WAVELAB ESSENTIAL 6

Personal Audio Editing System

steinberg

Operation Manual by Anders Nordmark,
Revision for WaveLab Essential by Stefan Zachau

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Introduction

Welcome!

Congratulations on your choice of WaveLab Essential, which is the audio editor of choice for any serious engineer or musician.

WaveLab Essential is continuously developed and refined, in collaboration with our users – from professional audio engineers to hobbyists. Your input helps making this program one of the most flexible and user-friendly ever!

Find out about the ease of use and workflow that makes working with WaveLab Essential so effective.

Your Steinberg Team.

Key command conventions

Many of the default key commands in WaveLab Essential use modifier keys. For example, the default key command for Undo is [Ctrl]-[Z] under Windows.

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]-[key]

For example, [Ctrl]-[Z] means "press [Ctrl] , then press [Z]".

Similarly, [Alt]-[X] means "press [Alt] then press [X]".

How you can reach us

After having installed and launched the program, you will find a number of useful Steinberg Web links on the Help menu ("Steinberg on the internet" submenu). These allow you to get online support, check for updates, get answers to frequently asked questions, etc.

⚠ These features require that you have a working Internet connection.

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Requirements

This is what you need…

To use WaveLab Essential you need the following:

▪ A PC with Windows XP or Windows Vista Home Premium or Ultimate (32-bit only) installed and ready.
An Internet connection is also required. For more details about the computer requirements, see below.

▪ A Multimedia PC compatible, 16-bit (or better) audio card.
By audio card we mean a card capable of recording and playing back audio, using the computer's hard disk as storage media. See "About audio cards" on page 11.

To take advantage of WaveLab Essential's more advanced features, you need the following:

▪ To utilize WaveLab Essential's CD burning capabilities, you will need a CD recorder.
Your CD recorder must support the disc-at-once write mode.

▪ DirectX 9 or later must be installed.

Computer requirements

Below, the minimum computer requirements are listed, with recommendations where applicable. The following sections describe each system component (processor, RAM, etc.) in more detail.

Minimum requirements

▪ Intel Pentium III/AMD Athlon 800 MHz (Intel Pentium IV/AMD Athlon or AMD Opteron 2,4 GHz or faster recommended).
▪ 256 MB RAM (1 GB recommended).
▪ A monitor and video card with a resolution of 24 bit (32 bit recommended).
▪ Display resolution 1024 x 768 pixels (1280 x 1024 pixels and a dual-monitor setup are recommended).
▪ 80 MB of free hard disk space.
▪ Windows XP or Windows Vista Home Premium or Ultimate (32-bit only).
▪ Windows MME compatible audio hardware (ASIO compatible audio hardware recommended).
▪ CD or DVD ROM drive for installation (CD/DVD writer recommended).
▪ Internet connection required for product activation and the Podcast feature.
▪ The Product can only be used on the system on which it was activated.

RAM

Since WaveLab Essential is disk based, the amount of RAM does not limit the size of audio files you can work with. Even with moderate amounts of RAM, you can have many files open at the same time. However, when more RAM is available, some processes can be accelerated by WaveLab Essential.

Processing power

The difference between running WaveLab Essential on a faster computer and a slower one is noticeable in many cases:

▪ More real-time processing
The faster the computer, the more real-time plug-ins you will be able to use.

▪ Faster "off-line" processing and analysis tasks
Certain types of processing which make heavy demands on the computer will be completed more quickly on a faster machine.

▪ Screen updates
Scrolling, editing and manipulating objects is "snappier" on a faster machine.

Hard disk

Audio files are relatively big. Approximately 10.6 MB of hard disk space is used up for every minute of 16 bit stereo/44.1 kHz audio recorded. For 24 bit/48 kHz audio or higher, the audio files are of course a lot bigger. Therefore we recommend that you get the largest hard disk you can afford. The speed of the hard disk will affect some of the processing operations. This is mainly noticeable when you work with very long files.

In addition, a fast hard disk is absolutely crucial for CD-R and DVD-R burning. If the hard disk is slow, your recorder might not be able to write at its maximum possible speed.

⚠ Do not use file compression on hard disks where audio files are stored!

About audio cards

WaveLab Essential works with any Multimedia PC compatible audio card. However, the audio quality varies dramatically between cards.

For serious work with WaveLab Essential, we recommend that you get a card with the highest possible specifications.

However, if you use WaveLab Essential to edit files for use with other hardware (such as a hard disk based recording system using its own audio converters) any loss in audio quality that you experience when listening to the files in WaveLab Essential (due to deficiencies in the audio card) will not affect the final audio files in any way.

For professional use (mastering, etc.) we recommend that you get a card capable of playing back files in 24 bit resolution.

About the System Information feature

After having installed and launched WaveLab Essential, you can get a very detailed report describing your computer system by selecting "System Information" on the Help menu. This function analyses your system and lists operating system specifics; processor(s), memory, hard drives, and much more. This is especially useful if you need to contact Technical Support, since this allows you to describe your computer configuration accurately.

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Installing and setting up

Setting up the computer

Before proceeding, your computer should be set up and the following items should be installed:

▪ Windows (see "This is what you need…" on page 10 for details on which version to use).

▪ The audio card and its driver.

Checking the audio card

To make sure the audio card will work as expected, you can perform the following two tests:

▪ Use the software included with the audio card to make sure you can record and play back without problems.

▪ Use the Media Player application (included with Windows and described in the Windows documentation) to record and play back audio.

Colors

At this point you might want to check and for example change the number of colors you use on your computer screen. See your Windows documentation for instructions on how to do this. The recommended setting for WaveLab Essential is 24 or 32 bit mode ("True Color").

Installation procedure

Installing the software

The installation procedure unpacks all the files and automatically puts them in the right places.

1. Insert the CD-ROM disk in the drive.
The installation program should start automatically after a few seconds. If, for some reason it doesn't – for instance if you have "Auto Insert Notification" deactivated for your CD drive – perform steps 2-4 below. Otherwise, proceed to step 5.

2. Launch the Explorer, open the "My Computer" window or select "Run" from the Start menu.

3. Locate and double click on the drive symbol for the CD-ROM drive.

4. Double click on the "setup" symbol (setup.exe).

5. Follow the instructions on screen.

6. Finally, a dialog informs you that the installation was successful.
A restart may be requested – but if no dialog requests a restart it is not necessary to do so.

When the installation is finished, the program is found among your other programs on the Start menu and/or the desktop.

This completes the installation of your WaveLab Essential program! But, you're not really done yet…

Activating WaveLab Essential

After installing WaveLab Essential you can use the program for 30 days without any restrictions. After this period, you will have to enter your permanent activation code. You will find this code in the "Essential Product Licence Information" document that is included in the WaveLab Essential package. Otherwise, WaveLab Essential will not run anymore.

Proceed as follows:

1. Open the Syncrosoft License Control Center (which can be found in the Start/Programs menu under Windows or in the Applications folder on a Mac).

2. In the Syncrosoft License Control Center, open the Wizards menu and select the "License Download" option. Follow the instructions and enter your WaveLab Essential activation code.

You are now ready to permanently run WaveLab Essential!

Register your software!

Registering your software will make sure you are entitled to technical support and kept aware of updates and news regarding WaveLab Essential.

Program settings

Before you start working, you should make some settings:

Audio card settings

You need to specify which audio card and driver you intend to use. WaveLab Essential can communicate with the audio card via any of the standard protocols; ASIO, MME or WDM.

Selecting an ASIO driver

1. Open the Preferences–Audio device tab.

2. Select the ASIO driver from the "Playback device" pop-up menu.
Note that the "Playback device" menu heading has now changed to "Playback/Record device" and the Recording device section has been greyed out. This is because with ASIO, the same driver is always used both for output and input.

3. If you click the "Control Panel" button the audio card settings application (usually installed with the audio card) for the ASIO driver opens.
In the Control Panel you may find settings for buffer size, digital formats, additional I/O connections, etc. depending on the audio card and the driver.

4. Click on the "Connections" button.
The ASIO Audio connections dialog will appear, listing all available channel inputs and outputs in WaveLab Essential. Select the channels you want to use for stereo output and input.

5. Close the dialog.

▪ When using ASIO, the playback resolution is set from the ASIO driver (you may find a setting for this in the ASIO Control Panel, depending on the hardware and driver).
Therefore, the Playback Resolution settings will be greyed out.

Selecting an MME/WDM driver

1. Select "Preferences…" from the Options menu.

2. Click on the Audio device tab.

3. Select the audio card you want to use for recording and playback from the pop-ups.
If you only have one audio card you can also select the "Microsoft Sound Mapper" options (the sound mapper is a "virtual audio card" which "maps" all audio to your real card). However this does not let you take full advantage of the card's driver when recording audio and is not recommended.

4. Choose your "Playback Resolution".

Additional audio settings

There are other settings in the Preferences that affect audio playback and recording. We recommend that you try the default settings before you change anything, since these work well in most cases.

On the "Audio Card" tab, you will find the following settings:

▪ Playback Buffer Number and Size.
These determine how much RAM memory is used for buffering when playing back. If you get playback problems such as dropouts or glitches, you should try to increase these values.

⚠ With ASIO drivers, you may find these settings in the ASIO Control Panel.

▪ Recording Buffer Number and Size (not available when using ASIO).
These determine how much RAM is used for buffering when recording. If you get dropouts in the recorded audio, you should try increasing these values.

On the Preferences–File tab, you will find the following settings:

▪ Disk block buffer size.
Governs the buffer size used when WaveLab Essential is reading data from the hard disk. If you experience problems in a read intensive scenario (such as playing back an Audio CD Montage with a lot of simultaneous clips), you should try changing this value.
If you change this setting, playback will stop when you leave the dialog.

▪ Use system cache.
When this is deactivated (default), WaveLab Essential reads files directly from the hard disk, bypassing Windows' file cache.

⚠ We recommend that you leave this option deactivated!

The option is available since it may remedy problems on certain systems with slow disk drives. Note:

▪ If you activate this, avoid using large disk block buffer size values!

▪ After activating this option, you need to close and reopen all open files, for the setting to take effect!

About latency

In the Playback section of the Audio device tab, you will find an indication of the current latency (at 16bit/44.1kHz stereo). Latency is the delay between when audio is "sent" from the program and when you actually hear it. The la-

tency in an audio system depends on the audio hardware, its drivers and their settings. It's usually possible to reduce latency by lowering the number and size of the playback/recording buffers. However, please note:

⚠ 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 Essential. Here the important issues are optimum and stable playback and editing precision. Therefore, you should not try to reach the lowest possible latency figures when working with WaveLab Essential. And again, should you get dropouts, crackles or glitches during playback, raise the Buffer Number setting on the Preferences–Audio device tab.

Temporary files

You also need to specify where WaveLab Essential should store its temporary files. Temporary files are used for certain operations, such as WaveLab Essential's extensive Undo function (see "Undo and Redo" on page 22).

If you have access to more than one drive, saving your temp files on a separate drive (not partition) can considerably speed up performance. For example, if your source files are located on the C: drive, you could specify D:\temp as temporary folder.

This will not only improve performance, but also reduce disk fragmentation.

1. In Windows, create a separate folder in which to store your "temp" files.

⚠ The folder should be on your fastest hard disk and you should make sure you have plenty of room available on that hard disk (or partition). Putting the "temp" files on a separate drive (that is, not the same drive as your regular files) will speed up file operations considerably.

2. Select "Folders…" from the Options menu.
This opens the Folders dialog, where you can edit how various WaveLab Essential folders are handled .

3. Click on the plus sign beside the "Temporary folders" item (this is located in the "Work folders" category).

4. Selecting the Temporary Folder item will show the current location where the temp files will be created in the Folder field to the right.

5. Either type in the path to the directory or you can browse the drives to locate and select the folder via a standard Windows file dialog.
Click OK to select a folder and exit the file dialog.

Peak and view memories

A peak file is a small file with the extension ".gpk" automatically created by WaveLab Essential each time a file is modified or opened in WaveLab Essential (if it hasn't been previously). The peak file contains information about the waveform, and determines how it is drawn in the wave window.

View memory files (extension ".mem") store view information relating to a specific audio file such as window and scroll positions, etc. – see "Saving view settings" on page 54.

By default, peak files and view memory files are stored in the same folder as the related audio file. Setting this to another folder on a different drive will also improve performance to a certain degree. Regardless of whether this folder is on a different drive or not you also get the advantage of not having the audio file folder cluttered with non-audio files if a separate folder is used.

This folder can be specified from the Folders dialog, either directly or via the Preferences–Wave edit tab:

▪ Select Preferences from the Options menu and select the Wave edit tab.

▪ If the "Save view settings in companion file" option is activated, view memory files will be saved in the same folder as the related audio file.

▪ If you select "Save in independent folder" you can click the "Edit" button, which will open the Folder dialog with the "Peak and view memories" work folder selected.
From here you can navigate to a new folder location to store the peak and view memory temp files.

Installing a CD/DVD recorder

Hardware installation/connection

For general instructions on installing internal or connecting external recorders via USB or Firewire, please refer to the instructions that came with the computer, or the recorder itself.

For WaveLab Essential, please just check the following points:

▪ Make sure to have the latest firmware version installed in your recorder unit. For CD recorders, the firmware you have must support Disc-at-Once mode! In addition, running a unit with older firmware might for example prevent you from writing CD-Text information into the tracks.

Checking the installation of the CD/DVD recorder

You might want to check that the recorder unit was actually found by the program. Proceed as follows:

1. Select "CD/DVD Information…" from the Tools menu.
The CD/DVD Info dialog appears.
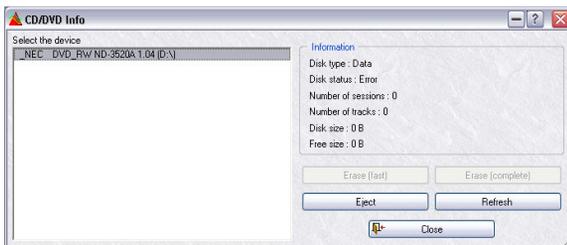
2. Check that your recorder unit appears in the list to the left.
The list will also contain any regular DVD-ROM drives, etc. If your CD/DVD recorder isn't listed, there's either something wrong with the installation or the unit is not supported by WaveLab Essential.

Installation done! Where do I go next?

There are three things we suggest you do:

▪ Read through the rest of this book and try out the different possibilities as you go along.

▪ Examine your WaveLab Essential directory and other disks included in this package for files that might be useful to you.

▪ If you run into problems, check the Troubleshooting chapter in the Operation Manual.

About the Tracer application

In the WaveLab Essential directory created on your hard disk during installation, you will find a folder called "Tools". Among other things, this folder contains a small application called Tracer. This is a diagnostic tool that tracks and logs various procedures that WaveLab Essential executes when it is launched, e.g. the loading of plug-ins.

Should you run into problems with WaveLab Essential and need to contact technical support, you can use the Tracer application and pass on the information it displays to the technical support staff. This could be of great assistance since it might be possible to see exactly which operation caused a problem.

▪ To use the Tracer, locate the file Tracer.exe in the Windows Explorer and double click on it – or use the Run command on the Start menu to browse for the file.
▪ After you have activated the Tracer application, launch WaveLab Essential.
▪ All loading procedures are displayed as plain text, and you can copy this information and then paste it into, for example, an e-mail.

4

Overview

Get to know WaveLab Essential

Welcome to WaveLab Essential!

This chapter is intended to get you acquainted with the program. We will here briefly describe its fundamental functions and main features, so as to point you in the right direction on your road to mastering all of the possibilities that WaveLab Essential offers.

The windows and what you can do with them

Working with WaveLab Essential, you will encounter a number of different windows that let you do different things. Editing audio files, compiling files for burning CDs or DVDs, applying effects and much, much more. This is an overview of the main windows in the program.

The Wave window
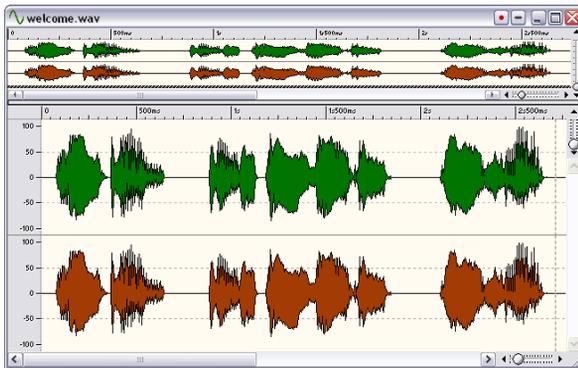
This is a Wave window, a graphical representation of an audio file. It consists of two parts – the lower is the Main view, and this is where you can perform various audio editing operations such as copying, cutting, pasting, moving, deleting, etc.

The upper part is the Overview and serves to let you easily navigate through long files.

You can read more about the Wave window and the operations you can perform in it in the chapter "Editing in the Wave window" on page 32.

