montage window.

About Selected and Focused Clips

There is a distinction between selected and focused clips. Some editing functions can only be processed on an individual clip or focused clip, while others can be processed on multiple clips or selected clips.

- A selected clip is a clip that you have selected using any of the selecting clips procedures. Several clips can be selected at the same time. This allows you to edit multiple clips at the same time using functions such as copy, delete, move, etc. Selected clips have a different background color. Right-clicking a clip opens the **Clip selection** menu.

- A focused clip is the clip that you selected, clicked, or edited last. Only one clip can be focused at a time. By default, the focused clip is distinguished by a highlighted name label. There are certain functions that can only be processed on a focused clip. Right-clicking a clip opens the **Focused Clip** menu. More options for the focused clip are available in the **Focused Clip** window.

Magnetic Bounds in Audio Montages

Certain positions, such as markers or the start and end of a clip, can be defined as magnetic.

When you move or resize, for example, a clip, and its edges or its cue point get close to one of the magnetic bounds, the clip snaps to this position. A label is displayed, indicating to what the clip snaps. This makes it easier to position items accurately.
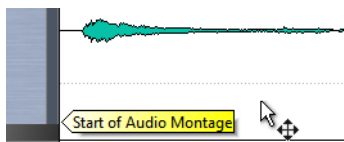
Activating Snapping to Magnetic Items

To make use of the magnetic bounds function, **Snap to magnetic items** must be activated.

PROCEDURE

▪ In the Audio Montage workspace, select **Options > Snap to magnetic items**, or click the **Snap to magnetic items** icon.

Selecting Clips

You can edit multiple selected clips at once.

▪ To select a clip, click it. Selected clips are displayed in a different color.

▪ To select multiple clips, [Ctrl]/[Command]-click in the bottom clip areas.

▪ To select a range of clips, [Shift]-click them.

Clip Context Menus

Many editing functions for clips can be accessed via the clip context menus. Depending on where you right-click the clip, different context menus are available.
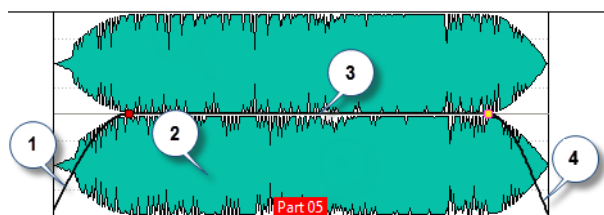
1) Fade-in section: Opens the **Fade-in** menu where you can edit the fade-in.

2) Any part of a clip: Opens the **Focused clip** menu where you can edit the focused clip.

3) Sustain section: Opens the **Envelope** menu where you can edit the envelope.

4) Fade-out section: Opens the F**ade-out** menu where you can edit the fade-out.

Clip Editing

All currently used clips are displayed in the **CD** window in the Audio Montage workspace. In this window, you can edit and rearrange clips and drag them in the audio montage.

The currently focused clip is highlighted in bold in the clips list.

RELATED LINKS:
"CD Window" on page 199

Focused Clip Window

This window allows you to edit the focused clips using various tools. For example, you can edit the cue points, envelope curves, fade-in/fade-out, and colors of clips.

In the Audio Montage, select **Workspace > Specific tool window > Focused Clip**.
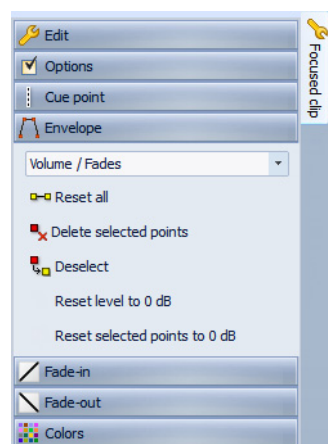
Edit

Edit plug-ins

Opens the plug-ins used by the focused clip.

Edit audio

Opens the clip's source file in the related workspace.

Zoom

Adjusts the view to display mainly the focused clip.

Play focused clip

Plays the focused clip from start to end.

Play focused clip with pre-roll

Plays the focused clip with a pre-roll. The amount of pre-roll is defined in the transport bar.

Split at cursor position

Splits the focused clip into two new clips, at the edit cursor or playback cursor position.

Cut to clipboard

Cuts the focused clip to the clipboard.

Copy to clipboard

Copies the focused clip to the clipboard.

Delete clip

Deletes the focused clip.

Split at silences

Opens a dialog, in which you can specify how to split clips at silences.

Shortcuts

Opens the **Customize commands** where you can define shortcuts for all the commands that are found in the **Focused clip** window.

Cue Points

Cue point - Set at cursor

Sets the cue point at a fixed position from the start of the clip.

Cue point - Follows fade-in end point

Sets the cue point to be the fade-in end point.

Cue point - Follows fade-out start point

Sets the cue point to be the fade-out start point.

End cue point - Custom offset

Sets the end cue point at a custom position from the end of the clip. This option allows you to edit the gap individually for each clip.

If this option is deactivated, the default gap defined in the **Audio Montage Preferences** is used.

Envelope

Envelope type menu

Sets the type of envelope. Depending on the selected type, different options are available.

Reset all

Resets the envelope to its neutral form.

Delete selected points

Deletes the selected envelope points.

Deselect

Resets the selection status of all envelope points.

Reset level to 0dB

Replaces the segments between the fade-in and fade-out points to a single neutral segment.

Reset selected points to 0dB

Resets the selected points to their default level.

Pan menu

Lets you select a pan mode.

Fade-in/Fade-out

Zoom

Adjusts the view to display mainly the fade-in/fade-out part of the focused clip.

Linear

Changes level linearly.

Sinus (*)

Changes level according to a sine curve. When used in a crossfade, the loudness (RMS) remains constant during the transition.

Square-root (*)

Changes level according to the square-root curve. When used in a crossfade, the loudness (RMS) remains constant during the transition.

Sinusoid

Changes level according to the sine curve.

Logarithmic

Changes level logarithmically.

Exponential

Changes level exponentially.

Exponential+

Changes level strongly exponentialy.

Set time

Sets the clip fade-in/fade-out time to the specified value.

Colors

On this panel, you apply the custom colors that you have set in the **Audio Montage Colors** dialog (**Options > Colors**).

Re-ordering Clips in the Audio Montage By Dragging

In the **CD** window, you can re-order clips by dragging them to another position in the list.

PROCEDURE

1. In the Audio Montage workspace, open the **CD** window.

2. In the clip list, drag a clip to another position in the list.

   You can move more than one clip at the same time, by selecting multiple clips and dragging them. If more than one clip is selected, all clips between the leftmost selected clip and the rightmost selected clips are moved.

About Moving and Crossfading Clips

You can let clips overlap other clips, move clips to another location, and create crossfades between clips.The **Options** menu in the Audio Montage workspace provides several options for defining the behavior when inserting, moving, and crossfading clips.

Moving Clips

NOTE

You cannot move mono clips to stereo tracks and vice versa.

PROCEDURE

1. Select the clips that you want to move.

2. Click the lower clip area, and move the clips in any direction.

   While dragging, the info line displays the current start position of the clip that you are dragging.

About Overlapping Clips

You can move clips so that they overlap each other.

Note the following:

- The tracks in the audio montage are polyphonic, which means that each track can play back several overlapping clips at the same time. Overlapping clips are transparent, allowing you to see the underlying clips and their waveforms.

- There are crossfading options that automatically adjust the volume envelope curves when you overlap clips.

Options for Moving and Crossfading Clips

The **Options** menu provides you with options that help you when moving and crossfading clips.

In the Audio Montage workspace, select **Options**.

Auto-shift clips on the right (on same track)

Moves all clips that are located on the right of the edited clip to the right. This option is taken into account when moving or resizing clips, and when inserting or pasting more than one clip at the same time.

Auto-shift clips on the right (on all tracks)

Moves all clips that are located on the right of the edited clip to the right. This option is taken into account when moving or resizing clips, and when inserting or pasting more than one clip at the same time.

Create default fades in new clips

If this option is activated, all new clips get the default fade-in and fade-out shape and length. For clips that are created by splitting a clip, only the default fade time is used.

Automatic crossfading -- free overlaps

If this option is activated, automatic crossfades are created when a clip overlaps the edge of another clip on the same track. The length of the overlap determines the length of the crossfade.

Snap to magnetic items

If this option is activated, moved elements such as clip edges, time selection edges, cursor, and markers snap to the magnetic items that are activated in the **Magnetic bounds** submenu.

Duplicating Clips

NOTE

You cannot copy mono clips to stereo tracks and vice versa.

PROCEDURE

1. In the Audio Montage workspace, select one or more clips.

2. Click the upper clip area and drag the clips in any direction.

    While you are dragging the clips, a dotted line indicates where the first of the copied clips will be placed. The position is also indicated on the info line.

Clip Resizing

In this context, resizing usually means moving the start and end points of a clip so that more or less of the original audio file is revealed.

To resize a clip, click the left or right edge of the clip, and move the start or end point to the left or to the right. You cannot drag the edge of a clip past the start or end point of the audio file it refers to.

If you press [Alt]/[Option] when resizing, all selected clips are resized by the same amount.
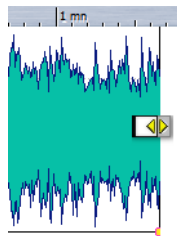
Splitting a Clip

You can split a clip in two.

PREREQUISITE

Decide whether you want to automatically create crossfades between the left and right clip by activating/deactivating **Options > Create default fades in new clips**.

PROCEDURE

1. In the Audio Montage workspace, click the position where you want to split the clip.

2. Position the mouse cursor on the edit cursor position in the top clip area.

    The cursor takes on the shape of a pair of scissors.
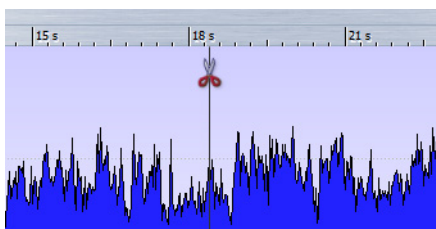
3. Double-click.

RESULT

The clip is split in two. The two clips have the same name and settings. Envelopes and fades are converted so that the two clips play back as if they were still one clip.

To split clips on all track, select **Edit > All tracks > Split at cursor position**.

Split Clip at Silences Dialog

You can remove silent clip parts and create a new clip at the cut position.

In the **Focused clip** window, open the **Edit** pane, and select **Split at silences**.

A clip has a duration of at least

> Sets the minimum length of the resulting regions after splitting. Non-silent sections shorter than this length will not become split regions.

Minimum silence between regions

Sets the minimum length of a silent region. Silent regions shorter than this length will not cause additional split regions to be created.

Silence is defined as a signal below (RMS)

Lets you manually set the treshold level for silence detection. Levels below this value will be considered as silence.

Automatic level detection (two-stage analysis, slower)

If this option is activated, the file will be analyzed and automatically split where WaveLab Elements detects silence. This process takes longer because the file is read twice.

Separate resulting clips by a fixed gap

If this option is activated, the resulting clips are separated from each other using the default gap duration. If this option is deactivated, the gaps between the resulting clips are determined by the amount of removed silence.

Deleting Clips

There are two principal ways to delete a clip:

- Right-click a clip, and select **Delete**.

- Select a clip, and press [Delete].

About Clips and Cue Points

A cue point is a defined position marker that belongs to a clip. It may be positioned within or outside the clip. Cue points are displayed as dotted vertical lines.
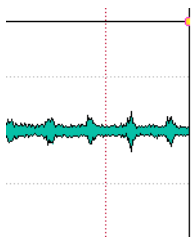
When you move a clip, its cue point is magnetic to any edges, markers, or positions. There are several uses for this:

- To set the cue point at a relevant position in the audio, and use it to align the clip with other clips, etc.

- To set the cue point before the start of a clip to position clips in a row with pre-defined spaces.

- To set the cue point at the fade-in or fade-out point of a clip, making it easy to maintain defined fade lengths when crossfading.

NOTE

Each clip can only have one cue point. If you select another cue point insert option, the cue point is moved to a new position.

Using Cue Points

You can add one cue point for each clip.

PROCEDURE

1. In the Audio Montage workspace, click the clip position where you want to set a cue point.

2. Open the **Focused clip** window, and on the **Cue points** panel, select one of the following options:
   - Set at cursor
   - Set at default pregap position

3. Decide if you want to activate the following options:
   - Follows fade-in end point
   - Follows fade-out start point
   - End cue point

Track Activity Indicator

The track activity indicator shows the volume level for audio tracks. It is located on the right side of the track control area in the Audio Montage workspace.
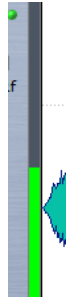
Instead of exact level readings the track activity indicator provides an overview of which tracks are currently playing back audio at what approximate level.

Envelopes for Clips

For clips in the audio montage, you can create envelopes for volume and fades and for panning.

You can create an independent volume envelope curve to automate volume, to create fades and crossfades, and to mute clip sections.

You can also draw pan envelopes to automate pan settings for clips. For mono clips, pan governs the left/right position in the stereo field. For stereo clips, pan sets the left/right balance.

Edit the envelope settings in the **Focused clip** window, or by right-clicking an envelope curve. The settings menu is different, depending on whether you click the fade-in part, the fade-out part, or the sustain part.

How the Envelope is Displayed

By default, all clips display a volume envelope curve. You can view the envelope as three separate envelopes: the fade-in part, the sustain part, and the fade-out part.

The points on the left and right side of the curve are the fade-in and fade-out junction points that separate the fade parts from the sustain part.
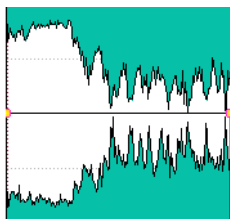
The envelope curve indicates if points, fade-ins, or fade-outs have been defined. In addition to the curve, changes in the volume envelope are by default also reflected in the waveform.

Selecting the Envelope

You can switch between volume/fade envelopes and pan envelopes.

PROCEDURE

1. In the Audio Montage workspace, select a clip, and open the **Focused clip** window.

2. On the **Envelope** panel, select which envelope to edit from the menu at the top.

Hiding the Envelope Curves

All clips display envelopes by default. You can hide these envelopes. However, hidden envelopes are still active.

PROCEDURE

▪   In the Audio Montage workspace, select a clip, open the **Focused clip** window, and on the **Envelope** panel, select **Hide all**.

Clip Envelope Editing

Curve points allow you to create volume curves, pan curves, and fade curves for a clip. You can edit the envelope curve by adding and moving curve points.

Editing Curve Points

Many of the editing operations that are commonly used in the context of your computer operating system can be applied when editing curve points. On top of these, a number of specific procedures apply.

- To add a curve point, double-click the envelope curve.

- To delete a curve point, double-click the curve point. The curve point between the sustain and fade parts of the envelope cannot be deleted.

- To delete several curve points, select the curve points that you want to delete, right-click one of the points, and select **Delete selected points**.

- To select a range of points, [Alt]/[Option]-click and drag to create a selection rectangle.

- To move all selected points, click one of the selected points and drag.

- To raise or lower the value of two consecutive curve points, [Ctrl]/[Command]-click the segment between the points and drag up or down.

- To change the time position of two consecutive curve points, [Shift]-click the segment between the points and drag left or right.

- To raise or lower the entire envelope curve, make sure that no curve point is selected, click the envelope curve, and drag up or down. Do not drag a segment that is delimited by selected points.

- To adjust the envelopes in all selected clips, hold down [Alt]/[Option], and drag any envelope curve up or down. This is a quick way to adjust the level or pan of several clips at the same time and also to adjust both sides of a stereo envelope simultaneously.

- To move a fade-in/fade-out point vertically, [Ctrl]/[Command]-click and drag the fade point.

- To change the level or the fade in/out time of multiple envelopes at the same time, select the clips that you want to edit, then press [Alt]/[Option], and edit the envelope with the mouse.

Resetting Curve Points

You can reset curve points to the default level.

▪ To reset a single point to 0dB, right-click the point, and select **Reset selected points to 0dB**.

▪ To reset the whole envelope curve to default, right-click the envelope curve, and select **Reset level to 0dB**.

Changing the Overall Volume Envelope of a Clip

The default envelope curve contains no volume envelope points. In this condition, you can still use the curve to change the overall volume for a clip.

PROCEDURE

1. In the Audio Montage workspace, place the mouse cursor on the envelope curve.

   The mouse cursor takes on the shape of a circle with two arrows that point up and down.
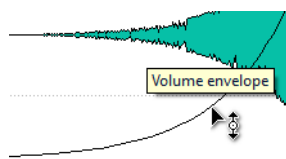
2. Click and drag the curve up or down to change the clip envelope volume.

About Pan Modes

The power of the sum of the channels drops by about 3dB if a signal is panned hard left or right, compared to the same signal being panned center. This can be compensated with pan modes.

Experiment with the modes to see which fits best. The pan modes can be set for tracks, clips, and the master output.

▪ To set the pan modes for clips, use the pan modes menu in the **Focused clip** window on the **Envelope** panel, or use the pan modes menu and knob in the **Effects** window.

▪ To set the pan modes for tracks and the master output, use the pan modes menu and knob in the **Effects** window.

The following pan modes are available:

Pan Mode	Description
Channel damp (0 dB/mute)	This mode does not compensate for power loss at all. If a signal is panned hard left or right, the power of the sum of the channels drops by 3 dB.
Constant power (+3 dB/mute)	This is the default mode. Regardless of the pan position, the power of the sum of the channels remains constant.
Channel boost (+4.5 dB/mute)	If this mode is selected and a signal is panned hard left or right, the power of the sum of the channels is higher than with a signal-panned center.
Channel boost (+6 dB/mute)	If this mode is selected and a signal is panned hard left or right, the power of the sum of the channels is higher than with a signal-panned center. This is the same as the previous option, but with even greater power boost.

About Modulating Audio With Other Audio

You can use the audio signal of one track to modulate the compression factor of another track. The signal of the upper audio track (clip) is usually called the carrier signal, because it contains the audio to be transmitted.

The **Ducker** plug-in is used for this purpose as it lowers the volume of one signal whenever another signal is present.

Fades and Crossfades in the Audio Montage

A fade-in is a gradual increase in level and a fade-out is a gradual decrease in level. A crossfade is a gradual fade between two sounds, where one is faded in and the other faded out.

Creating Fades

By default, all clips display a fade-in and a fade-out junction point. These can be dragged horizontally to create a fade-in or fade-out for a clip.

You can add envelope points to a fade just as with volume envelopes.

- To create a fade-in, click the fade-in point at the beginning of a clip, and drag it to the right.

- To create a fade-out, click the fade-out point at the end of a clip, and drag it to the left.

- To move a fade-in/fade-out point vertically, press [Ctrl]/[Command] while dragging.

- To create a crossfade, move a clip onto another. A crossfade is automatically created at the junction point.

The resulting linear fade-in/fade-out curve is displayed in the clip, and the fade is also reflected in the waveform. If you position the mouse over the fade-in point, a label appears, showing the fade-in time in seconds and milliseconds and the volume in dB.
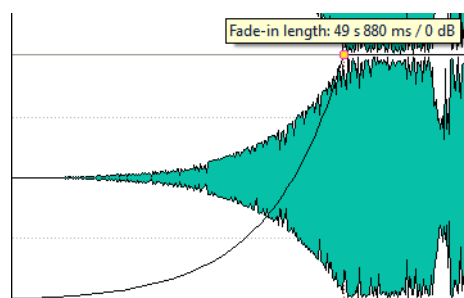
Editing Fades Menu

In this menu, you can select various preset fade curves and other fade-related options.

In the Audio Montage workspace, right-click the fade-in or fade-out point to open the **Fade-in**/**Fade-out** menu. This menu is a subset of the **Focused clip** window.

Fade-in region/Fade-out region

Adjusts the view to mainly display the fade-in/fade-out part of the focused clip.

Linear

Changes level linearly.
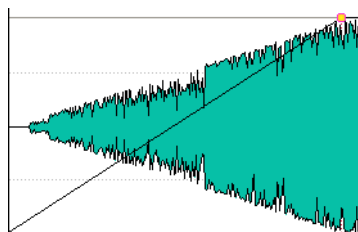
Sinus (*)

Changes level according to the first quarter period of the sine curve. When used in a crossfade, the loudness (RMS) remains constant during the transition.
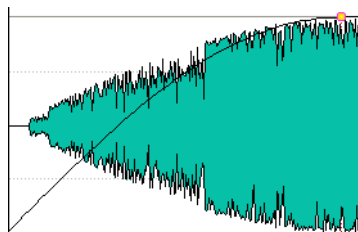
Square-root (*)

Changes level according to the square-root curve. When used in a crossfade, the loudness (RMS) remains constant during the transition.
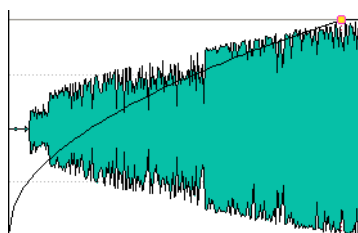
Sinusoid

Changes level according to a half period part of the sine curve.
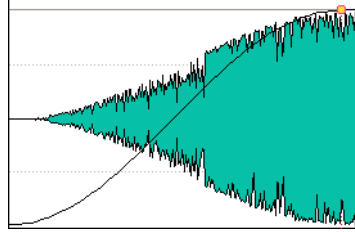
Logarithmic
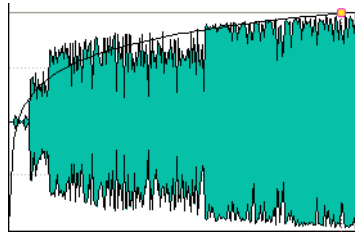
Changes level logarithmically.

Exponential

Changes level exponentially.
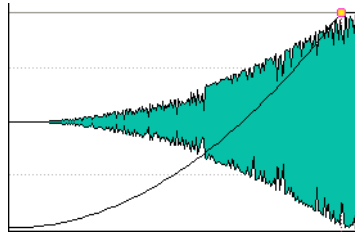
Exponential+

Changes level strongly exponential.
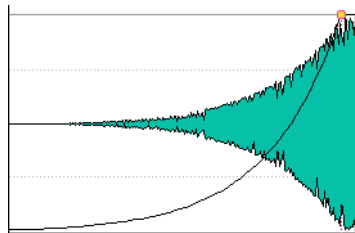
Set fade-in time/Set fade-out time

Sets the fade-in time/fade-out time to the value that you have specified in the **Focused clip** window on the **Fade-in/Fade-out** panel.

Applying Default Fades to New Clips

PROCEDURE

▪ In the Audio Montage workspace, select **Options > Create default fades in new clips**.

RESULT

All new clips that are imported or recorded in the audio montage get the default fade-in and fade-out shape and length if **Create default fades in new clips** is active. In this case, the default crossfade shapes are used. This also applies to clips that are created through splitting clips.

Crossfade Editing

You can create crossfades with independent shapes and lengths for the fade-in and fade-out curves.

The default automatic crossfade is linear. It uses the same shape and fade lengths for fade-in and fade-out. In most cases, an unaltered linear or sine crossfade produces the intended result. The following rules apply:

▪ A crossfade includes fade-in and fade-out.

▪ You can edit the fade-in and fade-out curves in crossfades in the same way as fades.

▪ To resize the crossfade time symmetrically, press [Shift], click the crossfade area, and drag left and right.

▪ To move the crossfade region while keeping its length, press [Ctrl]/[Command], click the crossfade area, and drag left and right.

▪ When you move a clip so that it overlaps another clip to create a crossfade, and neither clip has a defined fade in the overlap, a default crossfade is created.

▪ When moving a clip with a defined fade curve so that it overlaps the adjacent edge of another clip (without a defined fade), the unmoved clip automatically gets the same fade shape as the moved clip (but as a corresponding opposite fade), with amplitude compensation. This only applies if the fade-out length of the unmoved clip is set to zero.

- If both clips have different defined fade curves at their adjacent edges when creating a crossfade, this creates an asymmetrical crossfade, based on the defined fade curves.
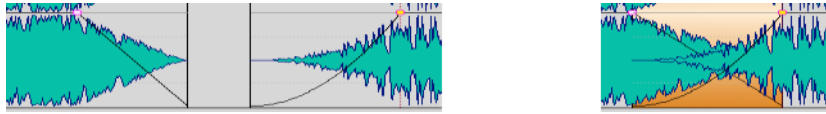
The **Options** menu provides additional options that affect crossfades.

RELATED LINKS:
"Options for Moving and Crossfading Clips" on page 175

Effects for Tracks, Clips, and the Master Output

You can add VST effect plug-ins to individual clips, tracks, or the master output of an audio montage. Clip effects affect individual clips only, track effects affect all clips on a track, and the master output affects the whole audio montage.

Only VST 2 and VST 3 plug-ins can be used in the audio montage. Each clip, audio track, and the master output can be independently processed by up to 2 VST effect plug-ins.

Effects are configured as follows:

- As inserts, when all sound is processed by the effects

- As send effects (split mode), where the balance between the unprocessed sound and the effect send level can be adjusted or controlled by effect envelope curves (clip effects and certain VST 2 plug-ins only)

An icon in front of a clip name indicates that effects are applied to a clip.
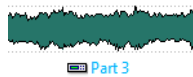
Hovering over a clip name shows the effects that are used for the clip.
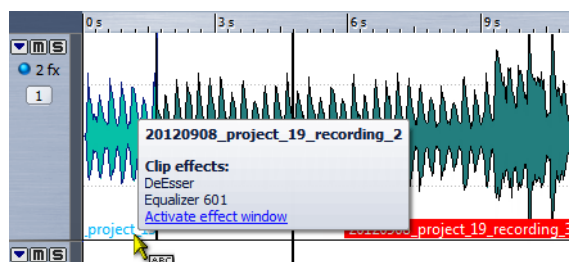
NOTE

Only clip effects for clips that are active at the current playback position consume CPU power. Track and master output effects are always active.

NOTE

The first time that you play an audio montage after is has been opened or copied, the program has to load all effects into memory. If you have many effects, this can result in a short silence before the playback starts.

NOTE

Effects that are used for tracks must support stereo audio, even if the audio track is mono.

About the Master Output Effects

You can add master output effects to an audio montage. While the Master Section is shared among all audio montages, the master output effects are local to each montage. This allows you to have a fully embedded project, without needing to use the Master Section.

The master output effects are located at the output of the audio montage.

NOTE

If you want to use a dithering plug-in, place it in the master output.

Effects Window

In this window, you can add effect plug-ins to tracks, clips, and the master output, and edit pan and gain settings.

In the Audio Montage workspace, select **Workspace > Specific tool windows > Effects**.
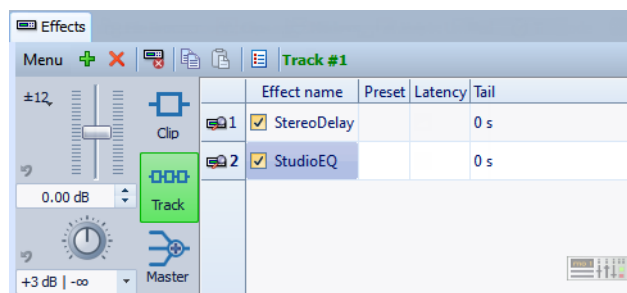
Menu

Clip effects

Displays the plug-ins of the focused clip.

Track effects

Displays the plug-ins of the focused track.

Master effects

Displays the plug-ins of the master output.

Add slot

Adds a slot into which an audio plug-in can be inserted.

Remove

Removes the selected plug-in.

Close all

Closes all plug-in windows that relate to this audio montage.

Copy

Copies the selected plug-in and its settings to the clipboard.

Paste

Replaces the selected plug-in with the plug-in that was copied to the clipboard. If no slot has been added, a new slot is created.

Plug-in map

Opens the **Plug-in Map** dialog, that displays all plug-ins that are used in the audio montage and the clips and tracks that are using them.

Customize commands

Opens the **Customize commands** dialog in which you can set up shortcuts for the **Effects** window.

Effects List

The effects list displays the effect plug-ins of the selected track, clip, or master output. In the list, you can select new effects for the existing effect plug-ins, change the effect order, and edit the **Tail** of effects.

The following options are available:

Plug-in window icon

Opens the plug-in window.

Effect name

Shows the effect name. Clicking an effect name opens the
Plug-ins menu where you can select a new effect.

Preset

Shows the last preset that was loaded for the plug-in.

Latency

Shows the latency (delay) in the audio path. Certain plug-ins must
analyze the sound before passing it on. However, real-time
changes, such as turning an effect knob, are delayed according to
the maximum latency that is found among all clips. Plug-ins with
latency cannot be used for adjusting the send level.

Tail (clip effects only)

Effects, such as reverb and delay, produce audio tails. This means,
for example, that the effect sound continues after the clip sound
ends. For example, if you add echo to a clip without specifying a
tail value, the echo effect is muted as soon as the clip ends. Set
the tail length so that the effect is allowed to decay naturally. If you
add another plug-in to the clip that also produces a tail, there is no
need to set a separate tail value for this plug-in, unless you want
the decay to sum up. The overall tail length for the clip is the sum
of the tail of each plug-in. The maximum tail setting is 30 seconds.

Gain/Pan Section

In this section, you can edit gain and pan settings for each clip and track.

Global Gain Section

In this section, you can set the global gain for the active audio montage. This gain can be applied before (pre) or after (post) the master output, depending on the setting of the pre/post button on the left of this section. Pre is the default setting.
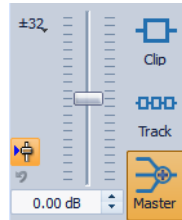
RELATED LINKS:
      "About Pan Modes" on page 183

Adding Effects to a Track, Clip, or Master Output

You can add effect plug-ins to every track and clip of the audio montage, and to the master output of the audio montage.

Adding Effects Via the Effects Window

PROCEDURE

1.   In the Audio Montage workspace, open the **Effects** window.

2.   Select the clip section, track section, or master output section.

3.   Click the **Add slot** button.
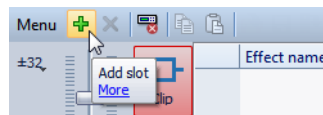
4.   In the **Effect name** column, select the added slot.

5.   Select a plug-in.

RESULT

The selected effect opens in a window.

NOTE

You can add effects during playback. However, if you add an effect with a latency larger than zero it is better to stop and restart playback to avoid timing discrepancies. In addition, a small number of VST plug-ins may change latency depending on parameter settings. If that is the case, make sure to stop and restart playback after the latency is changed.

Additional Ways of Adding Effects

- To add an effect to a track, click the **FX** button in the track control area, select **Add effect**, and select an effect from the menu.
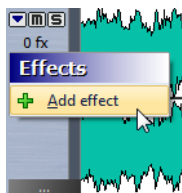
- To add an effect to a clip, in the montage window, right-click the clip name, select **Add effect**, and select an effect from the menu.
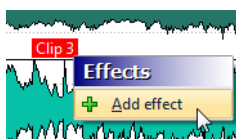
Removing Effects from Tracks, Clips, or the Master Output

PROCEDURE

1. In the Audio Montage workspace, open the **Effects** window.

2. Select the clip section, track section, or master output section.

3. Click the effect that you want to remove, and select **None**.

RESULT

The effect is removed from the slot. You can either select a new effect for the slot or leave the slot unused.

Copying Effect Settings to Other Tracks, Clips, or the Master Output

You can copy the effect and its settings of a track, clip, or master output to other tracks, clips, or the master output of the same or another audio montage.

PROCEDURE

1. In the Audio Montage workspace, open the **Effects** window.

2. Select the effect from which you want to copy the settings.

3. Select **Menu > Copy**.

4.   Decide if you want to paste the effect settings to a new slot or replace an existing effect.

•   To paste the effect settings to a new slot, add a new slot, and select **Menu > Paste**.

•   To replace an existing effect, select the effect, and select **Menu > Paste**.

Undoing Effect Changes

You can undo/redo changes to the effect settings. However, WaveLab Elements only registers the changes when the **Effects** window loses focus.

PROCEDURE

1.   In the plug-in window, click another window to lose focus of the plug-in in which you want to undo the settings.

2.   Go back to the plug-in in which you want to undo the settings.

3.   Press [Ctrl]/[Command]-[Z] to undo the settings.

Setting the Pan and Gain for Effects

You can set the pan and gain of the effects for each clip and track individually.

PROCEDURE

1.   In the Audio Montage workspace, select the **Effects** window.

2.   Select a clip or track.

3.   Adjust the pan and gain using the controls on the left of the **Effects** window.
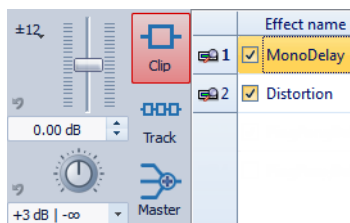
Setting the Global Gain for Effects

You can set a global gain for the master output effects of your audio montage and apply it before (pre) or after (post) the master output effects.