The Audio CD Montage window
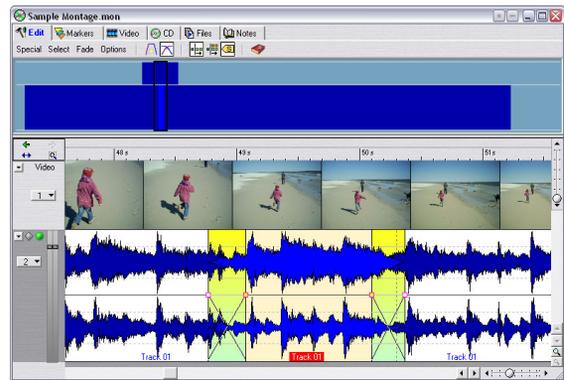
This is an Audio CD Montage window. An Audio CD Montage lets you compile and edit multiple clips (references to audio files on disk) on one or two tracks.

As you can see, the window consists of two panes. The lower one is called the Track View, and this is where you assemble the clips. The appearance of the upper pane depends on which of the six tabs at the very top of the window is selected. These tabs give you access to various functions.

After you have imported audio files as clips into an Audio CD Montage, you can arrange, edit and play back the clips. You can also apply effects, fades or crossfades, and much more, and last but not least, you can directly create CDs. All in all, the Audio CD Montage is an excellent tool for advanced music CD creation.

Read more about the Audio CD Montage and its features in the chapter "The Audio CD Montage" on page 103.

The Data CD/DVD window
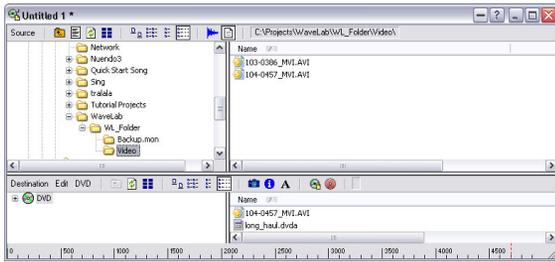
The Data CD/DVD window can be used for compiling and creating data CDs/DVDs (discs that exclusively contain computer data) and Mixed Mode CDs (discs that contain both data and audio).

The window is divided into two panes; the upper is called the source window, and the lower is the destination window. You drag files from the source window to the destination window, in which you can rename, remove and move files before burning a CD or DVD.

For a detailed description of the Data CD/DVD window and what you can do with it, see "Data CD/DVD Projects" on page 139.

The CD/DVD Label Editor
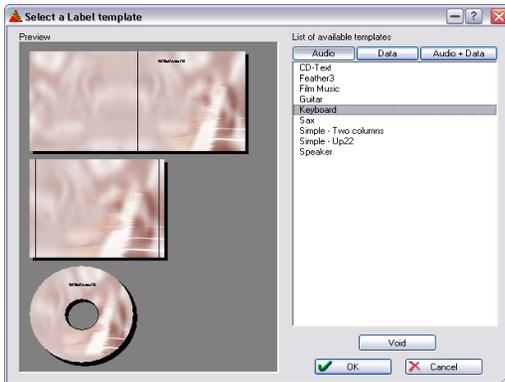
This window is the Label Editor. Here you can design and print custom labels for the CDs or DVDs you create. You can create labels for both the front and back of a jewel case, as well as for the discs.

Read more about this in the chapter "Creating labels" on page 147.

The Master Section

This is a very important part of WaveLab Essential, called the Master Section. It has a number of uses including:

- Adding real-time effect plug-in processors such as Chorus, Reverb, etc.
- Applying effects to files so that they are permanently made a part of the files (as opposed to using them in real-time).
- Monitoring and controlling the WaveLab Essential output level.
- Adding dithering.

For details, see "Master Section" on page 81.

Find your way around in WaveLab Essential

Editing and processing

Where do I go if I want to…

▪ Edit an existing audio file?
When you open an audio file, it appears in a Wave window, in which you can edit it in various ways. See "Editing in the Wave window" on page 32.

▪ Compile and edit several audio files on two independent tracks?
Create an Audio CD Montage. See "The Audio CD Montage" on page 103.

▪ Apply processing to a wave file?
The Process menu contains a number of options for manipulating wave files, including fade-in/out, normalize, time stretch and much more – see "Off-line processing" on page 67. You can also use the Render function in the Master Section to apply effects to a file.

▪ Convert an audio file into another audio format?
There are several ways: You can use either the "Save as" command or the "Save Special" command on the File menu (see "Saving in another format (Save as…)" on page 51), or the "Render" function in the Master Section (see "Rendering" on page 91). Finally, batch file encoding lets you convert multiple files to another format – see "Batch file encoding" on page 95.

Playback and recording

Where do I go if I want to…

▪ Play back with real-time effects?
Effects are added in the Master Section, see "Master Section" on page 81. In Audio CD Montages you can also add individual clip effects, see "Adding effects to clips" on page 124.

▪ Record new audio files?
Use the Record button on the Transport bar. The new file will appear in a Wave window, see "Recording" on page 59.

▪ Record songs from an audio CD into WaveLab Essential?
You don't – you import them directly from the disc. On the Tools menu there is an option called "Import Audio CD tracks" (see "Importing audio CD tracks into WaveLab Essential" on page 144).

CD/DVD creation

Where do I go if I want to…

▪ Create an audio CD that can be played back in a regular CD player?
You create an Audio CD Montage and insert audio files as clips into it, with each clip representing one track on the audio CD (see "The Audio CD Montage" on page 103).

▪ Create a data CD/DVD or a Mixed Mode CD/DVD containing audio, data and video?
You do this in a Data CD/DVD window. See "Data CD/DVD Projects" on page 139.

▪ Create labels for the CDs/DVDs I make?
This is done in the Label Editor. See "Creating labels" on page 147.

The above are just a few pointers to some of the fundamental functions in WaveLab Essential. While using them, you will discover a multitude of other features and functions that let you make full use of the possibilities of this amazing program.

Have fun exploring WaveLab Essential!

5

Basic methods

Why you should read this chapter

This chapter describes general methods that you will use when working with WaveLab Essential. Getting accustomed with these procedures will allow you to work more effectively with the program.

Getting help

WaveLab Essential comes with a detailed help system, making it easy to look up procedures and descriptions from within the program. There are two ways to access the help system:

▪ By selecting "Operation Manual" from the Help menu.
This takes you to the help in Adobe Acrobat format (extension ".pdf"). This PDF file contains all chapters of the manual including additional sections describing plug-ins, key commands and troubleshooting procedures.

▪ By pressing [F1].

Undo and Redo

WaveLab Essential has an extremely extensive Undo function, applicable when working in Wave windows, Audio CD Montages or the CD Label Editor. You can:

▪ Undo as many steps back as you like, by using the Undo item on the Edit menu.
The only limitation is the available hard disk space. You can also use the shortcuts [Ctrl]-[Z] or [F3] to undo. [F3] has the added advantage in that you can undo even if a modal dialog is currently open.

▪ Redo as many steps as you like, by using the Redo item on the Edit menu (or by pressing [Ctrl]-[Y] or [F4]).

Furthermore, each window has its own undo "history", so you can click on any window and undo the last changes made there, even if you afterwards worked in another window.

About Undo and disk space

Many undo operations require no memory or disk space. However, operations that modify actual wave data (like time stretch, EQ, etc.) require that a file copy of the selected part of the wave is stored, so that it can be brought back when you need to redo.

For this reason, WaveLab Essential will need to store files on your hard disk, in the folder you have specified for the temporary files (see "Temporary files" on page 15). These files are automatically deleted each time you close or save the related document.

Limiting the Undo function

If you run out of hard disk space or if you are applying processing to extremely long sections of waves, you might want to put a limit on the Undo function (applicable to Wave windows only):

1. Select "Preferences" from the Options menu and click the Wave edit tab.

2. Uncheck the "Unlimited" option in the Undo/Redo section.

3. Change the Limit number to the desired value.

Clearing the undo

There might be situations where you have "collected" a large number of undo possibilities that you know you don't need. You might then clear the whole undo "buffer" for one file at a time. This will free up some primary memory (RAM) but more importantly it will also delete all the "undo files" from your hard disk, to free up space.

1. Select "Clear undo" from the Edit menu.
A window appears informing you of how much RAM and hard disk space you will gain by this operation.
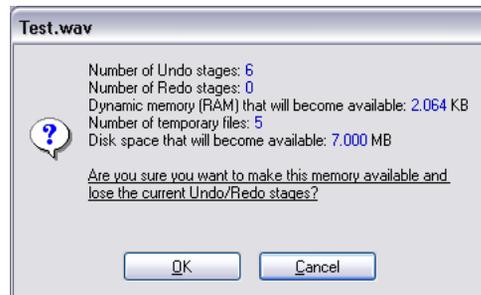
2. Click OK.

⚠ Please note that this function works on one document at a time. It is only the undo buffer for the file in the active window that will be cleared. Also note that it only applies to Wave windows.

Working with windows

Basic window handling

WaveLab Essential follows the basic guidelines for the Windows interface, which means standard "Windows procedures" apply.

Closing Wave windows

You can close a document window by clicking its close button, by selecting Close from the File menu or by pressing [Ctrl]-[W]. If document window(s) contain unsaved changes, you will be asked whether you want to save those changes before closing.

⇨ If you hold down [Ctrl]+[Shift] when clicking the close button, the window closes immediately. Any changes you have made will not be saved.

⇨ You can also close all windows in one go (either all Wave windows, or all windows regardless of type), by selecting the corresponding option from the Windows menu.

Minimizing Wave windows

WaveLab Essential windows are minimized like any other, but there are also options for minimizing all Wave windows or all windows (regardless of type, as with closing, see above), from the Window menu.

Quitting

When you quit the program, and have files with unsaved changes, the "Exiting with modified documents" dialog, see "Save All" on page 52, appears. Selecting all files in the list and clicking Save Selected, ensures that all changes made to any and all files, are saved.

Quick window switching

▪ To "cycle" between all open windows, press [Ctrl]-[Tab] or [Ctrl]-[F6].

▪ If you release the [Ctrl] key, and use any of these commands again, you will switch to the previous window, rather than the next window in the stack.
This allows you to quickly move back and forth between two windows.

The document switch bar

A quick way to switch between the open document windows is to use the document switch bar.

In this example, clicking on the tab will bring the "MoonProject" window to front.

⇨ You can position the document switch bar at the top, bottom, left or right side of the screen by using the document switch bar submenu on the View menu.
This submenu also lets you hide the document switch bar, if you like.

Panes

Several of WaveLab Essential's windows are divided into panes. Panes are separated by dividers. For example, a Wave window can have two panes, the Overview and the Main view.
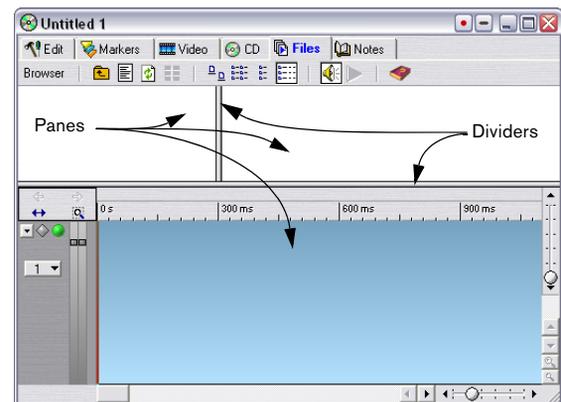
The panes and dividers in an Audio CD Montage window.

Adjusting the size of a pane

1. Position the mouse over the divider between the two panes.

The pointer turns into a two-way arrow.

2. Drag the divider to adjust the pane size.

Hiding and revealing a pane

In some windows, a pane can be hidden altogether.

To hide a pane, drag the border between the two panes all the way up or double click it. To reveal the pane again, drag the miniature divider symbol down or double click it.

The miniature divider symbol
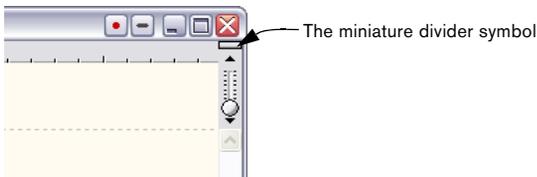
You can also hide/show the Overview pane in the Wave window by pressing [O] on the computer keyboard.

"Folding" windows

If you find a window takes up too much screen space, but you still don't want to close it, you can "fold it in" by clicking on the fold-in icon on the title bar. For dialogs, you can also double click on the title bar.

The fold-in icon
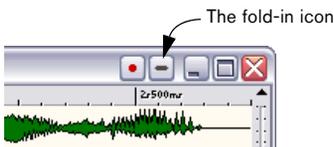
To return to normal size, just click again.
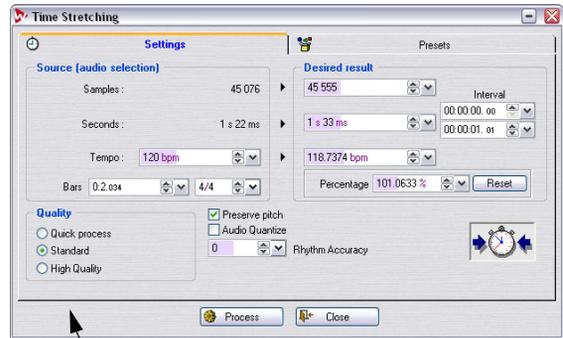
The normal Time Stretch dialog…
…and when "folded in".
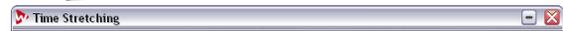
The Document icon
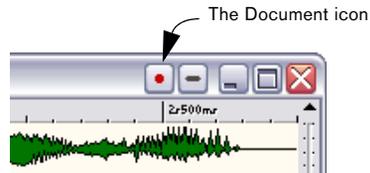
The Document icon

WaveLab Essential adds another symbol to some document windows, the Document icon. This is used to drag the whole document to various other windows, such as Audio CD Montages or Data CD/DVD windows.

Unsaved changes indicator
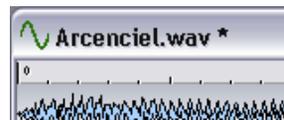
When you have made changes to a document window, an asterisk will be displayed after the document name in the title bar until you save the document.

Working with multiple windows

You can edit the same data in more than one Wave window. Among other things this allows you to work on different sections of a wave file (for example the start and end), without scrolling back and forth.

⇨ The two windows are views of exactly the same data.
Any change you make in one Wave window is immediately apparent in the other.

Creating a second window using menus

1. Make sure the desired window is the active one.
If it isn't, click once in its title bar.

2. Select Duplicate View from the View menu.

Creating a second window by dragging

1. Make sure "Create windows using mouse" is activated on the Preferences–Wave edit tab.

2. Click and drag a rectangle in an empty area of the WaveLab Essential window.
This must be of a certain minimum size or bigger. If you don't get a new window, try again with a bigger rectangle.
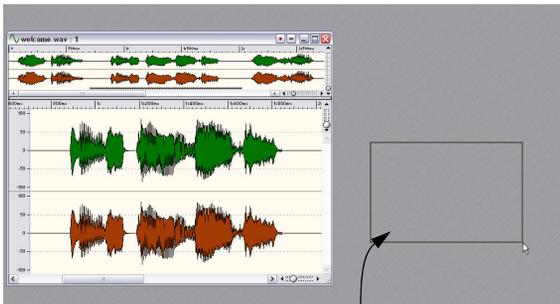
Dragging a box like this will create a new window for this audio file.
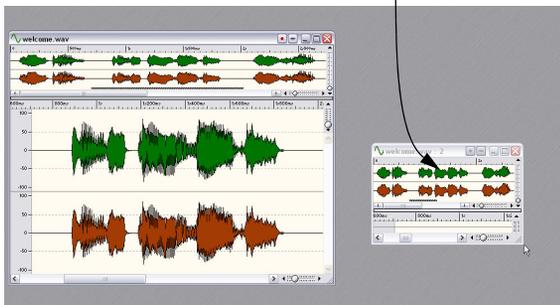
Windows sets, snapshots and Wave view settings

In addition to the above, there are other ways to manage windows:

▪ Snapshots store individual settings for one Wave window at a time, which allows you to quickly move between various views of a file. See "Snapshots" on page 39.
▪ Screen layouts store document window and dialog box positions and sizes. See "Working with window layouts" on page 183.
▪ View settings can be automatically stored (Preference setting) when saving wave audio files. This will store all view settings for an individual Wave window; i.e. window size & placement, time ruler style, scroll positions, selection ranges and snapshots. See "Saving view settings" on page 54.

Dockable control bars

Various tools, shortcuts and commands are gathered on "control bars" (strips with symbols). These can be used either as "palettes" (separate windows) or you can "dock" them to the window edges.
The following control bars are available:

▪ The Standard Commands
▪ The Transport bar
▪ The Wave toolbox
▪ The Wave Snapshots control bar
▪ The Marker toolbar

Docking a control bar

There are two ways to dock a control bar:

▪ Drag the control bar window (by its title bar) to any of the sides of the application window and release the mouse button.
The outline shows you the shape of the control bar at the docked position.

▪ Double click the title bar of a control bar to return it to its last docked position.

Please note that you can stack control bars and put them side by side, to create any type of layout you desire.

In this example, the Standard Commands, Toolbox and Transport control bars have all been docked to the upper part of the application window.

Turning a docked control bar into a separate window

To "un-dock" a control bar, drag it out from the docked position, or double click somewhere on its handle.

⇨ Control bar windows are moved by dragging the title bar, just as with any other window.