PROCEDURE

1. In the Audio Montage workspace, select the **Effects** window.

2. Select the master output.

3. Adjust the global gain using the fader on the left of the **Effects** window.
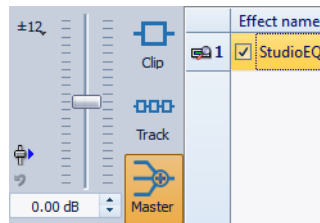
4. Click the pre/post button on the left of the global gain fader.
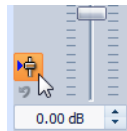
    If you use a dithering plug-in, set the gain to be pre-master.

Plug-in Window

In this window, you can display the effect plug-ins that are used for a track, clip, or the master output.
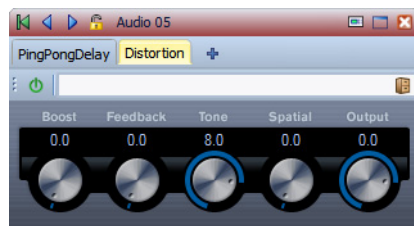
Single plug-in window

When you add a new effect plug-in to a track, clip, or master output, the plug-in window opens automatically. In the plug-in window, the effects are displayed in a plug-in chain by default. To change the processing order of the effects, you can drag each effect to a new position in the chain.

196

Opening the Plug-in Window

You can open the plug-in window from different locations in the Audio Montage workspace.

▪ To open the plug-in window from the **Effects** window, in the effects list, click the plug-in window icon to the left of a plug-in.

▪ To open the plug-in window for a clip from the montage window, right-click a clip, and select **Edit plug-ins**. You can also right-click the clip name and select a plug-in.

▪ To open the plug-in window for a track, click the **FX** button in the track control area.

▪ To open the plug-in window for a focused clip, in the **Focused clip** window, on the **Edit** panel, select **Edit plug-ins**.

Adding Effects From Within the Plug-in Window

Effects that are added to a clip, track, or the master output in the **Effects** window are automatically displayed in the plug-in window. However, you can also add effects to a track or a clip directly from within the plug-in chain window.

PROCEDURE

1. In the Audio Montage workspace, open the plug-in window for the clip, track, or master output to which you want to add an effect.

2. In the plug-in chain window, click the **Add plug-in** button.
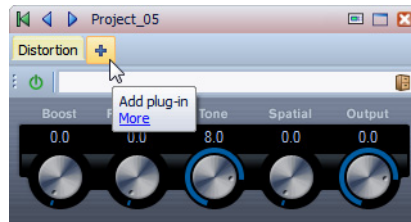
3. Select an effect from the menu.

   The effect is added at the end of the plug-in chain. The added effect is also displayed in the **Effects** window.

4. Optional: If you want to move the added effect in the plug-in chain, drag it to another position.

Changing Effects From Within the Plug-in Window

When displaying effect plug-ins in the plug-in window, you can change plug-ins to change the processing.

PROCEDURE

1. In the Audio Montage workspace, open the plug-in window for the clip, track, or master output for which you want to change an effect.

2. Click the plug-in menu icon, and select an effect from the menu.
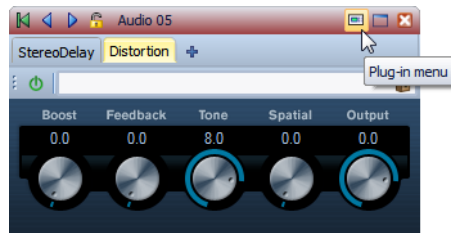
The changed effect is also displayed in the **Effects** window.

3. Optional: If you want to move the changed effect in a plug-in chain window, drag it to another position.

Switching Between Clip, Track, and Master Output Effects in the Plug-in Windows

In the plug-in window, you can quickly switch between the effect chain of clips, tracks, and the master output.

- To skip through the clips, tracks, and the master output of the active audio montage, use the left and right arrow icons.

- When using one plug-in window for both clips and tracks of an audio montage, you can switch between the plug-ins of the focused clip or the track which displays the focused clip by clicking the **Show Clip Plug-ins** or **Show Track Plug-ins** icons.
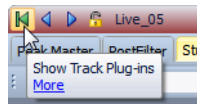
- To lock a plug-in window, activate **Lock Window**. If this option is activated, and you select another track or clip, another plug-in window opens. If this option is deactivated, and you select another track or clip, the effects are displayed in the same plug-in window.

Closing All Plug-in Windows

PROCEDURE

1. In the Audio Montage workspace, open the **Effects** window.

2. Select **Menu > Close all**.

About the CD Window

The **CD** window displays the clips of the currently active audio montage, and lets you write the audio montage to an audio CD.

NOTE

Each clip in the audio montage is a CD track.
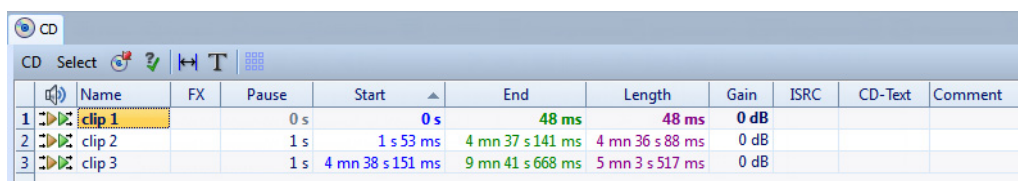
You can also adjust pauses between clips, check the conformity to the Red Book standards, add and edit CD-Text, and add UPC/EAN and ISRC codes. When selecting a clip in the montage window, the corresponding clip is highlighted in the **CD** window.

You can reorder CD tracks in the CD track list with drag and drop.

CD Window

In this window, you can create an audio CD.

In the **Audio Montage** workspace, select **Workspace > Specific tool windows > CD**.

		Name	FX	Pause	Start	End	Length	Gain	ISRC	CD-Text	Comment
1		clip 1		0 s	0 s	48 ms	48 ms	0 dB			
2		clip 2		1 s	1 s 53 ms	4 mn 37 s 141 ms	4 mn 36 s 88 ms	0 dB			
3		clip 3		1 s	4 mn 38 s 151 ms	9 mn 41 s 668 ms	5 mn 3 s 517 ms	0 dB			

Track List

You can edit tracks directly from the track list in the **CD** window.

Playback triggers

The following playback buttons are available:

⇥▷

Playback from start with a pre-roll.

⇥▷-[Alt]/[Option]

Playback from start with a long pre-roll.

▷

Playback from start.

You can also hold [Ctrl]/[Command] and double-click a CD track start marker triangle to start playback from the marker position.

Name

Shows the track name. To change the name, double-click in the corresponding cell, and enter a new value.

FX

Displays whether the corresponding clip uses effects.

Pause

Shows the pause between two tracks.

Start

Shows the start position of the track.

End

Shows the end position of the track.

Length

Shows the time value from the CD track start position to the corresponding end or splice marker.

Gain

Lets you set the gain for the clip.

ISRC

Lets you enter an ISRC code. To change the code, double-click the corresponding cell, and enter a new value.

CD-Text

Lets you specify the CD-Text. To change the CD-Text, double-click the corresponding cell, and enter a new value.

Comment

Allows you to enter a comment. To enter a comment, double-click a cell.

CD Menu

Write Audio CD

Opens a dialog from which you start writing a CD.

Check CD conformity

Verifies that the settings for the audio montage are in accordance with the Red Book standard.

Adjust pauses between clips

Opens a dialog, where you can adjust the pauses between clips. The following options are available:

▪ Set specific pause time

▪ Round existing pauses to closest second.

Edit CD-Text

Opens the **CD-Text editor** that allows you to enter descriptive text for the tracks that are written on CD.

Assign UPC/EAN code

Opens a dialog, in which you can assign a UPC/EAN code to a clip.

Select Menu

This menu allows you to select clips. The following options are available:

▪ Select all clips

▪ Select clips located before the cursor, on the focused track

▪ Select clips located after the cursor, on the focused track

▪ Deselect all clips

Creating Audio CD Tracks From Clips

You can use the **Check CD conformity** option to check whether the audio montage is ready for writing to audio CD.

PROCEDURE

1. In the Audio Montage workspace, make sure that the audio montage contains the material that you want on the audio CD.

    CD tracks must have a length of at least 4 seconds.

2. Audition the tracks in the **CD** window, and make corrections if necessary.

3. In the **CD** window, select **CD > Check CD conformity**.
    ▪   If a warning message appears, make corrections and check the CD conformity again.
    ▪   If no warning message appears, the audio montage is ready to write to audio CD.

About Cloning Audio Montages

When you clone an audio montage, you create a copy.

Clone copies the audio montage and lets the new clips reference to the original audio files. This is useful if you want to create several versions of the audio montage, for example, to experiment with variations. However, any processing or editing that you apply to the actual audio files are reflected in both audio montages.

Cloning Audio Montages

This creates a copy of the audio montage in which the new clips reference to the original audio files.

PROCEDURE

▪   In the Audio Montage workspace, select **File > Clone**, or press [Ctrl]/[Command], drag a tab, and drop it on the tab bar.

RESULT

A copy of the audio montage opens in another tab.

Mixing Down - The Render Function

The render function in the Master Section allows you to mix down the whole audio montage or a region of it to a single audio file.

A mixdown is necessary to produce an audio file from the audio montage.

RELATED LINKS:

Loudness Meta Normalizer

This tool is a key mastering component to ensure that all songs get the same loudness and to prevent clipping. It allows you to adjust the loudness of each clip in the audio montage so that they all have the same loudness. It is also possible to adjust the loudness of the audio montage mix down as well as the loudness at the Master Section output.

This tool operates on gains. It does not affect the underlying audio files or use any audio compressor.

If it is not possible to match the loudness in a given clip without clipping, the level of the other clips is reduced so that all clips still achieve the same loudness. This does not happen if the **Ignore peaks** option is selected.

To avoid clipping at the Master Section stage, you can limit the mixdown output of the audio montage before it goes into the Master Section and/or the Master Section output.

NOTE

The audio path in the audio montage uses 32-bit floating point processing. You can therefore overload it, for example, use levels above 0 dB in clips, without causing clipping in the signal path. The only section of the audio path that can introduce clipping is the output of the Master Section or the output of the audio montage. Both of these issues can also be solved by the Loudness Meta Normalizer.

NOTE

Since loudness requires several seconds of audio to be correctly computed, this tool is not adapted for very short clips (under 3 seconds).

Loudness Meta Normalizer Dialog

In this dialog, you can adjust the loudness of each clip in the audio montage so that they get the same loudness. You can also adjust the whole output.

In the Audio Montage workspace, select **Edit > Loudness Meta Normalizer**.
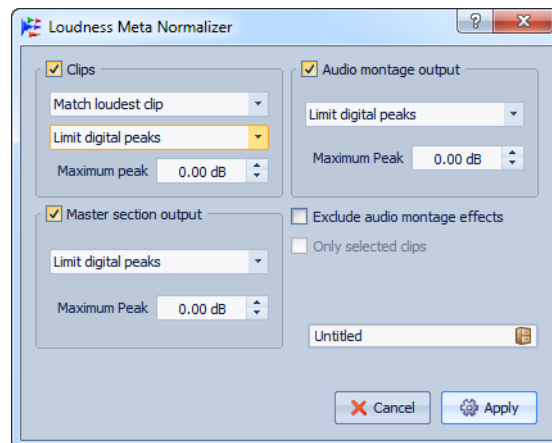
Clips, Master Section Output, and Audio Montage Output

- When **Clips** is activated, the gain settings of all clips in the audio montage are adjusted individually so that all clips play back at equal loudness.

- When **Audio montage output** is activated, the general gain setting of the audio montage is modified so that the audio montage mixdown matches a given loudness and optionally does not clip.

- When **Master section output** is activated, the Master Section gain is adjusted so that the audio montage mixdown that is processed through all Master Section plug-ins matches a given loudness and optionally does not clip. The audio montage itself is not modified by this operation.

The following options are available for the gain settings of clips, the audio montage output, and the Master Section output.

Match loudness menu

Select whether the audio montage output should match a given loudness or not. The following options are available:

- Do not change loudness

- Match loudest clip

- Match focused clip

Peaks menu

Select whether WaveLab Elements should limit the sample values (digital peaks), or ignore the peaks.

This setting is less important for clips, as the whole audio montage mixdown can be further reduced.

Maximum peak

Determines the maximum peak value that is not to be exceeded.

Additional Options

Exclude audio montage effects

If this option is activated, audio montage effects are not taken into account when you use the Loudness Meta Normalizer for processing.

Only selected clips

If this option is activated, only selected clips are processed with the Loudness Meta Normalizer.

Notes Window

This window allows you to keep notes about the current audio montage session.

In the Audio Montage workspace, select **Workspace > Specific tool windows > Notes**.
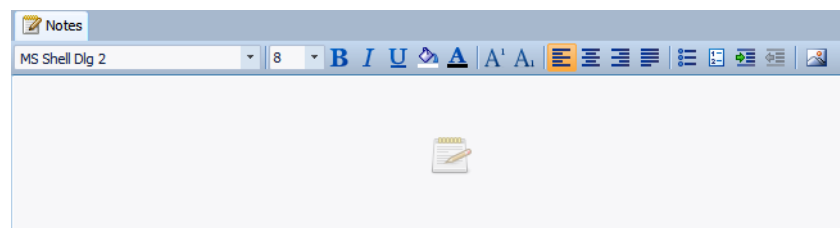
You can type into the window and use the standard HTML text editor controls to format your text, add images, and lists. The notes are saved with the audio montage file.

Recording

You can record audio in the Audio Files workspace and in the Audio Montage workspace.

Setting Up the Recording Dialog

Before you start recording, set up the **Recording** dialog.

PROCEDURE

1. In the Audio Files workspace or the Audio Montage workspace, click the **Record** button, or press [*] on the numeric key pad.

2. In the **File to create** section, open the pop-up menu, and select whether you want to record a named file or a temporary file.

3. In the **File to create** section, select a file name and the location where you want to store your file.

4. Select the audio format by doing one of the following:
   - Click the down arrow button to select a preset audio format.
   - Click the audio format text to open the **Audio File Format** dialog, select the format, and click **OK**.

5. Select whether you want to record to an audio file or an audio montage track, by selecting one of the following options:
   - **Create new audio file window**
   - **Add to active audio file**
   - **Add to focused track of montage**

6. Select whether you want the **Level** or the **Spectrum** display.

7. Optional: Make further settings in the **Options** section, and on the **Options** and the **Values** tabs.

8. Click **Record**, to start recording.

    If you have selected one of the Auto-start options, the recording goes into **Pause** mode, until the specified Auto-start criteria are met.

    The background of the **Recording** dialog turns red to indicate that you are recording.

9. Optional: You can pause the recording by clicking the **Pause** button.

10. Optional: You can drop markers in the file during recording by clicking the drop marker buttons.

11. When you have finished recording, click **Stop**.

12. Optional: If you want to record another take, click **Record** again.

Dropping Markers During Recording

When you are recording, you can click the marker buttons to add a marker to the recorded file.

PROCEDURE

1. Open the **Recording** dialog.

2. Make your settings and start recording.

3. Select the type of marker that you want to drop.
    -   To drop a numbered generic marker, click the yellow marker button, or press [Ctrl]/[Command]-M.
    -   To drop numbered generic region start and end markers, click the white buttons, or press [Ctrl]/[Command]-L/[Ctrl]/[Command]-R.

RESULT

The markers are dropped each time that you click the marker button.

NOTE

If you insert two or more region start markers in a row with no region end markers in between, only the last of these start markers is kept. The same applies for region end markers.

Recording Dialog

In this dialog, you can make recording settings and start recording an audio file.

In the Audio Files workspace or the Audio Montage workspace, click the **Record** button or select **Transport > Record**.

Main Buttons
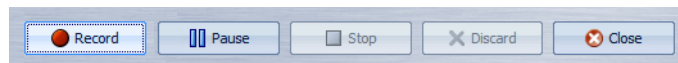
Record

Starts recording. Depending on the recording options, the **Pause** mode is activated.

Pause

Pauses recording.

Stop

Stops recording.

Discard

Stops recording and deletes anything recorded so far.

Method Tab

On this tab, you can define options for starting, stopping, and pausing the recording automatically. You can select an input device and choose to start a recording at a specific time or stop if after a specific duration.
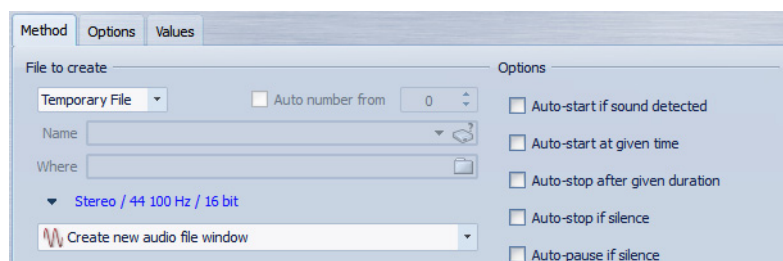
File to create

Specify whether you want to record a temporary file to be saved later, or record to a file with a specific name and location.

Auto number from

If this option is activated, increasing numbers are added to the file names of the successively saved files.

Name

The name of the file to be written, without the path. When typing, all files in the selected folder that start with the same letters are displayed. To display all files in the selected folder, click the list icon.

Where

Specifies the folder where you want to save the recording.

Audio File Format

Opens the **Audio File Format** dialog, where you can specify the file format.

Location of the Recording

Specifies where the audio is recorded:

- In a new audio file window.

- In an existing audio file is inserted at the edit cursor position (if none exists, a new one is created).

- In an existing audio montage is inserted at the edit cursor position (if none exists, a new one is created).

Auto-start if sound detected

If this option is activated, recording starts when the audio input level exceeds the threshold level specified on the **Values** tab.

Auto-start at given time

If this option is activated, recording starts at a specified time according to the computer clock. Specify the time on the **Values** tab.

Auto-stop after given duration

If this option is activated, recording stops automatically after the duration specified on the **Values** tab.

Auto-stop if silence

If this option is activated, recording automatically stops when the audio input level drops below a specified threshold level and stays there for a certain amount of time. Specify the level and the duration on the **Values** tab.

Auto-pause if silence

If this option is activated, recording automatically pauses when the audio input level drops below a specified threshold level and stays there for a certain amount of time. Specify the level and the duration on the **Values** tab.

209

Options Tab

On this tab, you can make additional settings for the recording process.
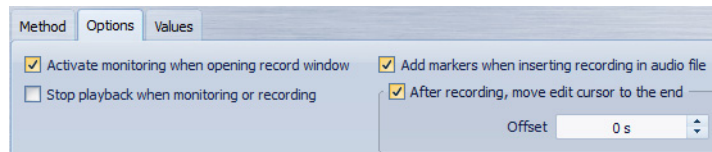
Activate monitoring when opening record window

If this option is activated, the meters are activated when the **Recording** dialog opens. If this option is deactivated, the meters and the audio thru are displayed when pressing **Record** or activating **Monitor**.

Stop playback when monitoring or recording

If this option is activated, playback stops before monitoring or recording starts.

Add markers when inserting recording in audio file

If this option is activated and a recording is inserted into an audio file, markers are added encompassing the new samples.

After recording, move edit cursor at the end

When recording into an audio file or montage, it is often convenient to move the cursor to the end of the recording.

Values Tab

On this tab, you can define values for the various recording options.
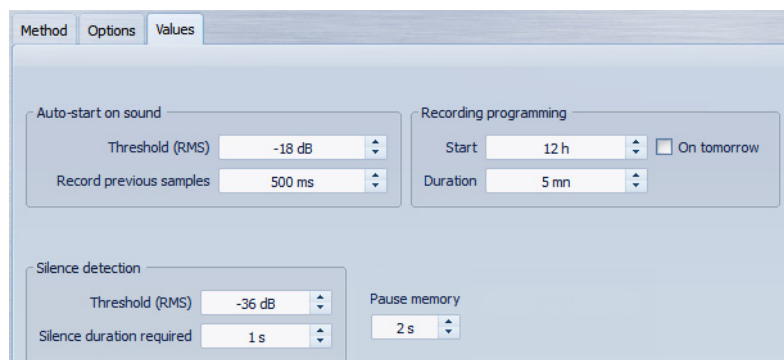
Auto-start on sound - Threshold (RMS)

Specify the average sound level that is sufficient to trigger recording.

Auto-start on sound - Record previous samples

Allows you to include a short section of audio before the start point, to capture attacks, for example. It is only relevant when the option **Auto-start if sound detected** is activated.

Silence Detection - Threshold (RMS)/Silence duration required

The threshold value used for the options **Auto-stop if silence** and **Auto-create markers at silence points**. It is used in conjunction with the **Silence duration required** setting, so that recording is stopped or a marker is added if the input level stays below the threshold value for the specified duration.

Recording programming - Start

Determines the time at which recording starts when the option **Auto-start at specific time** is activated.

Recording programming - On tomorrow

If this option is activated, you can specify a time on the next day.

Recording programming - Duration

Determines the length of the recording when the option **Auto-stop after specific duration** is activated.

Pause memory

This is a safety buffer when you are using the Pause button. When you resume recording, this buffer is used to restore the last short section of audio before you deactivated the pause button. This way, you can resume recording even if you deactivated the **Pause** button a bit too late.

Meter Display
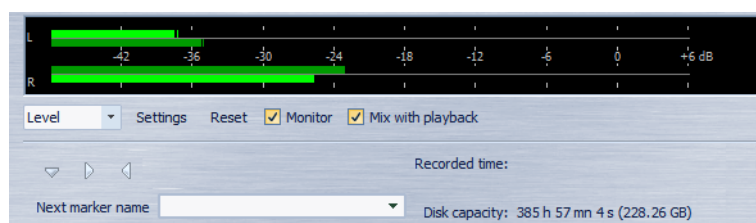
Level/Spectrum

Specifies which meter to display.

Settings

Opens the **LeveL/Pan Meter Settings** dialog, where you can customize the meter settings.

Reset

Resets the peak values.

Monitor

If this option is activated, the audio input is also sent to the output ports (not available if Windows MME drivers is used).

Mix with playback

If this option is activated and the same audio ports are selected for monitoring and for playback (in the **VST Audio Connections** dialog), the signals are mixed. If this is not activated, the monitoring signal has priority.

This allows you to toggle between the auditioning of the recorded signal and the playback signal, and to have full control over the monitor outputs.

Next marker name

Edit the name of the next marker to insert.

Meter Display

In the lower part of the **Recording** dialog, you find a meter display. This is useful for checking the input level and the frequency spectrum of the input signal.

The meters in the **Recording** dialog are miniature versions of the Level, Spectrum in the meter windows. Activate the meters, by activating the **Monitor** checkbox.This is done automatically, if the option **Activate monitoring when opening record window** is activated on the **Options** tab in the **Recording** dialog.

To reset the meters, click the **Reset** button.

Level Meter

In the Level meter, horizontal bars show the peak level (outer bars) and average loudness (VU, inner bars) of each channel. Values are also shown numerically. When clicking the **Settings** button, the **Level/Pan Meter Settings** dialog opens.

Spectrum Meter

The Spectrum Meter shows a bar diagram, providing a continuous graphical representation of the frequency spectrum. From the **Settings** pop-up menu you can choose whether to restrict to high audio levels, or to include medium or low audio levels.

Disk Capacity Indicator

This indicator at the bottom of the **Recording** dialog indicates the approximate amount of available disk space on the hard disk specified in the **File to create** section, or the hard disk that you have selected for temporary files.

NOTE

When there is less than 30 seconds of available hard disk space left, the disk capacity indication is displayed in red.

Master Section

The **Master Section** is the final block in the signal path before the audio is sent to the audio hardware, to an audio file, or to the audio meters. This is where you adjust master levels, add effects, and apply dithering.

The settings and effects in the **Master Section** are taken into account in the following cases:

- When playing back an audio file in the wave window.

- When playing back an audio montage. Note that the **Master Section** effects are global for all clips and tracks in an audio montage, as opposed to the individual clip or track effects.

- When using the **Render** function.

- When writing a CD from the audio montage.

By default, the **Master Section** is active. You can turn it off for each file individually by deactivating the **Play through Master Section** button at the bottom of the wave/montage window.
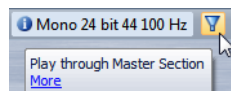
To turn the Master Section off globally, deactivate the **Playback goes through Master Section** button at the bottom right of the Master Section.
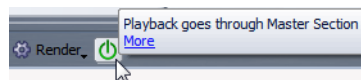
Master Section Window

In this window you can apply effect plug-ins, adjust the master level, apply dithering, and render the audio file or audio montage.

To open the **Master Section** window, in any workspace, select **Global > Master Section**.
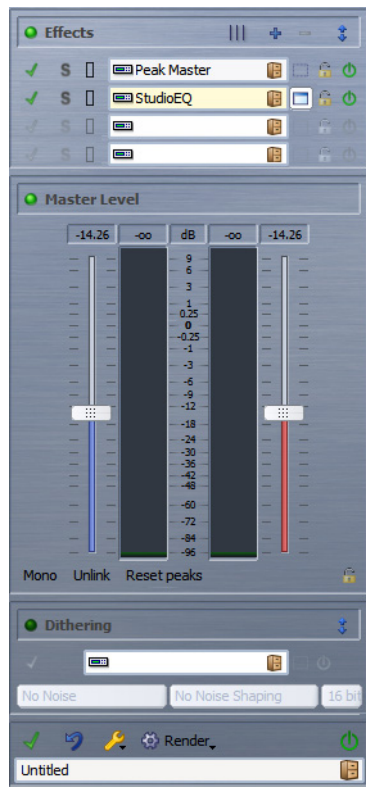
The **Master Section** consists of the **Effects** pane, the **Master Level** pane, and the **Dithering** pane.

Signal Path

The three panes in the Master Section window correspond to the three processing blocks of the Master Section: Effects, Master Level, and Dithering.

The signal passes through these blocks from top to bottom, as shown in the following figure:
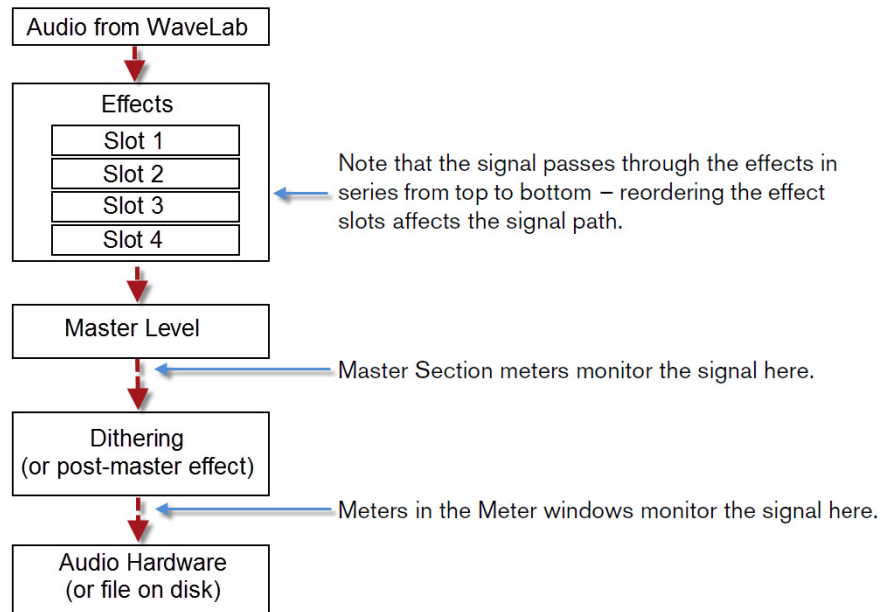
In the Master Section, the signal goes through all plug-ins, even when some plug-ins are soloed. However, the sound is not affected by this because the muted plug-ins are bypassed from the playback process stream.

When removing the bypass, the process signal is immediately available without latency. This allows you to quickly switch between different solo/mute settings.

Effects Pane

This pane in the **Master Section** allows you to add up to 4 effect plug-ins in series, and manage them.

In the Audio Files workspace or the Audio Montage workspace, select **Workspace > Shared tool windows > Master Section**.
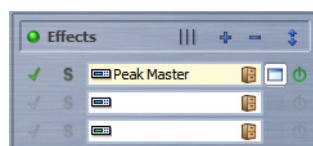
Rearrange

Rearranges the Master Section according to the sample rate and channel configuration of the active audio file. The internal bus of the Master Section and any active plug-ins are configured accordingly.

This operation is performed automatically before playback or rendering. It is sometimes helpful to manually rearrange the Master Section, because some plug-ins do not accept a mono or stereo signal as input, or a given sample rate. In that case, clicking the button informs you about any problems, before playback or rendering.

This operation has no effect if playback is already in progress or if there is no active audio file.

Show one more slot

Makes one more slot visible.

Hide bottom slot

Hides the bottom slot.

Fold/unfold section

Expands or collapses the **Effects** pane.

Bypass during playback

Bypasses the plug-in during playback and optionally for a rendering operation. The signal is still processed by the plug-in, but is not injected in the audible stream.

Solo (bypass)

Bypasses all plug-ins except this one during playback.

Effect plug-in slot

Slot where you can insert an effect plug-in.

Presets menu

Lets you store and restore preset settings. The **Presets** menu offers additional options to save and load default banks and effects.

Plug-in visibility

Activates/deactivates the plug-in window.

Switch effect on/off

Excludes the plug-in from both playback and rendering, and rearranges the bus without this effect.

Supported Effect Plug-in Formats

WaveLab Elements supports different plug-in standards. WaveLab Elements-specific plug-ins, VST 2 plug-ins and VST 3 plug-ins, and plug-ins that adhere to the Microsoft DirectX standard.

WaveLab Elements-specific Plug-ins

Some specific plug-ins are included in WaveLab Elements, for example, the Crystal Resampler plug-in.

VST Plug-ins

Steinberg's VST plug-in format is supported by a lot of programs and plug-in manufacturers. You find a number of VST plug-ins included with WaveLab Elements. Other plug-ins can be purchased separately from Steinberg or other manufacturers, or in some cases downloaded from the internet.

NOTE

If you have Cubase installed on your computer, you can use the effects that are included with Cubase in WaveLab Elements. See the Cubase documentation for details.

Plug-ins that Adhere to the Microsoft DirectX Standard

These are known as DirectX or DX plug-ins and are also widely available.

Setting Up Effects

The number of effects available depends on which plug-ins you have installed.

- To select an effect plug-in for a slot, click the slot, and select an effect from the pop-up menu. When you have selected an effect, it is automatically activated, and its control panel opens.

- To turn off an effect, click its **Switch effect on/off** button. To activate the effect, click again.

- To remove an effect plug-in, click the slot, and select **None**.

- To hide the control panel of an effect, click its **Plug-in visibility** button.

- To solo an effect, click the **Solo** button to the left of the effect slot. This allows you to check the sound of that effect only. You can also bypass effects in their control panels.

- To change the order of the slots, and thus the order in which the signal passes through the effects, click a slot, and drag it to a new position.

Master Section Plug-in Window

In the plug-in windows of the Master Section, you can make settings for a Master Section effect plug-in, such as bypass, solo, render in place, monitoring, or presets.

In the Master Section's Effects pane, click an effect's **Plug-in visibility** button to open the corresponding plug-in window for the effect.
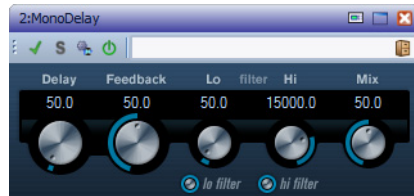
Bypass during playback

If this option is activated, this plug-in is bypassed during playback, and optionally for a rendering operation. To deactivate an effect when rendering, use the **Switch effect on/off** buttons in the Master Section's Effects pane.

Solo (bypass)

If this option is activated, all plug-ins except this one are bypassed during playback.

Render in place

Processes the audio in place without any intermediary step. Bypassed plug-ins are excluded and rendered audio is crossfaded at boundaries.

Switch effect on/off

If you deactivate the plug-in, it is excluded from both playback and rendering.

Presets

Opens a menu to save/load presets for this plug-in.

Effect Plug-in Presets

With WaveLab Elements comes a number of factory presets for the included effect plug-ins that you can select and use as is, or use as a starting point for your own settings.

Third-party plug-ins can provide their own factory presets. To access the presets for an effect, click the **Preset** button in its control panel window. The available functions depend on the type of plug-in.

Presets for VST 3 Plug-ins

Applying and saving presets for WaveLab Elements specific plug-ins works exactly as with any other preset, apart from the fact that there are no preset tabs or menu items as in dialogs. Instead, clicking the **Preset** button opens a separate **Preset** dialog.

The options in this dialog are the same as for dialogs with **Preset** tabs.

The file format is compatible with Cubase.

Presets for VST 2 Plug-ins

VST 2 plug-ins have their own preset handling. When you click the **Preset** button for this type of effect, a pop-up menu with the following options opens:

Load/Save Bank

Loads and saves complete sets of presets. The file format is compatible with Cubase.

Load/Save Default Bank

Load the default set of presets or saves the current set of presets as the default bank.

Load/Save Effect

Loads or saves a preset. This is also compatible with Cubase.

Edit name of current program

Allows you to define a name for the preset.

Preset List

Allows you to select one of the currently loaded presets.

Presets for DirectX Plug-ins

For DirectX plug-ins, the same functionality is provided as for WaveLab Elements plug-ins. In addition, you can import native presets created for the plug-in.

Master Level Pane

This pane in the Master Section allows you to control the master level of the active audio file.
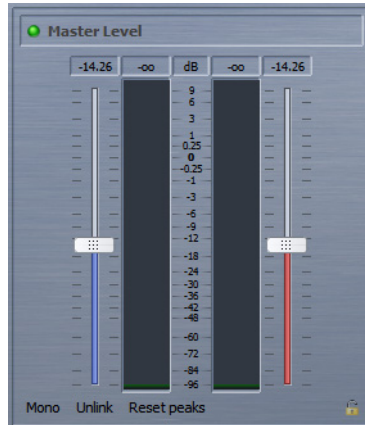
Faders

The faders in the Master Level pane govern the final output level. Use the faders to optimize the level of the signal that is sent to the audio hardware.

> NOTE
>
> It is important to avoid clipping, especially when mastering. Clipping is indicated by the clip indicators of the Master Section.

Meters

The Master Section meters show the signal level of the signal before dithering or any other plug-in that you have applied post-master fader.

Use these to get an overview of the signal levels. The numeric fields above the faders show the peak levels for each channel. The peak indicators turn red whenever the signal clips. If this happens, you should lower the faders, reset the clip indicators by clicking the **Reset peaks** button, or clicking the values, and play back the section again until no clipping occurs.

Mono Button

The **Mono** button sums two channels to mono. The output level is automatically reduced by -6 dB, to avoid clipping. The **Mono** button is useful for checking mono compatibility of stereo mixes, etc.

If the **Mono** button is activated, the red indicator for the Master Level pane is lit, even if the master level is not adjusted. This helps you avoid accidentally leaving the **Mono** button activated.

Unlink Button

Determines whether the faders should be individually adjustable or ganged.

If **Unlink** is deactivated, moving one fader also moves the other by the same amount. Activating **Unlink** allows you to correct improper stereo balancing by adjusting the channels' levels individually.

- If you offset the faders with **Unlink** activated and then deactivate **Unlink** again, you can adjust the overall level without changing the level offset between the channels.

- Fader offsets are not preserved at the end of the range of movement or once the mouse button is released.

About Dithering

Dithering is the technique of adding small quantities of noise to a signal to reduce the audibility of low level distortion in a digital recording. A small amount of random noise is added to the analog signal before the sampling stage, reducing the effect of quantization errors.

In the case of WaveLab Elements, dithering is applied when reducing the number of bits in a recording, for example, when moving from 24 to 16 bits, and when applying processing.

Dithering largely depends on the type of material. When making the dithering settings we recommend that you experiment and let your ears be the final judge.

During low level passages, only a few bits are used to represent the signal, which leads to audible quantization errors and distortion. This is perceived as graininess during low level passages in a recording.

When truncating bits, as a result of moving from, for example, 24- to 16-bit resolution, such quantization noise is added to an otherwise immaculate recording.

222

By adding a special kind of noise at an extremely low level, the quantization errors are minimized. The added noise can be perceived as a very low-level quiescent hiss added to the recording. However, this is hardly noticeable and preferred to the distortion that occurs otherwise. The **Noise Shaping** options allow to filter this noise to a frequency area less sensitive to the human ear.

NOTE

Dithering should always be applied after the output bus fader stage, and after any kind of audio process.

Selecting Dithering Algorithms

WaveLab Elements comes with an internal dithering plug-in. However, you can also add other dithering plug-ins.

▪ To select and activate a dithering algorithm in the Master Section, click the dithering plug-in slot in the **Dithering** pane, and select one of the options from the pop-up menu.

▪ To deactivate the dithering algorithm, open the dithering pop-up menu, and select **None**.

Adding Other Plug-ins to the Dithering Pane

If you want to use another dithering plug-in than the internal dithering, you can add it to the **Dithering** pane.

NOTE

The meters in the Master Section monitor the signal before the **Dithering** pane. To avoid clipping, check the Level/Pan Meter and adjust the output level setting of the plug-in, if available.

PROCEDURE

1. In any workspace, select **Options > Plug-in settings**.

2. Open the **Organize** tab.

3. Locate the plug-in that you want to add to the **Dithering** pane in the list, and activate the checkbox in the **Post** column for the plug-in.

4. Click **OK**.

RESULT

The plug-in appears on the pop-up menu in the **Dithering** pane, and can be inserted after the Master Level faders. The plug-in is still available for selection as a regular pre-master effect if the corresponding entry in the **Post** column in the **Plug-in settings** dialog is activated.

When to Apply Dithering

The basic rule is that you should dither when moving to a lower bit resolution. One instance of this is when converting an audio file to a lower resolution. For example, preparing a 24-bit file for mastering to CD, that uses 16-bit format.

However, even if you are playing back or rendering a 16-bit or 24-bit file to the same resolution, you need to dither if you are using any processing in WaveLab Elements. The reason for this is that WaveLab Elements works with an internal resolution of 32 bit (floating point) for supreme audio quality. This means that as soon as you perform any kind of processing, the audio data is treated at this high resolution instead of the original 16 bits or 24 bits, thus making dithering necessary.

Examples of real-time processing include level adjustments, any effects, mixing of two or more clips in a Montage, etc. The only time when a 16-bit file is played back at 16-bit resolution is if you play it without any fades or effects, and with the Master Faders set to 0.00 (no level adjustment – Master level indicator turned off).

NOTE

To make sure whether you need to dither or not, use the Bit Meter to check the actual resolution of your audio signals.

Dithering Pane

This pane in the **Master Section** allows you to add dithering to the signal before it is sent to the audio hardware or saved as a file on a disk.
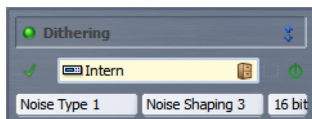
Fold/unfold section

Expands or collapses the **Dithering** pane.

Bypass during playback

Bypasses the plug-in during playback, and optionally for a rendering operation.

Effect plug-in slot

Slot where you can insert an effect plug-in.

Presets menu

Lets you store and restore preset settings. The **Presets** menu of the top slot offers additional options to save and load default banks and effects.

Plug-in visibility

Activates/deactivates the plug-in window.

Switch effect on/off

Excludes the plug-in from both playback and rendering.

Noise type

Lets you set one of the available noise types that are added to the signal. This is only available if **Internal dither** is activated.

Noise shaping

Lets you select the type of filtering for improving the apparent signal-to-noise ratio of the output. This is only available if **Internal dither** is activated.

Number of bits

Lets you select the number of bits that the signal should be quantized to. This is only available if **Internal dither** is activated.

Master Section Tools

The tools and options at the bottom pane of the Master Section window allow you to make various settings before rendering the file, make bypass settings, and decide whether the playback goes through the Master Section or not.
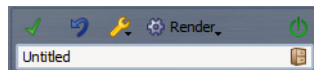
Bypass all effects

Bypasses any kind of processing in the effect panel during playback, and optionally when rendering.

Reset all

Removes all the active effects from the effects slots and sets the master output to 0 dB.

Setting menu

Opens the **Master Section settings** menu.

Render

> Clicking opens the **Render** dialog. Right-clicking opens a menu where you can select whether you want to open the **Render** dialog, render using the last settings, or use in-place rendering.

Playback goes through Master Section

> If this option is deactivated, the Master Section is ignored during playback of any file, freeing up resources. However, rendering to file is still possible. If playback is activated when you change this option, it stops and restarts.

Rendering

By rendering the effects in the Master Section, they become a permanent part of a file, rather than using them in real-time to test a set of effects on a file. So instead of performing all processing in real-time during playback, you can save the audio output to a file on disk.

This is done with the **Render** function of the Master Section.

Writing the outputs of the **Master Section** to a file on disk allows you to apply **Master Section** processing to an audio file, or mix down an audio montage to an audio file.

There are several uses for rendering:

- Mix down a complete audio montage to an audio file.

- Process a file and save a file to a new audio file, including Master Section effects, dithering, and other settings. You can choose the format of the new audio file, which allows you to create an MP3 file and add effects at the same time, for example.

- Process a region of an audio file in place.

Rendering Files

PROCEDURE

1. In the **Master Section**, make your settings.
2. On the bottom of the **Master Section**, click the **Render** button.
3. In the **Render** dialog, make your rendering settings.
4. When you have set up the rendering process, click **OK**.

The file is rendered.

NOTE

Several rendering operations can be run at the same time when using different files.

In-Place Rendering

In the Audio Files workspace, you can process a section of an audio file or the whole audio file directly from within a plug-in window, without any intermediary step. This is a quick way to process several audio sections in an audio file, or test the effect of different plug-ins on an audio file.

When using this function, the following render settings are always active:

▪ Fade-in/out at boundaries

▪ Exclude bypassed plug-ins

NOTE

Once an audio section has been processed, there is no automatic bypass of plug-ins or the Master Section.

An example for using in-place rendering:

Let's say that you are restoring a file and have 3 favorite plug-ins, for example, 3 DeClicker plug-ins. Now you want to use the one that gives the best results.

1) Load all 3 plug-ins in the Master Section.

2) Select a region, solo plug-in #1, and play the region.

3) Solo plug-in #2, and play the region.

4) Solo plug-in #3, and play the region.

5) Solo the plug-in that you think sounded the best, and click the **Render in place** button, or press [Alt]/[Option]-[A].

Rendering an Audio Selection In-Place

You can render the plug-ins of a section of an audio file or the whole audio file.

PREREQUISITE

In the Audio Files workspace, open the audio file that you want to render, and set up the Master Section.

PROCEDURE

1. If you only want to process a section of the audio file, in the wave window, select the audio section that you want to process.

2. Open the plug-in window.

3. Optional: If you only want to use some plug-ins of the Master Section, solo the plug-ins that you want to use.

4. Do one of the following:
    - In the plug-in window, click the **Render-in place** button.
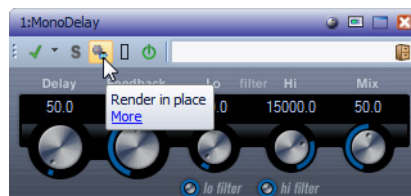
    - In the Master Section, right-click the **Render** button, and select **In-place rendering**.

RESULT

The audio section or the audio file is processed.

Render Dialog

This dialog allows you to select what parts of an audio file to render, and into which format.

To open the **Render** dialog, click the **Render** button in the Master Section.

The following options are available for both rendering in the Audio Files workspace and in the Audio Montage workspace:

Audio range - One region

Processes and renders a time range specified using region markers. In the drop-down menu below this option, select the region you want to render.

Create named files

If this option is activated, you can set name of the rendered file. Otherwise, the file is named "untitled".

Name

Enter a name for the rendered file. Clicking the arrow icon opens a menu that offers you several automatic naming options.

Auto naming

When rendering multiple sources, you can activate this option to add a numeric prefix to all rendered files.

Where

Select a folder where the file is rendered to.

File format

Opens the **Audio File Format** dialog, where you can select the file format.

Copy markers

If this option is activated, markers included in the range to process are copied to the rendered file.

Bypass Master Section on resulting audio file

If this option is activated, playback of the resulting audio file bypasses the entire Master Section after rendering. This setting can be toggled by clicking on the button at the bottom right of the wave window or montage window.

NOTE

It is recommended to have this option activated, because you do not want to monitor this new file through the effects again when the effects have been applied to a file.

No tail

If this option is activated, the audio tail produced by effects such as reverbs is not included in the rendered file.

Some plug-ins do not provide a tail duration to WaveLab Elements. In this case, this option has no effect. For such plug-ins, you could add the **Silence** plug-in to add extra samples at the end of the file. An audio tail appears in this space.

Upload to SoundCloud

If this option is activated, the rendered file is uploaded to SoundCloud, after the rendering process is finished.

Bypass Master Section

If this option is activated, the plug-ins and gain of the Master Section are bypassed when rendering.

Exclude bypassed plug-ins

If this option is activated, the plug-ins that are bypassed during playback are not used for rendering.

This applies to the bypass states managed by WaveLab Elements, not any bypass state that is under the control of the plug-ins.

Open resulting audio file

If this option is activated, each rendered file is opened in a new window.

Render Dialog in the Audio Files Workspace
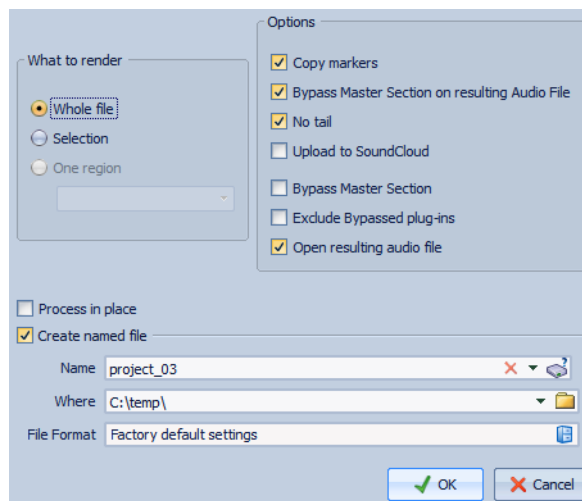
The following options in the **Render** dialog are exclusive to the Audio Files workspace:

Time range - Whole file

Processes and renders the whole audio range.

Time range - Selection

Processes and renders the selected audio range.

Process in place

If this option is activated, the rendered audio range replaces the source audio range. Otherwise, a new file is created.

Render Dialog in the Audio Montage Workspace
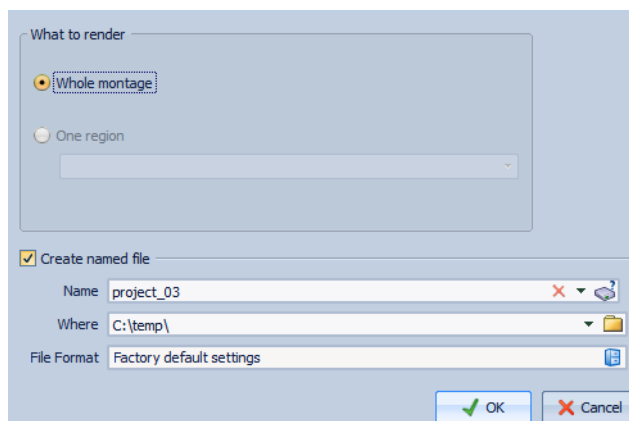
The following options in the **Render** dialog are exclusive to the Audio Montage workspace:

Time range - Whole montage

> Processes and renders the whole audio range.

Saving a Master Section Preset

You can turn all settings currently made in the Master Section into a preset. This includes which processors are used, what settings are made for each one of them, and dithering options.

PROCEDURE

1. Set up the Master section as you want it.

2. Click the presets button at the bottom of the Master Section, and select **Save as**.

3. Optional: In the **Save Master Section Preset** dialog, click the path name, enter a name, and click **OK** to create a new subfolder in the Master Section preset folder.

4. Enter a name for the preset in the **Name** field.

5. Decide, whether you want to include one or several of the following options in the preset:
   - To include the plug-ins from the Effects pane, activate **Save Effects plug-ins**.
   - To include the settings made in the Master Level pane, activate **Save Master Level settings**.
   - To include the plug-in from the Dithering pane, activate **Save Dithering plug-in**.
   - To exclude locked plug-ins, activate **Exclude locked plug-ins**.

6. Click **Save**.

Save Master Section Preset Dialog

In this dialog, you can save a Master Section setup as preset and define which parts of the current Master Section you want to include in the preset.

In the Master Section, click the Presets button at the bottom, and select **Save as**.
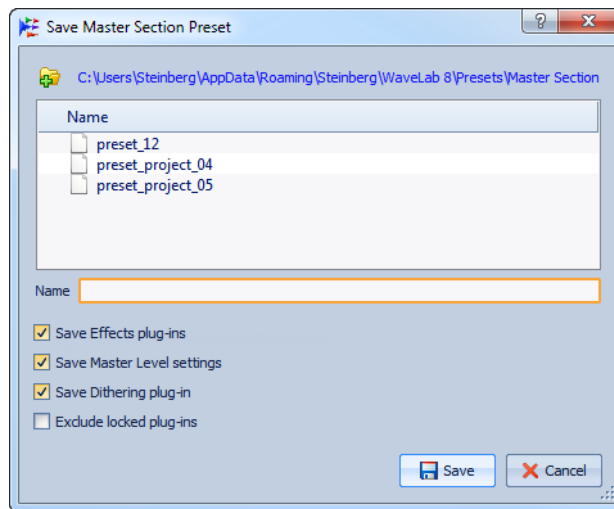
Path name

Opens the root folder of the preset in the Windows Explorer/Mac OS Finder. Here, you can create subfolders in which presets can be stored.

Presets list

Lists all existing presets.

Name

Lets you specify the name of the preset to save.

Save Effects plug-ins

If this option is activated, the effect plug-ins are saved with the preset.

Save Master Level settings

If this option is activated, the Master Level settings are saved with the preset.

Save Dithering plug-in

If this option is activated, the dithering plug-in is saved with the preset.

Exclude locked plug-ins

If this option is activated, locked plug-ins are not saved as part of the Master Section preset.

Loading a Master Section Preset

You can load a previously saved Master Section presets, a temporarily stored Master Section preset, or import WaveLab Elements 4/5/6 presets.

Open the **Presets** menu on the bottom of the Master Section window.

- To load a preset that has been previously saved in the Presets\Master Section folder, select a preset from the **Presets** menu.

- To load a preset from any location, select **Open from any location**, select a preset, and click **Open**.

- To load a temporarily saved preset, open the **Restore** submenu, and select a preset.

Load Master Section Preset Dialog

In this dialog, you can specify which parts of a saved Master Section preset to load when opening it.

This dialog only opens if it is activated in the Master Section's Presets menu. Open the Presets menu at the bottom of the Master Section window, and activate **Open option box when selecting preset**.
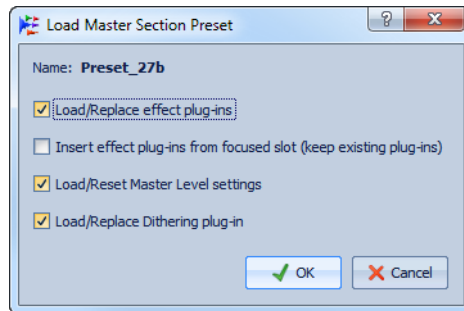
Now, when restoring a temporarily saved preset or opening a saved preset a dialog with the following options opens:

Name

Displays the name of the preset.

Load/Replace effect plug-ins

If this option is activated, the active effect plug-ins are removed, and any new plug-ins are inserted from the top slot.

Insert effect plug-ins from focused slot (keep existing plug-ins)

If this option is activated, the present effect plug-ins are kept, and any new plug-ins are inserted from the top slot.

Load/Reset Master Level settings

If this option is activated, the present Master Level settings are reset, and any new settings are loaded.

Load/Replace Dithering plug-in

If this option is activated, the present Dithering plug-in is removed, and the new plug-in is loaded.

Master Section Preset Menu

This menus offers several options for saving, managing, and restoring Master Section presets.

To open the **Preset** menu of the Master Section, click the preset icon on the bottom of the Master Section window.

Save

Saves the changes you have made to an existing preset.

Save as

Opens a dialog where you can select a name for the preset and choose a location.

Organize presets

Opens the **Preset** folder of the Master Section, where you can rename or delete presets.

Open from any location

Selects any Master Section preset located anywhere, not just in the default root folder. For example, this is useful if you want to load a preset provided by another source that is not located in your default root folder.

You can also navigate to any other location where you have stored presets.

Open option box when selecting preset

If this option is activated, a dialog opens that allows you to choose how to load the preset you select.

Store temporarily

Lets you select one of the slots to temporarily store a preset.

Restore

Lets you restore a previously stored preset.

List of saved presets

Lists the presets that are stored in the **Preset** folder of the Master Section.

About Monitoring Background Tasks

When rendering you can monitor the process, and pause or cancel tasks.

A status bar below the wave window and the montage window shows the progress of the current rendering process. You can cancel or pause the rendering with the provided buttons.
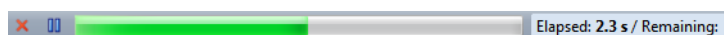
About Dropouts

A dropout most likely occurs when your computer does not have the processing power to handle all effect processors you have inserted.

To avoid dropouts, try the following:

▪ Use fewer effects.

▪ Consider rendering the processing rather than running it in real time. Then master from the processed file without any effects. Dropouts never occur when rendering to a file.

▪ Do not process any files in the background.

▪ If neither of the above helps, check the audio card preference settings. You might need to adjust the audio buffer settings. If a dropout occurs during a real-time mastering process we recommend that you re-master. Stop playback, click the dropout indicator to reset it, and try again.

Markers

Markers allow you to save and name certain positions in a file. Markers are useful for editing and playback, for example, to indicate cue points or absolute time locations, to highlight problem sections, and to visually separate tracks.

For example, markers can be used to:

- Set the wave cursor to a specific position.

- Select all audio between two positions.

- Loop sections in an audio file.

There is no limit to the amount of markers that you can have in a file.

NOTE

The functions in the Markers window of the Audio Files workspace and the Audio Montage workspace are the same. However, the Markers window of the Audio Montage workspace offers additional options regarding clips.

Marker Types

The following marker types are available:

Generic markers

Allow you to locate positions and select all the audio between two points, for example. They can be created during recording.

Region start and end markers

Define start and end points for generic regions. They can be created during recording and are used in pairs.

Loop start and end markers

Are used to define loop points and are required to access loop editing functions on the **Process** menu of the Audio Files workspace. They are connected to the **Loop** mode when playing back audio. These markers are useful for editing and creating loops before transferring a sound to a sampler. Loop markers are used in pairs.

Markers Window

In this window, you can create, edit, and use markers while working on an audio waveform or audio montage.

If the window is not already visible, do the following: In the Audio Files workspace or the Audio Montage workspace, select **Workspace > Specific tool window > Markers**.

Markers List

The **Markers** window contains a list of all markers of the active file along with their details and controls. You can create and edit markers directly from the markers list.

Numbers

Clicking the number of a marker scrolls the waveform to reveal the corresponding marker.

Playback triggers

The following playback buttons are available:

⏵

Playback from start with a pre-roll.

⏵-[Alt]/[Option]

Playback from start with a long pre-roll.

⏵

Playback from start.

Marker type

Shows the marker type. To change the marker type, click the marker icon and select another marker type from the pop-up list.

Name

Shows the marker name. To change the name, double-click in the corresponding cell and enter a new value.

Time

Shows the marker position on the time ruler. To change the time position, double-click in the corresponding cell and enter a new value.

Length

Shows the time value from the marker start position until the corresponding end.

- To zoom on the region between a start and end marker, in the **Length** column, click the corresponding cell.

- To select the region between a start and end marker, in the **Length** column, double-click the corresponding cell (Audio Files workspace only).

Lock

Allows you to lock markers. Locking markers prevents them from being accidentally dragged to a new position in the wave window or the montage window. To lock a marker, activate the checkbox for the markers that you want to lock.

Clip reference (Audio Montage workspace only)

A marker can be attached to the left or right edge of a clip, and to its waveform. When such reference moves, the marker moves along. The clip reference column shows the name of the clip.

Offset (Audio Montage workspace only)

Shows the distance between the marker and the reference point.

Insert Menu

On this menu, you can select the marker type that you want to insert at the edit or playback cursor position.

Functions Menu

The options on this menu differ depending on the workspace. The following options are available in the Audio Files workspace and the Audio Montage workspace:

Select all

Selects all markers in the markers list.

Select in time range

Selects the markers located in the selection range in the wave window (Audio Files workspace only).

Deselect all

Deselects all markers.

Delete selected markers

Deletes all markers that are selected.

Lock selected marker

Locks the selected marker. If this option is activated, the marker cannot be moved or deleted.

Customize commands

Opens a dialog where you can customize marker-related menus and shortcuts.

The following options of the **Functions** menu are only available in the Audio Montage workspace:

Bind selected marker to start of focused clip

Makes the marker's position relative to the start of the focused clip. When the start of this clip moves, the marker moves, too.

Bind selected marker to end of focused clip

Makes the marker's position relative to the end of the focused clip. When the end of this clip moves, the marker moves, too.

Detach selected marker from its associated clip

Makes the marker's position relative to the start of the audio montage.

Full clip attachment

Attaches markers to a clip so that they are copied or deleted when the clip is copied or deleted.

Filter Menu

Use the **Filter** menu to toggle which types of markers are displayed in the markers list and on the timeline.

About Creating Markers

Markers can be created during playback or in stop mode. You can mark a selection range, for example.

You can create specific markers if you already know what you want to mark, or create generic markers. Creating markers is done in the same way in the Audio Files workspace and the Audio Montage workspace.

Creating Markers

You can create markers in the wave window and montage window in stop mode or during playback.

PROCEDURE

1. Do one of the following:
   - Start playback.
   - In the wave/montage window, set the cursor to the position where you want to insert the marker.

2. Do one of the following:
   - In the **Markers** window, click a marker button, or select a marker from the **Insert** menu.
   - In the **Markers** window, select **Insert > Create/Name marker**, enter a name and select a marker type, and click **Create** or **Create and close**.
   - Right-click the upper part of the time ruler, and select a marker from the context menu.
   - Press [Insert]/[M]. This creates a generic marker.

Create Marker Dialog

This dialog allows you to create and name a marker in stop mode and during playback.

In the **Markers** window, select **Insert > Create/Name marker**.
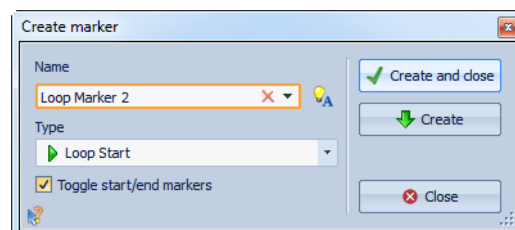
Name

Lets you enter the name of the marker.

When clicking the icon to the right of the name field, a default name is generated. To edit the default names, in the **Markers** window, select **Functions > Default names**.

Type

Lets you select the type of marker.

Toggle start/end markers

If this option is activated, and you create a region start or end marker, the related end or start marker is created when you click the **Create** or **Create and close** button again.

Create and close

Creates the defined markers and closes the dialog.

Create

Creates the defined markers while leaving the window open allowing you to create more markers.

RELATED LINKS:
"Default Marker Names Dialog" on page 246

Creating Markers at Selection Start and End

You can mark a selection for looping or review, for example.

PROCEDURE

1. In the wave window, create a selection range.

2. Do one of the following:
   - In the **Markers** window, click a marker pair button, or open the **Insert** menu and select one of the marker pairs.
   - In the **Markers** window, select **Insert > Create/Name region from selection**, enter a name for the start and end marker, select a region type, and click **Create** or **Create and close**.
   - In the wave window, make a selection range, right-click it, and select one of the marker pairs.
   - In the wave window or the montage window, create a selection range, right-click the time ruler, and select one of the marker pairs.

Create Region Dialog

This dialog allows you to create and name a start and end marker from a selection during stop mode and during playback.

In the **Markers** window, select **Insert > Create/Name region from selection**.
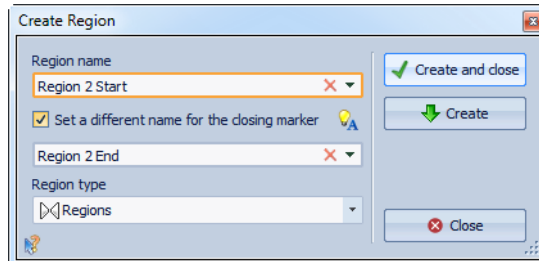
Region name

Lets you enter the name of the start and end marker. If nothing is entered, a generic name is created.

When clicking the icon to the right of the name field, a default name is generated. To edit the default names, in the **Markers** window, select **Functions > Default names**.

Set a different name for the closing marker

If this option is activated, you can enter a different name for the closing marker. If this option is deactivated, the name of the start marker is also used for the end marker.

Region type

Lets you select the type of region marker.

Create and close

Creates the defined markers and closes the dialog.

Create

Creates the defined markers and leaves the window open allowing you to create more markers.

RELATED LINKS:

Duplicating Markers

This is a quick way to create a marker from an existing marker.

PROCEDURE

- In the wave window or the montage window, hold down [Shift], click a marker, and drag.

Deleting Markers

Markers can be deleted in the wave window or the montage window, and in the **Markers** window.

Deleting Markers in the Wave/Montage Window

Individual markers can easily be deleted in the wave window.

- In the wave/montage window, right-click a marker, and select **Delete**.

- Drag and drop a marker icon above the time ruler.

Deleting Markers in the Markers Window

This is useful if your project has many markers or if the marker that you want to delete is not visible in the wave/montage window.

PROCEDURE

1. In the **Markers** window, select one or several markers.

   You can also select **Functions > Select all**.

2. Click the **Delete selected markers** button, or select **Functions > Delete selected markers**.

Moving Markers

You can adjust marker positions in the wave window and the montage window.

PROCEDURE

1. In the wave/montage window, drag a marker to a new position on the time ruler.

   If **Magnetic bounds** is activated, the marker snaps to the cursor position, or the beginning/end of a selection or waveform.

Navigating to Markers

You can jump to the previous or next marker using the corresponding marker buttons.

- To jump to the previous/next marker, on the **View** command bar, click the **Previous marker**/**Next marker** button.

- To set the wave cursor to a marker position, in the wave window or the montage window, double-click a marker triangle.

Hiding Markers of a Certain Type

For a better overview, you can hide marker types.

PROCEDURE

1. In the **Markers** window, select **Filter**.

2. Deactivate the marker type that you want to hide.

   You can make the markers visible again by activating the corresponding marker type.

Renaming Markers

You can change the automatically generated names of markers.

- To rename a marker in the wave window or the montage window, right-click a marker, select **Rename**, and enter a new name.

- To rename markers in the **Markers** window, double-click a marker name in the **Name** column, and enter a new name.

- To edit the default names, in the **Markers** window, select **Functions > Default names**.

Default Marker Names Dialog

In this dialog, you can specify the default marker names.

In the Markers window, select **Functions > Default names**.
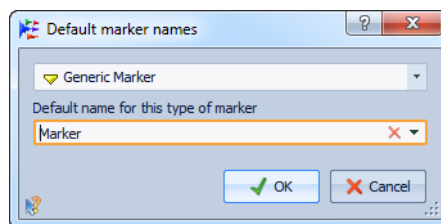
Marker type

Lets you select the type of marker to which you want to assign a default name.

Default name for this type of marker

Lets you specify the default name for the selected marker type.

About Selecting Markers

There are several ways to select markers.

▪   In the wave window or the montage window, click a marker.

▪   In the **Markers** window, click in a cell. The corresponding marker is selected.

▪   Use [Ctrl]/[Command] and [Shift] to select multiple markers.

The marker icon changes its background, to indicate the selected marker.
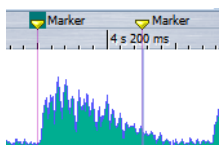
Selecting the Audio Between Markers

You can quickly select the audio between two adjacent markers or between any two markers. This allows you to select a section that has been marked.

▪   To select the audio between two adjacent markers, double-click between two adjacent markers.

▪   To select several regions between two adjacent markers, double-click between two adjacent markers, and after the second click, drag to select the adjacent regions.

▪   To select the audio between a region marker pair, hold down [Shift], and double-click a region marker.

▪   To extend the selection until the end of a marker region, in the wave/montage window, hold down [Shift], and double-click in the marker region that you want to select.

▪   To activate the **Markers** window and display further information about a certain marker, hold down [Alt]/[Option], and double-click a marker.

Binding Markers to Clips in the Audio Montage

In the Audio Montage workspace, you can bind markers to clips. By doing this, the marker remains in the same position relative to the clip start/end, even if the clip is moved in the audio montage or resized.

You can find the options regarding clips and markers in the **Functions** menu of the **Markers** window, and when right-clicking a marker.
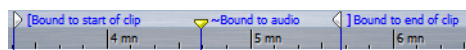
RELATED LINKS:

How Marker Information is Stored

WaveLab Elements uses MRK files to have a file format independent way to store information. However, to make marker information exchangeable between applications to a certain extent, WaveLab Elements also stores optionally some information in the Wave headers.

This makes saving files quicker if only a marker settings has been changed. However, this only applies when **Write markers in WAV file header** is deactivated in the **Audio File editing preferences** on the **File** tab. By default, both MRK files are created and information are stored in the Wave headers.

- When you import a file for the first time, any loop points are imported and displayed as loop markers.

- When you save the file in the Wave format, the loop points are saved both as part of the actual file and in the MRK file.

- When you open a file that includes markers that were added in WaveLab Elements, and markers that were added in another application, all markers are displayed when reopening the file in WaveLab Elements.