To drag a control bar on side of the application window, without docking it, hold down [Ctrl] when dragging.

Showing/hiding a control bar

There are different ways to show/hide a control bar:

• Pull down the View menu, select Control Bars, and from the submenu that appears, select the desired control bar, or…
• Hide a control bar by clicking its Close box.

Changing the appearance of a control bar

To change the shape of a control bar to either horizontal, square or vertical, drag the right or bottom edge as when resizing any other window.

To change the size of the buttons in the control bar, open the Preferences–Environment tab and adjust the "Button size" setting.

Finding out what a button on a control bar does

1. Select Preferences from the Options menu and click on the Environment tab.

2. Make sure "Show Tips" is activated.

3. Close the Preferences dialog.

4. Move the pointer over an item on the control bar and wait a moment.

A text showing the name of the button appears.
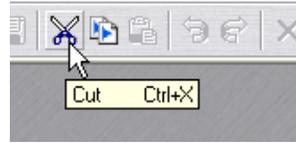
An example of a "Tip" pop-up for the control bar.

The various control bars

The Standard Commands

The Standard Commands bar supplies shortcuts for the most commonly used menu items, as well as some unique functions.

The Toolbox

The tools are used to perform various operations on the data in the window, like selecting, playing, etc.

The Snapshots control bar

This is used to store and recall window "layouts", see "Snapshots" on page 39.

The Transport bar

The Transport bar is used for various playback commands, see "Using the Transport bar" on page 57.

The Marker toolbar

This is used for various commands related to markers, see "Introduction" on page 98.

Speed menus

Most displays have speed menus associated with them.

⇨ To bring up a speed menu, right-click in the desired area.

In the Wave windows for example, there is one speed menu for the level ruler, one for each of the time rulers and one for each of the waveform displays.
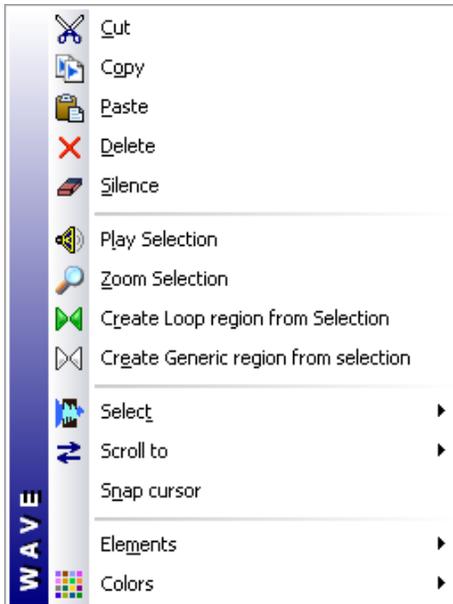
The Wave window main view "speed menu"

The Speed menus contain the same items that can be found on the main menus, but some speed menus also contain unique items.

⚠ When searching for a function, don't forget to check the speed menus in the window in which you are working!

The status bar

This is normally displayed at the bottom of the screen, but it can be hidden on the Preferences–Environment tab.

The status bar shows information related to the active window. Exactly what information appears depends on the window type – for Wave windows it shows various information about the file. See "The status bar" on page 35.

- For some of the fields you can also click to perform operations related to that field.
- The status bar also indicates the progress of operations that take some time to finish.

Units of time and level

For rulers

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

Time formats

Menu name	Description
Time	Positions are shown as hours, minutes, seconds and milliseconds. At large magnification factors, hundredths of milliseconds are shown.
Samples	Positions are shown as number of samples. How many samples there are to a second depends on the sample rate of the wave. For 44.1 kHz for example, there are 44100 samples for each second.
Time code	Also called SMPTE. Positions are shown in the following format: hours:minutes:seconds:frames. The number of frames per second is set on the Preferences–Wave Edit tab.
Meter	Positions are shown as bars, beats and ticks, as specified on the Preferences–Wave Edit tab.
File size	Positions are shown in file size units, MegaBytes, where the decimals represent kiloBytes.

Level formats

Menu name	Description
%	Amplitude (level) is shown as a percentage of full level.
dB	Amplitude is shown in decibels, a logarithmic scale used in audio engineering.
Decimal	This is the actual value of the amplitude as stored in computer memory (always displayed as 16 bits). Please note that the range is from negative to positive with "0" representing "no signal".

⇨ To make a ruler format the default (to be used in new Wave windows), you need to save it as part of the default window style.

See "Styling WaveLab Essential – Wave windows" on page 180.

Setting values

In dialog boxes, you will find yourself adjusting values. The following techniques apply:

Typing values

As in most other Windows programs you can "tab to" or click directly on a value and type in a new one.

Using the spin controls/value fields

Values can be set using either the regular Windows spin controls, or any of the other methods described below.

The spin controls

The history pop-up

- Clicking either arrow raises/lowers the value.
- Keeping the mouse button pressed over an arrow will "scroll" the value.
- Holding down [Ctrl] makes the value change in larger steps.
- Holding down [Ctrl]+[Shift] changes the value to its minimum/maximum.
- The last adjusted control can be changed using the [↑] and [↓] keys, also in combination with [Ctrl] or [Ctrl]+[Shift] as described above.
- You can also click and hold in the value field and move the pointer up or down to change values.
- Pointing in a value field will display the available parameter range.
- The down arrow to the right of the spin controls brings up a history pop-up where the last applied value change(s) in the current dialog are shown and can be selected.

Using sliders and pop-ups

Many times, the most convenient way of changing a value is using WaveLab Essential's proprietary sliders and pop-ups:

1. Click with the right mouse button on the spin control (in some windows you can also double-click with the left mouse button).

2. If a pop-up menu appears, select one of the options on it.

3. If one or more sliders appear, drag the handle(s) or click the arrows to set the value.
The setting is shown in the value box "behind" the slider window.

In this case, four faders appear, one for the integer and three for the decimals.

The value gets updated when you move the sliders.
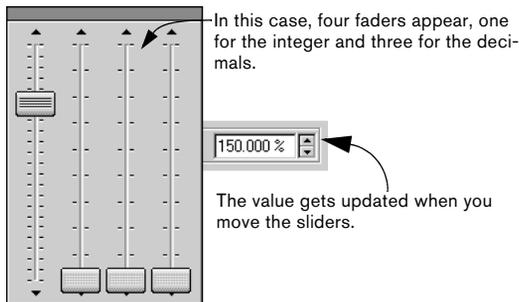
4. When you have finished, click outside the slider window.
- If the value is "segmented" (for example divided into minutes and seconds, etc.), more than one slider will appear, each used for adjusting one of the "segments".
- The slider window can be dragged to any position on the screen, using the "title bar" at the top.
- The last-used slider can also be adjusted using the computer keyboard:.

These keys	Move the slider handle
[↑] and [↓]	One step up/down.
[Page Up] and [Page Down]	A few steps up/down.
[Home] and [End]	To the top/bottom.

In effect processor panels

In the Master Section you will find either generic or custom effect panels for each effect processor. In custom panels, values are adjusted using special methods, see "The Effects pane" on page 85.

Using a wheel mouse

If you are using a mouse with a scroll wheel or similar, you can take advantage of the wheel for various operations in WaveLab Essential:

Scrolling

If you point at a waveform, the wheel scrolls the view horizontally.

Zooming

If you hold down [Ctrl] and point at a waveform, the wheel zooms the view horizontally.

If you hold down [Ctrl] and [Shift] and point at a waveform, the wheel zooms the view vertically.

Changing values

If you point at an edit field in a dialog, the wheel can be used to adjust the value.
- If you hold down [Ctrl], the value changes in bigger increments.
- If you hold down [Ctrl]+[Shift] the value jumps to the minimum or maximum.

Master Section

- When working in the Master Section window, the wheel can be used to adjust the master volume.
You have to point in the Master Section for this to work.

⇨ This functionality can be turned off in the Preferences–Environment tab.

Presets

Many dialogs in WaveLab Essential have either a Presets tab or a Presets pop-up menu. If you think of the dialogs as forms, presets allow those forms to be filled out automatically. WaveLab Essential comes with a selection of presets for most dialogs that use them, but the real power of presets becomes evident when you start creating your own!

⇨ For some WaveLab Essential effect panels there is a Preset button instead of a Presets tab or pop-up menu. Clicking the button opens the Presets dialog which has the same items as described below.

Depending on how presets are displayed in a certain dialog (tab or menu) they are handled slightly differently, but both cases are described below.

A number of presets in the Harmonization dialog

Loading presets

1. Open the dialog you wish to use and click on its Presets tab or pull down its Presets menu.

2. Select the preset you want to use.

3. Where applicable, click the Load button.

⇨ A quick way to load a preset is to right-click on the Preset tab and select a preset from the menu that appears.

Creating a preset

1. Open the dialog you wish to use and set up the dialog as desired.

2. Click on the Presets tab or pull down the Preset menu.

3. Click on the name line and type in a name for the preset or click the Save As… menu item and type in a name in the dialog that appears.

4. Where applicable, click the Add button.

Modifying a preset

1. Load the preset you want to modify, as described above.

2. Make the desired settings in the dialog.

3. Click the Update button or click the Save item.

Deleting a preset

1. In the Presets tab, click on the preset you want to delete.

2. Click the Delete button.

Or…

1. From the Presets menu, select the option Explore presets.

2. In the Explorer window that appears, select the preset file you want to delete and press [Delete].

Store temporarily and Restore

Some dialogs also allow you to quickly save and load up to 5 presets with the Store temporarily and Restore menu items. This is useful if you want to quickly test and compare different settings.

1. Select the option "Store temporarily" and from the submenu select the number under which you want to save (#1 – #5).

2. To quickly load the saved settings again, select the corresponding number from the Restore submenu.

How presets are saved

The presets are automatically saved when you quit the program. The next time you load the program, the presets are ready and waiting, just as you left them. Furthermore the presets are "global" to all files. No matter which file you are working on, you still have access to all your presets.

About non-modal dialogs

Many of the dialog boxes in WaveLab Essential are "non-modal". This means that the window behind the dialog can be operated even though the dialog box is still up on the screen.

For example, when you have a Processing dialog up on screen, you can still work with the Wave window and the main menus. For example, this allows you to perform the following operations without closing the dialog.

- Play back the wave to hear the effect of any applied processing.
- Adjust the selection before re-processing.
- Use the menu to undo the last processing.

Keyboard commands

Windows normally does not allow you to select from menus and use keyboard accelerators when a dialog box is the active window. However, we have provided a few special key shortcuts for the most crucial commands:

Key	Command
[F3]	Undo
[F4]	Redo
[F6]	Play selection
[Shift]+[F6]	Activate loop and play selection
[F7]	Stop
[F8]	Play

Using the computer keyboard

When you are working with WaveLab Essential, the computer keyboard has several different uses:

Transport controls

The Transport functions (such as Play, Stop, Record and so on) can all be managed from the computer keyboard. The keyboard commands for these functions are located on the numeric keypad, to the right on the computer keyboard. See "Using the Transport bar" on page 57.

Keyboard shortcuts

Shortcuts for menus

Many of the items in WaveLab Essential's menus have a computer keyboard equivalent – an "accelerator", listed on the menu. Some abbreviations might need an explanation:

Abbreviation	Description
KP	The numeric keypad. "KP 2" for example means the "2" key on the numeric keypad.
BkSp	The Backspace key.
F1 to F12	The Function keys.

Due to the large number of functions in WaveLab Essential, some key commands consist of double or triple key strokes (known as "key sequences"). These are displayed with the different keys separated by comma signs. For example, "Alt+F12, T" means "hold down [Alt] and press [F12], release, then press [T]".

Customizable shortcuts

You can define your own key shortcuts for a number of functions in the program, see "Customizable key commands" on page 184.

Additional shortcuts

In addition to the above, there are key commands that are not listed on the menus or in this manual. Check the Key Commands chapter in the online documentation for a full list.

6

Editing in the Wave window

About this chapter

The Wave window is the heart of WaveLab Essential's audio editing capabilities. This is where you view, play back and edit individual audio files. This chapter describes how to open and save audio files, how to perform wave editing and how to handle the Wave window itself.

Creating new empty documents

If you want to start with an empty file, for assembling material from other files for example, proceed as follows:

Using menus

1. Select New from the File menu, and Wave from the submenu that appears.
Or, right-click the New icon on the Standard Commands control bar.

2. Fill out the dialog that appears.
See "Supported file formats" on page 49 for details about the various options.

By dragging

This is only possible if the currently active window is a Wave window (or if no document windows are open).

1. Make sure "Create window using mouse" is activated in the Preferences–Wave edit tab.

2. Drag to make up a box in an empty free area of the WaveLab Essential application window.
This must be of a certain minimum size. If you don't get a new window, try again with a bigger box. The new window "inherits" its attributes from the last active window. If no window is open, the dialog box settings for units are used instead.

About display options

There are a number of options that govern how a window will look when it is first created. These are all found on the Preferences–Wave edit tab.

Opening Waves

⚠ For a list of supported file formats, see "Supported file formats" on page 49.

Using the Open dialog

1. Select Open Wave from the File menu, press [Ctrl]-[O] or click the Open icon on the Standard commands control bar and select "Wave…" from the pop-up menu that appears.

2. Use the standard controls to locate and select the desired file.
The file format pop-up allows you to only view files in a certain format and the buttons in the upper left half provide various views of the files on the disk.

3. Click Open.
The Wave appears in a new window.

Below follow descriptions of the items/procedures which are not standard for all Windows Open dialog boxes:

The Recent Folders pop-up menu

At the top of the dialog, you will find a pop-up menu which lists the most recently accessed folders. Select one to open it.

The playback functions

Once you have selected a file in the list you can audition it by clicking Play. Click again to Stop.

You can also have files play back automatically as soon as they are selected. To do this, activate the Auto button.

Opening multiple files

As in many other Windows programs, you can select and open as many files as you wish. The [Shift] key is used for making continuous selections and [Ctrl] is used for selecting any combination of files.

When you click Open the selected files will be opened, each in an individual window.

The Open in Audio CD Montage window option

If you check this option at the bottom of the dialog, the file(s) you open will be placed in an automatically created new Audio CD Montage.

Inserting a file into the current document

You may have a file that you want to insert into an existing file. The two must have the same attributes (e.g. sample rate), or a warning will appear.

1. Locate the document into which you want to add material, and make it active.

2. If you want to add the file at some arbitrary position in the document (rather than at the beginning or end), click to move the wave cursor to that position.

3. Pull down the Edit menu and select Insert Audio File and then one of the options from the submenu that appears.

4. Select a file and click Open.
The file is added. If you used the "at cursor position" option, a temporary marker is added at the insertion point.

Using drag and drop

To open files from the Windows desktop, use one of the following possibilities:

▪ Drag and drop the file(s) on the WaveLab Essential application window.

▪ Drag and drop the file(s) on the WaveLab Essential program icon or a shortcut for it.
If the program isn't already running, it will be launched. This works even if the application is running but minimized.

To Nuendo

⇨ It is also possible to drag and drop files from WaveLab Essential to Steinberg's Nuendo!
This should be done using the Document icon.

Opening files from the desktop

To open a file in WaveLab Essential by double-clicking on it, you must have created an association between the file format and the WaveLab Essential application.

▪ You can do this from within WaveLab Essential at any time by selecting "Associate all files of this type with WaveLab Essential" on the File menu–Special submenu.
This association is made according to the currently selected file's format, and will ensure that all files of this format always opens with WaveLab Essential.

Using the Recent Files lists

On the bottom of the File menu you will find one or several hierarchical menu items that allow you to open recently used document files. There are different submenus for different file types, as indicated by the menu items ("Recent Audio Files", "Recent Audio CD Montages", etc.). Each section holds up to twenty files. Selecting an item on one of the submenus opens the corresponding file.

Using Favorites

Just above the "Recent…" items is the Favorites menu. This lets you create a "library" of files that you want to be able to open quickly.

▪ The "Add current document" option, adds the currently active document to the menu.
The list is sorted alphabetically.

▪ "Validate list" checks whether each document on the menu is still residing in the specified location on your hard disk(s).
If a document can't be found, it is removed from the list.

▪ "Clear list" removes all files from the menu.

Opening Wave files from within other windows

You can also open files from Audio CD Montage windows. See the respective chapter for details.

Importing tracks from an audio CD

This is described in the section "Importing audio CD tracks into WaveLab Essential" on page 144.

Window overview and adjustments

Left audio channel
Overview
Right audio channel
Main view
Zoom controls

About the window sections

Main view

The lower waveform area is where the main action is going on. It is here that you select, apply tools, drag and drop, etc.

• There are both time and level rulers. These can be hidden and displayed (see the ruler and wave display speed menus). You can also set which units of time and level they show (see "Units of time and level" on page 28).

Overview

The overview is mainly used for navigating through long files. Since you can have different zoom factors in the two areas, the Overview can display the entire wave while the Main view only shows you a short portion.

The status bar

The status bar can be hidden. This is done on the Preferences–Environment tab. The status bar provides the following information:

Mouse cursor position/Level
File format details (see "Supported file formats" on page 49)
Wave cursor position/Selection length
Zoom factor
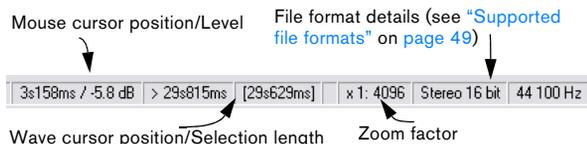
• The Wave and Mouse cursor time positions are shown using the same unit of time as in the rulers and dialog boxes.
• Level positions are always shown in dB.