Metering

WaveLab Elements contains a variety of audio meters that you can use when monitoring and analyzing audio. Meters can be used to monitor audio during playback, rendering, and recording. Furthermore, you can use them to analyze audio sections when playback is stopped.

Metering Window

Audio Meters can be used in the Audio Files workspace and in the Audio Montage workspace.

They can be used as following:

- A docked window in a workspace

- An independent floating window. In this mode, it can be useful to select **Window > Hide frame**, to save screen space. In this case, the whole menu is accessed by right-clicking.

There can only be one instance of each audio meter.

The axis of most audio meters can be rotated, to view the graphics horizontally or vertically. For some meters, you can also style and customize parameters via a settings dialog.

About Meter Settings

You can set up most meters according to your needs in the corresponding settings dialogs. For example, you can adjust the behavior, scale, and color of the meters.

- To open the settings dialog for a meter, select **Functions > Settings**.

- To check the results after changing the settings without closing the settings dialog, click **Apply**.

- To close the settings dialog and discard any changes that you have made, even if you have clicked the **Apply** button before, click **Cancel**.

Resetting the Meters

You can reset the display of some meters, for example, the values of the Level Meter.

PROCEDURE

- In the meter window, click the Reset icon, or select **Functions > Reset**.

RESULT

All meters and numerical indicators are reset.

Level Meter

The Level Meter displays the peak and average loudness/decibel level of your audio file.

In the Audio Files workspace or the Audio Montage workspace, select **Analysis > Level Meter**.
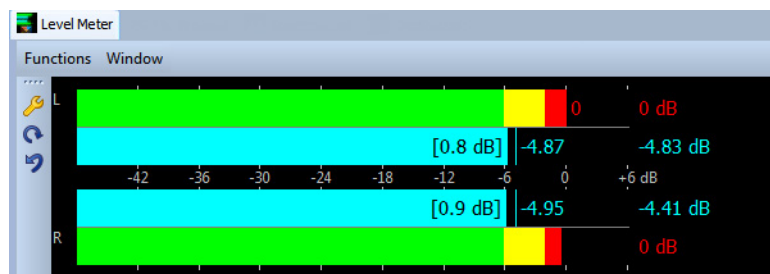
Level Meters

The Level Meter shows the peak level and average loudness in the following way:

- The Peak Level meters display the peak levels of each channel, graphically and numerically.

- The VU meters measure the average loudness (RMS) of each channel. These meters have a built-in inertia, evening out loudness variations over a user-defined time span. If you are monitoring playback or the audio input, you can see two vertical lines following each VU meter bar. These lines indicate the average of the most recent minimum RMS values (left line) and the average of the most recent maximum RMS values (right line). To the left, the difference between the minimum and maximum average values is displayed. This gives you an overview of the dynamic range of the audio material.

- The maximum peak and loudness values are displayed to the right of the meter bars. The numbers in brackets to the right of the maximum peak values indicate the number of times that clipping occurs (0 dB signal peaks). Values between 1 and 2 clips are acceptable, but if you get a larger number, you should lower the master level to avoid digital distortion.

- Recording levels should be set so that they only rarely clip. If the master level is set too high, the sound quality and frequency response are compromised at high recording levels, with unwanted clipping effects. If the level is set too low, noise levels can be high relative to the main sound being recorded.

Level Meter Settings Dialog

In this dialog, you can adjust the behavior, scale, and color of the meters.

In the **Level Meter** window, select **Functions > Settings**, or click the tool icon.

Peak Meter Section

Ballistics - Release rate

Determines how fast the peak level meter falls after a peak.

Ballistics - Peak hold time

Determines how long a peak value is displayed. The peak can be displayed as a line or a number. If the meter's height is too narrow, only the line is displayed.

Top/Middle/Low zone

The color buttons allow you to select colors for the low, middle, and top zones of the level meter. You can define the range for the top and middle zones by changing the corresponding values.

VU Meter (Loudness) Section

VU Meter (Loudness)

Activates/deactivates the VU meter.

Ballistics - Resolution

Sets the time that is used for determining the loudness. The smaller this value, the more the VU meter behaves like the Peak meter.

Ballistics - Range inertia

Sets the time that is used for determining the recent minimum and maximum value lines, and therefore determines how quickly these respond to changes in loudness.

Global Colors Section

In this section, you select colors for the meter background, marks (scale units), and grid lines.

Global Range (Peak and VU Meter) Section

In this section, you specify the minimum and maximum values of the displayed level range. Typically, you want to create a preset showing the full level range, and other presets for a detailed view of a smaller range.

Spectroscope

The Spectroscope shows a graphical representation of the frequency spectrum, analyzed into 60 separate frequency bands, represented as vertical bars.

In the Audio Files workspace or the Audio Montage workspace, select **Analysis > Spectroscope**.
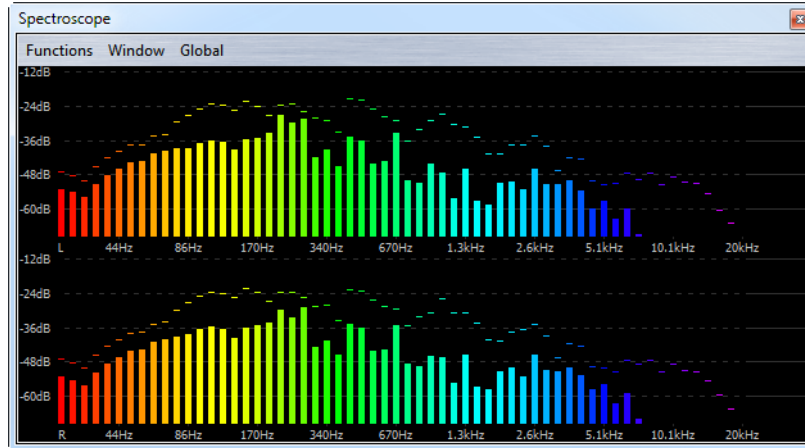
Peak levels are shown as a horizontal lines above the corresponding bands, indicating recent peak/maximum values. The Spectroscope offers a quick spectrum overview. For a more detailed analysis of the audio spectrum, use the Spectrometer.

On the **Functions** menu, you can specify whether only high audio levels are displayed, or whether medium and low levels are also shown.

Oscilloscope

The Oscilloscope offers a highly magnified view of the waveform around the playback cursor position.

In the Audio Files workspace or the Audio Montage workspace, select **Analysis > Oscilloscope**.
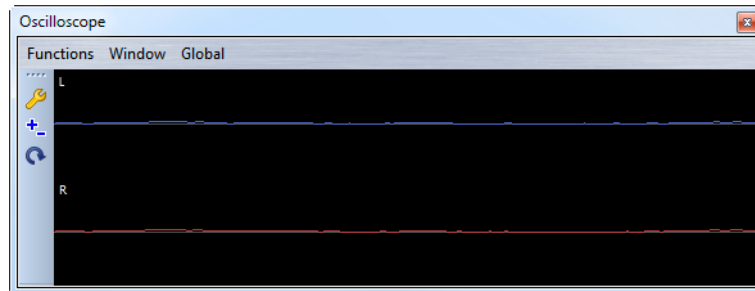
If you are analyzing stereo audio, the Oscilloscope normally shows the separate levels of the two channels. However, if you activate **Show sum and subtraction** on the Options pop-up menu, the upper half of the Oscilloscope shows the mix of the two channels and the lower half shows the subtraction.

Oscilloscope Settings Dialog

In this dialog, you can adjust the display colors, and activate/deactivate Auto-zoom. When **Auto-zoom** is activated, the display is optimized so that the highest level reaches the top of the display at all times and even small signals are visible.

In the **Oscilloscope** window, select **Functions > Settings**.

Writing Operations

This chapter describes the CD/DVD writing processes in WaveLab Elements. This chapter assumes that the preparations have been completed, and that you are ready to run the actual writing process.

Write Audio CD Dialog

In this dialog, you can write your audio montage to an audio CD.

- When you want to write audio montages to an audio CD, in the **Audio Montage** workspace, open the **CD** window, and select **CD > Write Audio CD**.
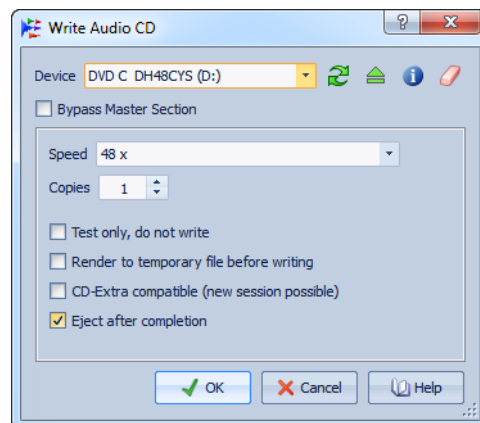
Device

Here, select the disc writer that you want to use.

> NOTE
>
> On the Mac, insert a media in the drive after opening WaveLab Elements. Otherwise, the drive is under the control of the operating system and is not available for WaveLab Elements.

Refresh

Scans the system for connected optical devices. This is done automatically, when this dialog opens. Click the update icon after you insert a new blank media to update the **Speed** menu.

NOTE

On the Mac, insert a media in the drive after opening WaveLab Elements. Otherwise, the drive is under the control of the operating system and is not available for WaveLab Elements.

Eject optical medium

Ejects the optical medium present in the selected drive.

Information about selected device

Opens the **Device information** dialog, that shows information about the selected device.

Erase optical disc

Erases the optical disc present in the selected drive, provided it is a rewritable media.

Bypass Master Section

If this option is activated, the audio signal is not processed through the Master Section before being written to the media.

Speed

Lets you select the writing speed. The highest speed depends both on the capabilities of your writing device and of the media present in the device.

Copies

Lets you enter the number of copies that you want to write.

Test only, do not write

If this option is activated, clicking **OK** initiates a simulation of writing the CD. If this test is passed, the real write operation will succeed. If the test fails, try again at a lower writing speed.

Render to temporary file before writing

If this option is activated, a disk image is created before writing, which eliminates the risk of buffer underruns. This is useful if your project uses many audio plug-ins while writing. It is activated automatically when writing multiple copies. While this option makes the writing operation longer, it may allow you to select an higher writing speed.

CD-Extra compatible (new session possible)

If this option is activated, the resulting audio CD is compatible with the CD-Extra format.

Eject after completion

If this option is activated, the disc is ejected after the write process.

Erase Optical Media Dialog

In this dialog, you can quickly or fully erase the disc before writing.

In the **Write Audio CD** dialog, click the eraser icon.
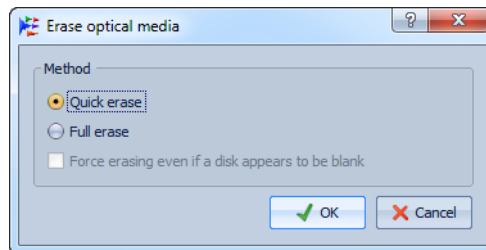
Quick erase

Erases the table of contents of the disc.

Full erase

Erases all parts of the disc.

Force erasing even if a disk appears to be blank

If this option is activated, the disc is erased, even if it is declared as blank. Use this option to make sure that discs that were partially or minimally erased are fully erased.

About Writing Audio Montages

You can write audio montages to an audio CD.

Writing an Audio Montage to an Audio CD

PREREQUISITE

Set up your audio montage, and make your CD writing settings in the **Global preferences**.

NOTE

On the Mac, insert a media in the drive after opening WaveLab Elements. Otherwise, the drive is under the control of the operating system and is not available for WaveLab Elements.

PROCEDURE

1. Optional: Check the audio montage to make sure that all starts, ends, and transitions are as intended.

2. Optional: In the **CD** window, select **Functions > Check CD conformity**, to check that all settings conform to the Red Book standard.

3. Insert an empty CD into your drive.

4. In the **CD** window, select **Functions > Write Audio CD**.

5. From the **Device** pop-up menu, select the writing device that you want to use.

6. If you want to bypass the Master Section, activate **Bypass Master Section**.

7. Select the writing speed from the **Speed** pop-up menu.

8. Select the number of copies that you want to write.

    When you want to write more than one copy, it is recommended to activate **Render to temporary file before writing**.

9. Optional: Activate one or several of the following options:
   - Activate **Test only, do not write**, if you want to test if the writing operation would be successful.
   - Activate **Render to temporary file before writing**, if your audio montage uses many plug-ins. This way, the audio data is sent to the CD writer fast enough.
   - Activate **CD-Extra compatible (new session possible)**, if you want the resulting audio CD to be compatible with the CD-Extra format.
   - Activate **Eject after completion**, if you want the disc to be automatically ejected after the writing operation.

10. Click **OK**.

RESULT

The writing operation starts.

RELATED LINKS:

About CD-Text

CD-Text is an extension of the Red Book Compact Disc standard and allows you to store text information such as title, songwriter, composer, and disc ID on an audio CD.

The text data is then displayed by CD players that support the CD-Text format. The CD-Text can also be included in the audio CD report.

CD-Text Editor Dialog

In this dialog, you can specify information such as track title, performer, and songwriter, that is written onto the CD as CD-Text.

You can add information about the disc itself and each individual track. This information is entered in the text fields that scroll horizontally. There is one pane of fields for the disc itself and a pane for each track.

In the Audio Montage workspace, in the **CD** window, select the track for which you want to edit the CD-Text, and select **Functions > Edit CD-Text**.

⬌▶
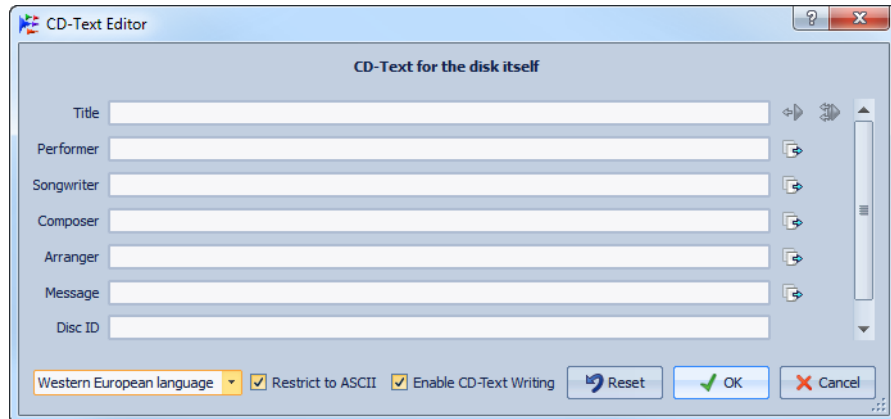
Copies the name of the CD track start marker to this field.

⮂▶

Copies the name of each CD track start marker to the title field of each CD track.

▶

Copies the text to all tracks located after the current one.

Scrollbar

Use the scrollbar to navigate across all CD-Texts. The first position corresponds to the whole CD, other positions to individual tracks.

Language selection

Here, select how characters should be encoded on the CD.

> NOTE
>
> If a character is not CD-Text compatible, it is displayed as a **?** character.

Restrict to ASCII

To ensure the maximum compatibility with CD players, it is recommended to restrict the characters to ASCII when using the **Western European** option. If this option is activated, and you type a non-compatible character, a **?** character is displayed.

Enable CD-Text writing

If this option is activated, the CD-Text is written onto the CD.

Data CD/DVD Projects

A data CD/DVD project can be used to compile and write a data-only CD, DVD, Blu-ray, or to write to ISO image. You can enter a name for your disc and change the disc file structure before writing your data to a CD, DVD, Blu-ray, or ISO image.

Creating a Data CD/DVD Project

A data CD/DVD project can be used to compile and write a data-only CD, DVD, Blu-ray, or to write to ISO image.

PROCEDURE

1. In any workspace, select **Global > Data CD/DVD**.

2. Add files to the project, using one of the following methods:
   - Drag the files from the WaveLab Elements file browser or from the Explorer/Finder into the **Data CD/DVD** window.
   - Drag a tab from any workspace into the **Data CD/DVD** window.
   - In any workspace, select **File > Special > Add to Data CD/DVD**, to add the open file to the **Data CD/DVD** project.

3. Optional: Click the **New Folder** icon, specify a folder name, and arrange the files by dragging.

Writing a Data CD/DVD Project

PREREQUISITE

Open the **Data CD/DVD** dialog, and add the files that you want to write to a data CD/DVD.

PROCEDURE

1. Click the **Write Data CD/DVD** icon.

2. Select a writing device.
   - When you select **ISO Image**, specify a file name and file location.
   - When you select a CD/DVD writer, specify the writing speed and make further settings.

3. Click **OK**.

Data CD/DVD Dialog

In this dialog, you can create a data CD/DVD project, and write it to CD, DVD, Blu-ray, or ISO image.

In any workspace, select **Global > Data CD/DVD**.
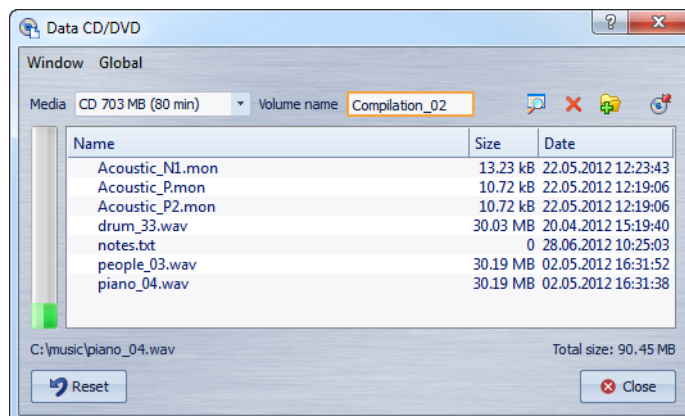
Media

> Select the media type you want to write. If the media size that you want to use is not listed, select the media type that offers a size closest to your requirements.

Volume name

> Specify the volume name of the CD/DVD.

Open Explorer/Finder

> Opens the Explorer/Finder to show the location of the selected file.

Remove selected files and folders

> Removes the selected files and folders from the CD/DVD project.

New folder

> Creates a folder. You can also create sub-folders.

Write Data CD/DVD dialog

> Opens the **Write Data CD/DVD** dialog from which you can write the media.

Data CD/DVD list

> Shows the contents of the CD/DVD project, and the size and creation date of the files.

Available space on media

> Indicates how much space is used on the media. The total size of the data CD/DVD project is shown below the data CD/DVD list.

Reset

Removes all files from the data CD/DVD project.

Write Data CD/DVD Dialog

In this dialog, you can write a data CD/DVD project to CD/DVD or ISO file.

In the **Data CD/DVD** dialog, click the **Write Data CD/DVD** icon.
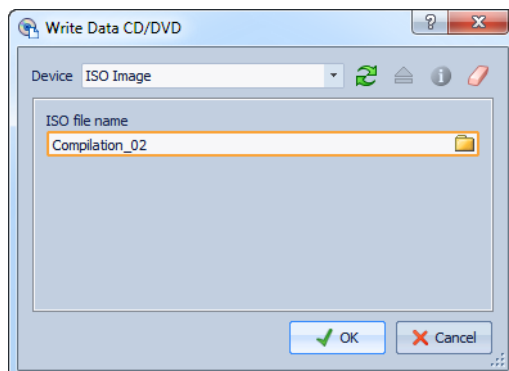
Device

Here, select the disc writer you want to use, or select **ISO Image** to write a file on the hard drive. Writing an ISO image creates a copy of a future optical media.

NOTE

On the Mac, open WaveLab Elements without a media in the drive. Otherwise, the drive is under the control of the operating system and is not available for WaveLab Elements.

Refresh

Scans the system for connected optical devices. This is done automatically, when this dialog opens. Click the update icon after you insert a new blank media, to update the speed menu.

Eject optical medium

Ejects the optical medium present in the selected drive.

Information about selected drive

Opens the **Device information** dialog, that shows information about the selected device.

Erase optical disc

Erases the optical disc present in the selected drive, provided it is a rewritable media. If **ISO Image** is selected, clicking the button erases the existing ISO file.

ISO file name

When **ISO Image** is selected in the **Device** menu, specify the file name and file location of the ISO file in the text field.

Speed

Here, select the writing speed. The highest speed depends both on the capabilities of your writing device and of the media present in the device.

Test only, do not write

If this option is activated, clicking **OK** initiates a simulation of writing the CD. If this test is passed, the real write operation will succeed. If the test fails, try again at a lower writing speed.

Create CD-Extra session

If this option is activated, the data is written in a new session, after the audio tracks. This creates a CD Extra, also known as Enhanced CD and CD Plus. For this to work, the CD in the drive must have audio tracks on it, written with the CD Extra option. Otherwise the operation fails.

Verify after write

If this option is activated, the data on the medium is automatically verified after the writing process.

Eject before verifying

If this option is activated, the disc is ejected and retracted before the verification process, to force the drive out of the write state. This is only possible if the disc can be retracted automatically.

Eject after completion

If this option is activated, the disc is ejected after the write process.

About Audio CD Formats

This chapter provides you with background information on the CD format, to help you better understand how to create your own CDs.

This documentation can only give basic information on this subject. For more information, try a text-book on the subject, or search the internet.

Basic CD Formats

There are a number of different formats for the contents of a CD disc. For example, audio CDs, CD-ROMS, and CD-I. These are all slightly different.

The audio CD specification is called Red Book. It is this standard to which WaveLab Elements conforms.

NOTE

Red Book CD is not a real file format. All the audio on the CD is stored in one big file. This is different from hard disks, for example, where each file is stored separately. Keep in mind that all the audio is in fact one long stream of digital data.

CD-Extra Support

CD-Extra is a format that allows for the writing of both audio and data on a single CD, just like Mixed Mode CDs. When writing an audio CD, you can prepare it for CD-Extra support (also known as Enhanced CD or CD Plus).

The difference is that when Mixed Mode CDs are written with the audio placed on the last tracks of the CD, for CDs in the CD-Extra format the audio is contained in the first tracks of the CD, and the data follows subsequently.

All features of the Red Book audio CD are possible with CD-Extra, unlike with Mixed Mode CDs. After an audio CD has been written with CD-Extra support, the data can be added to the CD in a separate session, by creating and writing a Data CD Project.

NOTE

Some computer CD drives may not recognize CDs in the CD-Extra format.

Types of Events on an Audio CD

There are three types of events that can be used to specify various sections of audio on the CD.

Event	Description
Track start	There can be up to 99 tracks on one CD. Each is identified by its start point only.
Track sub-index	On advanced CD players, a track can be divided into sub-indexes (sometimes called only indexes). These are used to identify important positions within a track. There can be 98 sub-indexes in each track. However, since it is difficult and time-consuming to search for and locate to a sub-index, many CD players ignore this information.
Pause	A pause appears before each track. Pauses can be of variable lengths. Some CD players indicate the pauses between tracks on their displays.

About Frames, Positions, Small Frames, and Bits

The data on an audio CD is divided into frames.

A frame consists of 588 stereo samples. 75 frames make up one second of audio. This is because 75 x 588 = 44100, and since the sampling frequency of the CD format is 44100Hz (samples per second), this equals one second of audio. When you specify positions on the CD, in WaveLab Elements, you do it in the format mm:ss:ff (minutes:seconds:frames). The frame values go from 0 to 74, since there are 75 frames to a second.

Technically, there is no way to specify something smaller than a frame on a CD. One effect of this is that if the sample length of a track on the CD does not equal a perfect number of frames, some blank audio must be added at the end. Another effect of this is that when you play the CD, you can never locate to anything closer than a frame. If you need some data in the middle of a frame, you still have to read the whole frame. Again, this is unlike a hard disk, where you can retrieve any byte on the disk, without reading the surrounding data.

But frames are not the smallest block of data on a CD. There is also something called "small frames". A small frame is a container of 588 bits. 98 small frames together make up one regular frame. In each small frame there is only room for six stereo samples, which means that a lot of space is left for data other than the actual audio. There is information for encoding, laser synchronization, error correction, and the PQ data to indentify the track boundaries. This PQ data is of major importance to anyone who wants to create their own CD, and handled effortless in WaveLab Elements.

ISRC Codes

International Standard Recording Code (ISRC) is an identification that is only used on CDs intended for commercial distribution. WaveLab Elementsallows you to specify an ISRC code for each audio track. These codes are provided by your publisher or clients.

The ISRC code is structured as follows:

- Country Code (2 ASCII characters)

- Owner Code (3 ASCII characters or digits).

- Recording Year (2 digits or ASCII characters)

- Serial Number (5 digits or ASCII characters)

The groups of characters are often presented with hyphens to make them easier to read, but hyphens are not part of the code.

UPC/EAN Codes

UPC/EAN code - the Universal Product Code/European Article Number, is a catalog number for an item (such as a CD) intended for commercial distribution. On a CD, the code is also called the Media Catalog Number and there is one such code per disc. These codes are provided by your publisher or clients.

UPC is a 12-digit barcode widely used in the USA and Canada. EAN-13 is a 13-digit barcoding standard (12 + a checksum digit) defined by the GS1 standards organization. EAN is now renamed as International Article Number, but the abbreviation has been retained.

Pre-Emphasis

CD pre-emphasis refers to process designed to increase, within a band of frequencies, the magnitude of some (usually higher) frequencies compared to the magnitude of other (usually lower) frequencies in order to improve the overall signal-to-noise ratio by lowering the frequencies during reproduction.

Pre-emphasis is commonly used in telecommunications, digital audio recording, record cutting and in FM broadcasting transmissions. The presence of pre-emphasis on a track is sometimes indicated by a tick in the ▄ column on the **Import Audio CD** dialog.

Disc-At-Once - Writing CD-Rs for Duplication Into Real CDs

WaveLab Elements only writes audio CDs in Disc-at-Once mode.

- If you want to create a CD-R to use as a master for a real CD production, you must write the CD-R in Disc-At-Once mode. In this mode, the entire disc is written in one pass. There are other ways of writing a CD, namely Track-At-Once and Multi-Session. If you use these writing formats, the link blocks created to link the various recording passes together will be recognized as uncorrectable errors when you try to master from the CD-R. These links can also result in clicks when playing back the CD.

- Disc-At-Once mode provides more flexibility when specifying pause lengths between tracks.

- Disc-At-Once is the only mode that supports sub-indexes.

Writing On The Fly vs. CD Images

WaveLab Elements writes a CD on the fly, that is, it does not create a CD image before writing. This method makes writing CDs/DVDs faster and requires less disc space. However, you can also create an image prior to writing a CD/DVD.

Loops

This chapter describes various operations that are related to looping. Looping is used to simulate the infinite or at least very long sustain of many instrumental sounds. WaveLab Elements has tools for creating smooth loops, even for the most complex types of sounds.

Basic Looping

Looping a sound allows you to repeat a section of the sample indefinitely in order to create a sustain of unlimited length. Instrumental sounds in samplers rely on looping. An example of this would be an organ sound.

Without looping, you can only play audio as long as the original recording. With looping, audio can be of any length. In WaveLab Elements, loops are defined by loop markers. Loop markers are added, moved, and edited such as any other type of marker.

To ensure that you find a good loop point note the following:

- There are only two types of loops: very long and very short loops. Loops of intermediate lengths usually do not provide good results.

- A long loop sounds the most natural and should be used whenever possible. However, if the sound does not have a stable section in the middle (an even sustain part), it might be hard to find a good long loop. For example, a piano note which decays continuously is hard to loop since the start point of the loop is louder than the end point. A flute is much simpler, because the sound in the sustain section is very stable.

- Very short loops that cover only a few cycles or periods can almost always be found but may sound static and unnatural.

- A loop should start shortly after the attack portion, that is, when the sound has stabilized to a sustaining note.

- If you set up a long loop, it should end as late as possible but before the sound starts decaying to silence.

- Short loops are difficult to position within the sound. Try to position them near the end.

More information about looping in general, and the exact capabilities of your sampler in particular can be found in the manual of the sampler.

Creating a Basic Loop

PROCEDURE

1. In the Audio Files workspace, select the audio section that you want to loop.
2. Right-click the top of the ruler, and select **Create loop from selection**.
3. On the **Transport** bar, activate **Loop**.
4. Play back the loop and adjust the position of the markers to change the loop.

AFTER COMPLETING THIS TASK:

Dragging markers to various positions does not necessarily lead to good loops. Most often, you hear a click or an abrupt change in timbre at the turning point.

We suggest you only use this method for setting up the basic length of the loop and then use the **Loop Tweaker** and **Loop Tone Uniformizer** for optimizing.

About Refining Loops

The **Loop Tweaker** tool allows you to refine a region of audio for seamless looping. Use the **Loop Tweaker** to tweak an existing loop selection so that it loops perfectly or use it to create a loop from material which does not naturally repeat.

You can automatically detect loop points by scanning the area between two loop markers. You can specify parameters that determine how accurate the program should be when suggesting loop points.

If the automatic search for loop points is not successful, you can process the waveform to allow for smoother loops by crossfading areas of the waveform close to the loop start and end points.

To use the **Loop Tweaker**, you must first define a loop using a pair of loop markers.

Loop Points Adjustment Tab

Use the **Loop Points Adjustments** tab in the **Loop Tweaker** dialog to manually refine a loop selection by dragging on the waveform left/right or by using the automatic search buttons to find the nearest good loop point. The aim is to align the waveforms so that they meet at a zero-crossing point where the waveforms match as closely as possible. When you adjust your loop start and end points within the dialog, the start and end loop markers in the main waveform window adjust accordingly. Note that this movement may or may not be visible depending on how much you move the markers and on the zoom factor that you have selected.

It may be helpful to loop the transport during playback so that you can hear the difference when you adjust the loop markers within the dialog. Note that if you are not using a crossfade or post-crossfade, you do not need to click **Apply** when tweaking loop points. You can also leave this dialog window open and manually adjust the position of the markers in the main waveform windows.

Crossfade Tab

This tab allows you to apply a crossfade of the end of a loop with a copy of the beginning of the loop. This can be useful to smooth the transition between the end of a loop and its beginning, especially when you use material that does not naturally loop. Use the envelope drag points or value sliders to adjust the crossfade envelope. Click **Apply** to process the crossfade.

Post-Crossfade Tab

This tab allows you to cross fade the loop back into the audio behind the end of the loop by mixing a copy of the loop back into the audio. Use the envelope drag points or value sliders to adjust the crossfade envelope. Click **Apply** to process the post crossfade.

Refining Loops

You can refine loops using the **Loop Tweaker** tool.

PREREQUISITE

Set up a basic loop.

PROCEDURE

1. In the Audio Files workspace, select the loop that you want to refine by clicking between its loop start and loop end marker.

2. Select **Process > Loop Tweaker**.

3. Refine your loop using the settings in the **Loop Tweaker** tool.

4. Click **Apply**.

Moving Loop Points Manually

If your loop still has glitches or bumps at the turning points, you can use the **Loop Tweaker** tool to move the points in small steps to remove the glitch.

This is similar to moving the loop points in the wave display, but with a visual feedback to facilitate finding good loop points.

There are two ways of moving the loop points manually on the **Loop points adjustment** tab in the **Loop Tweaker** dialog:

▪   Drag the waveform to the left and right.

▪   Use the green arrows below the waveform to nudge the audio to the left and right. Each click moves the loop point by a single sample.

The following applies when moving the loop points manually:

▪   To move the end point to a later or earlier position, move the left part of the display.

▪   To move the start point to a later or earlier position, move the right part of the display.

▪   To move the start and end points simultaneously, activate **Link start and end points**. This way, when adjusting a loop point, the length of the loop stays the same, but the entire loop is moved.

▪   You can also adjust the loop markers in the wave window.

Automatically Detect Good Loop Points

The **Loop Tweaker** tool can automatically search for good loop points.

PROCEDURE

1. In the Audio Files workspace, select the loop that you want to refine by clicking between its loop start and loop end marker.

2. Select **Process > Loop Tweaker**.

3. On the **Loop points adjustment** tab, make sure that **Link start and end points** is deactivated.

4. In the **Automatic search** section, specify the **Aimed correspondence** and the **Search accuracy**.

5. Click the yellow arrow buttons to start the automatic search for a good loop point.

   WaveLab Elements scans from the current point forwards or backwards, until it finds a point that matches. You can stop at any time by clicking the right mouse button. The program then jumps back to the best found match.

6. Check the loop by playing it back.

7. Optional: If you think there might be a better loop point, continue with the search.

Temporarily Storing Loop Points

Temporarily saving and restoring loop points allows you to quickly compare different loop settings.

PREREQUISITE

Set up a basic loop and open the **Loop Tweaker** tool.

NOTE

There are five slots for temporarily saving loop point settings per wave window and montage window, not one per set of loop points. This means that if you have several sets of loops in your file, you must be careful to not recall the wrong set.

NOTE

Only loop positions are temporarily saved.

273

1. On the **Loop points adjustment** tab, in the **Temporary memories** section, select **M**.

2. Select one of the five memory slots.

About Crossfades in Loops

Crossfading is useful to smooth the transition between the end of a loop and its beginning, especially when using material that does not naturally loop.

Sometimes it is impossible to find a loop that does not cause any glitches. This is especially true for stereo material, where you might be able to find a perfect candidate for only one channel.

In this case crossfading smears the material around the end loop point so that it loops perfectly. This is achieved by mixing material from before the loop start with material that is located before the loop end.

Note that this technique alters the waveform and therefore changes the sound. However, normally you can find settings that minimize this problem.

Creating a Crossfade

PROCEDURE

1. In the Audio Files workspace, create a good a loop as you can.

2. Select **Process > Loop Tweaker**.

3. Decide if you want to create a crossfade or a post-crossfade:
   - If you want to create a crossfade, click the **Crossfade** tab.
   - If you want to create a post-crossfade, click the **Post-Crossfade** tab.

4. Make sure that **Crossfade audio at end of loop with audio before loop** (**Crossfade** tab) or **Crossfade audio after loop with audio of loop start** (**Post-Crossfade** tab) is activated.

5. Decide on a length for the crossfade either by dragging the length handle or by adjusting the **Length** value below the graph.

6. Decide on a crossfade shape by dragging the shape handle or by adjusting the **Shape (from equal gain to equal power)** value.

7. Click **Apply**.

    The sound is processed. Each time that you click **Apply**, the previous loop process is automatically undone. This allows you to try out many settings quickly.

    Do not move the loop points after you have performed a crossfade. The waveform has been processed specifically for the current loop settings.

AFTER COMPLETING THIS TASK:

▪   You can check the crossfade visually by opening the **Loop points adjustment** tab and activating **Display processed audio**. When this is activated, the display shows a preview of the crossfaded waveform. When the option is deactivated, the display shows the waveform original. Switching back and forth allows you to compare the two.

About Post-Crossfades

Post-crossfading means crossfading the loop back into the audio after the end of the loop so that there is not glitch when playback continues after the loop. This is done by mixing a copy of the loop back into the audio.

The post-crossfade can be set up on the **Post-Crossfade** tab of the **Loop Tweaker** dialog.

The post-crossfade analyzes the part of the waveform that occurs just after the loop start and processes a certain area that begins at the end of the loop. The length parameter adjusts the size of this area. Everything else is identical with regular crossfading.

Loop Tweaker Dialog

This dialog allows you to adjust the loop start and end points, and crossfade the loop boundaries.

In the Audio Files workspace, select **Process > Loop Tweaker**.

The **Loop Tweaker** dialog consists of the following tabs:

Loop Points Adjustment Tab
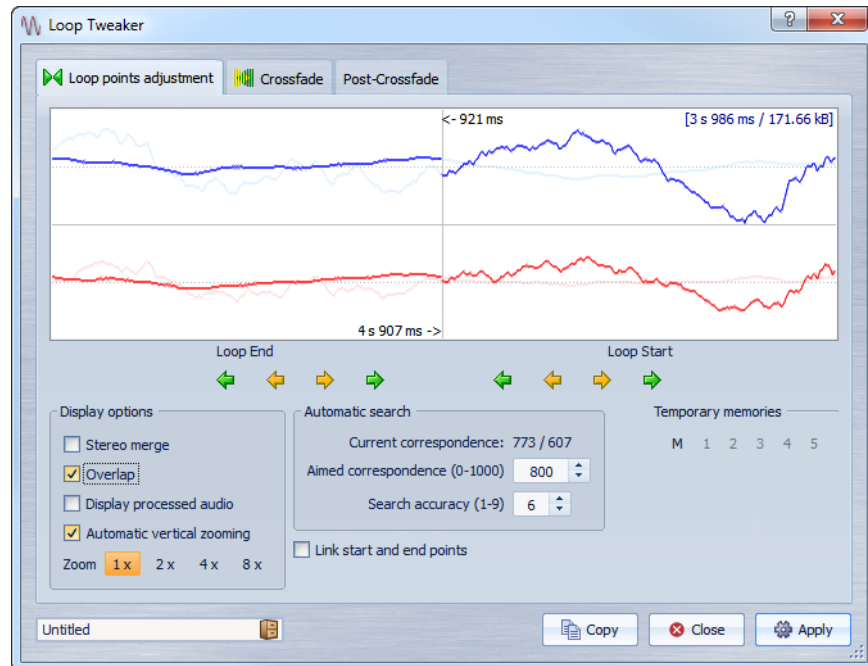
The top of this dialog shows the beginning and the end of the waveform between the loop markers. The bottom of this dialog offers the following options:

Loop End - Green Arrows

Move the loop end points to the left/right.

Loop End - Yellow Arrows

Invokes an automatic search for the nearest good loop point to the left/right of the loop end point and moves the end point to that position.

Loop Start - Green Arrows

Moves the loop start points to the left/right.

Loop Start - Yellow Arrows

Invokes an automatic search for the nearest good loop point to the left/right of the loop start point, and moves the start point to that position.

Stereo merge

If this option is activated for a stereo file, the two waveforms are overlayed, otherwise they are shown in two separate sections.

Overlap

If this option is activated, the waveforms of both halves are continued in the other half. This shows how the waveform looks like right before and after the loop.

Display processed audio

If this option is activated, the display shows a preview of the waveform after crossfading. If deactivated, you see what the waveform looks like without crossfading. This option only makes sense after you have set up a crossfade and clicked **Apply**.

Automatic vertical zooming

If this option is activated, the vertical magnification is adjusted so that the waveform always fills the entire display vertically.

Zoom

Sets the zoom factor.

Current correspondence

Indicates how well the waveforms near the loop points match one another. The left value estimates the similarity across several wave cycles, while the right value estimates the similarity of the few samples near the loop points. The higher the values, the better the match.

Aimed correspondence (0-1000)

Sets up the automatic search for good loop points. This defines how well the found section must resemble the section to which it is compared, in order to be considered a match. The higher the value, the more precise the resemblance must be. A value of 1000 most likely fails, since it requires a 100% perfect match.

Search accuracy

Determines how many samples should be taken into account by the auto-find analysis. Higher values result in greater accuracy, but also in longer processing times.

Link start and end points

If this option is activated, both the start and end points move simultaneously when you adjust the loop points manually. That is, the loop length is exactly the same, but the entire loop moves.

Temporary memories

Allows you to save up to five different sets of loop points which you can later recall. This allows you to try out several different loop settings. To store a set, click this button, then on one of the buttons 1-5.

Crossfade Tab
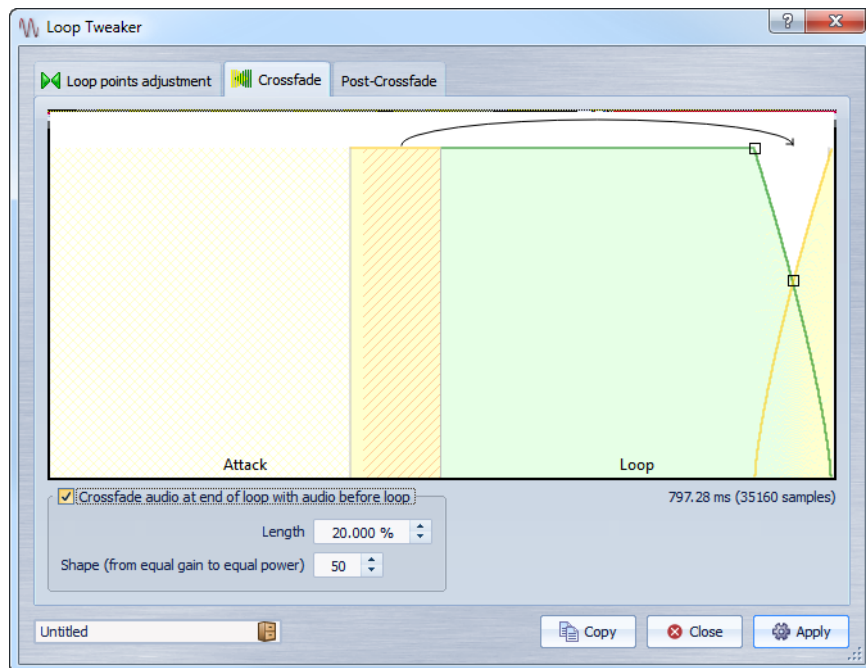
Crossfade audio at end of loop with audio before loop

To enable crossfading, activate this checkbox. The crossfade is applied when you click **Apply**.

Length

Determines the section length of the audio file to be used in the crossfade. Generally, you want the crossfade to be as short as possible, with an acceptable result:

- Using a long crossfade smoothens the loop. However, more of the waveform is processed, which changes its character.

- A shorter crossfade affects the sound less, but the loop is not as smooth.

Shape (from equal gain to equal power)

Determines the shape of the crossfade. Generally, use low values for simple sounds and high values for complex sounds.

Post-Crossfade Tab
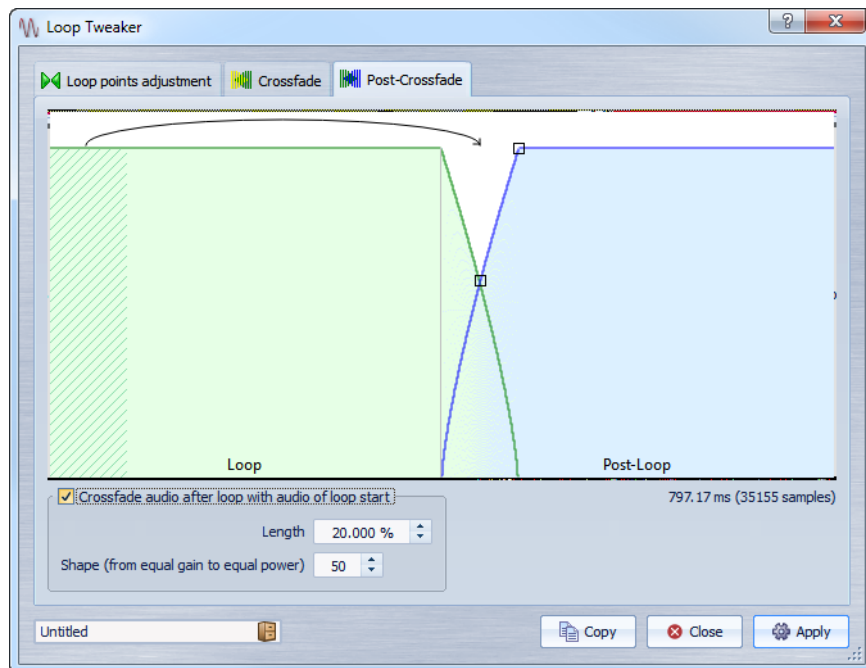
Crossfade audio after loop with audio of loop

To enable crossfading, activate this checkbox. The crossfade is applied when you click **Apply**.

Length

Determines the section length of the audio file to be used in the crossfade. Generally, you want the post-crossfade to be as short as possible, with an acceptable result:

- Using a long post-crossfade smoothens the loop. However, more of the waveform is processed, which changes its character.

- A shorter post-crossfade affects the sound less, but the loop is not as smooth.

Shape (from equal gain to equal power)

Determines the shape of the post-crossfade. Generally, use low values for simple sounds and high values for complex sounds.

About Looping Seemingly Unloopable Audio

Sounds that constantly decay in level or continuously change in timbre are difficult to loop. The **Loop Tone Uniformizer** allows you to create loops from sounds that seem unloopable.

The **Loop Tone Uniformizer** applies processing to the sound that evens out changes in level and timbral characteristics in order for a sound to loop properly. For example, this is useful for creating looped samples for a softsynth or hardware sampler.

The **Loop Tone Uniformizer** includes a crossfade facility so that the original sound fades into the processed sections as playback approaches the loop start.

To use the **Loop Tone Uniformizer**, you must have a loop defined using a pair of loop markers. The original length of the loop is not changed.

Looping Seemingly Unloopable Audio

PROCEDURE

1. In the Audio Files workspace, set up a basic loop.

2. Select **Process > Loop Tone Uniformizer**.

3. Make sure that either **Slice mixing** or **Chorus smoothing** is activated and make the settings.

4. Optional: Open the **Pre-Crossfade** tab, and set up a crossfade.

5. Click **Apply**.

   The sound is processed. Each time that you click **Apply**, the previous loop process is automatically undone. This allows you to try out many settings quickly.

   NOTE

   Do not move the loop points after you have performed a crossfade. The waveform has been processed specifically for the current loop settings.

AFTER COMPLETING THIS TASK:

After using the **Loop Tone Uniformizer**, the transition from the end of the loop to the end of the file is in many cases not very natural. This can be fixed by creating a post-crossfade using the **Loop tweaker**.

Loop Tone Uniformizer Dialog

This dialog allows you to create sounds that loop from audio that seems unloopable. These are normally sounds that constantly decay in level or continuously change in timbre.

In the Audio Files workspace, select **Process > Loop Tone Uniformizer**.

The **Loop Tone Uniformizer** dialog consists of the following tabs:

Uniformizers Tab
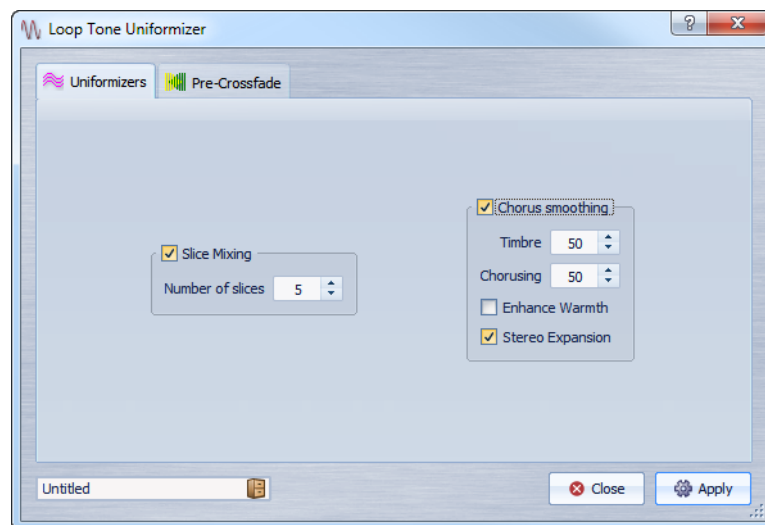
This tab allows you to specify the methods that are used to even out the sound that you want to loop.

For slice mixing, you must experiment to see how many slices are needed. Generally, the more slices you use, the more natural the sound will be.

Slice Mixing

Cuts the loop in slices, which are then mixed together to uniformize the sound.

For slice mixing, you need to determine the number of slices. Only experimentation can tell how many slices are needed, but generally, the more slices you have, the more natural the sound (to a certain extent). However, the program puts a restriction on the number of slices, so that each one is never shorter than 20ms.

For example, if you specify eight slices, the loop is cut up into eight sections of equal length. These sections are then overlapped and mixed together as one sound which is repeated eight times. This new piece of audio replaces all audio inside the loop in a smart way so that no harmonic cancelation due to phase offsets occurs.

Slice Mixing - Number of slices

The more slices you have, the more the sound changes.

Chorus smoothing

This processor uses a method known as phase vocoding to filter the harmonics. This method is recommended for looping ensemble and choir sounds and can drastically change the timbre.

Chorus smoothing - Timbre

Governs the amount by which the timbral characteristics of the sample should be evened out. The higher the value, the more pronounced the effect.

Chorus smoothing - Chorusing

Determines the depth of the chorus effect.

Chorus smoothing - Enhance Warmth

Creates a smoother, warmer sounding effect.

Chorus smoothing - Stereo Expansion

Increases the width of the sample in the stereo sound image.

Pre-Crossfade Tab
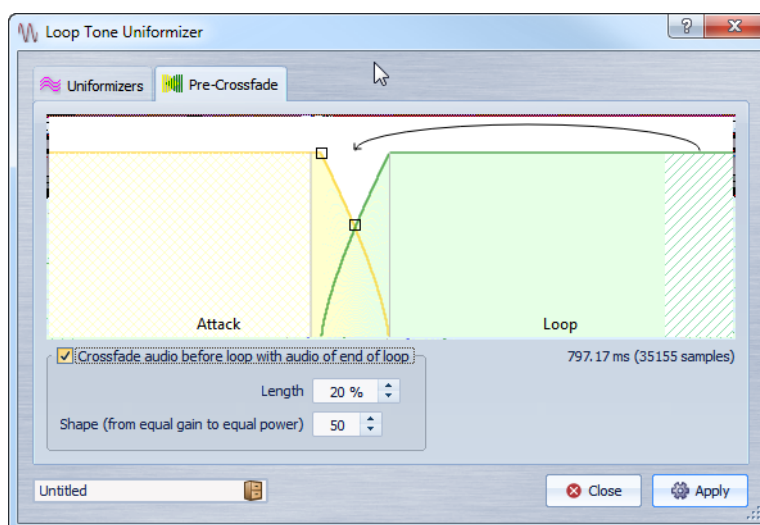
This tab allows you to crossfade the end of the loop with the start of the newly processed section so that transition into the newly looped section is smoother during playback. Use the envelope drag points or value sliders to adjust the cross fade.

You need to use this feature since the **Loop Tone Uniformizer** itself changes the timbre only inside the loop. This means that the transition into the loop is not as smooth as expected unless you apply crossfading.

Crossfade audio before loop with audio of end of loop

Enables crossfading, which is applied when you click **Apply**.

Length

Determines the section length of the audio file to be used in the crossfade. Generally, you want the post-crossfade to be as short as possible, with an acceptable result:

▪ A long crossfade produces a smoother loop. However, more of the waveform is processed, which changes its character.

▪ A shorter crossfade affects the sound less, but the loop is not as smooth.

Shape (from equal gain to equal power)

Determines the shape of the crossfade. Generally, use low values for simple sounds and high values for complex sounds.

About Sample Attributes

Sample attributes allow you to define settings for an audio sample before loading it into a hardware or software sampler.

Sample attributes do not process the sample, they just provide the file properties that the receiving sampler can use. This includes information about the pitch of the sample, which can be detected automatically, the key range that the sample should span, and the velocity range to occupy. For WAV and AIFF files, this information is stored in the header of the file. By default, there are no sample attributes in an audio file.

NOTE

Depending on your sampler and the protocol that you use for communicating, the sample attributes may not be supported.

Editing Sample Attributes

PROCEDURE

1. In the Audio Files workspace, open the **Sample Attributes** window.

2. In the **Sample Attributes** window, select **Create**.

3.   Optional: If you want to automatically detect the pitch of an audio selection, select an audio range, and select **Detect from audio selection**.

4.   Specify the sample attributes.

5.   Save the audio file to store the sample attributes settings in the audio file.

     The sample attribute is only saved in WAV and AIFF files.

Sample Attributes Window

In this window, you can create sample attributes for an audio sample.

In the Audio Files workspace, select **Workspace > Specified tool windows > Sample Attributes**.
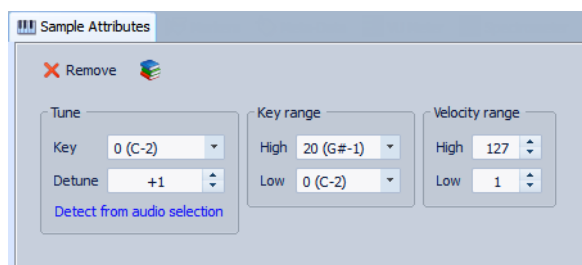
Create/Remove

Creates/Removes sample attributes for the active audio file.

Tune - Key

Specifies which key plays back the sound at its basic pitch.

Tune - Detune

Specifies whether the sample should be played back at a slightly different pitch. The range is ±50 % of a semitone, which translates into a quarter tone in each direction.

Detect from audio selection

Detects the pitch from an audio selection. Make sure that the audio selection contains a clearly defined pitch.

Key range - High/Low

Specifies the key range for the sample if the sample is part of a multi-sample key map.

Velocity range - High/Low

Specifies the velocity range for the sample if the sample is part of a multi-sample key map with velocity-switchable samples.

Importing Audio CD Tracks

You can read audio tracks from regular CDs and save them as a digital copy in any audio format on your hard disk.

Although WaveLab Elements supports a large number of CD drives, there are some restrictions you need to be aware of:

- There are a number of different protocols for retrieving audio from a CD-ROM/CD-R drive. WaveLab Elementssupports as many of these methods as possible, but there are no guarantees that it works with any particular drive. This applies for CD-Text and ISRC.

- Observe and respect any copyright notices on the CDs from which you are importing tracks.

When importing tracks, they are named "Track XX" by default, where XX is a number starting at 01. The numbering scheme can be changed.

NOTE

Importing audio CD tracks is technically more complicated than reading files from a CD-ROM or hard disk, because audio sectors can be hard to detect. Some CDs which do not conform completely to the CD standard may cause problems, especially when being copy protected.

Import Audio CD Dialog

In this dialog, you can import one or more tracks from an audio CD.

In any workspace, select **File > Import > Audio CD**.

Menus

Functions - CD Info

Displays the CD length and the UPC/EAN code, if available.

Functions - Extract ISRC codes

Reads the ISRC codes and displays them in the track list. Depending on your CD drive, this can take a while.

Functions - Examine CD-Text

Opens the **CD-Text** dialog where you can view the CD-Text. Not all CD drives support CD-Text.

Functions - Extract CD-Text

Extracts the CD-Text and displays a summary in the track list.

Rename tracks - Name

Renames the tracks according to the selected renaming scheme.

Rename tracks - Search track names on the internet (FreeDb)

Searches track names from an internet database. If the album is found, the CD track list is updated.

Convert - Convert to audio montage (all)

Extracts all audio CD tracks and uses them to create an audio montage.

Convert - Convert to audio montage (selected tracks)

Extracts the selected audio CD tracks and uses them to create an audio montage.

Actions Tab
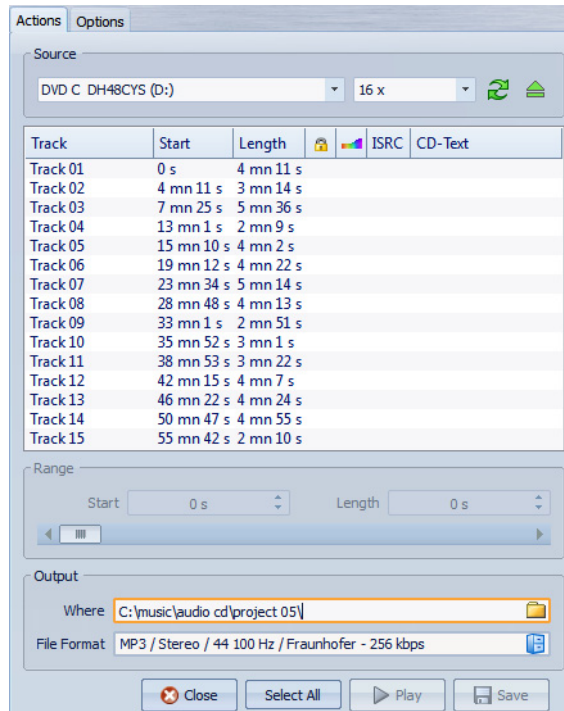
Source

Select the CD drive from which you want to import audio CD tracks.

Speed

Here, you select the writing speed. The highest speed depends on the capabilities of your writing device and of the media present in the device.

Refresh

If you insert a CD while the **Import Audio CD** dialog is open, you need to click this button to show the contents of that CD in the list.

Eject optical medium

Ejects the medium of the selected drive.

Track list

Shows the tracks on the CD.

Range - Start/Length

Use the Range Start and Length fields to define a start point and length if you want to import only a section of a track.

Output - Where

Here, you define an output location.

Output - File Format

Here, you define an output file format.

Select All

Selects all CD tracks in the track list.

Play

Plays back the selected CD track.

Options Tab
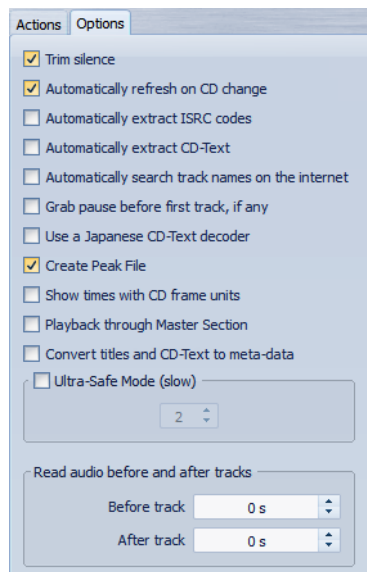
Trim silence

If this option is activated, silence between imported tracks is removed. Only digital silence is removed, that is, samples with a zero level.

Automatically refresh on CD change

If this option is activated, WaveLab Elements checks for the presence of a new CD in the drive several times a second. If a new CD is found, the track list display is refreshed.

Automatically extract ISRC codes

If this option is activated, ISRC codes are automatically extracted when a CD is inserted.

Automatically extract CD-Text

If this option is activated, CD-Text is automatically extracted when a CD is inserted.

Automatically search track names on the internet

If this option is activated, track names are automatically searched on the internet when a CD is inserted.

Grab pause before first track, if any

If this option is activated, when a section of audio is located before the first track, it is extracted together with the first track. This usually corresponds to a hidden bonus track.

Use a Japanese CD-Text decoder

If this option is activated, CD-Text is interpreted as Japanese the next time it is extracted.

Create Peak File

If this option is activated, a peak file is created together with the rendered files.

Show times with CD frame units

If this option is activated, times are shown in CD frame units. There are 75 CD frames per second.

Playback through Master Section

If this option is activated, the audio track signal goes through the Master Section when playing back.

Convert titles and CD-Text to meta-data

If this option is activated when importing tracks into an audio format supporting meta-data (for example, MP3 and WMA), the titles of the tracks and the CD-Text are automatically added to the file header.

Ultra-Safe Mode (slow)

If this option is activated, each CD track is read several times until the same result is found (checksums are used). Specify the number of times that a track should be read with the same result before it is saved to disk.

Real audio before and after tracks

You can ensure that entire tracks are imported properly by defining how much audio should be read before and after a CD track.

Importing Audio CD Tracks

PROCEDURE

1.   Insert a CD into the CD-ROM/CD-R device.

2.   Select **File > Import > Audio CD**.

3.   In the **Source** section, select the drive from which you want to read, as well as the read speed.

4.   Optional: Rename the files and adjust the numbering scheme.

     The tracks must have unique names if you want to import them all.

5.   Optional: On the **Options** tab, in the **Read audio before and after tracks** section, define how much audio should be read before and after a CD track.

6.   In the track list, select the tracks that you want to import.

7.   Optional: If you have only selected one file, in the **Range** section, you can define a **Start** and **Length**, to import just a part of the track.

8.   In the **Output** section, click the folder icon, and select an output location.

     You can also drag one or more CD tracks onto an audio montage track.

9.   In the **Output** section, click the file format field, and select a file format for the imported audio files.

10. Click **Save**.

RESULT

The tracks are retrieved.

Searching Track Names on the internet

You can search for information about your CDs, using the FreeDb database of CD information.

PREREQUISITE

You need to be connected to the internet to use the FreeDb function.

PROCEDURE

1. Insert a CD into the CD-ROM/CD-R device.

2. Select **File > Import > Audio CD**.

3. Select **Rename tracks > Search track names on the internet (FreeDb)**, or click the corresponding icon.

About Ultra-Safe Mode

Sometimes, a small bit of a CD track is not properly retrieved. This depends on the quality of your CD drive. This can result in unpleasant clicks and pops. To solve this issue, you can activate the **Ultra-Safe Mode** in the **Import Audio CD** dialog options.

When this option is activated, you can specify how many times each CD track is read with the same result, before it is saved to disk.

Converting Audio CD Tracks to an Audio Montage

PROCEDURE

1. Insert a CD into the CD-ROM/CD-R device.

2. Select **File > Import > Audio CD**.

3. Optional: On the **Options** tab, select which information you want to extract from the Audio CD when converting.

4. Decide whether to convert only selected tracks or all tracks.

   - To convert only selected tracks, select **Convert > Convert to Audio Montage (selected tracks).**

   - To convert all tracks, select **Convert > Convert to Audio Montage (all)**.

RESULT

When the conversion is finished, the imported files open in the Audio Montage workspace.

Podcasts

Podcasting is a method of distributing multimedia files over the internet, for example, for playback on mobile devices and personal computers.

A Podcast can be downloaded automatically, using software that is capable of reading RSS feeds. RSS (Really Simple Syndication) is a standard for distributing news and other information via the internet. An RSS news feed sends short messages on a certain topic from a specific web site. In order to read the messages, the user employs a program that has the ability to monitor multiple feeds and automatically download new messages on a regular basis. This can be special feed readers or an internet browser, for example.

A Podcast is an RSS feed including data content, such as audio or video files. This can be a show of which new episodes are released regularly. The file formats .mp4a, .mp3, and .ogg are commonly used for podcasts.

Podcast Workspace

The Podcast workspace is divided into two panes. The upper pane shows the information for the feed or an episode, depending on the item that is selected in the list below. This is where you can add files, internet links, or textual information to the Podcast feed and its episodes. The lower pane shows an item list of the basic feed and all episodes that are included in the Podcast.
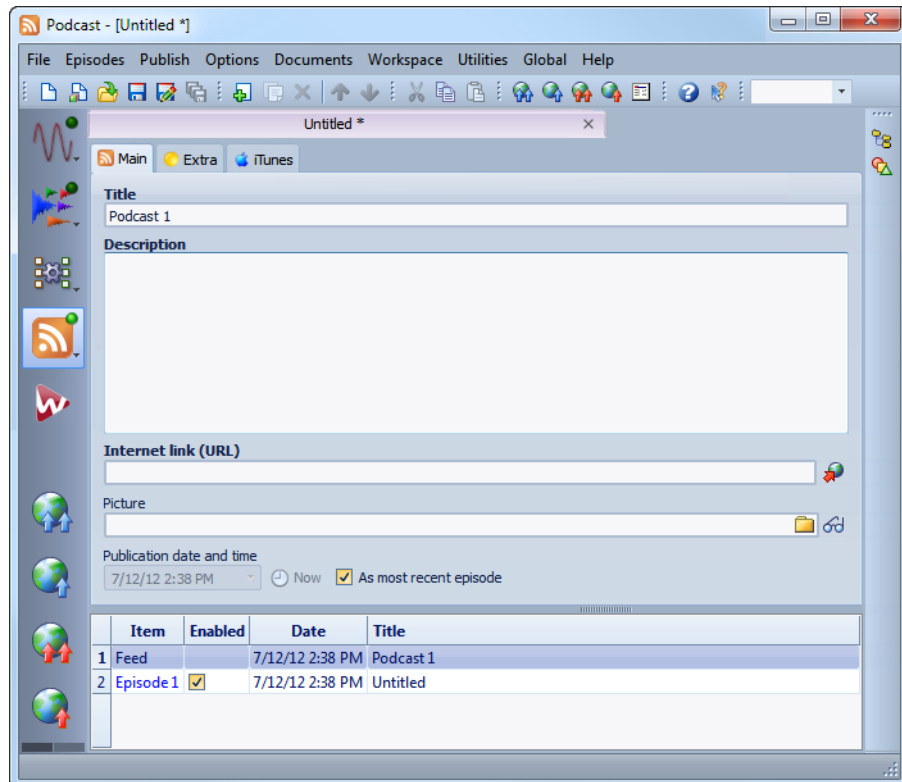
Episodes Menu

In the **Episodes** menu, you can create, delete, and move individual Podcast episodes.

New

Adds a new untitled episode without any information present.

Duplicate selected

Adds a new episode, copying all the information from the existing episode to the new one.

Delete selected

Deletes the selected episode. Alternatively, you can exclude an Episode from the Podcast by deactivating the **Enabled** box.

Cut/Copy/Paste

Cuts, copies, and pastes the selected episode.

Move up/Move down

Moves the selected episode one position up or down in the item list. Alternatively, use drag and drop.

Publish Menu

In the **Publish** menu, you can define where your Podcast is going to be uploaded via FTP.

Update all items on FTP

Uploads/updates the XML Podcast file on the FTP server. It also uploads all media files of the item, but only if they are not yet available on the FTP server. This is the most common function to upload and update your Podcast.

Update selected item on FTP

Uploads/updates the XML Podcast file on the FTP server. It also uploads the media file of the selected item in the list, but only if it is not yet available on the FTP server.

Upload/Replace all items on FTP

This is the same as above, but it always uploads/replaces all of the media files belonging to the item. This is useful if you have changed the audio data, for example.

Upload/Replace selected items on FTP

This is the same as above, but it always uploads/replaces the media file of the selected item in the list. This is useful if you have changed the audio data, for example.

View published Podcast

Opens your Podcast (via the URL specified in your FTP site settings) using your default browser.

View XML source code

Opens an XML editor to display the source code of the Podcast.

FTP site

Edit the FTP settings that are related to this Podcast.

Options Menu

On the **Options** menu, you can set additional options that are valid for all Podcast windows.

Options

Edit the automatic picture resizing, set a time offset with Greenwich Mean Time, and specify the path of the HTML editor.

Folders

Edit the default folders where to open and save files.