• The "Selection length" field shows the length of the entire wave if nothing is selected, and the length of the selection (in brackets) if there is one. If you click this value with the right mouse button the window zooms in on the selected range.

Sizing, moving and minimizing

WaveLab Essential uses standard Windows techniques for resizing, moving, maximizing and minimizing windows. See your Windows documentation for details.

Maximizing width

Selecting the Maximize Width item on the View menu makes the window as big as the screen (or any other factor) permits.

The divider

The divider between the Main view and the Overview can be dragged to change the view sizes. See "Panes" on page 23 for details.

Setting the zoom factor

About zooming

Horizontal zoom

• When you zoom out all the way the entire file fits the window.
• When you zoom in as far as possible, each sample will occupy several pixels on the screen. This allows for single sample-accurate editing of waveforms.
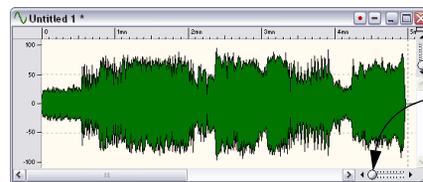
Zoom out all the way to see the entire wave.
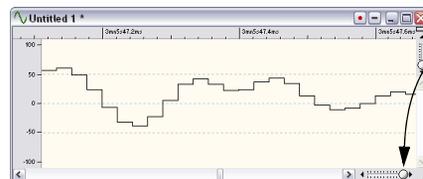
Zoom in until you can see each individual sample point, for very detailed editing.

Vertical zoom

▪ When you zoom out all the way, the complete height of the wave fits into the window. You can note this by checking the ruler on the left side.

▪ As you progressively zoom in, the display will only show you a smaller part of the total height. Exactly which section you see can be adjusted with the vertical scroll bars. Again, check the ruler to see which part of the waveform is currently shown in the display.

For example, to check the peaks of the waveform in great detail, zoom in and scroll all the way up and down.

Detailed view of waveform peaks
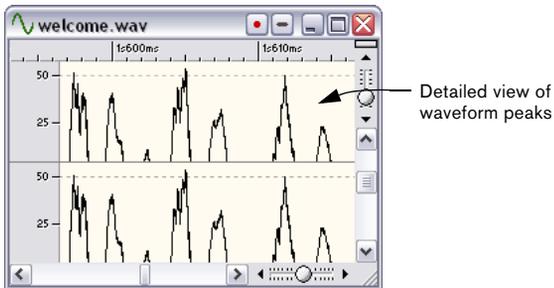
Using the zoom controls

Both the Main view and the Overview have horizontal and vertical zoom controls. These behave just like scroll bars:

Vertical and horizontal zoom controls
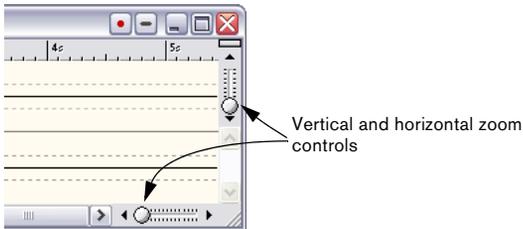
▪ You can drag the handle to any position.

▪ You can click anywhere on the scale to move the handle there.

▪ You can click on the arrows at either end to change the zoom factor in smaller steps.
Either way, the zoom factor on the status bar is updated continuously.

Using the Magnifying Glass tool

The Magnifying Glass tool is used to specify any section of the waveform and have it occupy the entire window.

The Magnifying Glass tool selected.

Selecting the tool

The Magnifying Glass tool can of course be selected from the tool box, but there are two other options:

▪ When you hold down [Ctrl] and move the pointer over the Main view, the Magnifying Glass is automatically selected.
This is just a momentary selection. As soon as you release [Ctrl] you get the previous tool back.

▪ When you move the pointer over the overview, it turns into the Magnifying Glass automatically.

Using the tool in the Main view

1. Press the mouse button with the pointer somewhere in the waveform.

2. Drag left or right to make up a box, and then release the button.
The area encompassed in the box now fills up the entire window.

Making a box like this…

…zooms in so that the "boxed" area will span the entire display.
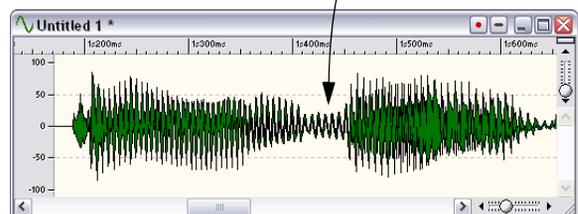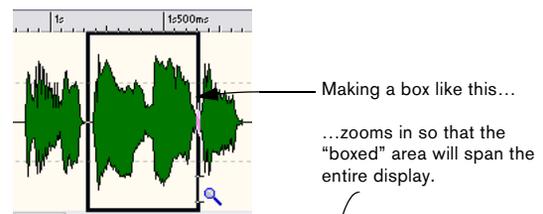
Using the tool in the Overview

The Magnifying Glass can be used in the Overview, just as in the Main view. However, even though you use the tool in the Overview, it is the Main view that gets zoomed.

You can for example use this as follows: keep the Overview zoomed out all the way and use the Magnifying Glass tool to display any section in the Main view.

Mouse zooming

Using the mouse, you can continuously change the zoom factor by dragging:

1. Position the mouse pointer over the ruler in the Main view.

2. Press the mouse button and drag up or down.
The zoom factor changes continuously.
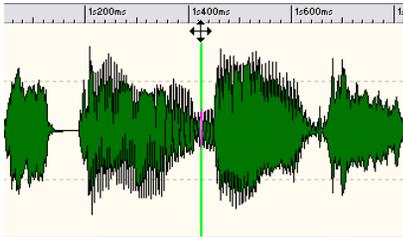
Dragging to change the zoom factor.

▪ To zoom with the cursor in a fixed center position, hold down [Shift].

▪ To make vertical zoom adjust automatically to the peaks in the waveform, hold down [Ctrl].

▪ To switch to scrolling, hold down [Alt].

This technique works very well in combination with the fact that you can move the song position by dragging horizontally in the ruler. By dragging in both directions, you can quickly find a certain position in the file and display it at the desired magnification factor.

Using mouse zooming to its full effect requires some practice – but it is worth the effort!

Setting sensitivity for mouse zooming

On the Preferences–Environment tab, there's a Sensitivity setting for mouse zooming. The higher the value, the less sensitive the function. You might want to raise this value when you first try out the function.

Using a wheel mouse

▪ If you hold down [Ctrl] and point at a waveform, the wheel zooms the view horizontally.

▪ If you hold down [Ctrl] and [Shift] and point at a waveform, the wheel zooms the view vertically.

Using the Zoom menu

The Zoom submenu can be invoked from two places:

▪ From the main view menu.

▪ By clicking on the Zoom factor on the status bar.

It provides the following options:

Option	Description
Restore last zoom	Brings back the last zoom factor set using this menu or the Magnifying Glass tool.
Overview	Zooms the view out as far as possible.
Zoom in 1:1	Zooms in so that one pixel (dot) on the screen represents one sample.
Microscope	Zooms in as far as possible, so that one sample occupies several pixels.
Zoom selection	Zooms the window so that the current selection (see "Selecting" on page 40) fills the entire display. You can also click the selection range (in brackets) with the right mouse button on the Status bar.
Custom…	This brings up a dialog that allows you to enter any zoom factor.
Optimize vertical zoom	This changes the vertical zoom factor so that the peaks are clearly visible. This adjustment is done according to the section of the wave currently visible in the window, not the whole file.

Using the keyboard

A quick way to zoom the active Wave window is to use the arrow keys on the computer keyboard: Press [arrow up] or [arrow down] to zoom in or out (respectively) horizontally. Hold down [Shift] and use the arrow keys to zoom in or out vertically.

There are also additional key commands for zooming – check the Key Commands chapter in the online documentation for a full list.

Using auto zoom for Overview

This setting, found on the Preferences–Wave edit tab, allows you to have the zoom factor automatically adjusted, so that it always shows the entire wave.

1. Activate "Auto zoom for overview" in the Preferences dialog.

2. Zoom out on the overview so that you see the entire wave.
Now, when you resize the window, the overview zoom factor is automatically adjusted so that the entire wave is always shown.

Which part of the file do I see?

In the overview, a striped line called the "range indicator" tells you which section of the file is currently displayed in the Main view.

Furthermore, the range indicator moves while you drag the scroll bar handle. This means that by observing the overview you can easily find positions in the Main view when scrolling, even though the Main view might be zoomed in very closely.
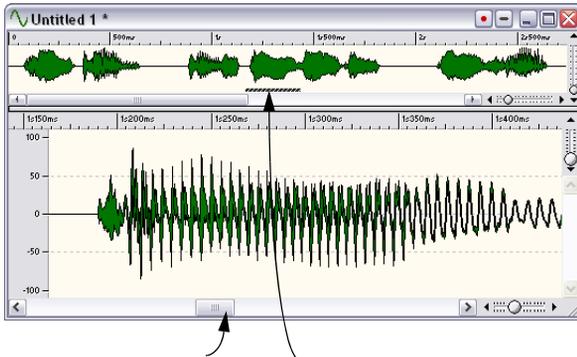
When you drag the scroll bar, the range indicator continuously shows you which part of the wave is shown in the Main view.

The range indicator can be displayed at the top or bottom of the overview, see "Range Indicator at top/bottom" on page 181.

Navigating through the file

There are several ways to move the view to a certain position in the file:

Scroll bars

This is the most evident option. These work exactly as in any other Windows program. Please note that the waveform scrolls while you drag the scroll bar handle.

Furthermore, WaveLab Essential uses proportional scroll bars, that is, the size of the handle shows you how much of the entire document you see. To get a feeling for how this works, drag the horizontal zoom control while observing the size of the scroll bar "handle".

Centering the view vertically

If you have zoomed in vertically, you might want to center the waveform view. To do so, double click in the level ruler.

Clicking in the Overview

If you click once in the Overview, the Main view is scrolled so that the position where you clicked is shown on the left side of the window.

Using the Scroll to menu

To bring up the Scroll to menu, either select "Scroll to" from the Main view menu, or right-click in the Overview or the Main view.
The difference between the methods is that the main menu always affects the Main view, whereas the speed menus affect either view depending on where you clicked.

The following options are available on the menu:

Option	Scrolls the view to
Start/End	The beginning or end of the wave.
Selection start/end	The beginning or end of the current selection, if any.
Cursor	The wave cursor.

Clicking on the status bar

If you click on the cursor position on the status bar, the view is scrolled so that the wave cursor becomes visible.

If you right-click instead, a dialog appears to let you specify a certain time position to scroll the view to.

Using a wheel mouse

If you move the wheel down the scroll bar will move forward and vice versa. You can also hold down the wheel and drag the view in either horizontal direction.

Snapshots

Snapshots store the Main view's "layout" – essentially two things:

▪ How a window is scrolled (which part of the wave you see).
▪ The window's zoom factor.

If you move back and forth between various positions in a file, or if you zoom in and out for detailed or overview editing, using snapshots will save you a lot of time. Snapshots are created and managed on the Wave Snapshots control bar, opened from the View menu.

To create a snapshot, you first set up the view as desired (by scrolling and/or zooming). Then click the camera icon on the Wave Snapshots control bar, followed by one of the numbers. The snapshot is now stored under that button. The fact that the snapshot is used is indicated by a red circle around the number.

This snapshot is "programmed".

You use the same procedure to "reprogram" existing snapshots.

To recall a stored snapshot, simply click on its number on the Wave Snapshots control bar.

⇨ Snapshots will be automatically saved with the individual file if "Save view settings in companion file" is activated in the Preferences–Wave edit tab, see "Saving view settings" on page 54.

Setting the ruler start position

Normally, the ruler is set so that the beginning of the file represents position "0". However, for editing purposes you may want to set the "0" position at some other point in the file. The picture sequence below shows you how to do this:

1. Set the wave cursor where you want the "0" position.
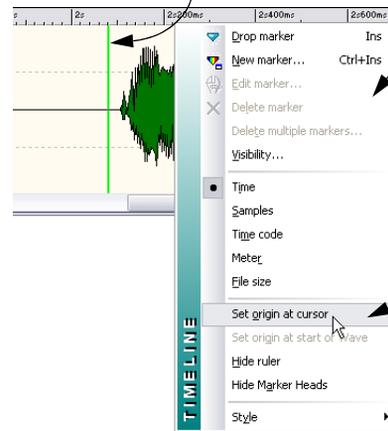
2. Right-click the ruler to bring up this pop-up menu.

3. Select "Set origin at cursor".
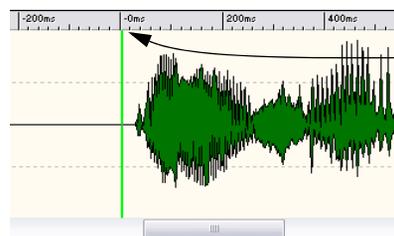
The ruler start position is moved.

Working with a meter based display

If the material on which you are working is tempo based, and you know the tempo, you can make the ruler show positions in meter format (bars, beats and ticks), to make it easier to find musically related cutting points:

1. Select Meter for the ruler time format, see "Units of time and level" on page 28.

2. Open the Preferences–Wave edit tab.

3. Set the Time Signature and Tempo to match the file.

4. Set the "Ticks per quarter note" setting to a number you feel comfortable with.
This might for example be the same value as that used by your MIDI sequencer.
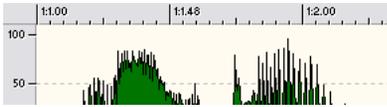
In this example, a meter ruler with 96 ticks per quarter note is used.

Setting the wave cursor position

Many operations, such as playback and selection depend on the current cursor position – for example, playback often starts at the cursor. The current cursor position is indicated by a vertical flashing line, both in the Main view and in the Overview. There are various ways to move the wave cursor:

▪ By clicking once somewhere in the Main view or on the time ruler.
If you have a selection, click on the ruler, since clicking in the waveform deselects all.

▪ By clicking and dragging in the time ruler.

▪ By using the Transport controls (see).

▪ By using the "Move cursor to" menu on the View menu.
The options on this are similar to the "Scroll to" menu, see above. There's also a "Position" option which allows you to specify any position in the format selected for dialogs and a "Snap Cursor" option described in the section .

▪ By using the Cursor keys:

These keys	Move the wave cursor
[←] and [→]	One "pixel" (screen dot) in either direction.
[Ctrl] + [←] and [→]	Twenty "pixels" in either direction.
[Home] and [End]	To the beginning and end of the wave.

▪ By using markers
Markers allow you to pre-define positions and move the cursor there, see .

Using magnetization

If you have "Magnetize bounds" on the Options menu activated and drag the cursor on the time ruler, it will "snap" to the following positions:

▪ The start and end of the entire wave.
▪ The start and end of the selection.
▪ Markers (see).

Using "Snap Cursor"

This function – which can be reached from the "Move cursor to" item on the View menu and from the main wave display speed menu – moves the cursor position automatically for you. There are two options:

▪ Move to the closest zero crossing (see) to the left of the cursor position.
To get this effect, make sure "Snap to time unit" is turned off on the Options menu.

▪ Move to the zero crossing closest to a major time unit.
For example, this can be to the zero crossing closest to a whole second on the time ruler. To get this effect, make sure "Snap to time unit" is activated on the Options menu.

In the last case, the "time unit" mentioned depends on which type of scale is selected for the ruler:

Option	Cursor moves to
Time	Closest whole second
Samples	Function not available
Time code	Closest frame
Meter	Closest whole beat

Selecting

Almost all types of editing and processing you perform in WaveLab Essential operate on the selection. There are numerous ways to make a selection:

By dragging or [Shift]-clicking

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.

You can also press [Shift] and click in the Wave window to make a selection between the position of the wave cursor and the click position.

Selecting in stereo files

If you are working on stereo material you can select either channel or both so that you can apply an operation to one channel only or to the entire stereo material. Which channel will be selected when you drag or [Shift]-click depends on where you position the mouse pointer, as indicated by the pointer shape:

Position	Pointer Shape	Description
Upper half of left channel	I^{L}	Only the left channel will be selected.
Middle area	I	Both channels will be selected.
Lower half of right channel	I_R	Only the right channel will be selected.

⇨ To select a single channel by [Shift]-clicking, you need to set the wave cursor in only one channel (by clicking in the upper or lower part of the wave) and then [Shift]-click in the same channel.

Switching the selection between channels

If you have made a selection, you can move this to the other channel or extend it to both channels by selecting the corresponding items from the Select submenu (on the Edit menu). Or, you can press [Tab] to move the selection between channels (if there is no selection, [Tab] moves the cursor between channels).

Selection shortcuts

There are a number of ways to quickly make certain selections (for many options there is more than one method):

To select…	You can…
The area between two consecutive markers	• Double click between them. • Depending on the type of marker, use one of the last two options on the Select menu (on the Edit menu).
The area between any two markers	• Double click between two markers, keep the mouse button pressed and drag left or right.

To select…	You can…
The entire waveform	• If there are no markers, double click. • Triple click. • Press [Ctrl]-[A]. • Select "All" from the Select menu on the Edit menu.
From the cursor to the following or previous marker	• Select "From cursor to previous/next edge" from the Select menu (on the Edit menu). • Hold down [Shift] and double click between the cursor and the marker.
From the cursor to the beginning or end of the file	• Select "From cursor to start/end of file" from the Select submenu (on the Edit menu). • Hold down [Shift] and double click to the left/right of the cursor position. • Press [Shift]+[Home] or [Shift]+[End].
All data between two start/end loop or region markers	• Hold down [Shift] and double click on either marker head. • Click between the start/end region markers and select the type (loop or generic region) from the Select menu on the Edit menu.
Half or double the current selection length	• Select "Halve selection length" or "Double selection length" from the Select menu on the Edit menu. These options are useful if you are working with measures.
What was previously selected	• Select "Toggle" from the Select menu on the Edit menu. • Press [Esc].

Selecting in the Overview

You can select in the Overview, just as in the Main view. To get the selection tool in the overview, hold down [Ctrl] and move the pointer into the overview.

Extending and shrinking the selection

Very often you will have made a selection only to find it isn't completely perfect. In this case you can extend or shrink the selection. In fact you can very well use this as a method: make a coarse selection with a lower zoom factor, then zoom in and adjust the start and end in more detail.

By dragging

1. Move the mouse pointer to the beginning or end of the selection.
It turns into a double arrow.

2. Press the mouse button and drag left/right.
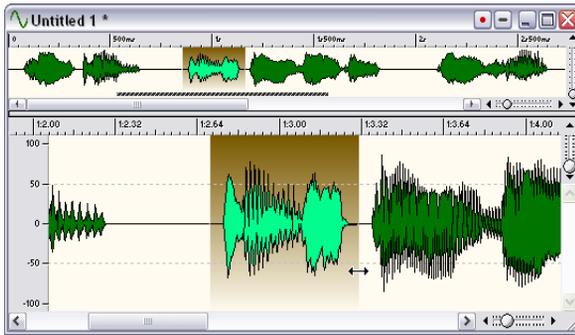
Dragging the end of the selection.

Using [Shift]

▪ Hold down [Shift] and click outside (extend) or inside (shrink) the current selection.

If you click inside the first half of the selection, this will change the start point, if you click inside the latter half, this will change the end point.

Using the cursor keys

▪ If you hold down [Shift] and press the [←] or [→] keys, the start or end of the selection is moved one pixel (screen dot) to the left/right. If you also hold down [Ctrl] it is moved twenty pixels instead.
▪ If you hold down [Shift] and press [Page Up]/[Page Down], it will also move 20 pixels.
▪ If you hold down [Shift] and press the [Home]/[End] keys, the selection will extend from the current cursor position to the start/end of the file respectively.

Which end of the selection you change depends on which end of the selection the cursor is closest to.

Exactly how much one pixel represents depends on the zoom factor. If for example the zoom factor is "x1:64", the cursor keys alone move 64 samples, and together with [Ctrl] they move 1280 samples.

Using the Select menu

The Select submenu (on the Edit menu) has a number of options for extending the selection to various points in the waveform.

Moving the selection

If the selection is the right length, but at the wrong position, you can move it:

1. Hold down [Ctrl] and [Shift].

2. Point at the selection and drag left/right.

Snapping to zero crossings

About zero crossings

If you cut out a portion of a wave and paste it in somewhere else, chances are there will be a discontinuity where the two waves are joined. See the example below. This discontinuity will result in a transient in the wave when it is played back, which is perceived as a "click" or "bump" in the sound.

At this point, there will be a click in the sound, due to the discontinuity in the splice.
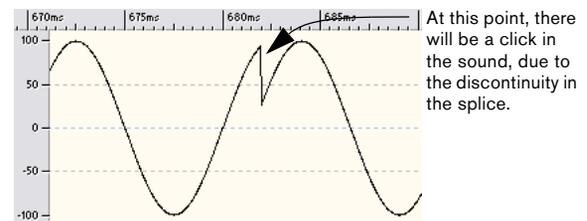
To avoid this you need to make the splice at a zero crossing.

A zero crossing is – a point where the wave crosses the zero level axis, the point where the wave is considered to have "zero level".

Furthermore we recommend that joins are made with the splice points of the two waves heading from opposite directions to the zero crossing. That is, one should be on its way up (below the zero level axis), and the other should be on its way down (above the zero level axis).

WaveLab Essential can help!

If you wish, WaveLab Essential can automatically search for zero crossings, and extend the selection "outwards" (make it bigger at both ends) so that it begins and ends at a zero crossing. Normally this will not be noted in the editing precision (since there are usually hundreds or thousands of zero crossings per second), but it will help avoid "clicks" and "pops" and "bumps".

But just making the selection start and end at zero crossings is not enough. When you actually perform the editing operation (cut and paste or dragging, for example) you need to make sure the material is inserted at a zero crossing. See "By dragging" on page 44.

Setting up zero crossing detection

1. Pull down the Options menu and activate "Snap to zero crossing".

2. Select Preferences from the Options menu.

3. Click on the Wave edit tab.

4. Fill out the "Snap to Zero crossing" options.

Checking the effect of Snap to Zero crossing

1. Make sure that "Off at high zoom factor" is not activated and zoom in until the zoom factor is 1:1.

2. Make a selection and observe how it is extended left and right.

If you make a selection like this…

…it is automatically extended at both ends, to the closest zero crossings.
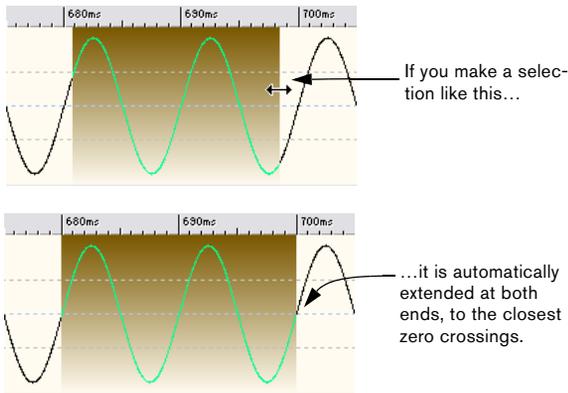
Snapping to time units

When "Snap to time units" is activated on the Options menu, selections will automatically be extended to the left and right so that they start and end at whole time units (and also at the closest zero crossing, if that option is activated, see above). This allows you to easily make selections spanning a certain number of seconds for example.

⚠ Note that this means that you must drag across a certain "time area" (for example more than half a second) to get any selection at all.

The "time unit" mentioned depends on which type of scale is selected for the ruler:

Option	Cursor moves to
Time	Closest whole second
Samples	Function not available
Time code	Closest frame
Meter	Closest whole beat
File size	Function not available

Using Magnetization

If you have "Magnetize bounds" on the Options menu activated and create or adjust a selection, it will "snap" to the following positions (or to the zero crossing closest to the position, see above):

- The wave cursor.
- The start and end of the entire wave.
- Markers (see "What are markers for?" on page 98).

Level selections

For some of WaveLab Essential's level processing functions, it is useful to make a selection not only in time, but in level.

By dragging

1. Make a regular "time" selection.

2. Hold down [Shift].

3. Move the mouse to the top or bottom of the selection box.
The pointer changes into a vertical double arrow.

4. Press the mouse button and drag up/down.

Make a regular selection, move the pointer to its top or bottom and hold down [Shift]…

…drag up/down, and release the mouse button.
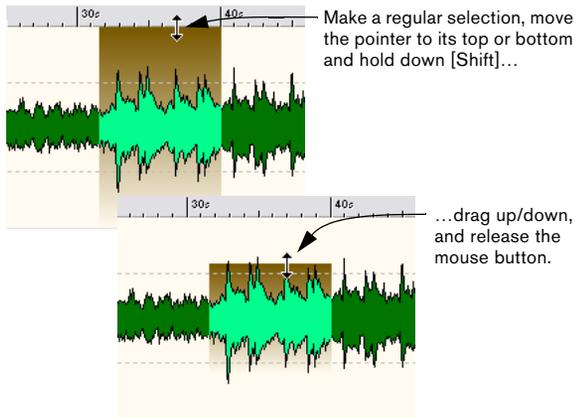
If you then extend the selection time-wise, the level selection still remains the same.

Extend to peaks

To automatically set the level selection to the highest peak in the current selection, make a time selection as desired and select "Extend to peaks" from the Select submenu on the Edit menu.

Basic editing commands

Mono/stereo

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

Copying audio

The following operations allow you to make copies of sections of audio within the same file or from one file to another.

⚠ Please note that any existing markers (see "What are markers for?" on page 98) in the source audio section also will be copied.

By dragging

1. Decide whether you want to use "Snap to Zero crossing" (activated from the Options menu) for this operation. When this is activated, both the selection start and end as well as the drop position will always occur at zero crossings. See "Snapping to zero crossings" on page 42 for details.

2. Make a selection.

3. Point at the selection, press the mouse button and hold it down.

4. Drag to a position outside the selection (in the same file) or to another Wave window. When you have the cursor over a valid area, the pointer will turn into a single or double waveform (see below). The status bar will show the exact position at which the selection will be inserted.

⚠ Make sure you don't drop on a selection in the destination window, or you will perform a crossfade, see "Crossfade" on page 73.

5. Release the mouse button.

The selection is inserted at the indicated point. The audio that previously began at that point is moved forward so that it is now played after the inserted section.
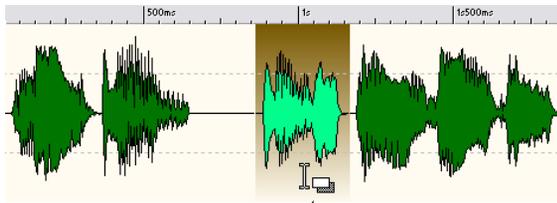
Make a selection, position the mouse pointer over it…
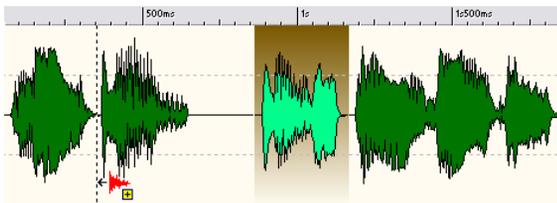
…drag and drop…
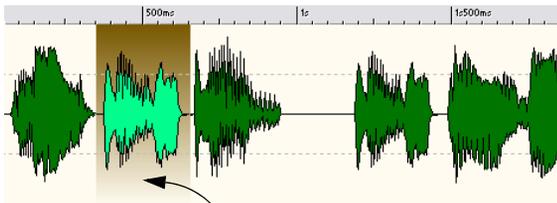
…the dragged section is inserted at the drop point.

Using "Magnetize Bounds"

If you have "Magnetize bounds" on the Options menu activated when you drag, the cursor will "snap" to the following positions:

- The wave cursor.
- The start and end of the entire wave.
- Markers (see "What are markers for?" on page 98).

Stereo/mono "conflicts"

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 position in the destination window at which the drop is made. This is indicated by the cursor shape (see "Selecting in stereo files" on page 41). The selection can be inserted into only one of the channels, or the same material can be 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 will play back at the wrong pitch (speed). The program will warn you if this is about to happen.

While mixing sample rates can sometimes be used as an effect, it is most often not desired. There are two ways to get around this:

- Sample rate convert the source file to the same rate as the destination file before doing the editing.
You might go back later and undo this conversion if necessary.
- Sample rate convert the destination file to the same rate as the source file before adding the audio to it.
Please note that you are then partly "stuck" with this new sample rate, since rate converting back and forth too many times is not recommended, see "Convert sample rate" on page 79.

By using Copy and Paste

1. Make a selection.

2. Select Copy from the Edit menu, press [Ctrl]-[C] or drag the selection onto the Copy icon on the Standard Commands control bar.

3. If you want to insert the audio, click once at some position in the same file or in another file.
The wave cursor appears at that point.

4. If you would rather replace a section of audio, select it.
In this case, the position of the cursor is of no relevance.

5. Select Paste from the Edit menu or press [Ctrl]-[V].
The material you copied is either inserted at the indicated point (no selection) or it replaces the current selection (if you have a selection).
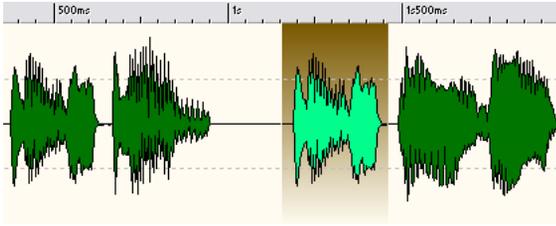
Make a selection, and select Copy…
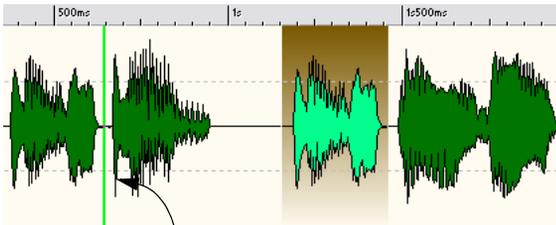
…click for an insertion point…
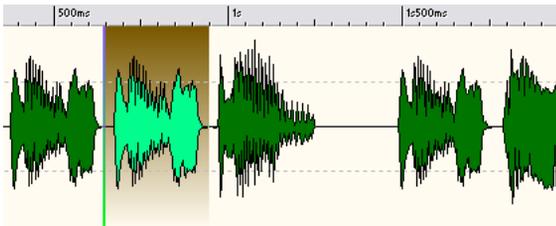
…and select Paste. The copied section is inserted at the cursor position.

Stereo/mono "conflicts"

Stereo/mono is handled as follows when you paste:

Copied section	Paste wave	Action
Stereo	Stereo	If the wave cursor extends across both channels of the destination file, the material will be inserted into both channels.
Stereo	Stereo	If the wave cursor is only in one channel, the Paste will only happen in that channel. Material from the left channel will be pasted in the left channel and vice versa.

Copied section	Paste wave	Action
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 Paste can either happen in one of the channels, or the same material can be inserted into both channels.

Moving audio

The following commands allow you to rearrange the "order" of the audio in a file.

By dragging

This is just like drag copying (see above). The only difference is that you hold down [Alt] and [Ctrl] while dragging to move audio. The material you dragged is removed from its original position and inserted where you drop it.

By using Cut and Paste

This is just like using Copy and Paste (you can for example drag the selection to the Cut symbol on the Standard Commands control bar – see above). The only difference is that when you select Cut, the audio is removed from the window. The material after the cut section will be moved to fill out the gap.

⚠ Please note that 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.

By nudging

The Nudge tools

The Nudge left/right tools in the Toolbox (also known as "Kicker tools") can be used to move the audio in small steps within a file.

1. Make a selection.

2. Click on the selection with one of the Nudge tools (depending on the direction in which you want to move it).
The audio is moved one pixel (screen dot). Exactly how much this is depends on how far you are zoomed in. If for example the status bar says x1:256, the selection will be moved 256 samples.

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Editing in the Wave window

⇨ The moved section "overwrites" the audio originally at that position.
For example, when you nudge a selection to the right, silence will appear before the nudged section while audio to the right will be replaced by the nudged section. This is different from moving by dragging.

⇨ If you nudge many times in a row and then undo, all the moves are undone in one go.

Repeating an audio selection

To repeat a section of audio, proceed as follows:

1. Make a selection, select Cut or Copy and place a new insertion point, just as when performing a normal Cut or Copy (see above).

2. Select "Multiple copies…" from the Paste Special submenu on the Edit menu.

3. In the dialog that appears, enter the number of copies you desire (up to 1000), and click OK.

Other Paste operations

On the Paste Special menu you will find some additional options:

Overwrite

This will overwrite data in the destination file, rather than moving data to make room for the inserted audio. The actual amount that will be 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 data will be overwritten.
If there is a selection, the pasted data will replace that selection, just as when making a regular paste.

Append

This will add the pasted audio after the end of the file, just as if you had placed the wave cursor there and selected Paste.

Prepend

This will add the pasted audio before the beginning of the file.

Mix

This will blend the two files into each other, starting at the selection (if you have one) or at the cursor position (if there is no selection).

▪ When you select the Paste Special – Mix option, a dialog appears, allowing you to specify the desired gain for the audio on the clipboard and at the destination, respectively.
A setting of 0 dB means the level will be unaffected.

▪ All the data on the clipboard is always mixed in, regardless of the length of the selection.
It doesn't matter whether or not you have a selection in the destination file when you paste.

Deleting selections

Delete

You can use the following methods to delete a selection of audio:

▪ Select Delete from the Edit menu.
▪ Click the Delete icon on the Standard Commands control bar.
▪ Press [Backspace] or [Delete].
▪ Drag the selection to the Delete icon on the Standard Commands control bar.

Trim

To remove all the audio except the current selection, select Trim from the Edit menu (or press [Ctrl]-[Backspace]).

Silence

The Silence function offers two different methods for inserting silence:

▪ You can "insert" silence into a section, i.e. to space two sections further apart.
▪ Or, you can select to "replace" a selection or time range with silence.