Main Tab

On the **Main** tab, you can assign parameters to your Podcast. The available parameters change, depending on whether you select a feed or an episode. Field labels in bold letters mark fields that are mandatory to fill.

Title

Sets the title of the feed, for example, the topic of your Podcast.

Description

Gives space for a further description of the feed content.

Internet link (URL)

The main link of the feed that the user sees. Use this to direct people to a certain web site that is related to your feed. Clicking the world icon opens the specified URL in your default internet browser.

Picture (only available for feeds)

According to the RSS standard, this picture may not be larger than 144 x 400 pixels, so the picture is automatically resized. Clicking the sunglasses icon opens the specified picture in your default image viewer of your system.

Publication date and time

Sets the publication date and time of the feed or episode. Clicking the **Now** button transfers current date and time of your system.

As most recent episode (only available for feeds)

If **As most recent episode** is activated, the date and time of the most recent episode are automatically matched.

Import HTML file (only available for episodes)

Lets you browse for an HTML document that replaces the description.

Audio file (only available for episodes)

This sets the path to the audio file that you want to add to the episode. The audio file can be any file type that is supported by the media reader of your browser. An .mp3 file provides best compatibility. Click the icon to list the audio files that are already open in WaveLab Elements. Select one for your episode.

Alternatively, you can drag the list icon of an audio file into the audio file pane. Click the play icon to open the specified file in the default media player or viewer of your system, for previewing or checking purposes.

Extra Tab

In the **Extra** tab, you can assign parameters to your Podcast. The available parameters change, depending on whether you select a feed or an episode.

The following parameters are available when a feed is selected:

- Webmaster (email address)
- Editor (email address)
- Copyright
- Category
- Related domain (URL)
- Language
- Frequency of updates
- Skip hours (0 to 23, separate each one with a comma)
- Time to live (number of minutes)

The following parameters are available when an episode is selected:

- Author (email address)
- Comments (URL)
- Category
- Related domain (URL)
- Title
- Original domain (URL)

iTunes Tab

In the **iTunes** tab, you can activate the iTunes extension, that allows you to specify additional feed and episode information. The available parameters change, depending on whether you select a feed or an episode.

The following parameters are available when a feed is selected:

- Subtitle

- Summary

- Categories

- Keywords (separate them with a comma)

- Author

- Owner name

- Picture

- New URL of Feed

- Hide in iTunes

- Explicit material

The following parameters are available when an episode is selected:

- Subtitle

- Summary

- Keywords (separate them with a comma)

- Author

- Duration

- Hide in iTunes

- Explicit material

Global Podcast Options

You can set some additional options that are valid for all Podcast windows.

In the Podcast workspace, select **Options > Options**.

Automatic picture resizing (not for iTunes)

Defines what to do if specified pictures exceed the maximum size allowed by the RSS standard. If pictures need resizing, the original images on your hard disk is not modified.

Time offset with GMT (Greenwich Mean Time)

The displayed dates and times are local. If your system is properly set, WaveLab Elements automatically adjusts the time offset in relation to GMT. However, if you want to have time and date relative to a different time zone, adjust the value with this option.

HTML Editor

Sets the path to the external HTML editor that is launched when clicking the Pen button in the **Import HTML file** section.

Creating a Podcast

There are several ways to create a new Podcast feed or episode.

- To create a new podcast, in the Podcast workspace, select **File > New**.

- To create a new podcast from the selected audio file, in the Audio Files workspace, select **File > Export > Create Podcast from active file**.

- To add an audio file to an existing podcast, in the Audio Files workspace, select **File > Special > Add to Podcast**.

- To add a new untitled episode to a podcast, in the Podcast workspace, select **Episodes > New**.

- To duplicate an episode, in the Podcast workspace, select **Episodes > Duplicate**. This adds a new episode, and copies all information from the existing episode to the new one.

Setting Up a FTP for Podcast Publishing

To be able to upload a Podcast to your FTP server, you must enter the FTP server details first.

PROCEDURE

1. In the Podcast workspace, select **Publish > FTP site**.

2. Enter the following details:
   - The log-in details for your FTP server.
   - The relative path and file name of the Podcast (extension .xml).
   - Your web site address including the path to the feed.

3. Click **OK**.

Publishing a Podcast

You can upload a Podcast from within WaveLab Elements directly to your FTP server.

PREREQUISITE

Set up your FTP settings within WaveLab Elements.

PROCEDURE

1. In the Podcast workspace, select the **Publish** menu, and select one of the following options:
   - Update all items on FTP
   - Update selected item on FTP
   - Upload/Replace all items on FTP
   - Upload/Replace selected items on FTP

2. Check if the FTP settings are correct, and click **OK**.

RESULT

The Podcast is uploaded to your FTP site.

FTP Site Dialog

In the FTP site dialog, you can manage all required information for the Podcast upload process.

In the Podcast workspace, select **Publish > FTP site**.
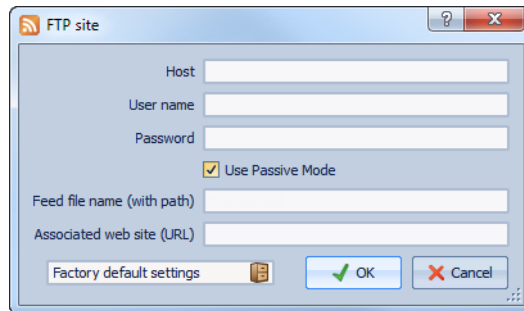
Host

> The host name or IP address of the FTP server.

User name

> The login name to your FTP server.

Password

> The password to the login.

Use Passive Mode

> Keep this activated and only change this if you experience problems with the FTP connection.

Feed file name (with path)

> The Podcast file name that is displayed on your FTP server (extension .xml), including the relative path. File name and path are part of the final public internet address of the Podcast, so you may want to avoid long names.

Associated web site (URL)

> Your own web site address including the path to the feed.

FTP Site Dialog Example
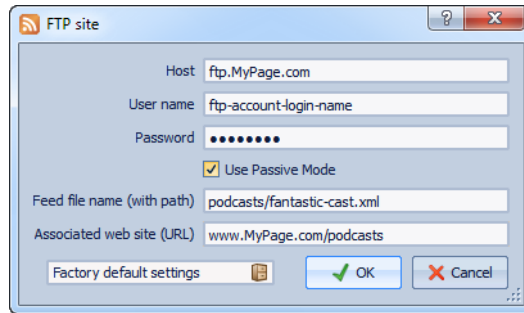
- Your FTP host address is "ftp.MyPage.com", your public web site address is "www.MyPage.com".

- The feed file name setting is "podcasts/fantastic-cast.xml", the associated web site setting is "www.MyPage.com/podcasts".

- The media files of the Podcast will be uploaded to the FTP server at "ftp.MyPage.com/podcasts".

- The Podcast file itself and the internet address to be distributed will be found at "www.MyPage.com/podcasts/fantastic-cast.xml".

Each Podcast saves its own complete FTP site information. It is also possible to save and recall FTP site presets using the **Preset** functions at the bottom of the dialog.

Checking the Podcast

After creating and publishing a Podcast, you can check if the upload was successful.

- To visualize the contents of the feed XML file in your default XML editor, in the Podcast workspace, select **Publish > View XML source code**.

- To open your default internet browser and receive the Podcast that you have just published from the internet, in the Podcast workspace, select **Publish > View published Podcast**.

Customizing

Customizing means making settings so that the program behaves and looks the way that you want it to.

Customizing the Wave Window and the Montage Window

You can style the wave/montage window to your liking, by adjusting colors of waveforms, background, cursor lines, etc., and changing the look of the ruler and other window details. This helps you find your way through the audio file or audio montage.

Customizing can be done in the following ways:

- By changing the default style.

- By assigning different styles, according to specific conditions. For example, a certain file type or a certain file name.

Default colors are provided, but you can also define custom colors. You can copy and paste colors to transfer colors between various parts of the wave/montage.

Assigning Custom Colors to the Wave Window or the Montage Window

PROCEDURE

1. Depending on whether you want to customize the colors of the wave window or the montage window, do the following:
   - In the Audio Files workspace, select **Options > Audio file editing preferences**, and select the **Style** tab.
   - In the Audio Montage workspace, select **Options > Colors**.

2. Select the part from the **Parts** list.

3. Specify a color using the color picker or the RGB fields.

4. Click **OK**.

Assigning Custom Colors According to Conditions

You can have different color schemes automatically applied to different clips, according to their names or properties of their audio files.

IMPORTANT

If you redefine colors, be careful not to choose colors that cause some elements to disappear. For example, when having black marker lines on a black background.

PROCEDURE

1. Depending on whether you want to customize the colors of the wave window or the montage window, do one of the following:
    *   In the Audio Files workspace, select **Options > Audio file editing preferences**, and select the **Style** tab.
    *   In the Audio Montage workspace, select **Options > Color**.

2. Depending on the workspace you are in, do one of the following:
    *   In the **Audio file editing preferences** dialog, on the **Style** tab, select one of the **Conditional** options from the menu at the top of the dialog.
    *   In the **Audio montage colors** dialog, in the **Parts** list, select one of the **Custom** entries.

3. Specify a color using the color picker or the RGB fields.

4. In the **This style is used if these conditions apply** section, specify the conditions.

5. Click **OK**.

Copying Color Settings

You can copy the color settings of one part, or all parts of a custom color schema.

*   To copy a color setting, select the part from which you want to copy the color, and select **Copy color**. Then select the part to which you want to copy the color, and select **Paste**.

*   To copy all color settings of a custom color setting, drag the name of a custom color setting onto another custom color name, and click **OK**.

Audio Montage Colors Dialog

In this dialog, you can specify custom colors to clips and parts of a clip in the montage window.

In the Audio Montage workspace, select **Options > Colors**.
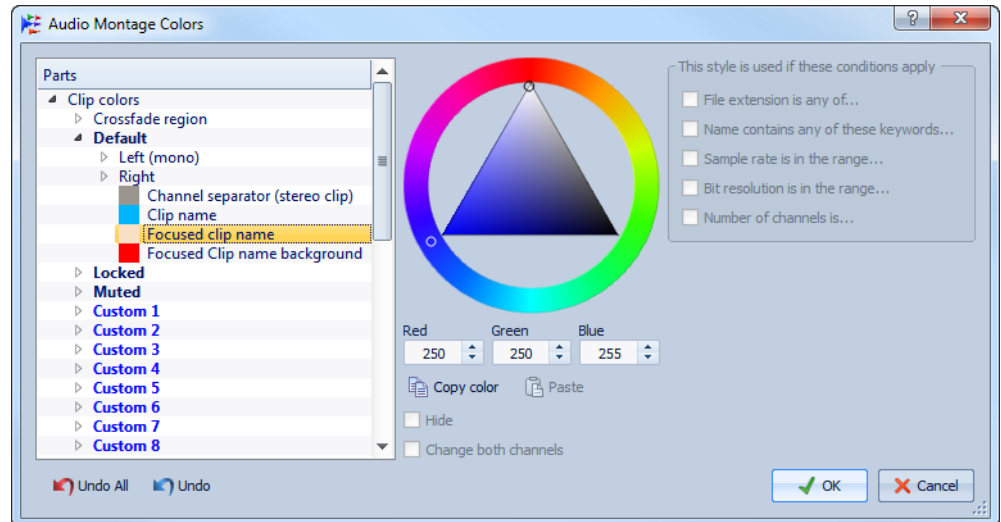
Parts list

Shows parts that can be colorized. Click a part to edit the color.

Undo all

Undoes all changes that have been made since this dialog was opened.

Undo

Undoes the last change.

Hide

Hides the selected part.

Change both channels

It is possible to make separate color settings for the left and the right side of stereo clips. If this option is activated, settings for the left side of a clip are automatically mirrored on the right side, and vice versa.

Color picker

Lets you select the color for the selected part. Click the surrounding circle to select the hue. Click in the triangle to adjust the saturation and lightness.

Red/Green/Blue

Lets you specify the red, green, and blue components of the RGB color spectrum.

Copy color

Copies the current color to the clipboard.

Paste

Pastes the color from the clipboard.

This style is used if these conditions apply

Lets you define conditions under which a certain color style is applied.

File extension is any of

If this option is activated, the color style is applied to clips referencing a file with the specified extension. Separate extensions with a ";" character.

Name contains any of these keywords

If this option is activated, the color style is applied to clips with certain keywords in their name. Separate keywords with a ";" character.

Sample rate is in the range

If this option is activated, the color style is applied to clips referencing a file having a sample rate within the specified range.

Bit resolution is in the range

If this option is activated, the color style is applied to clips referencing a file having a bit resolution within the specified range.

Number of channels is

If this option is activated, the color style is applied to clips having the specified number of channels.

Color Elements in the Audio Montage Workspace

You can assign custom colors to various elements of the Audio Montage workspace.

In the Audio Montage workspace, select **Options > Colors**.

Clip Colors

The following clip types are available:

Crossfade region

Allows you to set the background color for overlapping clip sections.

Default

The default colors, used for clips for which you have not selected any specific color.

Locked

The colors used for all fully locked clips.

Muted

The colors used for all muted clips.

Custom

These options correspond to the items on the color submenus. These can be renamed, and you can also set up conditions for when these should be automatically applied.

The following color elements are available:

Background top/bottom

The background colors of the clip. The resulting display backgrounds are gradient fades from the top colors to the bottom colors.

Waveform (normal/selected)

The waveform color for selected and unselected clips.

Waveform outline (normal/selected)

The color of the waveform outline for selected and unselected clips.

Edge

The left and right edge of the clip.

Edge (selected)

The left and right edge if the clip is selected.

Axis (level zero)

The color of the horizontal dotted line in the middle of a clip, indicating zero level.

Axis (half level)

The color of the horizontal dotted lines halfway up and down from the middle of a clip, indicating 50% level.

Channel separator (stereo clip)

The line dividing the two sides in a stereo clip.

Clip name

The name label of the clip.

Focused clip name

The name label of the focused clip.

Focused clip name background

The name label background of the focused clip.

Miscellaneous

Background top/bottom

The background colors of the track view for area without a clip.

Background (selected range) top/bottom

The background colors in selected ranges.

Cursor (edit)/Cursor (edit, no focus)/Cursor (playback)

The color of the corresponding cursor.

Marker line

The color of the marker lines in the audio montage.

Cue point line/End cue point line

The color of the vertical dotted cue point lines and end cue point lines.

Time grid lines

The color of the time grid if activated in the menu of the time ruler.

Audio Files Colors Dialog

This tab in the **Audio file editing preferences** dialog allows you to specify custom colors to parts of the wave window.

In the Audio Files workspace, select **Options > Audio file editing preferences**, and select the **Style** tab.
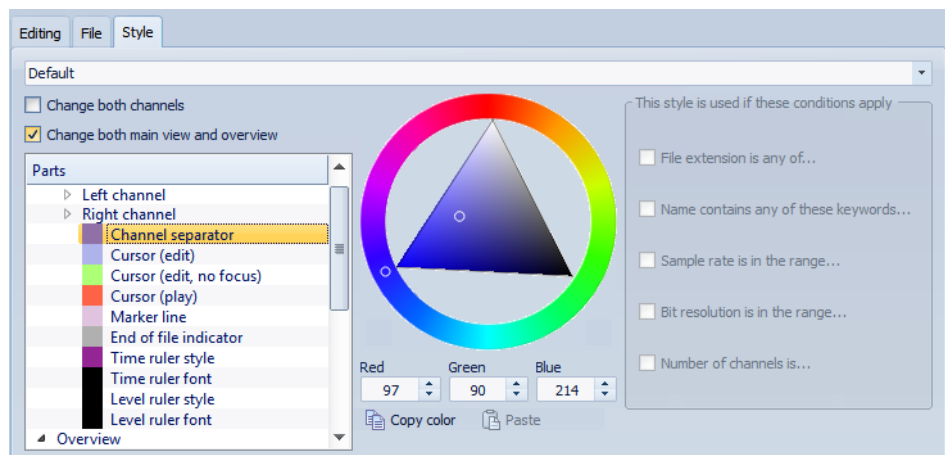
Styles list

Lets you select the default style and conditional styles.

Parts list

Shows parts that can be colorized. Click a part to edit the color.

Hide (for certain parts only)

Hides the selected part.

Dotted line (for certain parts only)

Changes the line to a dotted line.

Transparency (for certain parts only)

Lets you edit the degree of transparency of the selected element.

Element size (for certain parts only)

Lets you edit the size of the selected element.

Change both channels

Allows you to make separate color settings for the left and the right side of stereo file. If this option is activated, settings for the left side of a file are automatically mirrored on the right side, and vice versa.

Change both main view and overview

Allows you to make separate color settings for the main view and the overview. If this option is activated, settings for the main view are automatically mirrored on the overview, and vice versa.

Color picker

Lets you select the color for the selected part. Click the surrounding circle to select the hue. Click in the triangle to adjust the saturation and lightness.

Red/Green/Blue

Lets you specify the red, green, and blue components of the RGB color spectrum.

Copy color

Copies the current color to the clipboard.

Paste

Pastes the color from the clipboard.

This style is used if these conditions apply

Lets you define conditions under which a certain color style is applied.

File extension is any of

If this option is activated, the color style is applied to files with the specified extension. Separate extensions with a ";" character.

Name contains any of these keywords

If this option is activated, the color style is applied to files with certain keywords in their name. Separate keywords with a ";" character.

Sample rate in the range

If this option is activated, the color style is applied to files having a sample rate within the specified range.

Bit resolution is in the range

If this option is activated, the color style is applied to files having a bit resolution within the specified range.

Number of channels is

If this option is activated, the color style is applied to files having the specified number of channels.

Color Elements in the Audio Files Workspace

You can assign custom colors to various elements of the Audio Files workspace. Depending on the selected element, additional settings can be made for transparency, appearance, or whether a line should be dotted, for example.

In the Audio Files workspace, select **Options > Audio file editing preferences**, and select the **Style** tab.

Left/Right Channel

Waveform

The waveform color.

Waveform (selected)

The waveform color of the selected part of the waveform.

Waveform outline

The outline color of the waveform.

Waveform outline (selected)

The outline color of the selected part of the waveform.

Background top

The color of the background top.

Background top (selected)

The color of the selected part of the background top.

Background bottom

The color of the background bottom.

Background bottom (selected)

The color of the selected part of the background bottom.

Waveform main axis

The color of the waveform main axis and its style.

Waveform 50% axis

The color of the waveform 50% axis and its style.

Waveform Elements

Channel separator

The color of the channel separator line.

Cursor (edit)

The color of the edit cursor, its width, and transparency.

Cursor (edit, no focus)

The color of the edit cursor for a file that does not have the focus.

Cursor (play)

The color of the cursor during playback.

Marker line

The color of the marker lines and an optional transparency.

End of file indicator

The color of the end of the file indicator.

Time ruler style

The color of the time ruler and its style.

Time ruler font

The color of the font on the time ruler and the font size.

Level ruler style

The color of the level ruler, its style, and transparency.

Level ruler font

The color of the font on the level ruler and the font size.

About Customizing Shortcuts

In WaveLab Elements, you can control many functions via shortcuts to speed up your workflow. You can edit existing shortcuts, and create new shortcuts.

Most shortcuts are restricted to a specific context, so you can reuse the same shortcut combination in different workspaces. The exception is the Master Section where all shortcuts are global to the application. Shortcuts that cannot be edited are grayed out. The shortcuts that you created are displayed in blue in the editor.

You can create a new shortcut by specifying a key sequence of between one to three keys that must be pressed in a certain order to invoke the operation.

Editing Shortcuts

You can see the list of all shortcuts in the **Customize commands** dialog, and edit and assign shortcuts in the **Shortcut Definitions** dialog.

NOTE

The **Customize commands** dialog provides a different command set for each menu or dialog.

- To open the **Shortcut Definitions** dialog, where you can edit the shortcuts, double-click the shortcut text or its placeholder, or select a command and click **Edit shortcut**.

- You can define one key shortcut per command. Each shortcut can be a sequence of up to four keystrokes.

- To reset some or all types of shortcuts to their factory defaults use the **Reset** button.

Defining Key Sequences

You can define key sequences for a keyboard.

PREREQUISITE

On Mac, commands for the main menus must be of a single key command.

When using multiple key stroke commands, make sure that the key commands do not interfere with each other. For example, when you have one shortcut [Shift]+L, M and define another to be [Shift]+L, the second shortcut has no effect.

PROCEDURE

1. In any workspace, select **Options > Customize commands**, or select **Customize commands** when available in tool windows or other places in WaveLab Elements.

2. In the customize commands list, select the command for which you want to define a key sequence, and click **Edit shortcut**, or double-click the **Key sequence** column of the corresponding command.

3. In the **Shortcut Definitions** dialog, click in the **1st key stroke** field, and press the buttons that you want to use as the key sequence.

4. Optional: Define up to 4 key sequences for the command.

5. Click **OK**.

RESULT

When you now press the keys/buttons specified in the dialog, the corresponding operation is performed. The key strokes must be executed one after the other.

Customizing Menus and Command Bars

You can individually decide whether to hide or show command bar icons. This way you can customize command bars by removing unwanted commands.

PROCEDURE

1. In any workspace, select **Options > Customize commands**, or select **Customize commands** when available in tool windows or other places in WaveLab Elements.

2. To show a certain command in the command bar, activate the checkbox in the **Bar** column for corresponding command.

3. Click **OK**.

Generating a List of All Shortcuts

You can generate an HTML file or print out a list that contains all shortcuts for the active command set.

PREREQUISITE

When you want to print out the list, make sure a printer is connected to your system.

PROCEDURE

1. In any workspace, select **Options > Customize commands**, or select **Customize commands** when available in tool windows or other places in WaveLab Elements.

2. Click **Summary**, and select one of the following options:
    - To open the **Print preview** dialog, from which you can print out the list of all shortcuts, select **Print preview**. For **Print preview** to be available, a printer must be connected.
    - To open the list of all shortcuts in the HTML file format in the standard browser, select **HTML report**.

Customize Commands Dialog

This dialog allows you to customize your own shortcuts for WaveLab Elements. It shows a list of already assigned shortcuts for WaveLab Elements commands and menu options.

In any workspace, select **Options > Customize commands**, or select **Customize commands** when available in tool windows or other places in WaveLab Elements.

Search by

Allows you to select the part of the commands list in which the search is performed.

Search field

Allows you to search for a command.

Use wildcards

If this option is activated, the wildcard characters "*" and "?" can be used.

"*" substitutes zero or more characters, and "?" substitutes any character.

For example, if **Search by keyboard shortcut** is selected, type "*" to display all the commands already associated with a shortcut.

Expand/Collapse

Expands/collapses the folder tree.

Commands list

Shows all commands and their shortcuts for the active command set.

Reset

Resets the commands to the factory setting.

Summary

Opens a menu from which you can generate a list of all commands and their shortcuts either in HTML or as a print out.

Edit shortcut

Opens the **Shortcut Definitions** dialog where you can edit the shortcuts of the selected command.

Shortcut Definitions Dialog

This dialog allows you to define your own customized shortcuts for a particular function. These custom shortcuts can speed up your workflow in WaveLab Elements.

In the **Customize commands** dialog, select a command, and click **Edit shortcut**.

Key Sequence

1st key stroke

Lets you select the first key of an optional sequence of up to 4 keys. Set the focus in the key stroke field, then press the key combination. If nothing is displayed, a key is not allowed in this context.

2nd/3rd/4th key stroke (optional)

Lets you select additional keys that have to be triggered to execute the command. The command is only executed if this key event happens after the first one.

Clear

Erases all key event fields.

Plug-ins Organization

WaveLab Elements comes with various plug-ins, and additional plug-ins can be added. To remain an overview about the plug-ins that are relevant to your project, you can organize your plug-ins in groups.

In the **Organize** tab of the **Plug-in settings**, you can organize how your plug-ins appear on menus in the program. In the plug-ins list, you find subfolders, representing groups of plug-ins.

How you organize your effects is up to you, but initially, they are categorized by vendor, category, favorite plug-ins, and recently used plug-ins.

In case 32 bit and 64 bit versions of WaveLab Elements are used on the same system, their settings are shared. An exception to this rule are the following options in the **Plug-in settings** dialog:

▪ **Additional VST plug-in folders**

▪ **Ignore plug-ins located in the following subfolders**

This is because 32-bit plug-ins cannot be used in WaveLab Elements 64 bit and reciprocally.

Deactivating Plug-ins

You can deactivate plug-ins. This is useful if you have plug-ins installed that you do not want to use in WaveLab Elements.

Many of the DirectX plug-ins, for example, do not apply to audio and are of no relevance to WaveLab Elements. By disabling these, you make it easier to find the plug-ins that you want to use in WaveLab Elements.

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > Plug-in settings**.

2. Select the **Organize** tab.

3. In the plug-ins list, navigate to the plug-in that you want to deactivate, or use the search field.

4. Deactivating the checkbox in for the corresponding plug-in.
   ▪ When selecting multiple plug-ins, you can deactivate all of them with a single click.
   ▪ To deactivate the plug-in from the plug-in selection menus, deactivate the checkbox in the **Effect** column.
   ▪ To deactivate the plug-in in the **Dithering** panel of the Master Section, deactivate the checkbox in the **Post** column.

Adding Plug-ins to the Favorites Menu

You can add plug-ins that you are using regularly to the **Favorites** menu of the plug-in selection menu.

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > Plug-in settings**.

2. Select the **Organize** tab.

3. In the plug-ins list, navigate to the plug-in that you want to add to the favorites, or use the search field.

4. Specify whether to add or remove a plug-in from the favorites, by activating/deactivating the checkbox in for the corresponding plug-in in the **Favorites** column.
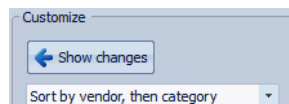
NOTE

If the **Favorites** menu is empty, it does not appear in plug-in selection menus.

Customizing Plug-in Groups

In any workspace, except the Podcast workspace, select **Options > Plug-in settings**, and open the **Organize** tab. Here, you can customize the appearance and sorting of plug-ins.

▪   To update the tree with the following changes, click the **Show changes** button.

▪   The category labels used to create the hierarchy are supplied by the plug-in manufacturers. To change the category name, in the **Category renaming** table, click in the **Original** column, and select the category that you want to rename. Then click in the **Modified** column, and enter a new name.

▪   To change the sorting of plug-in groups, in the **Customize** section, in the sorting menu, select whether to sort by category or by vendor. If a plug-in does not publish a vendor name or category, the name of the enclosing plug-in folder on disc is used as vendor name or category, if it is not the VST plug-in root folder.

▪   To group all plug-ins that start with the same prefix in one submenu, activate **Create submenus based on prefixes**, and specify the number of plug-ins that must start with the same prefix. Only if this number is reached, a submenu is created.

▪   To group plug-ins in a single submenu if their number is below a specified value, activate **Compress hierarchy**, and specify the threshold. A tree is flattened to a single submenu if the number is below the threshold. This prevents having small submenus.

▪   To activate the **Recently used** category, activate **Submenu with recently used plug-ins**, and specify the maximum number of recently used plug-ins that should be displayed in this category.

▪ You can make the **Recently used** category global to all places or individual for each context, for example, for the Master Section, audio montage track, audio montage clip, or batch processors. To make the **Recently used** category individual for each context, activate **Independent for each context**.

Adding Additional VST Plug-ins

You can specify folders where additional VST plug-ins can be found. This is useful if you are using third-party VST plug-ins that you do not want to store in the standard VST folder.

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > Plug-in settings**.

2. Select the **General** tab.

3. In the **Additional VST plug-in folder (WaveLab specific)** section, click the folder icon, and navigate to the folder that contains the VST plug-ins that you want to add.

4. Click **OK**.

Excluding Plug-ins

You can specify a list of plug-ins that WaveLab Elements does not open.

PROCEDURE

1. In any workspace, except the Podcast workspace, select **Options > Plug-in settings**.

2. Select the **General** tab.

3. In the **Do not load the following plug-ins** section, type in the name of the plug-in that you do not want to open:
   ▪ Enter the exact file name, without path and without file extension.
   ▪ Enter one name per line.
   ▪ If you put * in front of the name, any plug-in that contains the name is ignored.

4. Click **OK**.

Replacing Missing Plug-ins

When opening an audio montage and some plug-ins for tracks or clips are missing, you can select plug-ins to replace the missing plug-ins.

PROCEDURE

1. In the **Missing plug-ins** dialog, click the **Replacement** column, and select a replacement for the plug-in displayed in the **Original** column.
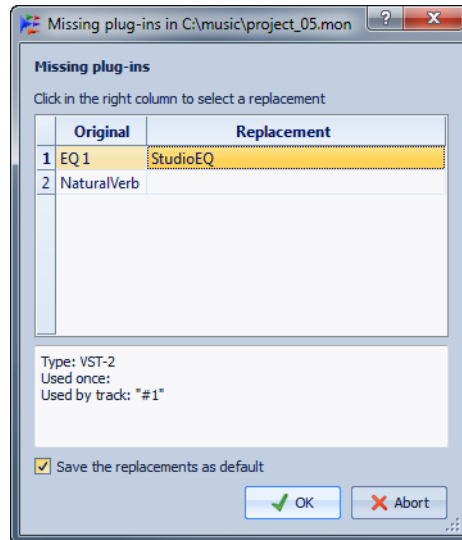
2. If you want the settings to be persistent for the future, activate **Save the replacements as default**.

3. Click **OK**.

Plug-in Settings Dialog

In this dialog, you can access a number of options for managing your VST plug-ins.

You can specify where WaveLab Elements should search for your VST plug-ins and which ones it should ignore. It also allows you to choose how your VST plug-in knobs respond to mouse interactions and how frequently graphics are updated.

If you use your own file structure to organize and store VST plug-ins, this dialog allows you to have full control over which ones are loaded or not. This is useful if you want to disable a particular plug-in that you suspect of not functioning properly, or if you want to ignore certain plug-ins you never want to use with WaveLab Elements.

In any workspace, except the Podcast workspace, select **Options > Plug-in settings**.

General Tab

Search standard VST plug-in shared folders

If this option is activated, WaveLab Elements searches VST plug-ins in the default VST plug-in folders.

Information about the searched folders

Clicking on the info icon opens a window in which you can see in which folders WaveLab Elements searched for plug-ins when it was launched. When you cannot find a plug-in in WaveLab Elements, this helps you to determine whether you have specified the correct folder, for example.
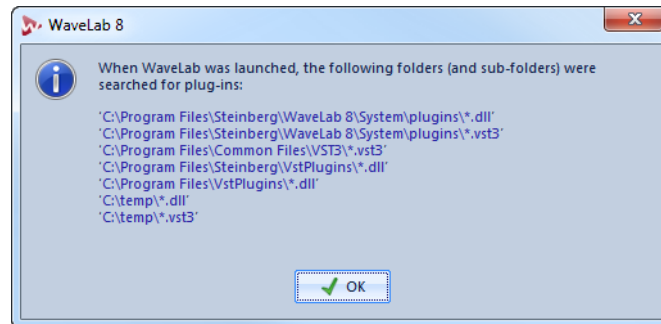
Additional VST plug-in folders (WaveLab Elements specific)

Lets you specify additional folders where VST plug-ins can be found.

Ignore plug-ins located in the following subfolders (separate folder names with a semicolon)

Lets you specify folder names, that WaveLab Elements skips when searching VST plug-ins.

Do not load the following plug-ins

Lets you specify plug-ins that WaveLab Elements does not open. Enter the file names, without path and without file extension. Write each plug-in on a new line.

If you put the character * in front of the name, any plug-in that contains the name is ignored.

Force plug-in detection at next launch

Analyzes the plug-ins when launching WaveLab Elements the next time. To reduce the start time of WaveLab Elements, the plug-ins are not analyzed every time WaveLab Elements is started. However, WaveLab Elements keeps a list of plug-ins and updates this automatically when a date or size change is detected.

Keep plug-ins in memory until WaveLab Elements ends

If this option is activated, the plug-ins are kept in memory even when no longer used. This results in a faster reopening of plug-ins. However, if you use many plug-ins, too much memory could be used after a certain time, which slows down the application.

Faster graphics refreshing (consumes more computer power)

Refreshes the graphics of VST plug-ins more quickly.

VST plug-in knobs

Lets you set the mode for using knobs in plug-ins. You can set the mode to **Circular**, **Circular with relative movement**, and **Linear**.

Organize Tab

Plug-ins list

Displays the hierarchy of the plug-ins in WaveLab Elements. Here, you can specify whether a plug-in should be available from the plug-in selection menus and/or the Dithering panel of the Master Section. You can add plug-ins to the **Favorites** list, create shortcuts for plug-ins, specify custom categories, and decide whether to use the generic user interface or the plug-in specific user interface.

Expand/Collapse

Expands/collapses the folder tree.

Search field

The search field allows you to filter the plug-ins list for names.

- Click in the search field, and enter the text that you want to search for.

- To switch the focus from the search field to the plug-ins list, press the arrow down key.

- To switch the focus from the plug-ins list to the search field, press [Ctrl]/[Command]-[F].

Only show new plug-ins

If this option is activated, only the recently detected plug-ins are displayed.

Clear "new" status

Resets the "new" status of the recently detected plug-ins.

Display changes

Regenerates the plug-in tree according to the current settings.

Sorting

Determines how the plug-ins should be primarily hierarchized. The other parameters act on that hierarchy.

Compress hierarchy

Merges all items into a single submenu if a submenu and all its submenus contain less than a certain number of plug-ins (**Threshold**).

Compress hierarchy - Threshold

Represents the minimum number of items that are needed to compress the hierarchy.

Create submenus based on prefixes

Creates a submenu that is labeled as the prefix, when several items in a submenu start with the same prefix.

Create submenus based on prefixes - Threshold

Represents the minimum number of items that must start with the same prefix that are needed to create submenus that are labeled as the prefix.

Merge single submenus

Merges submenus that contain another submenu with only a single item in it.

Category renaming

The category labels used to create the hierarchy are supplied by the plug-in manufacturers. In this section you can change the category name. This can also be useful to merge two categories into one, by renaming these two categories with the same name.

Submenu with recently used plug-ins

Toggles if the **Recently used** submenu is shown or hidden.

Submenu with recently used plug-ins - Maximum size

Determines the maximum number of plug-ins in the **Recently used** submenu.

Submenu with recently used plug-ins - Independent for each context

Determines whether the **Recently used** submenu is global to all places where plug-ins can be selected, or if it is local to each context.

Ignored plug-ins

Opens the **Ignored Plug-ins** dialog, where you can see the plug-ins that were not loaded. This dialog lets you instruct WaveLab Elements to rescan these plug-ins at the next launch. This is fast than a full rescan.

Number of plug-ins

Shows the number of plug-ins that are available in WaveLab Elements.

Configuring the Software

You can configure WaveLab Elements according to your needs.

About Global Preferences

Global preferences are preferences that apply throughout WaveLab Elements. Before starting to work with WaveLab Elements, edit these preferences to set up WaveLab Elements according to your needs.
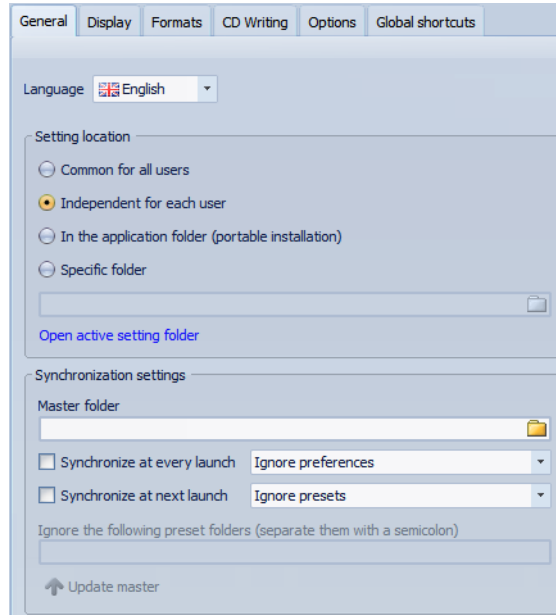
Global Preferences Dialog

This dialog allows you to view and change options that are common throughout WaveLab Elements.

In any workspace, select **Options (WaveLab menu on Mac) > Global preferences**.

General Tab

This tab allows you to change the location of settings files and the user interface language. You must restart the application for changes to take effect.

Language

Allows you to select the user interface language.

Setting location - Common for all users

Shares the preferences settings with all users on this computer.

Setting location - Independent for each user

Lets each user on this computer make their own preferences settings.

Setting location - In the application folder (portable installation)

Saves settings in the application directory. Use this option to install the application on a portable device.

Setting location - Specific folder

Allows you to save the settings in a specified folder.

Setting location - Open active setting folder

Opens the folder that is currently used to save settings. This way you know where the settings are stored and you can back up the settings.

Synchronization settings - Master folder

Lets you specify where the reference settings are saved.

Synchronization settings - Synchronize at every launch

If this option is activated, the settings are synchronized whenever WaveLab Elements is launched.

Synchronization settings - Synchronize at next launch

If this option is activated, the settings are synchronized the next time that WaveLab Elements is launched.

Synchronization settings - Preferences handling

Determines how to synchronize the preferences, that is, all settings except the presets. You can either ignore or mirror the preferences.

Synchronization settings - Preset handling

Determines how to synchronize the presets that are saved in the master folder. The following options are available:

- **Ignore presets**: the presets are not synchronized.

- **Mirror presets**: the presets will be restored from the master folder, regardless of their time stamp. Any additional local presets are deleted.

- **Import new presets**: the presets in the master folder that are unavailable on the computer are imported.

- **Update old presets**: as above, but existing presets are overwritten if a newer version is found in the master folder.

Ignore the following preset folders (separate them with a semicolon)

Lets you specify which preset folders you want to ignore when synchronizing the settings. For example, to ignore the VST Audio Connection settings, add "VST Audio Connections" to the field.

### Synchronization settings - Update master

If you click this button, the settings that were used when launching WaveLab Elements are used to update the master folder.

IMPORTANT

This procedure should only be run by the system administrator if multiple WaveLab Elements stations are used.

Display Tab

This tab allows you change many aspects of the user interface that apply across the whole application. These options provide useful information and usability functions but can be deactivated to streamline the interface.
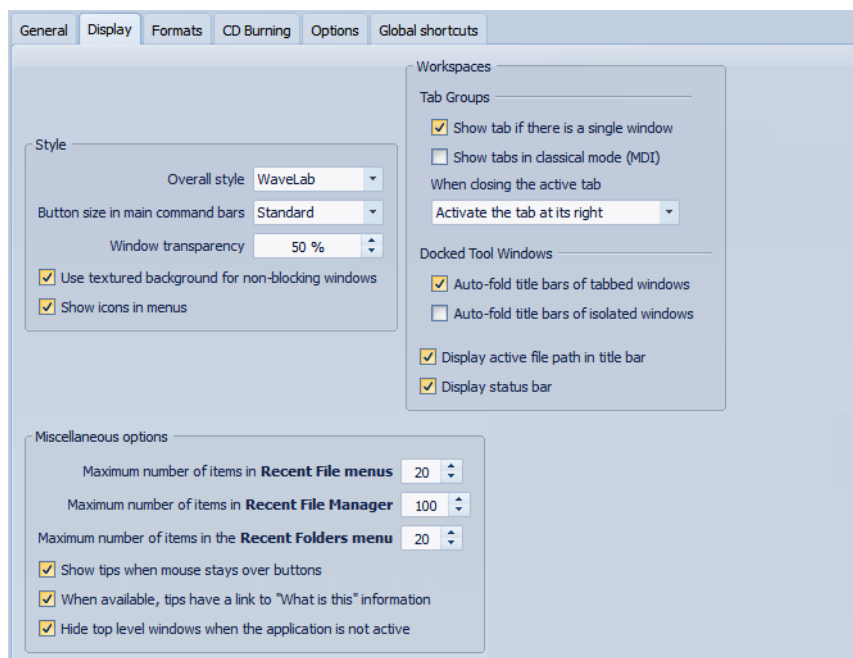
Style

Overall style

Changes the overall look of the application.

Button size in main command bars

Increases the button size in the command bars, but not in the tool windows.

Window transparency

Sets the degree of transparency for windows that have this option activated.

Use textured background for non-blocking windows

If this option is activated, you can easily determine whether a dialog is modal or not.

Show icons in menus

If this option is activated, icons are displayed in textual menus.

Miscellaneous options

Maximum number of items in Recent File menus

Sets the maximum number of files that are listed in menus.

Maximum number of items in Recent File Manager

Sets the maximum number of files that are listed in the Recent File Manager.

Maximum number of items in the Recent Folders menu

Sets the maximum number of files that are listed in the Recent Folder menus.

Show tips when mouse stays over buttons

If this option is activated, tooltips are displayed when you move the mouse cursor over markers or command bar buttons.

When available, tips have a link to "What is this" information

If this option is activated, tooltips contain "What is this" information if available.

Hide top level windows when the application is not active. (Windows only)

If this option is activated, all floating windows are automatically hidden when another application becomes active. When deactivated, floating windows remain on top of other application windows.

Workspaces

Tab Groups - Show tab if there is a single window

If this option is activated, the tabs are always visible, even if there is only one active file.

Tab Groups - When closing the active tab

Determines the behavior of the program when closing the active tab.

Docked Tool Windows - Auto-fold title bars of tabbed windows/Auto-fold title bars of isolated windows

If these options are activated, the title bar of docked tool windows is partially hidden to provide slightly more space to the contents area. A thin bar remains visible.

To unfold a title bar, simply move the mouse cursor over the thin bar.

Display active file path in title bar

Displays the file path of the active file in the title bar of the workspace.

Display status bar

If this option is activated, a status bar is displayed at the bottom of each workspace. The status bar is used to show hints, for example, when moving the mouse in a menu.

Formats tab

This tab allows you to adjust settings for some of the audio formats and units that WaveLab Elements uses.
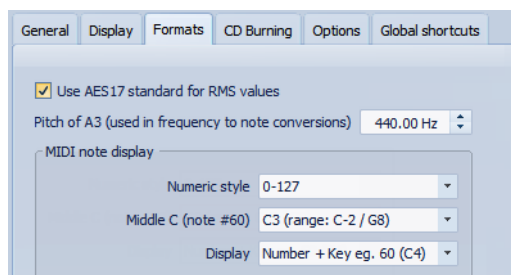
Use AES17 standard for RMS values

Determines how RMS values are reported.

- If this option is activated, the displayed level for a full scale sine audio file is 0 dB. This follows the AES17 standard.

- If this option is deactivated, the displayed level for a full scale sine audio file is -3 dB.

Pitch of A3 (used in frequency-to-note conversions)

Sets the reference pitch in WaveLab Elements. The frequency-to-note conversions take this pitch into account.

MIDI note display

The options in this section allow you to choose whether to display the different key values in WaveLab Elements with the pitch or the MIDI note number of the key. In musical notation, keys are denoted according to their pitch. For example, C3 means the note C in the third octave.

Each key corresponds to a MIDI note number from 0 to 127. For example, key C3 corresponds to the MIDI note number 48. MIDI note numbers make it possible for samplers to automatically map samples to the correct keys.

MIDI note display - Numeric style

Determines the format for MIDI notes that are displayed as numbers.
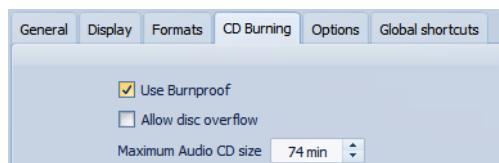
MIDI note display - Middle C (note #60)

Determines the key convention for the MIDI note range (0-127).

MIDI note display - Display

Determines how MIDI notes are displayed throughout the application.

CD Writing tab

This tab allows you to set a number of parameters for CD writing.

Use burnproof

Fixes possible buffer underrun errors automatically, provided the CD writer supports this technology.

Allow disc overflow

Allows WaveLab Elements to attempt writing more data (max. 2 minutes) than the official capacity of the disc.

Maximum Audio CD size

Allows you to specify the maximum length for a CD. A warning message will appear if the project exceeds this length.

The standard maximum length is 74 minutes.

Options Tab

This tab allows you to control application-wide start-up options. You can also reset the default message boxes.

Show logo screen on start-up

Determines whether the WaveLab Elements logo is displayed during initialization.

Reset default answers

Resets all message box options to their default settings. For example, the "Do not show again" options are cleared.

Global Shortcuts Tab

This tab allows you edit key sequences for shortcuts that are available across all workspaces.
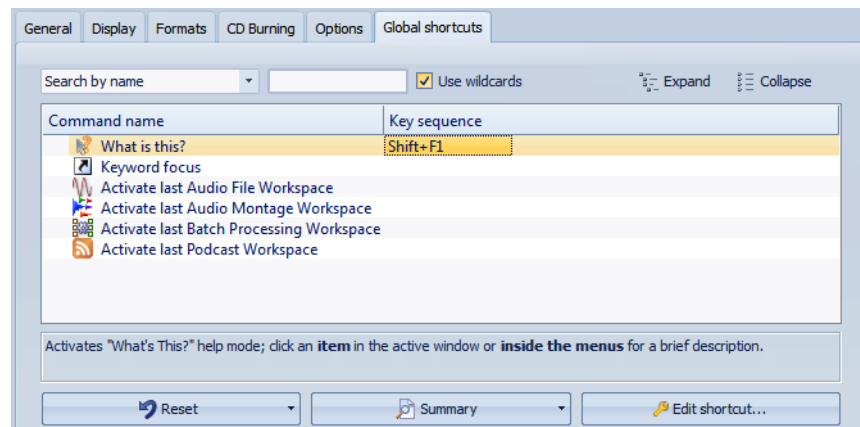
Search by

Allows you to select the part of the commands list in which the search is performed.

Search field

Allows you to search for a command.

Use wildcards

If this option is activated, you can use the wildcard characters "*" and "?" for searching.

"*" substitutes zero or more characters, and "?" substitutes any character.

For example, if **Search by keyboard shortcut** is selected, type "*" to display all the commands that are already associated with a shortcut.

Expand/Collapse

Expands/collapses the folder tree.

Commands list

Shows all commands and their shortcuts.

Reset

Resets the commands to their default setting.

Summary

Opens a menu from which you can generate a list of all commands and their shortcuts either in HTML or as a print out.

Edit shortcut

Opens the **Shortcut Definitions** dialog where you can edit the selected shortcut.

Audio File Editing Preferences Dialog

This dialog allows you to define settings for editing in the Audio Files workspace. However, these settings also effect other parts of WaveLab Elements. You can choose defaults for editing and playback, adjust the visual appearance of the waveform displays, and determine how WaveLab Elements works with audio and peak files.

In the Audio Files workspace, select **Options > Audio file editing preferences**.

Editing Tab

Save view settings in companion file

If this option is activated, zoom settings, ruler settings, and optionally the Master Section preset that is associated with the audio file are saved in a companion file. When the audio file is reopened, these settings are reused. Deleting a companion file does not alter the audio contents.

Save in an independent folder

If this option is activated, the companion file is not saved in the same folder as the related audio file but in a specific folder that you can choose.

Edit

Opens the **Folders** dialog, where you can specify where to save the companion files.

Open new audio file windows with overview

If this option is activated and you open an audio file, the overview is also displayed.

Overview: passive range indicator also covering the waveform

If this option is activated, the range indicator that is displayed in the time ruler of the overview also covers the waveform area. Unlike the time ruler indicator, it is passive and cannot be modified.

Auto zoom for overviews

If this option is activated on opening a file, the zoom of the overview is set to display the whole file.

Display file extension on tabs

If this option is activated, tabs display file names with their extension. For example, "piano.mp3" instead of "piano".

Number of seconds to display on opening

Lets you specify how much time to display when opening an audio file for the first time. WaveLab Elements converts this time to the appropriate zoom factor.

Whole audio file

If this option is activated, the horizontal zoom is set to display the whole file.

Select all channels with the mouse

If this option is activated when you select a range with the mouse in a stereo file, both channels are selected. To select the channels individually, press [Shift] while selecting. To switch from one channel selection to the other, press [Tab].

Process whole file if there is no selection

If this option is activated and a process is to be applied to an audio file, the whole file is processed if there is not audio selection. In the same situation, if the option is deactivated, a warning appears.

Playback scrubbing - Restrict to Play Tool

If this option is activated, this function only works if the Play Tool is used.

Playback scrubbing - Sensitivity

Lets you set the micro audio loop duration that is performed when you move the mouse cursor over the time ruler.

Snap selection to zero-crossing - Do not snap at high zoom factors

If this option is activated, snapping does not occur if the waveform is displayed at a high zoom factor.

Snap selection to zero-crossing - Scan range

Lets you define how far WaveLab Elements can search a zero-crossing point in the left and right direction.
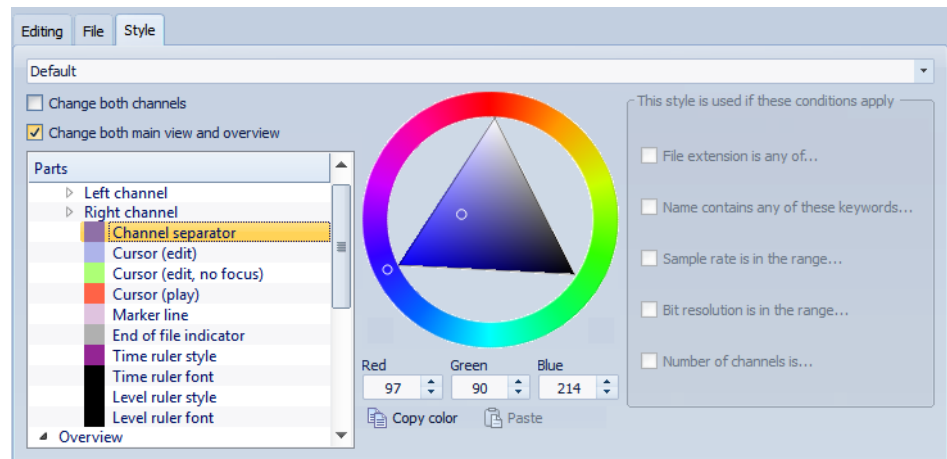
File Tab

Default sample rate for files without header

Lets you specify the sample rate of audio files that do not have a header describing this property.

Style Tab

This tab allows you to specify custom colors to parts of the wave window.

Settings Management

You can make some reference settings available to other WaveLab Elements installations. These settings can then be used by other WaveLab Elements stations to keep the settings in sync on different computers.

PROCEDURE

1. In any workspace, select **Options (WaveLab menu on Mac) > Global preferences**, and select the **General** tab.

2. In the **Setting location** section, specify where to store the settings.

3. Click **OK**.

Multi-User Settings

If you use multiple WaveLab Elements stations in your studio, in your school, as administration, etc., you can set up one WaveLab Elements station to be the master station. The shared preferences and presets of this station can then be used by other slave stations.

These settings can be stored on the local network, for example.

If the administrator updates these settings, the different WaveLab Elements stations can synchronize with the master settings. You can also use this feature for single computers to back up a reference setting and revert to this if necessary.

The settings in the **General** tab of the **Global preferences** dialog are not synchronized. These are stored for each user in the startup.ini (Windows) or startup.plist (Mac).

IMPORTANT

Settings cannot be synchronized between PC and Mac.

RELATED LINKS:
"Global Preferences Dialog" on page 324

Setting Up a Multi-User Setup

You can use the settings that you have made on a master WaveLab Elements station for other slave WaveLab Elements stations.

PROCEDURE

1. Set up a WaveLab Elements station with all settings and presets that you want to use on other WaveLab Elements stations.

2. Assign read-only access to the settings folder of the master WaveLab Elements station.

3. Open WaveLab Elements on another station for which you want to use the master settings.

4. In any workspace, select **Options (WaveLab menu on Mac) > Global preferences**, and select the **General** tab.

5. In the **Synchronization settings** section, set up the **Master folder**, specify when the settings should be synchronized, and specify whether to include the preferences and/or presets.

6. Click **OK**, and close WaveLab Elements.

7. Copy the startup.ini (Windows) or startup.plist (Mac) of the slave WaveLab Elements station to the settings folder of the other WaveLab Elements stations, except the master WaveLab Elements station.

    This avoids having to make the above procedure on each slave station.

RESULT

All slave WaveLab Elements stations use the settings of the master WaveLab Elements station.

Plug-in Reference

Steinberg created Virtual Studio Technology (VST) to allow effect plug-ins to be integrated with audio editors, such as WaveLab Elements. VST uses Digital Signal Processing (DSP) to closely simulate the effects of familiar recording studio hardware in software.

A vast number of plug-ins are available, from freeware to high-end commercial products.

The order of processing is significant. You can change the order in which effects are processed by moving the effect icons by dragging them between slots. WaveLab Elements provides slots for up to ten plug-ins.

Most plug-ins provide a custom GUI, often displaying controls similar to the physical switches and knobs of audio hardware. Other plug-ins rely on the host application for their UI.

Built-in Plug-ins

These plug-ins use a plug-in format of WaveLab Elements, and cannot be used with other applications.

- WaveLab Elements specific plug-ins can only be used in the Master Section. However, some WaveLab Elements effects are also included as VST plug-ins, available as track or clip effects in audio montages.

- You can specify which plug-ins should be available in the **Effects** pane and **Dithering** pane of the Master Section by using the **Plug-in settings** dialog.

- Only certain built-in plug-ins can be used as master effects when a multichannel configuration is used in the audio montage. Note that all channels in the Master Section are affected equally.

Crystal Resampler

This plug-in is a professional sample rate converter providing exceptional transparency and preservation of the frequency content. It is only available in the Master Section.

NOTE

This plug-in is very CPU consuming, especially in high quality modes.
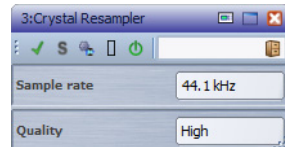
Sample rate (6-384 kHz)

Defines the output sample rate while the input sample rate is determined by the sample rate of the active audio file or audio montage.

Quality

Defines the quality of the algorithm that is used (**Preview (fast)** or **Standard**).

Ducker

This plug-in lets you control (modulate) the volume of clips placed on a track with the signal of one or more clips placed on the next adjacent track below it. The Ducker plug-in can only be used as a clip effect in the audio montage.

It uses the **Route to...** options that can be found on the **Track** menu. You can use mono or stereo tracks for both the modulating and the upper track.
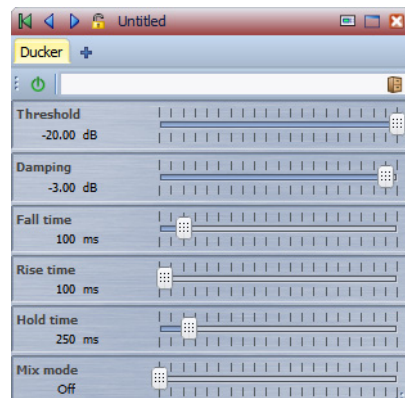
Threshold

Sets the loudness threshold that triggers the Ducker. Clips on the modulator track with levels above the threshold will cause the level of a clip on the upper track to be lowered.

Damping

Sets the amount of level reduction that is applied to the clip on the upper track.

Fall time

Sets the time it takes for the level to change from 0 dB to the set damping level.

Hold time

When the modulating signal falls below the set threshold, this setting determines how long the level will stay reduced before it starts rising to normal level again.

Rise time

Sets the time after which the reduced level rises to the normal level when the modulating signal falls below the set threshold (after the **Hold time**).

Mix mode

If this is activated, the Ducker outputs a mix of the two tracks. This is only useful if the **Route to upper track only** option has been activated for the modulating track. Then this feature can be used for processing several clips through the same plug-in chain if more plug-ins have been assigned after the Ducker on the upper track.

Note that the mixed output is controlled by the upper track. If this is not playing a clip, both of the tracks will be silent.

Leveler

This plug-in is useful for correcting an imbalance or adjusting levels between stereo channels, or for mixing down to mono.
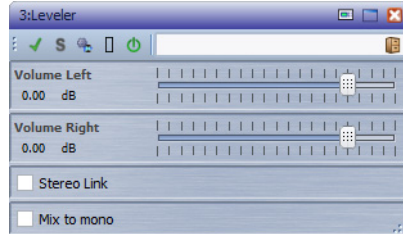
Volume Left/Volume Right (-48 dB to 12 dB)

Governs how much of the signal is included in the left and/or right channel of the output bus.

Stereo Link (OFF or LINKED)

When set to **LINKED**, **Volume Right** delivers the gain that is set for **Volume Left**.

Mix to Mono (OFF or ON)

When set to **ON**, a mono mix of the stereo channels is delivered to the output bus.

Peak Master

This is a basic plug-in that minimizes peaks in your audio file, allowing a louder mix without clipping. It is useful in taming dynamic instruments.

It is primarily used as a brickwall limiter. For example, you can limit audio peaks without altering the rest of the audio signal. In this case, set **Input Gain** to 0 dB and **Out Ceiling** to 0 dB, to achieve a clip-free audio signal. When used in this way, **Peak Master** is an excellent plug-in to succeed a resampler plug-in, and to proceed a dithering plug-in.
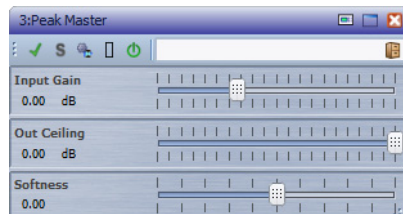
Input Gain

Values range from -12 dB to 24 dB.

Out Ceiling

This is the maximum level of the output signal. Values range from
-18dB to 0dB.

Softness

This governs the speed at which the signal becomes unaffected
after limiting has been triggered on some samples. Values range
from -5 to +5.

Silence

This plug-in provides a simple way of inserting a precise period of
silence at the start or at the end of an audio file. Use this plug-in to add
silence at the end of a file, so that the tail of a reverb plug-in does not
cut immediately at the end of the file.

Start

Use the slider to insert from 0 to 60,000ms of silence at the start
of the file.

End

Use the slider to insert from 0 to 60,000ms of silence at the end
of the file.

Stereo Expander

This plug-in is a stereo width enhancer that makes a stereo signal sound
wider. It gives better results from real stereo material, as opposed to
mono channels panned to different positions in the stereo image.

Width (0 to 100%)

Higher values result in a greater stereo width. Usually, you set
Width to values between 0% and 20%. Higher values can be used
for special effects.

Steinberg VST3 Plug-ins

In WaveLab Elements there is no limitation to the use of VST plug-ins. They can be used wherever plug-ins can be inserted.

- You can specify which VST plug-ins should be available in the **Effects** pane and **Dithering** pane of the Master Section by using the **Plug-in settings** dialog.

- VST plug-ins have their own preset handling. You can save or load effect programs (presets).

AutoPan

This plug-in is a simple auto-pan effect. It can use different waveforms to modulate the left-right stereo position (pan), using manual modulation speed settings.

Rate

Sets the auto-pan speed from 0.1 to 10, by rotating the knob by dragging, or using the mouse wheel.

Width

Sets the depth of the auto-pan effect, that is, how far out to the left/right speaker the sound should move, from 0% to 100%.

Waveform Shape selector

Allows you to select the modulation waveform. Sine produces a smooth sweep. Triangle creates a ramp, that is, a sweep from one speaker to the other and then a quick jump back.

Brickwall Limiter

This plug-in ensures that the output level never exceeds a set limit.

Due to its fast attack time, Brickwall Limiter can reduce even short audio level peaks without creating audible artifacts. Brickwall Limiter features separate meters for input, output, and the amount of limiting. Position this plug-in at the end of the signal chain, before dithering.

Threshold (-20 to 0dB)

Only signal levels above the set threshold are processed.

Release (10 to 1000ms or Auto mode)

Sets the time after which the gain returns to its original level when the signal drops bellow the threshold level. If the **Auto** button is activated, Brickwall Limiter automatically finds the optimal release setting, depending on the audio material.

Link button

If this option is activated, Brickwall Limiter uses the channel with the highest level to analyze the input signal. If the **Link** button is deactivated, each channel is analyzed separately.

Detect Intersample Clipping

If this option is activated, Brickwall Limiter detects and limits signal level between two samples to prevent distortion when converting digital signals to analog signals.

NOTE

Brickwall Limiter is designed for the reduction of occasional peaks in the signal. If the Gain Reduction meter indicates constant limiting, try raising the threshold or lowering the overall level of the input signal.

Chorus

This plug-in is a single stage chorus effect. It works by doubling whatever is sent into it with a slightly detuned version.

Rate

The sweep rate can be set with the **Rate** knob, without sync to tempo.

Width

Determines the depth of the chorus effect. Higher settings produce a more pronounced effect.

Spatial

Sets the stereo width of the effect. Turn clockwise for a wider stereo effect.

Mix

Sets the level balance between the dry signal and the wet signal. If Chorus is used as a send effect, this should be set to the maximum value as you can control the dry/effect balance with the send.

Waveform Shape selector

Allows you to select the modulation waveform, altering the character of the chorus sweep. A sine and triangle waveform are available.

Delay

Affects the frequency range of the modulation sweep by adjusting the initial delay time.

Filter Lo/Hi

Allow you to roll off low and high frequencies of the effect signal.

Compressor

This plug-in reduces the dynamic range of the audio, making softer sounds louder or louder sounds softer, or both.

Compressor features separate controls for threshold, ratio, attack, hold, release, and make-up gain parameters. It also features a separate display that graphically illustrates the compressor curve shaped according to the Threshold and Ratio parameter settings. A Gain Reduction meter shows the amount of gain reduction in dB, Soft knee/Hard knee compression modes, and a program-dependent auto feature for the Release parameter.

Threshold (-60 to 0dB)

Determines the level where Compressor kicks in. Signal levels above the set threshold are affected, but signal levels below are not processed.

Ratio (1:1 to 8:1)

Sets the amount of gain reduction applied to signals over the set threshold. A ratio of 3:1 means that for every 3 dB the input level increases, the output level increases by only 1 dB.

Soft Knee button

If this button is off, signals above the threshold are compressed instantly according to the set ratio (hard knee). When **Soft Knee** is activated, the onset of compression is more gradual, producing a less drastic result.

Make-up (0 to 24dB or Auto mode)

Compensates for output gain loss, caused by compression. If the **Auto** button is activated, the knob becomes dark and the output is automatically adjusted for gain loss.

Attack (0.1 to 100ms)

Determines how fast Compressor responds to signals above the set threshold. If the attack time is long, more of the early part of the signal (attack) passes through unprocessed.

Hold (0 to 5000 ms)

Sets the time the applied compression affects the signal after exceeding the threshold. Short hold times are useful for DJ-style ducking, while longer hold times are required for music ducking, for example, when working on a documentary film.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gain returns to the original level when the signal drops below the threshold. If the Auto button is activated, Compressor automatically finds an optimal release setting that varies depending on the audio material.

### Analysis (0 to 100) (Pure Peak to Pure RMS)

Determines whether the input signal is analyzed according to peak or RMS values or a mixture of both. A value of 0 is pure peak and 100 pure RMS. RMS mode operates using the average power of the audio signal as a basis, whereas Peak mode operates more on peak levels. As a general guideline, RMS mode works better on material with few transients such as vocals, and Peak mode works better for percussive material with a lot of transient peaks.

Live button

When this button is activated, the look-ahead feature of Compressor is disengaged. Look ahead produces more accurate processing, but adds a certain amount of latency as a trade-off. When Live mode is activated, there is no latency, which might be better for live processing.

Distortion

This plug-in adds crunch to your tracks.
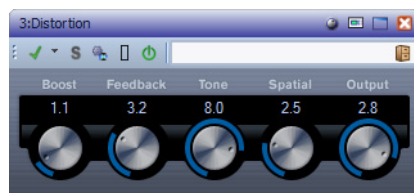
Boost

Increases the distortion amount.

Feedback

Feeds part of the output signal back to the effect input, increasing the distortion effect.

Tone

Lets you select a frequency range to which to apply the distortion effect.

Spatial

Changes the distortion characteristics of the left and right channel, thus creating a stereo effect.

Output

Raises or lowers the signal going out of the effect.

Steinberg Gate

Gating, or noise gating, silences audio signals below a set threshold. As soon as the signal level exceeds the set threshold, the gate opens to let the signal through.

Threshold (-60 to 0dB)

Determines the level where Gate is activated. Signal levels above the set threshold trigger the gate to open, and signal levels below the set threshold close the gate.

State LED

Indicates whether the gate is open (LED lights up in green), closed (LED lights up in red) or something in between (LED lights up in yellow).

Filter buttons (LP, BP, and HP)

When the **Side-Chain** button is activated, you can use these buttons to set the filter type to either low-pass, band-pass, or high-pass.

Side-Chain button

(Below the **Center** knob.) Activates the side-chain filter. The input signal can then be shaped according to set filter parameters. Internal side-chaining can be useful for tailoring how the Gate operates.

Center (50 to 20000 Hz)

When the **Side-Chain** button is activated, this sets the center frequency of the filter.

Q-Factor (0.01 to 10000)

When the **Side-Chain** button is activated, this sets the resonance of the filter.

Monitor button

Allows you to monitor the filtered signal.

Attack (0.1 to 1000 ms)

Sets the time after which the gate opens after being triggered. Deactivate the **Live** button to make sure that the gate is already open when a signal above the threshold is played back. Gate manages this by looking ahead in the audio material, checking for signals loud enough to pass the gate.

Hold (0 to 2000 ms)

Determines how long the gate stays open after the signal drops below the threshold.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gate closes (after the set hold time). If the **Auto** button is activated, Gate will find an optimal release setting, depending on the audio material.