Insert silence

If you intend to insert silence, proceed as follows:

1. Make a selection that encompasses the range where you wish to insert the silence.

2. Select Insert Silence from the Edit menu or press [Ctrl]+[Shift]-[Space].

Replace selection

If you intend to replace a specific range with silence, proceed as follows:

1. Make a selection that encompasses the range you wish to replace with silence.

2. Select Silence from the Edit menu or press [Ctrl]-[Space].

There are four ways to replace a section of audio with silence:

▪ Select it and select Silence from the Edit menu.
▪ Select it and click the Silence icon on the Standard Commands control bar.
▪ Select it and press [Ctrl]-[Space].
▪ Select it and drag the selection to the Silence icon on the Standard Commands control bar.

Turning selections into new documents

If you want to turn a section of wave into a new document, proceed as follows.

1. Make a selection.

2. Drag the selection out of the window and onto an empty section of the WaveLab Essential application window.
The cursor turns into a "new document" icon.

3. Release the mouse button.
The selection appears in a new window. You can also use this function to create stereo waves out of mono waves, see below.

Converting from mono to stereo

You may convert a mono file into a stereo file that contains the same material in both channels, for example for further processing into "real" stereo.

1. Make a selection.

2. Drag the selection out to the WaveLab Essential "desktop".

3. When the pointer is outside the window, hold down [Ctrl] and release the mouse button.

Converting from stereo to mono

You may mix the two channels in a stereo file into a mono document.

This can be done in two ways. Which method to use mainly depends on whether you want to convert the entire file or just a selection:

By dragging

1. Make a stereo selection.

2. Drag the selection out to the WaveLab Essential "desktop".

3. When the pointer is outside the window, hold down [Ctrl] and release the mouse button.

By saving (converting an entire file)

1. Open the stereo file.

2. Select "Save as" from the File menu and click the Properties button at the bottom of the dialog to open the "Audio File Format" dialog.

3. Change the Channels setting to the "Mono (Mix)" option, but leave the other settings as they are.
You can of course change the other settings too, but this will have other effects, see "Saving in another format (Save as…)" on page 51.

⇨ The other two "Mono (Mix)" options will also convert a stereo file to mono, but the amplitude of the resulting file will be attenuated by 3 or 6 dB respectively.
Since the mixing of the two channels when converting a stereo file to mono might often result in the amplitude increasing to a point where clipping occurs, these two options can be useful to remedy such a situation.

4. Click OK and save the file.

5. Open the file you just saved.

Swapping channels in a stereo file

You may move the material in the left channel to the right channel, and vice versa:

1. Make a selection across both channels.
Only the material in the selected section will be swapped.

2. Select "Swap channels" from the Edit menu.

Waveform restoration with the Pencil tool

The Pencil tool allows you to redraw the waveform directly in the Wave window. This can be used to quickly repair waveform errors.
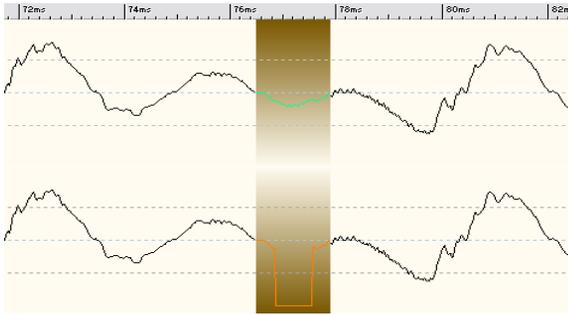
This error in the right channel (red waveform) can be corrected quickly by using the Pencil tool.

▪ The Pencil tool can be used if the Zoom resolution is set to at least 1:8 (one pixel on the screen equals 8 samples) or a higher resolution.

Resolution values can be set in the Zoom pop-up menu. You can open it by clicking on the Zoom factor field in the Status bar, located at WaveLab Essential's bottom window rim.

Click here to open the Zoom pop-up menu.
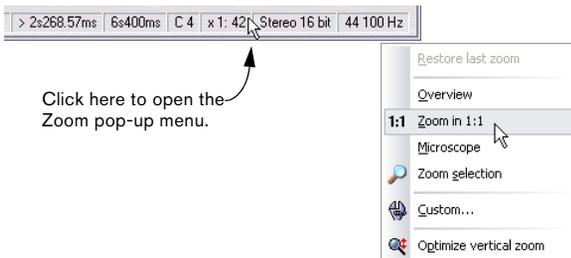
▪ Select the Pencil tool from the Toolbox and redraw the waveform.

If you wish to redraw the waveform of both channels at once, press [Shift] on your computer keyboard during the drawing process.

File handling in Wave windows

⚠ This section describes file handling in the Wave window (i.e. handling audio files). File handling of other document types (e.g. Audio CD Montages) is described in the respective chapter.

Supported file formats

WaveLab Essential can open and save audio files in a number of file formats. The table below gives you some basic information about the various formats available (note that additional file formats may have been added after this document was written).

▪ The Format column also lists the typical file name extensions for each format.

▪ All sample rates are supported, for all file formats.

▪ All file types can handle mono and stereo.

Format	Description
Wave (.wav)	The most common file format on the PC platform. If you plan to load the files into any other PC program, Wave files are a safe bet. 8, 16, 20, 24 bit and 32 bit (float) resolutions are supported.
AIFF (.aif, .aiff, .snd)	Audio Interchange File Format, a standard defined by Apple Computers Inc. 8, 16, 20, or 24 bit resolutions are supported.
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 Essential can both open and save files in this format. - Note that when you open an MPEG compressed file in WaveLab Essential, the file is converted to a temporary wave file that is much larger than the original compressed file. Therefore, make sure that you have enough free space on your hard disk when opening MPEG compressed files. - When you save, the temporary wave file will be converted back to MP3, so from a user perspective the file handling is transparent apart from the size difference mentioned above.
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 as with MP3 files.
Original Sound Quality (.osq)	This is WaveLab Essential's proprietary lossless compressed audio format. By saving files in this format, you can save considerable disk space without compromising audio quality. See "About saving OSQ files" on page 51.
Sound Designer II (.sd2)	This audio file format is used by Digidesign applications (such as Pro Tools). 8, 16 or 24 bit resolutions supported.

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. Files in this format can often be found on the Internet. 8, 16 or 24 bit resolutions are supported.
ADPCM – Microsoft/ Dialogic (.vox)	This is a format commonly used for games and telephony applications that offers a lower bit rate than linear PCM and thus requires less storage space/ bandwidth.
Ogg Vorbis (.ogg)	Ogg Vorbis is a relatively new compressed file format that is open and patent-free and offers 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 Essential, it will be decoded and opened as an audio file. Note that these files are not compressed in any way, so they can get very large! Therefore, avoid creating and opening extremely large .txt files. Also note that when using 32 bit float files, the .txt format is not 100% lossless – i.e. information may be lost! 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 Essential lets you import/export audio in this format, provided that you have Windows Media Player 9 (or later) installed on your system.
Ensoniq Paris (.paf)	Used by the Ensoniq Paris™ system (16 bit resolution).

About 20-, 24- and 32-bit float files

You do not need a 20- or 24-bit audio card to take advantage of the fact that WaveLab Essential can handle 20- and 24-bit audio files. Any processing or editing performed on the files is always done at full resolution, even if your card doesn't support the full resolution. For playback, WaveLab Essential automatically adapts to whatever card you have installed.

About temporary files

As you work in WaveLab Essential, temporary files (file name extension .$$$) used for Undo, etc. are created on your hard disk, see "Temporary files" on page 15.

You can decide whether these files should be in 16-, 24- or 32 bit format. This is done on the Preferences–File tab.

The higher this value, the better the quality of the temporary file. However, 32-bit files are also twice as big as 16-bit files and take longer to process.

▪ If you ever plan to export your files in 24-bit or 32-bit format, use this format or a better one (higher number) for your temporary files as well.
▪ Use 32-bit if you want to create files with levels exceeding 0dB.
▪ Even if you only work with 16-bit files, selecting 24-bit for your temporary files can improve audio quality slightly.
▪ For less critical applications where speed and disk space are crucial factors, use 16-bit temporary files.

Opening files

The various methods for opening an audio file in a Wave window are described in the section "Opening Waves" on page 33. Importing CD tracks from an audio CD is described in the section "Importing tracks from an audio CD" on page 34.

Save and Save as – General information

⇨ When you save a new document for the first time, it doesn't matter whether you select Save or Save as.
The "Save as" dialog will appear, since you need to specify a file format, folder, and file name.

⇨ Once a file has been saved, you can continue to edit it and then select Save from the File menu, or press [Ctrl]-[S], to update the file and make the changes permanent.

⇨ If you want to specify a new name, location and/or file format, you should select Save As from the File menu.
See "Saving in another format (Save as…)" on page 51.

⇨ All save operations except "Save a Copy" clear the Undo buffers, which means that after saving you cannot undo or redo.

Automatic backups

For all save operations except a regular "Save", backups are created automatically if a file with the same name already exists.

If for example you select Save As and specify a file name already used in that folder, the program will ask you if you want to back up the existing file first. If you click Yes, the first letter in the file's extension will be changed to "~". "AIF" for example, will become "~IF".

Saving in another format (Save as…)

If you want to change the format (file format, sampling frequency, bit resolution and stereo/mono status) when saving, proceed as follows:

1. Select Save as… on the File menu.

2. A regular file dialog appears where you can specify a file name, folder and a file format (see "Supported file formats" on page 49).

3. If you wish to change other attributes of the file (e.g. mono/stereo status, bit resolution or sample rate), click the button at the bottom of the dialog.
This opens the Audio File Format dialog where you can specify the desired properties of the converted file.
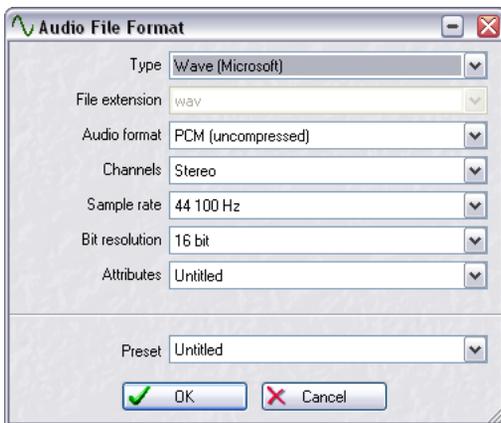
The Audio File Format dialog

4. After making the desired settings, close the Audio File Format dialog and click Save.
A new file is created. The original file is not affected by the operation.

If you change the sample rate, bit resolution and number of channels, the following operations are performed:

Property	Action
Sample Rate	If a new sample rate is specified, a sample rate conversion will be performed (see "Convert sample rate" on page 79).
Bit Resolution	If a different bit resolution is specified, the file is either "truncated" down (e.g. to 8 bits), or "padded" up (e.g. to 24 bits). If you are converting to a lower bit resolution, you should consider adding dithering – see "The Dithering pane" on page 88.
Mono/Stereo	If the file is converted from mono to stereo, the same material will appear in both channels. If the conversion is from stereo to mono, you can either select to only save the left or right channel, or create a mix of the two channels.

▪ If you only wish to change the bit resolution you can do this directly in the "Audio Properties" dialog (see "Editing audio properties" on page 55) instead and perform a standard save.

▪ For high quality mastering purposes, it is not recommended to change the sample rate and number of channels this way, but instead use plug-ins and functions of the Master Section (see "The Effects pane" on page 85).

▪ For the available compressed file formats (MP3, MP2, WMA and Ogg Vorbis), you can select "Edit…" from both the Encoding and Attributes pop-up menus in the Audio File Format dialog.
This opens additional settings dialogs, where you can specify various options such as bit rate and compression method, and also enter text tags for the file.

⇨ It is also possible to convert several files to another format in one go (batch encoding).
See "Batch file encoding" on page 95.

⇨ Note that you can also save as WMA files, MP3 files and MP2 files via the "Encode to…" options on the Save Special submenu.

About saving OSQ files

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

▪ You can save any audio file as an OSQ file by using the Save As function.
The audio will play back exactly the same as in the original, uncompressed file.

▪ Similarly, if you open an OSQ file in WaveLab Essential and save it as an uncompressed audio file in its original format (e.g. WAV), the audio will play back exactly the same.

▪ You can also convert several files to OSQ format in a batch. See .

Save selection as

This is a menu item on the Save Special submenu. It works exactly as Save As, except that only the current selection is saved as a new file.

Save a Copy

This item, also on the Save Special submenu, allows you to save a copy of the file, in its current state, without affecting the original. A regular file dialog is used as with Save As.

Save left/right channel as

These two menu items are also located on the Save Special submenu. They allow you to save each channel individually, into a separate file. A regular file dialog is used as with Save As.

This menu command is used when you have been editing "dual mono" files for example, and wish to save the channels into separate files.

Save All
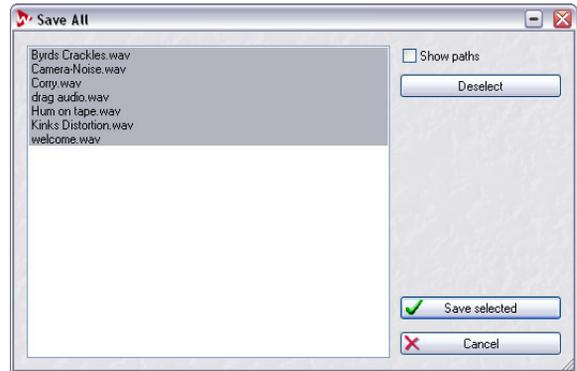
The Save All dialog

This menu item brings up a dialog that allows you to save some or all of the open documents, in one go.

The list displays all open documents that currently contain unsaved changes. The "Show paths" check box allows you to display/hide the complete file paths.

1. Select /deselect files by clicking on them or by using the Select/Deselect button.
Only the selected files will be saved.

2. Click "Save selected".

Revert to saved

This menu option, on the File menu, allows you to revert the file back to its last saved state (actually, the last saved version of the file is loaded from disk). This can be used as a kind of "super undo" which undoes all the changes made to the file since it was last saved.

1. Select "Revert to saved" from the File menu.

2. Click "Yes" in the warning dialog that appears.
The file is restored to its previously saved state.

Renaming files and documents (Rename)

The Rename function is available from most WaveLab Essential documents, not just Wave windows. The function is however of particular importance when renaming audio files. If you rename an audio file outside WaveLab Essential, and this file is referenced to an Audio CD Montage or Data CD/DVD project, the reference will be lost the next time you open the document that references this file.

But WaveLab Essential allows you to handle file renaming in an intelligent way so that all the documents that reference this renamed file are automatically updated! This works as follows:

⇨ All open documents that reference the file or document to be renamed will be automatically updated to reference the new name.

E.g. if you rename an audio file named "India" to "Sitar", all currently open documents that reference the file "India" will be updated to reference the file as "Sitar"!

For audio files, peak and marker files will also be renamed accordingly.

• Documents that use audio file references are Audio CD Montages and Data CD/DVD projects.

• WaveLab Essential documents can also refer to the names of other documents, e.g. a Data CD/DVD project will contain references to Audio CD Montages.

This will work in the same way – if the document/project that references the document to be renamed is open, the references will be updated.

To rename a file or document proceed as follows:

1. Select the audio file/document to be renamed.

Make sure all documents that reference this particular file are open. This is not mandatory, but if they aren't, the file references will not be updated.

2. Select "Rename…" from the File menu, or press [F2].

The Rename dialog opens.
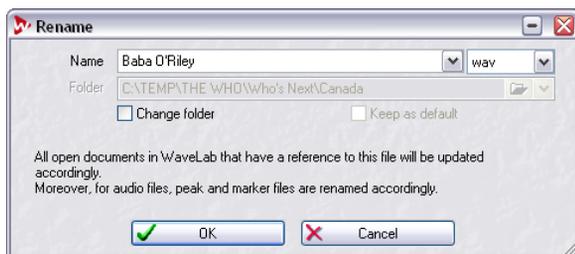
The dialog contains the following items:

Item	Description
Name text field	This is where you type in the new name.
Change folder	It is also possible to change the folder location of the file when renaming. If Change folder is ticked, you can navigate to a new location. Note that this is only possible within the same drive partition.
Keep as default path	If you check this option, the same path will be selected the next time you open the dialog. This is useful if you need to move several files successively.
Extension pop-up	The file extension can be changed, but only if corresponds to the original file format (certain file formats can have different possible file extensions, e.g. "aif" or "snd").

Deleting files and documents

It is possible to delete whole files or documents from within WaveLab Essential. This function is available from the File menu and will delete the currently selected file or document from disk. Make sure the file or document you wish to delete is in focus.

1. Select "Delete…" from the File menu.

A dialog appears as a warning, allowing you to cancel or proceed with the operation.
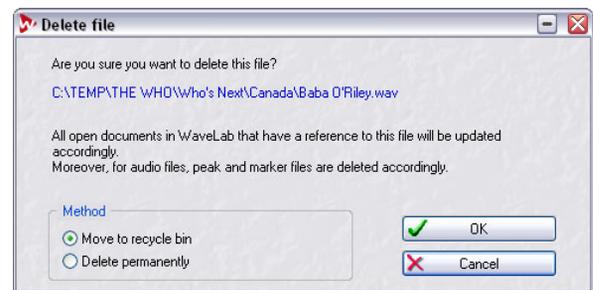
2. Select whether to permanently delete the file or to move it to the Recycle bin by clicking the appropriate button in the Method section of the dialog.