Analysis (0 to 100) (Pure Peak to Pure RMS)

Determines whether the input signal is analyzed according to peak or RMS values, or a mixture of both. A value of 0 is pure Peak and 100 pure RMS. RMS mode operates using the average power of the audio signal as a basis, whereas Peak mode operates more on peak levels. As a general guideline, RMS mode works better on material with few transients such as vocals, and Peak mode better for percussive material, with a lot of transient peaks.

Live button

When this button is activated, the look-ahead feature of Gate is disengaged. Look ahead produces more accurate processing, but adds a certain amount of latency as a trade-off. When Live mode is activated, there is no latency, which is better for live processing.

Limiter

This plug-in is designed to ensure that the output level never exceeds a set output level, to avoid clipping in following devices.

Limiter can adjust and optimize the **Release** parameter automatically according to the audio material, or it can be set manually. Limiter also features separate meters for the input, output and the amount of limiting (middle meters).

### Input (-24 to 24 dB)

Adjusts the input gain.

Output (-24 to 6 dB)

Determines the maximum output level.

Release (0.1 to 1000 ms or Auto mode)

Sets the amount of time it takes for the gain to return to its original level. If the **Auto** button is activated, Limiter automatically finds an optimal release setting that varies depending on the audio material.

Mono Delay

This is a mono delay effect using freely specified delay time settings.
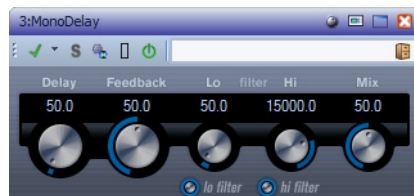
Delay

Sets the base note value for the delay from 0.1 to 5000 ms.

Feedback

Sets the number of repeats for the delay.

Filter Lo

Affects the feedback loop of the effect signal and allows you to roll off low frequencies from 10 Hz up to 800 Hz. The button below the knob activates/deactivates the filter.

Filter Hi

Affects the feedback loop of the effect signal and allows you to roll off high frequencies from 20 kHz down to 1.2 kHz. The button below the knob activates/deactivates the filter.

Mix

Sets the level balance between the dry signal and the wet signal. If MonoDelay is used as a send effect, set this to the maximum value as you can control the dry/effect balance with the send.

RoomWorks SE

RoomWorks SE is a lite version of the RoomWorks plug-in. This plug-in delivers high quality reverberation, but has fewer parameters and is less CPU demanding than the full version.

Pre-Delay

Controls how much time passes before the reverb is applied. This allows you to simulate larger spaces by increasing the time it takes for first reflections to reach the listener.

Reverb Time

Allows you to set the reverb time in seconds.

Diffusion

Affects the character of the reverb tail. Higher values lead to more diffusion and a smoother sound, while lower values lead to a clearer sound.

Hi Level

Affects the decay time of high frequencies. Normal room reverb decays quicker in the high- and low-frequency range than in the mid-range. Lowering the level percentage causes high frequencies to decay quicker. Values above 100 % cause high frequencies to decay more slowly than the mid-range frequencies.

Lo Level

Affects the decay time of low frequencies. Normal room reverb decays quicker in the high- and low-frequency range than in the mid-range. Lowering the level percentage causes low frequencies to decay quicker. Values above 100% cause low frequencies to decay more slowly than the mid-range frequencies.

Mix

Determines the blend of dry (unprocessed) signal to wet (processed) signal. When using RoomWorks SE inserted in an FX channel, you most likely want to set this to 100% or use the **wet only** button.

StereoDelay

StereoDelay has two independent delay lines with freely specified delay time settings.
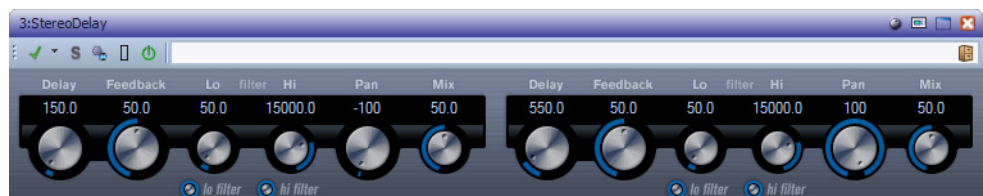
Delay 1 & 2

This is where you specify the base note value for the delay time in milliseconds.

Feedback 1 & 2

Set the number of repeats for each delay.

Filter Lo 1 & 2

Affect the feedback loop of the effect signal and allow you to roll off low frequencies up to 800 Hz. The buttons below the knobs activate/deactivate the filter.

Filter Hi 1 & 2

Affect the feedback loop and allow you to roll off high frequencies from 20 kHz down to 1.2 kHz. The buttons below the knobs activate/deactivate the filter.
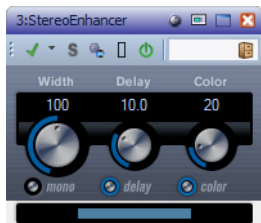
Pan 1 & 2

Set the stereo position for each delay.

Mix 1 & 2

Set the level balance between the dry signal and the wet signal. If StereoDelay is used as a send effect, set these controls to the maximum value (100%) as you can control the dry/effect balance with the send.

StereoEnhancer

This plug-in expands the stereo width of (stereo) audio material. It cannot be used with mono files.

Width

Controls the width or depth of the stereo enhancement. Turn clockwise to increase the enhancement.

Delay

Increases the amount of differences between left and right channels to further increase the stereo effect.

Color

Generates additional differences between the channels to increase the stereo enhancement.

Mono button

Switches the output to mono, to check for possible unwanted coloring of the sound which sometimes can occur when enhancing the stereo image.

StudioEQ

Studio EQ is a high-quality 4-band parametric stereo equalizer with two fully parametric mid-range bands. The low and high bands can act as either shelving filters (three types), or as a Peak (band-pass), or Cut (low-pass/high-pass) filter.
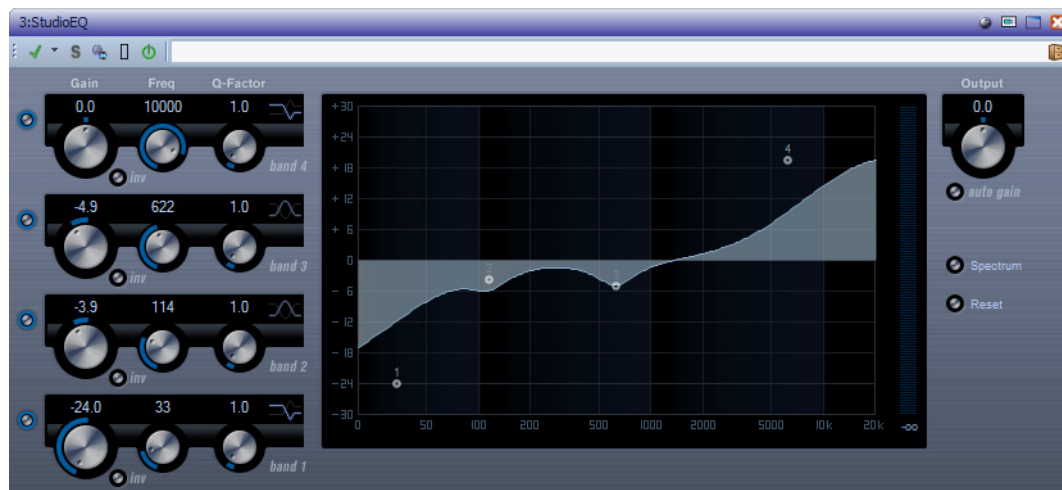
Band 1 Gain (-20 to +24 dB)

Sets the amount of attenuation/boost for the low band.

Band 1 Inv button

Inverts the gain value of the filter. Use this button to filter out unwanted noise. While looking for the frequency to omit, it sometimes helps to boost it in the first place (set the filter to positive gain). After you have found it, you can use the Inv button to cancel it out.

Band 1 Freq (20 to 2000 Hz)

Sets the frequency of the low band.

Band 1 Q-Factor (0.5 to 10)

Controls the width or resonance of the low band.

Band 1 Filter mode

For the low band, you can select between three types of shelving filters, a Peak (band-pass), and a Cut (lowpass/high-pass) filter. When Cut mode is selected, the Gain parameter is fixed.

- Shelf I adds resonance in the opposite gain direction slightly above the set frequency.

- Shelf II adds resonance in the gain direction at the set frequency.

- Shelf III is a combination of Shelf I and II.

Band 2 Gain (-20 to +24 dB)

Sets the amount of attenuation/boost for the mid 1 band.

Band 2 Inv button

Inverts the gain value of the filter. See also the description of the Invert button for Band 1.

Band 2 Freq (20 to 20000 Hz)

Sets the center frequency of the mid 1 band.

Band 2 Q-Factor (0.5 to 10)

Sets the width of the mid 1 band: the higher this value, the narrower the bandwidth.

Band 3 Gain (-20 to +24 dB)

Sets the amount of attenuation/boost for the mid 2 band.

Band 3 Inv button

Inverts the gain value of the filter. See also the description of the Invert button for Band 1.

Band 3 Freq (20 to 20000 Hz)

Sets the center frequency of the mid 2 band.

Band 3 Q-Factor (0.5 to 10)

Sets the width of the mid 2 band: the higher this value, the narrower the bandwidth.

Band 4 Inv button

Inverts the gain value of the filter. See also the description of the Invert button for Band 1.

Band 4 Gain (-20 to +24 dB)

Sets the amount of attenuation/boost for the high band.

Band 4 Freq (200 to 20000 Hz)

Sets the frequency of the high band.

Band 4 Q-Factor (0.5 to 10)

Controls the width or resonance of the high band.

Band 4 Filter mode

For the high band, you can select between three types of shelving filters, a Peak, and a Cut filter. When Cut mode is selected, the Gain parameter is fixed.

- Shelf I adds resonance in the opposite gain direction slightly below the set frequency.

- Shelf II adds resonance in the gain direction at the set frequency.

- Shelf III is a combination of Shelf I and II.

Output (-24 to +24 dB)

This knob on the top right of the plug-in panel allows you to adjust the overall output level.

Auto Gain button

When this button is activated, the gain is automatically adjusted, keeping the output level constant regardless of the EQ settings.

Spectrum button

Shows the spectrum before and after filtering.

Reset button

Resets the EQ settings.

Using Modifier Keys

When using the mouse to change the parameter settings, modifier keys can be used. When no modifier key is pressed and you drag an EQ point in the display, the Gain and Frequency parameters are adjusted simultaneously.

[Shift]

When you keep the [Shift] key pressed and drag the mouse the Q-factor of the corresponding EQ band is changed.

[Alt]/[Option]

When you keep the [Alt]/[Option] key pressed and drag the mouse the frequency of the corresponding EQ band is changed.

[Ctrl]/[Command]

When you keep the [Ctrl]/[Command] key pressed and drag the mouse the gain value of the corresponding EQ band is changed.

Tube Compressor

This versatile compressor with integrated tube-simulation allows you to achieve smooth and warm compression effects. The VU meter shows the amount of gain reduction. Tube Compressor features an internal side-chain section that lets you filter the trigger signal.
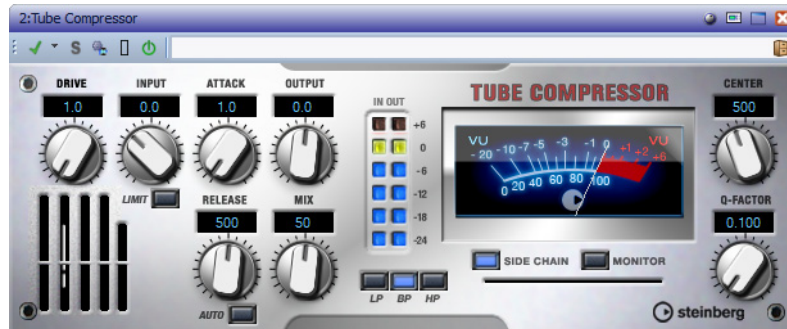
Drive (1.0 to 6.0)

Controls the amount of tube saturation.

Input (-24.0 to 48.0)

Determines the compression amount. The higher the input gain setting, the more compression is applied.

Limit button

Increases the ratio of the compressor for a limiting effect.

Output (-12.0 to 12.0)

Sets the output gain.

Attack (0.1 to 100.0)

Determines how fast the compressor responds. If the attack time is long, more of the initial part of the signal (attack) passes through unprocessed.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gain returns to the original level. If the **Auto** button is activated, Tube Compressor automatically finds an optimal release setting that varies depending on the audio material.

Mix (0 to 100)

Adjusts the mix between dry and wet signal preserving the transients of the input signal.

In/Out Meters

Show the highest peaks of all available input and output channels.

VU Meter

Shows the amount of gain reduction.

Side-chain button (if supported)

Activates/deactivates the internal side-chain filter. The input signal can then be shaped according to set filter parameters. Internal side-chaining is useful for tailoring how the compressor operates.

Filter section (LP, BP, and HP)

When the **Side-Chain** button is activated, you can use these buttons to set the filter type to low-pass, band-pass, or high-pass.

Side-Chain section: Center

Sets the center frequency of the filter.

Side-Chain section: Q-Factor

Sets the resonance or width of the filter.

Side-Chain section: Monitor

Allows you to monitor the filtered signal.

VSTDynamics

VSTDynamics is an advanced dynamics processor. It combines three separate processors: Gate, Compressor, and Limiter, covering a variety of dynamic processing functions.

The window is divided into three sections, containing controls and meters for each processor. Activate the individual processors using the buttons at the bottom of the plug-in panel.
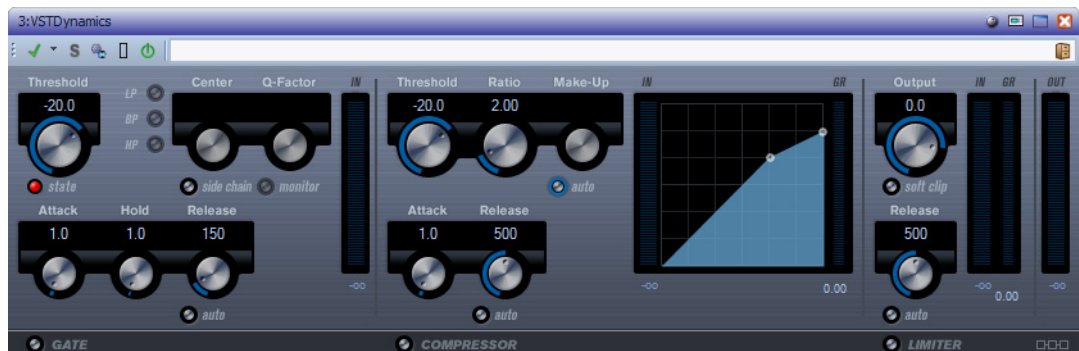
Gate Section

Gating, or noise gating, is a method of dynamic processing that silences audio signals below a set threshold. As soon as the signal level exceeds the set threshold, the gate opens to let the signal through. The Gate trigger input can also be filtered using an internal side-chain.

The following parameters are available:

Threshold (-60 to 0 dB)

Determines the level where Gate is activated. Signal levels above the set threshold trigger the gate to open, and signal levels below the set threshold close the gate.

State LED

Indicates whether the gate is open (LED lights up in green), closed (LED lights up in red) or something in between (LED lights up in yellow).

Side-Chain button

Activates the internal side-chain filter. You can use this to filter out parts of the signal that might otherwise trigger the gate in places you not want it to, or to boost frequencies you want to accentuate, allowing for more control over the gate function.

LP (low-pass), BP (band-pass), HP (high-pass)

These buttons set the basic filter mode.

Center (50 to 22000 Hz)

Sets the center frequency of the filter.

Q-Factor (0.001 to 10000)

Sets the resonance or width of the filter.

Monitor (On/Off)

Allows you to monitor the filtered signal.

Attack (0.1 to 100 ms)

Sets the time after which the gate opens after being triggered.

Hold (0 to 2000 ms)

Determines how long the gate stays open after the signal drops below the threshold level.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gate closes (after the set hold time). If the Auto button is activated, Gate will find an optimal release setting, depending on the audio material.

Input Gain Meter

Shows the input gain.

Compressor Section

The compressor reduces the dynamic range of the audio, making softer sounds louder or louder sounds softer, or both. It works like a standard compressor with separate controls for threshold, ratio, attack, release, and make-up gain. The compressor features a separate display that graphically illustrates the compressor curve shaped according to the **Threshold**, **Ratio**, and **Make-Up Gain** parameter settings. It also features meters for input gain and gain reduction and a program-dependent **Auto** feature for the **Release** parameter.

Threshold (-60 to 0 dB)

Determines the level where the compressor kicks in. Signal levels above the set threshold are affected, but signal levels below are not processed.

Ratio (1:1 to 8:1)

Determines the amount of gain reduction applied to signals above the set threshold. A ratio of 3:1 means that for every 3 dB the input level increases, the output level increases by only 1 dB.

Make-Up (0 to 24 dB)

Compensate for output gain loss, caused by compression. When the Auto button is activated, gain loss is being compensated automatically.

Attack (0.1 to 100 ms)

Determines how fast the compressor responds to signals above the set threshold. If the attack time is long, more of the early part of the signal (attack) passes through unprocessed.

Release (10 to 1000 ms or Auto mode)

Sets the amount of time after which the gain returns to the original level when the signal drops below the threshold. If the Auto button is activated, the compressor automatically finds an optimal release setting that varies depending on the audio material.

Graphical display

Use the graphical display to graphically set the Threshold and Ratio values. To the left and right of the graphical display you find two meters that show the amount of gain reduction in dB.

Limiter Section

The limiter ensures that the output level never exceeds a set threshold, to avoid clipping in following devices. Conventional limiters usually require very accurate setting up of the attack and release parameters to prevent the output level from going beyond the set threshold level. The limiter adjusts and optimizes these parameters automatically according to the audio material. You can also adjust the Release parameter manually.

Output (-24 to 6 dB)

Determines the maximum output level. Signal levels above the set threshold are affected, but signal levels below are left unaffected.

Soft Clip button

If this button is activated, the limiter acts differently. When the signal level exceeds -6dB, Soft Clip starts limiting (or clipping) the signal softly, at the same time generating harmonics which add a warm, tube-like characteristic to the audio material.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gain returns to the original level when the signal drops below the threshold. If the Auto button is activated, the limiter automatically finds an optimal release setting that varies depending on the audio material.

Meters

The three meters show the input gain (IN), the gain reduction (GR) and the output gain (OUT).

Module Configuration Button

Using the Module Configuration button in the bottom right corner of the plug-in panel, you can set the signal flow order for the three processors. Changing the order of the processors can produce different results, and the available options allow you to quickly compare what works best for a given situation. Simply click the Module Configuration button to change to a different configuration. There are three routing options:

- C-G-L (Compressor-Gate-Limit)
- G-C-L (Gate-Compressor-Limit)
- C-L-G (Compressor-Limit-Gate)

Sonnox Restoration Toolkit

The Sonnox Restoration Toolkit consists of the De-Clicker, De-Noiser, and De-Buzzer tools. The tools are for restoring old material, removing clicks, pops, buzzes, and background noise that can occur in new recordings.

Sonnox DeBuzzer

Sonnox DeBuzzer allows you to remove hum and buzz noises from audio material.

Sonnox Menu Options button

Opens a menu where you can select the following options:

- Duration of the input/output meter clip lights hold (indefinitely, 2 s, 5 s)

- Knob behavior

- Information about the version number and build date

Input Level meter

This meter is designed to give exactly 1 dB per LED for the top 18 dB of dynamic range, and 2 dB per LED thereafter. This gives a clear and intuitive impression of the working headroom.

Trim Input Level

Allows you to adjust the input signal level by up to ±12 dB.

Frequency Knob and touch pad (Hz)

The DeBuzzer has an active frequency range for the buzz fundamental of between 20 and 440 Hz. In **Auto** mode, this knob sets the frequency from which the buzz detection circuit starts to hunt for buzz components. In **Freeze** mode, this knob sets the exact frequency of the buzz fundamental. The knob is graduated around the circumference, and clicking on any labeled graduation sets the frequency to that graduation.

Fine Adjust button

Enables fine tuning of the buzz frequency control. The graduations around the circumference of the frequency knob re-draw to a finer scale, and scrolling the touch pad enables very quick fine tuning of a hunt frequency. Scrolling past an end-stop continues to scroll the frequency and the marked graduations re-draw appropriately.

Fine Adjust mode forces **Freeze**, so that the selected frequency can be specified exactly, without the **Auto** circuitry hunting for a stronger fundamental. If entering **Fine Adjust** mode from **Auto**, the **Freeze** button flashes and the plug-in reverts to **Auto** when **Fine Adjust** mode is exited.

Tone On button

Enables an audible tone generator, which can be used to aid location of the buzz fundamental. While the **Tone** button is on, a touch pad appears above the button and becomes a **Tone** level control. It defaults to -18 dB, and has a range of -6 dB to -96 dB.

Sensitivity knob and touch pad (%)

Controls the sensitivity of the buzz detection circuit. Fully sensitive might allow the detection circuit to lock to inaudible and possibly undesirable frequencies. Stronger buzzes, which typically would be removed first, require a less sensitive setting.

Hum/Buzz Mode button

Control switches between **Hum** mode and **Buzz** mode. In **Hum** mode the bandwidth limit for harmonic removal is 0 to 800 Hz. In **Buzz** mode the bandwidth limit for harmonic removal is 0 to 4000 Hz. **Hum** mode is less damaging, and should be used when possible.

Enable button

Enables the buzz removal processing. It allows glitch-less comparisons with and without the buzz removal. When **Enable** is deactivated, the buzz detection circuit is still enabled and the Detect display still shows the degree of buzz detection.

Reduction display

Indicates the level of audio that is being removed from the signal.

Attenuation knob and touch pad (dB)

Determine the level of attenuation that the buzz removal circuit apply, up to a maximum of 96 dB. Generally this should be set so that the buzz is just inaudible. Excessive use of attenuation can degrade the signal unnecessarily.

Auto button

Enables **Auto** mode for the buzz detection circuit. In this mode the buzz detection is continually calculated and a slow drift in the buzz fundamental frequency automatically follows. This mode is useful for material with a time-varying buzz component. In this mode the removal filters follow the detected frequency.

Freeze button

Enables **Freeze** mode for the buzz detection circuit. In this mode the buzz fundamental is fixed to the frequency shown in the touch pad window. This mode is useful for material with fluctuating buzz level, but with a constant buzz frequency. In this instance, **Auto** mode would suffer when the buzz level drops and would typically re-hunt for a different buzz fundamental. In this mode the removal filters follow the nominal frequency.

Detect display

Indicates the degree of detection that the buzz detection circuit has achieved.

Output Level meter (dB)

This meter is designed to give exactly 1 dB per LED for the top 18 dB of dynamic range, and 2 dB per LED thereafter. There is a peak-hold feature that holds the highest peak, helping to give a better impression of the working dynamic range.

Trim Output Level

Allows you to reduce the output level by up to 12 dB. Dithering is applied after output gain control, so it may be necessary to reduce this value by a small amount to avoid clipping.

Using the Sonnox DeBuzzer

- Find the nominal frequency. Start with **Sensitivity** and **Attenuation** controls at the default positions (90% and -48 dB).

- If you know the rough frequency of the nominal, select that frequency using either the knob or by typing into the touch pad.

- In **Auto** mode, allow the detector time to drift towards the actual fundamental. The **Detect** display indicates confidence of hum detection. **Auto** mode should be used if the fundamental drifts over time.

- **Freeze** mode should be used to select a specific frequency that might be variable in strength. **Fine Adjust** (which forces **Freeze** mode) can be used to increase the resolution of selecting the fundamental.

- If you are still having difficulty finding the fundamental, use the **Tone** control.

- The **Hum** mode removes harmonics up to 800 Hz. If you can hear harmonics that are higher in frequency, select **Buzz** mode, which removes harmonics up to 4000 Hz. If there are no harmonics above 800 Hz, be sure to use **Hum** mode to preserve as much original audio as possible.

- In order to cause as little damage to the audio as possible, back off the attenuation until you can just hear the buzz, then increase it until the buzz is inaudible.

- Then reduce the sensitivity until the buzz is inaudible.

Sonnox DeClicker

Sonnox DeClicker allows you to remove clicks from audio material.
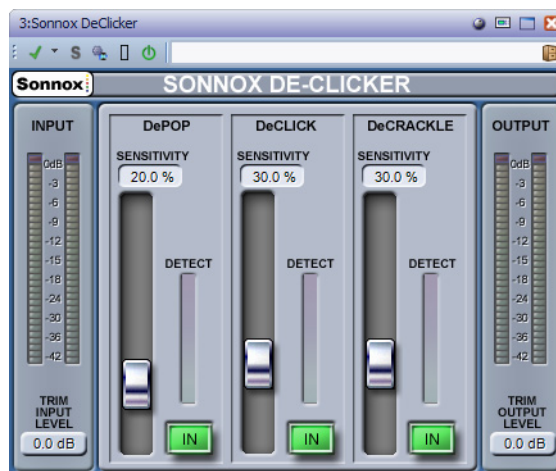
Sonnox Menu Options Button

Opens a menu where you can select the following options:

- Duration of the input/output meter clip lights hold (indefinitely, 2s, 5s)

- Information about the version number and build date

Input Level Meter

Gives exactly 1 dB per LED for the top 18 dB of dynamic range, and 2 dB per LED thereafter. This gives a clear and intuitive impression of the working headroom.

Trim Input Level

Allows you to adjust the input signal level by up to ±12dB.

Sensitivity Fader and Touch Pad (%) (DePop, DeClick, DeCrackle)

Controls the sensitivity of the detection circuits. Fully sensitive might allow the detection circuit to react to low level signals and possibly mis-classify programme as pops or clicks. Stronger pops and clicks require a less sensitive setting.

In Button (DePop, DeClick, DeCrackle)

Enables the pop, click or crackle removal processing. When **In** is deactivated, the pop, click, or crackle detection circuit is still enabled and the detect display still shows the degree of event detection.

Detect Meter Display (DePop, DeClick, DeCrackle)

Combines two indications. The main rising column indicates the sum of the energy of events that have been detected. With the **In** button de-selected (i.e. the repair circuit disabled), this column is colored orange/red. With the repair circuit active the column is colored blue. The bottom segment of the meter is an indication of each individual detected event.

Output Level Meter (dB)

Gives exactly 1dB per LED for the top 18dB of dynamic range, and 2dB per LED thereafter. There is a peak-hold feature that holds the highest peak, helping to give a better impression of the working dynamic range.

Trim Output Level

Allows you to reduce the output level by up to 12dB. Dithering is applied after output gain control, so it can be necessary to reduce this value by a small amount to avoid clipping.

Using the Sonnox DeClicker

- We recommend repair the larger and more energetic events first.

- If there are large displacement events in the programme material, enable the DePop section and raise the sensitivity fader until the largest events are detected and repaired.

- For clicks, enable that section and raise the sensitivity fader until they are detected and repaired.

- Finally, if there is crackle left, enable that section and raise its fader to remove the crackle.

▪   There is necessarily some degree of overlap in the detection circuits of clicks and crackle. Decreasing the DeClick sensitivity can increase the apparent detection of crackle and increasing the DeClick sensitivity can indicate less crackle. Best results are likely if the two controls are balanced.

Sonnox DeNoiser

Sonnox DeNoiser removes wide-band noise from audio material.

Sonnox Menu Options button

Opens a menu where you can select the following options:

▪   Duration of the input/output meter clip lights hold (indefinitely, 2 s, 5 s)

▪   Knob behavior

▪   Information about the version number and build date

Graphical display

Shows the real-time frequency/gain curve of the program material. It is graduated from 0 to 20 kHz and from 0 to -144 dB. The yellow line is the calculated noise spectrum level, and in **Adapt** mode continually follows the noise in real time. Everything below this contour is assumed to be noise, and everything above the line is program signal.

Input Level meter

This meter is designed to give exactly 1 dB per LED for the top 18 dB of dynamic range, and 2 dB per LED thereafter. This gives a clear and intuitive impression of the working headroom.

Trim Input Level

Allows you to adjust the input signal level by up to ±12 dB.

Sensitivity fader and Trim touch pad (dB)

The sensitivity fader defaults to 0.0 dB, which is the midpoint of its travel. It adjusts the sensitivity of the noise detection circuit, and the visible effect of this is to move the yellow noise contour line up and down. The sensitivity level can be changed by up to ±18 dB.

To reduce the sensitivity and make the DeNoiser less reactive to the noise component, move the fader down. The noise contour displaces downwards, showing less noise component in the detection circuit. If the sensitivity is set too low, little noise reduction occurs.

To increase the sensitivity and make the DeNoiser more reactive to the noise component, move the fader up. The noise contour displaces upwards, showing more noise component in the detection circuit. The default setting is for the noise contour to lie just below the peaks of the signal. Making the detection circuit more sensitive to noise decreases the signal component, possibly pushing the contour up towards the peaks of the signal. In this case, it is likely that processing artifacts are heard, as the noise removal circuit acts on the signal component as well as the noise component.

Adapt button

Enables **Adapt** mode for the noise detection circuit. In this mode the noise fingerprint is continually calculated and updated. This mode is useful for material with a time-varying noise component.

Freeze button

Enables **Freeze** mode for the noise detection circuit. In this mode the noise fingerprint is calculated. This mode is useful for material with a constant noise component, and would typically be sampled when the signal is absent and only the noise component is present.

In button

Enables the noise removal processing. It allows glitch-less comparisons with and without the noise reduction. When **In** is deactivated, the noise detection circuit is still enabled and the graphical display still shows the real-time frequency display and the noise contour line.

HF Limit knob and touch pad (Hz)

Displays and controls the frequency beyond which the attenuation is applied nondynamically. Scrolling the frequency down from the default of 22 kHz shows a red region in the frequency display that has a fixed attenuation. To the left of the HF Limit line the noise removal circuit behaves as normal. To the right the signal is attenuated by a fixed amount set by the attenuation fader. This mode is useful for band-limited program material.

A good example is a low bitrate encoded signal, which might be band limited to 12kHz. Due to the sharp discontinuity, the noise removal circuit can introduce audible artifacts around the band limit, and setting the HF Limit frequency slightly lower than the band limit removes those artifacts.

Attenuation fader and touch pad (dB)

Determine the level of attenuation that the noise removal circuit applies in the range 0 to -18dB. Generally this should be set so that the noise reduction is pleasing. Excessive use of attenuation can degrade the signal unnecessarily.

Output Level meter (dB)

This meter is designed to give exactly 1dB per LED for the top 18dB of dynamic range, and 2dB per LED thereafter. There is a peak-hold feature that holds the highest peak, helping to give a better impression of the working dynamic range.

Trim Output Level

Allows you to reduce the output level by up to 12dB. Dithering is applied after output gain control, so it can be necessary to reduce this value by a small amount to avoid clipping.

Using the Sonnox DeNoiser

- Start with **Sensitivity** and **Attenuation** controls at the default positions (0.0dB and -4.5dB).

- Select **Adapt** mode if the noise varies in time. Select **Freeze** for a defined and static noise fingerprint.

- Adjust the **Sensitivity** to find the correct balance between being too low (not enough noise is removed) and too high (too much signal is removed).

- Adjust the **Attenuation** to find the most pleasing audio. Too much attenuation can impair the audio, either by reducing brightness or by introducing low-level distortion.

You might be working with bandwidth-limited material, possibly as a result of sample rate conversion or lossy compression (for example, limited at around 10kHz). If you experience distortion around the limit try reducing the **HF Limit** control. Adjust until it lies just to the lower frequency side of the limit (around 9.5kHz in our example).

Legacy Plug-ins

Under Windows, a set of plug-ins is provided for compatibility with audio projects that referenced these effects when using earlier versions of WaveLab Elements. An audio montage which referenced these plug-ins would otherwise require cumbersome user intervention to open, for example.

Their use with new audio projects is not recommended and they are not documented.

Dithering Plug-ins

Dithering plug-ins add small quantities of noise to a signal to reduce the audibility of low level distortion in a digital recording. A small amount of random noise is added to the analog signal before the sampling stage, reducing the effect of quantization errors.

Internal Dithering

This is a built-in plug-in that provides a simple way of adding a small amount of noise to the rendered signal to improve the apparent signal-to-noise ratio of the output.

The following parameters are available when selecting **Internal**.

Noise Type

Sets the noise type for adding to the signal.

- In **No Noise** mode, no dithering is applied.

- The **Noise Type 1** mode is the most all-round method.

- The **Noise Type 2** mode emphasizes higher frequencies more than **Noise Type 1**.

Noise Shaping

Increases the apparent signal to noise ratio by altering the spectrum of the low-level audio signal which results from lowering the number of bits. The higher the number you select here, the more the noise is moved out of the ear's mid-range.

Bit Resolution

Allows you to specify the intended bit resolution for the final audio, after dithering, regardless of whether you want to render the settings or play back in real-time.

Dithering changes the sample resolution, but not the sample size. For example, when dithering 24 bit to 16 bit, the file will still be 24 bit in size, although only 16 bits of information will have significance. When rendering to a 16-bit file, specify the file resolution to avoid wasting space.

Index