Only select to permanently delete if you are absolutely certain – you won't be able to retrieve the file!

• Any Data CD/DVD project that is open in WaveLab Essential and has a reference to this file will be updated accordingly.

The file will get removed from the Data CD/DVD project(s).

▪ However, if a file is being referenced by a currently open Audio CD Montage, you will not be able to delete the file and a warning will appear.

In addition, you will not be able to delete the file in the following circumstances:

▪ If it is currently copied to the clipboard.
▪ If a part of it is has been pasted into another file that is open.
▪ If the file is open in another application.

▪ Deleting an audio file will also automatically delete its peak and marker file names.

Saving view settings

WaveLab Essential can automatically save all settings associated with a Wave file. This includes:

▪ Window size and position.
▪ Zooming.
▪ Scroll position.
▪ Snapshots.

The view setting information is stored in a companion file (extension ".mem") either together with your audio files or in a separate folder.

▪ This feature is activated/deactivated (on by default) in the Preferences–Wave edit tab ("Save view settings in companion file").

If the feature is activated and you save a file, the settings will be recreated exactly as you had them when later reloading the same file!

Compression encoded export formats

Apart from the formats available in the Save As dialog and the Save special encode MP3/MP2/WMA options, Wave-Lab Essential allows you to export files in a number of compression encoded audio formats, suitable for multimedia, web publishing, etc. (see "Supported file formats" on page 49). The basic functionality for this is part of a software technology called Microsoft ACM (Audio Compression Manager) which is included with Microsoft Media Tools.

The number of formats you can export, depends on which ACM drivers you have installed on your computer.

For more information, see www.microsoft.com/windows/windowsmedia.

About "lossy" and "non-lossy" compression

There are two types of compression methods. When you use a "non-lossy" method (like saving as an OSQ file – see above), all information about the file is preserved, which means that when you decompress the file, you get it back exactly as it was.

However, most audio compression techniques are "lossy". This means that once the file has been compressed, some information has been lost. This type of compression always results in some kind of audio degradation, albeit in many cases a very small one.

WaveLab Essential can also import any file supported by ACM, provided that the correct ACM drivers are installed.

⚠ If you need audio file compression with uncompromised audio quality, you should use the OSQ (Original Sound Quality) lossless audio compression format instead (see "About saving OSQ files" on page 51).

Exporting to encoded formats

The menu item "Encode (ACM)" uses the Microsoft Media-Tools technology to convert the file to one of a number of compressed formats.

1. Select "Encode (ACM)…" from the Save Special submenu.
The dialog that appears is a MediaTools dialog, not a WaveLab Essential dialog.

2. Select one of the formats from the pop-up in the middle and chose a setting for it from the pop-up below.
The dialog also provides possibilities for creating "presets" of formats and settings, using the upper row of controls.

⚠ The options which are available depend on the original format of the file, its sample rate, the number of channels, etc. However, we have noted problems with some ACM drivers. Even though a certain format can be selected, an error message appears when you try to save the file. If this happens, please use another encoding method.

3. Click OK.
A regular file dialog appears.

4. Specify a name and location for the file, as with any Save operation.

Note: When you export to compressed files using the "En-code (ACM)" option, the file that is created will technically be a Wave file, regardless of the compression format (the files will have the extension "wav"). But instead of the regular "linear" audio data that usually makes up a wave file, a special audio data "chunk" is included that contains the compressed audio.

This is normally not a problem, but something to be aware of when planning for usage of files in other programs and on other computer platforms.

Editing audio properties and file attributes

Editing audio properties

Each audio file has a certain set of properties, that is, information about the sample rate at which it was recorded, what the bit resolution is, etc. The "Audio Properties" dialog allows you to change that information.

There are two ways to bring up this dialog:

▪ Select "Audio Properties" from the Edit menu.

▪ Click on the properties information field, on the status bar.

The Audio Properties dialog

About changing the values

Changing the values in this dialog does not process the file in any way, unlike Convert File (see "Saving in another format (Save as…)" on page 51). However, the following rules apply:

▪ If you change the sample rate, the file will play back at the wrong pitch.

▪ If you change the bit resolution the file will be converted to the new resolution the next time you save it.

⚠ There is no Undo for this item. If you save with a lower bit resolution, the file is permanently converted.

File attributes

If you select this option on the Edit menu, a dialog opens in which you can specify various information about the wave file.
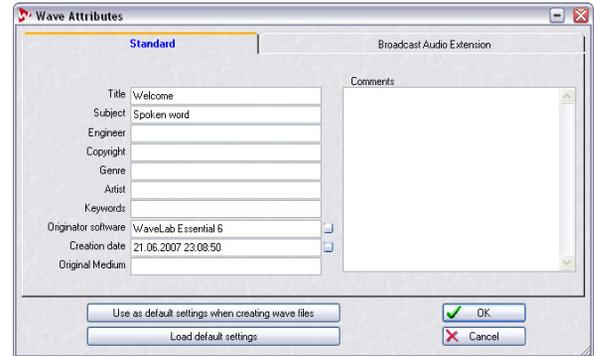
The Wave Attributes dialog

You can enter information on either the Standard tab or the Broadcast Audio Extension tab. The information you enter here is added to the header of the file, and thereby labels it as either a Standard wave file or a Broadcast wave file. A Broadcast wave file is essentially the same thing as a Standard wave file, the difference is what information the file headers can contain.

▪ On the Standard tab in the dialog, you can enter information that will be displayed for instance when viewing the file's properties in the Windows explorer.

⇨ Note that you can instruct WaveLab Essential to automatically fill out the text fields for "Originator software" (WaveLab Essential) and "Creation Date" (the current), by clicking the small buttons to the right of the fields.

▪ On the Broadcast Audio Extension tab you can also enter information to be embedded in the file, such as title, author, etc. A Timecode position is included in the file as well. This makes it possible to insert audio at precise positions in other applications. By default, the Timecode position is set to the start position of the audio.

7

Playback and recording

Playing back

Background information

About sample rates

If the wave file is recorded at a sample rate not supported by your audio card you will not be able to play it back. You might then opt to use sample rate conversion, see "Convert sample rate" on page 79. Also see "Supported file formats" on page 49 for more on file formats.

About the playback cursor position and appearance

Great care has been taken to achieve synchronization between what you hear and what you see (the wave cursor position in the wave during playback). However, by nature, this precision depends to a large extent on the audio card and its driver. In case you run into problems you may want to adjust the settings on Preferences–Audio device tab.

About audio cards and playing in the background

When you activate playback or recording in WaveLab Essential, it will "grab" the audio card so that other applications cannot access it. The opposite is also true: if another application has grabbed the card, WaveLab Essential will be unable to play.

⇨ If you want to run WaveLab Essential together with another audio program, and make sure whichever application is active gets access to the audio card, activate the "Release audio hardware…" option in the Preferences–Audio device tab.

When you do, WaveLab Essential will "let go" of the audio card when another application is made active (provided that this doesn't happen during playback or recording in WaveLab Essential).

Using the Transport bar

Displaying the Transport bar

If the Transport is hidden, select Transport from the Control bars submenu on the View menu.

The Transport controls
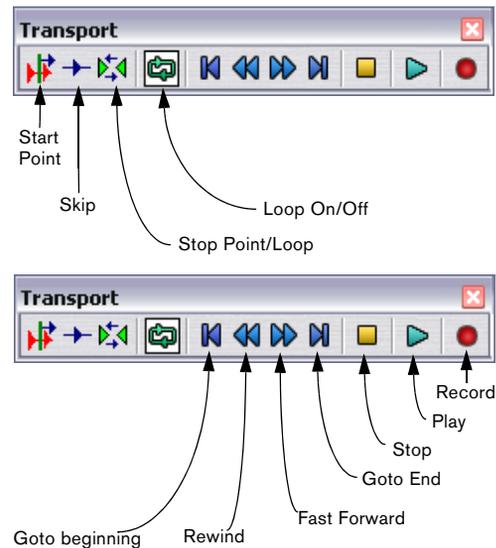
The Stop button

The result of clicking on the stop button depends on the current situation:

• If the program is stopped and you click the Stop button, the wave cursor is moved to the beginning of the last start position. A second click will move the cursor to the start of current selection (if any and if this is located before the last start position).

• If there is no selection, or if the wave cursor is already to the left of the selection, it is moved to the beginning of the file instead.

• If there is no selection, and you activate playback from a point and then stop so the wave cursor is to the right of the original point, the cursor will move to the place you last started when you click Stop again.

• If you click on the Stop Point/Loop button and activate the "On stop, move cursor back to start" option on the menu, the cursor will be automatically moved back to the beginning of the selection when you click Stop (from playback).

If there is no selection, it will automatically move back to the place you started from.

Transport control settings for separate windows

By default, open windows in WaveLab Essential (wave windows and montage windows) all use the same Transport control settings (loop settings, playback speed, etc.). You can however choose to use separate settings for separate windows if you want: open the Preferences–Audio device tab and make sure the option "Transport settings are global to all windows" is not activated.

When this option is deactivated, the following transport controls can be set differently for each open wave or montage window:

- Start point (see "Setting the start point for playback" on page 58).
- Skip (see "Skipping sections during playback" on page 58).
- Stop point/loop (see "Setting the Stop point/loop" on page 58).
- Loop On/Off (see "Looping" on page 58).

Setting the start point for playback

The Start point button on the transport brings up a menu that allows you to specify where playback will start.

For example, if you select "Play from start of file", as soon as you hit Play, the wave cursor will jump back to the beginning of the file and playback starts from there.

Setting the Stop point/loop

The Stop point/loop button on the Transport bar allows you to select where playback should stop and whether it should loop indefinitely.

Automatic Stop

For example, if you select "Stop at next marker", playback will stop as soon as the program reaches a marker or the end of the file, whichever comes first.

Looping

Let's say you have chosen "Loop selection" mode. Now, if some piece of the wave is selected, this will be repeated indefinitely (as long as you don't start playback from a position later than the selection).

If no selection is made, the entire wave is looped.

About loop updating and short loops

The loop points are updated continuously during playback, which means that if you change the loop start or end during playback, the loop changes. This is a great feature for auditioning selection points for rhythmic material!

Please note that it takes some time for positions to be updated (0.3 to 1 second, depending on the file's bit resolution and sample rate). If you don't want to wait, activate "Restart on loop/selection change" on the Options menu. When this is activated, the loop starts over as soon as you adjust the selection or move a loop start marker.

Also please note that WaveLab Essential handles playback of extremely short loops without problems. However, the cursor position might not be updated correctly.

Skipping sections during playback

You can also have playback automatically jump past certain positions during playback. This way, you will be able to audition what the material would sound like with certain sections cut out, before the actual edits are made.

This selection is done from the menu invoked by clicking the Skip button on the Transport bar.

- If you have made a selection range, you can select "Skip selection" to skip the selected area.

Play tool – Playing one or both channels in stereo files

Selecting the Play tool momentarily

The Play tool can of course be selected by clicking in the Toolbox, but there are situations when you are working with another tool and just momentarily want to use the Play tool.

- To momentarily select the Play tool, hold down [Alt]. When you have finished playing, release [Alt].

Using the Play tool

The Play tool allows you to play back from any position:

1. Point at the position where you want playback to start.

2. If the wave is in stereo, move the pointer up or down to decide whether only one channel should be played back. Watch the cursor shape, it indicates what will be played back (L, R or both).

3. Press the mouse button.

Playback continues for as long as you keep the mouse button pressed, or until the wave ends. After playback has stopped, the cursor will be moved to the playback start position, making this a quick way to locate to certain positions in the audio.

Using the Playback Browser

The Playback Browser feature helps you find a certain position in an audio file, by restarting playback repeatedly when you click or drag to move the wave cursor.

1. Activate playback using the regular Play function, or select the Play tool.

Note that depending on your Preferences settings, Playback Browsing may only be available for the Play tool.

2. Click or drag in the ruler.

If you click, playback jumps immediately to the position at which you clicked. If you drag continuously, a short snippet of audio from each new position is played (looped).

Playback Browser preferences

On the Preferences–Wave edit tab you will find two preferences for Playback Browsing:

▪ The Sensitivity setting is used to determine the size of the "snippets of audio" played back when you drag.
▪ When the "Restrict to Play tool" option is activated, Playback Browsing is not available when you activate Playback using the transport bar or computer keyboard.

On the Options menu you will also find an option called "Stop after playback browsing", which determines what happens when you release the mouse button: playback continues (deactivated) or stops (activated). Note that when this option is activated, the cursor will automatically be moved back to the playback start position on stop, allowing you to use this function for locate positions in the audio.

Playing the selection only

There are several ways to play the selected part of the wave only:

▪ Press the right mouse button in the Overview or the Main view and select Play Selection from the menu that appears.

▪ Hold down [Ctrl] and click on the Play button.

▪ Press [F6].
If you hold down [Shift] and press [F6], the selection will be played back repeatedly (looped).

▪ Drag and drop the selection on the Play button on the Transport.

Scrolling during playback

The "Scrolling during playback" submenu on the Options menu contains several options for how the view should be scrolled in Play mode:

Option	Description
Immobile view	This disables scrolling completely.
View follows cursor	In this mode, the waveform view will automatically change when the Wave cursor reaches the right side of the window during playback.
Scroll wave (partial)	In this mode, the waveform view is scrolled continuously, attempting to keep the Wave cursor in the middle of the view. However, if loop mode is activated and the loop range fits on the screen, no unnecessary scrolling takes place, allowing for a more stable view of the loop. The program will also "sense" the end of a file and stop scrolling when it is "in view", rather than when the end is reached.
Scroll wave (always)	In this mode, the waveform view is scrolled continuously, attempting to keep the Wave cursor in the middle of the screen.

⇨ Note: these options do not apply to playback using the Play tool, and the last two options require a fast computer and graphics card.

If you get dropouts during playback, please select another Scrolling mode.

Recording

⚠ For details on connections, recording levels, etc. please refer to the documentation that came with your audio card.

About automatic gain controls

Some audio cards may have a feature which automatically sets the recording level for the microphone input. This feature is often called AGC (Automatic Gain Control). For "professional" results we recommend that you deactivate this feature using the software that came with the card.

Please note that if you leave this feature activated, the Microphone input gain control in the Mixer (see later in this text) will have less effect on the recording level.

Preparations

To record a new file, proceed as follows:

1. Click the Record button, or press [*] on the numeric key pad.
The Record dialog appears.
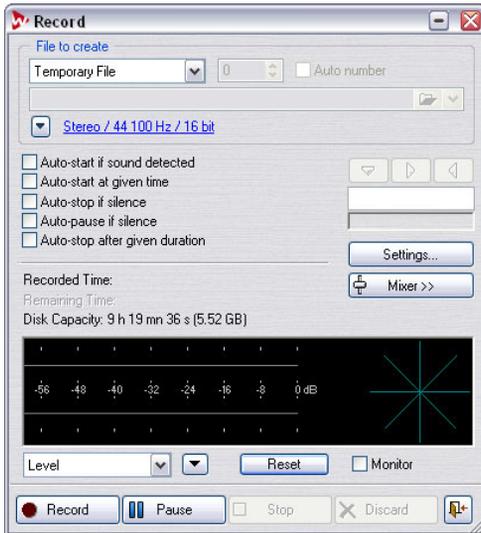
The Record dialog

2. Decide whether you want to record to a "named" or a "temporary" file, by selecting from the pop-up at the top of the dialog.
Temporary files are practical to use, since you don't need to name the file beforehand, you just "hit record and go". On the other hand, you will need to save the file at a later stage. Temporary files are always wave files, while named files allow you to choose to record files in a number of different formats. Also note that if you plan to make a recording over several minutes we recommend that you record a named file.

3. If you have selected one of the "Named File" options in the step above, type in the path to the desired destination for the file on the line below the pop-up or click the folder button and specify a file location.
If you activate the Auto number checkbox, a three-digit number will be added to the file name. Starting at the number you specify in the value field to the left of the checkbox, the Auto number will be increased in increments with each new recording, to prevent existing files from being overwritten.

4. Click the file format button at the top of the Record dialog, and decide on a recording format. WaveLab Essential lets you record directly into a number of different formats (see "Supported file formats" on page 49 for details).
In the Audio File Format dialog that appears, you can among other things choose the desired format, sample rate, number of channels to record and bit resolution.
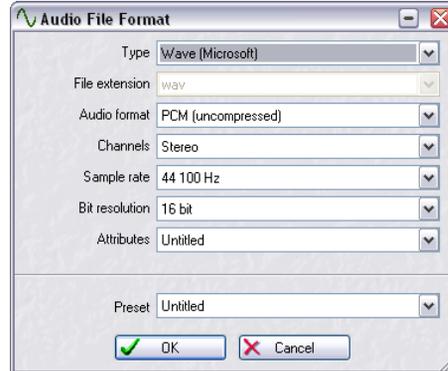
The Audio File Format dialog

⚠ If you choose a bit resolution not supported by your audio card, you will not be able to record.

5. Click OK to close the Audio File Format dialog.

6. If needed, activate the desired recording options in the dialog.
There are also additional settings in a separate dialog, opened by clicking the Settings button.

At this point, you can start recording (see "Start recording!" on page 61) if you like.

Setting up the mixer (MME/WDM drivers)

At this point you may want to click the Mixer button to adjust the relative volume of your card's inputs.

⇨ For the mixer to appear, you must have specifically selected the card on the Preferences–Audio device tab.
If the Input and Output are set to "Microsoft Sound Mapper" a mixer cannot be created.

Exactly what controls will appear in the mixer depends on the card, but here are some possibilities:

- Master Gain (output-fader)
- Synth In (input-fader plus on/off check box)

- CD (input-fader plus on/off check box)
- Line (input-fader plus on/off check box)
- Mic (input-fader plus on/off check box)

In addition to the above, the card might have custom controls for monitoring, etc., which cannot be accessed from the WaveLab Essential mixer. Again, please use the application(s) included with the card.

⚠ Not all audio cards have a mixer application and can therefore not access the WaveLab Essential mixer. This is especially true with digital I/O cards.

Using the meters

In the lower part of the Record dialog, you will find a meter display. This is useful for checking the input level, as well as the frequency spectrum of the input signal.

⇨ The meters in the Record dialog are "miniature" versions of the Level and Spectrum Meters in the Meter windows.
For detailed descriptions of the functionality and features, see "Level meter" on page 64.

For the meters to register the signal, you need to activate the Monitor checkbox. This can be done automatically, if the option "Activate meters when opening record window" is activated in the Record Settings dialog. The pop-up menu in the lower left corner allows you to select between Level or Spectrum metering.

- When the Level Meter is selected, horizontal bars show the peak level (outer bars) and average loudness (VU, inner bars) of each channel.
Values are also shown numerically. If the Phase Scope option is activated on the pop-up menu next to the Reset button, a Phase Meter is displayed to the right of the Level Meter.

- When the Spectrum Meter is selected, a "bar diagram" will be shown, providing a continuous graphical representation of the frequency spectrum.
See "Spectrum meter (60 bands)" on page 65.

You can reset the meters by clicking the Reset button – this instantly resets all meters and numerical indicators, including the Maximum Peak and RMS values to the right in the Level Meter.

You can also select one of five presets for the Level Meter on the pop-up menu next to the Reset button. These presets (containing settings for meter ranges, colors, etc.) can be edited by selecting "Settings…" from the pop-up menu. The options are described in the chapter "Making settings for the level meter" on page 65.

⚠ Use the Level Meter to check the audio input level. Adjust this (with the mixer controls or the audio card's applications), so that the Peak Level Meters go as high as possible without ever reaching 0dB!

Checking disk capacity

The Disk Capacity indicator above the meters helps you make sure you have enough disk space for the recording. This indicator shows the amount of available disk space on the hard disk specified in the Named File path, or the hard disk you have selected for your temporary files (see "Temporary files" on page 15). Please note that this value is approximate.

⚠ When there is less than ten seconds of available hard disk space, the disk capacity indication is displayed in red.

Start recording!

When all the preparations are done, click Record to start the actual recording.

- If you have selected one of the Auto-start options, the recording will go into Pause mode (the Record button will blink), until the specified Auto-start criteria are met.
When recording starts, the Record button will be "lit" and the Recorded Time value will indicate how much you have recorded.

- If you have selected the "Auto-stop after given duration" option, the "Remaining Time" value will indicate how much recording time you have left.

- If you like, you can pause the recording by clicking the Pause button at any time.
The Record button will blink to indicate Pause mode. To resume recording, click the Pause or Record button again. A short section of audio just before you resume recording (according to the Pause memory value in the Record Settings dialog) will be captured.

- You can drop markers in the file during recording by clicking the Drop Marker buttons.
See below.

- If you want to abort the recording, click the Discard button.
This terminates recording and discards the recorded file.

- When you have finished, click Stop. You can also have recording stop automatically by using one of the Auto-stop options. Either way, the recording by default appears in a new window behind the dialog.

If you want to perform more recordings after the first, click the Record button and record again. If you have selected the Named File option, and the Auto number option is deactivated, you have to specify another file name to avoid overwriting the previously recorded file.

When you have finished recording completely, click the Close button (in the lower right corner) to close the dialog.

⇨ If you have created temporary files, and want to save the file(s) permanently, click on each document you have created and use Save As on the File menu to save each one.
See for details.

About dropping markers during recording

When you are recording, you can click the marker buttons at any time, to add a marker to the recorded file. The yellow button will generate a numbered, generic marker (see), while the white buttons will generate numbered, generic region start and end markers.

If you want to name the markers you drop rather than using generic, numbered markers, you can do this in the following way:

- Type in the desired name in the box below the buttons.
You can type in a new name for each marker before you drop. This works well if you know beforehand where you want to drop the markers and what their names should be. If you want to be able to drop markers not planned beforehand though, use the dialog that will appear each time you click a button to drop a marker. In this dialog, you can either type in a

name for the marker, or you can confirm that you want to use an already entered name. The benefit of using this method is that the marker will be dropped at the time position when you clicked the marker button, regardless of how long you take to type in a name for the marker.
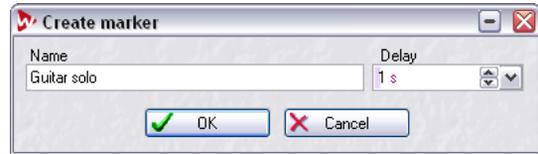
Furthermore, this dialog also allows you to specify a delay value for the marker. The marker will then be dropped at the position when you clicked the marker button, minus the delay value you specify. So if you clicked the marker button after 10 seconds of recording and specify a delay value of 2 seconds, the marker will be dropped 8 seconds into the recording.

⇨ 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 will be kept (the first marker(s) will be removed).
In other words, the last region start marker doesn't become "permanent" until you insert a region end marker.
The same goes for region end markers – if you insert several end markers in a row, only the last one will be kept.

This is a very useful function, because it allows you to "change your mind" when inserting markers during recording. For example, let's say you are recording a continuous performance and want to mark all takes worth keeping. At the start of a take you insert a region start marker. However, this turns out to be a false start or a flawed take. When the next take starts you insert a new region start marker again and the previous, unwanted start marker is removed.

8

Metering

Introduction

WaveLab Essential offers very detailed and versatile metering, allowing you to monitor level and spectrum during playback, and also featuring an oscilloscope display. This chapter describes how to display, set up and use the various meters.

Monitor playback

The meters reflect the audio being played back. Note that metering occurs after the Master Section, which means the results of effects, dithering and Master faders are taken into account.

The meters can be used for monitoring all kinds of audio playback: Wave windows, Audio CD Montage, audio CD track lists, audition in file dialogs, etc.

The meters

There are three different meters in WaveLab Essential, each with its separate window. The meters are opened and closed from the Analysis menu.

As with any standard window, you can resize the meter windows by dragging the window borders, and fold the windows by clicking the fold icons (or by double clicking the title bars).

On the following pages, the available meters are described.

Level meter

This meter window shows the peak level and average loudness, in the following way:

Meter presets (see "Selecting meter presets" on page 65)

Reset button

Peak level meters
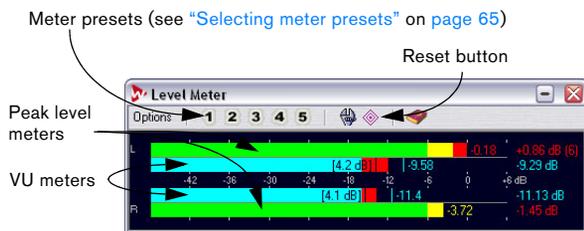
VU meters

- The Peak Level meters display the peak levels of each channel, graphically and numerically.

By default, the meter segments and numerical peak values are displayed in green for low levels, yellow for levels between –6dB and –2dB, and red for levels above –2dB. You can change both the colors and the range boundaries if you wish, as described on "Making settings for the level meter" on page 65.

- The VU (Volume Unit) 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, you will also note two vertical lines following each VU meter bar, seemingly "trying to reach" the current RMS value. 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 (the level value in brackets) – this gives you an overview of the dynamic range of the audio material.

Difference value   Recent minimum   Recent maximum
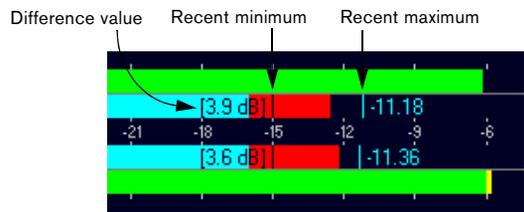
- If you are monitoring audio playback, the maximum peak and loudness values are displayed numerically to the right of the meter bars.

Numbers in brackets to the right of the Maximum Peak values indicate the number of successive clips (0dB signal peaks). 1 or 2 clips can be acceptable, but if you get a larger number, you should lower the master level to avoid digital distortion.

Resetting the meters

You can reset the level meters by clicking the Reset icon, or by selecting Reset from the Options pop-up menu. This instantly resets all meters and numerical indicators, including the Maximum Peak and RMS values and the number of signal clips.

The Reset icon

Making settings for the level meter

You can adjust the behavior, scale and color of the meters as desired. It is also possible to save five sets of meter settings as presets, for instant access. Proceed as follows:

1. Pull down the Options pop-up menu and select "Settings" (or click the "tool" icon).
The Level Meter Settings dialog appears.
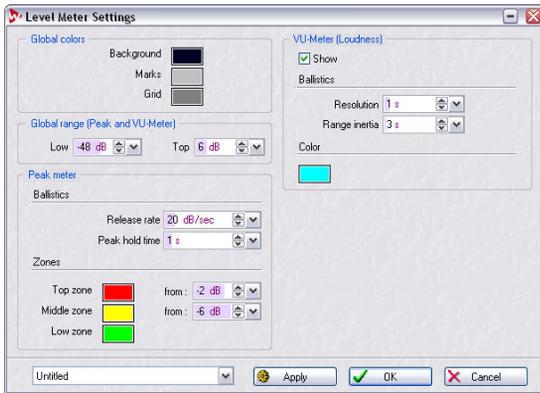
2. Adjust the settings as desired.
By using the Apply button, you can check the results of your changes without closing the dialog. The following settings are available:

Setting	Description
Global colors	Click these buttons to select colors for the meter background, marks (scale units) and grid lines.
Global range	This is where you specify the low and high end of the displayed level range. Typically, you may want to create a preset showing the full level range, and other presets for detailed view of a smaller range.
Peak meter – Ballistics	These settings determine how fast the peak level meter falls after a peak (Release rate) and for how long the numerical peak indication remains displayed after a peak (Peak hold time).
Peak meter – Zones	The color buttons allow you to select colors for the peak level meters' low, middle and top zones. You can also define what should be considered "middle" and "top" zones, by changing the "Middle zone from" and "Top zone from" values.
VU meter – Show	Allows you to activate or deactivate the VU meters.

Setting	Description
VU meter – Ballistics	These settings determine how the VU meter responds: Resolution is the sample width of the "average window" for the VU meter (the number of samples continuously evaluated to calculate the average). The smaller this is, the more the VU meter behaves like the peak meter. Range inertia determines the "average windows" for the recent minimum and maximum value lines, and will therefore affect how quickly these respond to changes in loudness.
VU meter – Color	The color button allows you to select the color for the VU level meter.

3. If you want to store your settings for later use (or assign them to a preset), select "Save as…" from the pop-up menu at the bottom of the dialog, and specify a name for the preset in the file dialog that appears.

4. To make the settings instantly available for selection in the Meter window, use the "Assign to preset button" sub-menu on the pop-up menu.

5. When you are finished, click OK to close the dialog.
Clicking Cancel closes the dialog and discards any changes you have made (even if you have used the Apply button to apply them to the meters).

Selecting meter presets

If you have assigned your settings to the Preset buttons in the Settings dialog, you can quickly switch between different level scales and display modes, by clicking one of the Preset icons [1]-[5], or selecting the desired preset from the Options pop-up menu.

Spectrum meter (60 bands)
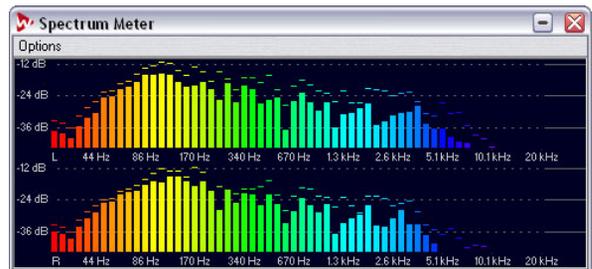
The Spectrum meter shows a continuous graphical representation of the frequency spectrum, in the shape of a "bar diagram" with 60 frequency bands.

Oscilloscope
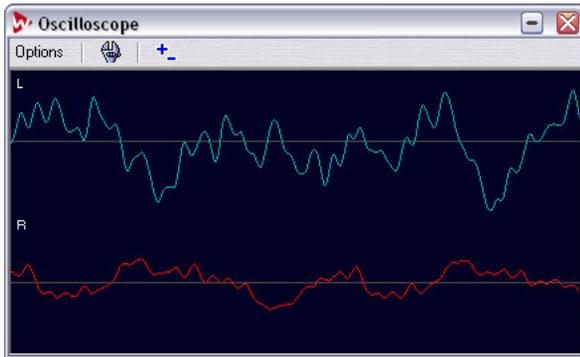
The Oscilloscope is a "microscope" version of the level meter, showing the area around the cursor position at large magnification.

If you are analysing stereo audio, the Oscilloscope will normally show the separate levels of the two channels. However, if you activate the option "Show Mix and Subtraction" on the Options pop-up menu (or click the +/– icon) the upper half of the Oscilloscope will show the mix of the two channels and the lower half will show the subtraction.

Making settings

Selecting "Settings" from the Options pop-up menu (or clicking the "tool" icon) will open the Oscilloscope settings dialog. Here you can adjust the display colors, and choose whether Auto-zoom should be active or not. When Auto-zoom is activated, the display will be optimized so that the highest level reaches the top of the display at all times.

9

Off-line processing

Introduction

When we refer to off-line processing, we mean functions that "permanently" alter the file, to make it sound more or less different. This is in opposition to "real-time processing", which makes the file play back differently, without making any permanent changes to it. Real-time processing is described in the next chapter.

Applying processing

Processing can be applied to a selection or to a whole file. For certain processing operations processing the entire file is necessary. This will be indicated in the respective section.

⇨ If "Process whole file if no selection exists" is activated in the Preferences–Wave edit tab, the whole file will automatically be processed if no selection exists.

To apply processing to a selection, proceed as follows:

1. Make a selection.
Note that you will "Select All" to process the entire file. If the file is in stereo, you can apply processing to either channel or both, by selecting one channel or both, see "Selecting in stereo files" on page 41.

2. Select the desired type of processing from the menus.

3. If a dialog appears, fill it out.
If the dialog uses presets, you can load one of them to fill out the settings automatically, see "Presets" on page 30.

4. When you have finished with the settings in the dialog, click the Apply/Paste/Process button.
The status bar shows the progress of the operation. If you need to interrupt a long process, click the "Stop" button on the status bar or press [Esc].

Undo/Redo

No matter how long the selection is or how elaborate the processing may be, you have access to unlimited Undo/Redo for all processing. The only limitation to this is the available hard disk space, as described in the section "Undo and Redo" on page 22.

Getting the most out of the non-modal dialogs

The processing dialogs are non-modal, which means they stay on screen even after the processing has been applied. This, together with the Undo allows you to try different types of processing without ever leaving the dialog (or even stopping playback!):

▪ When the dialog is still the active window you can use the computer keyboard for the following operations:

Key	Command
[F3]	Undo
[F4]	Redo
[F6]	Play selection
[Shift]+[F6]	Loop selection
[F7]	Stop
[F8]	Play

▪ While the dialog is still open (but inactive) you can select from menus and use other dialogs and palettes (for example the Transport bar).

▪ You can "fold in" and "fold out" non-modal dialogs, as described in the section ""Folding" windows" on page 24.

Presets

As described in the section "Loading presets" on page 30, you can use presets for most processing dialogs, to save and recall settings. In addition, the program comes with a number of useful presets for each processing option.

Level Normalizer

This allows you to change the amplitude (volume) of the selection. The value is always related to the maximum level that can be obtained.

Gain Change
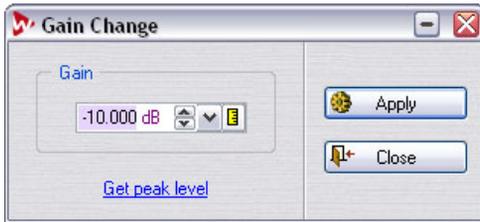
This also allows you to change the amplitude (volume) of the selection, just like the Level Normalizer. The difference here is that the gain change is set in absolute numbers, plus/minus the current level (which is indicated as 0dB).

Clipping

This processor lets you do something that most other functions in WaveLab Essential never do: introduce clipping.

Clipping is when the gain is raised to a point where distortion is added. While this is normally not wanted, mild clipping in for example the attack of a drum sound can add some "punch".

If you try to raise the level of a wave above 0dB (100%)…

…it will get distorted (the peaks are "clipped").
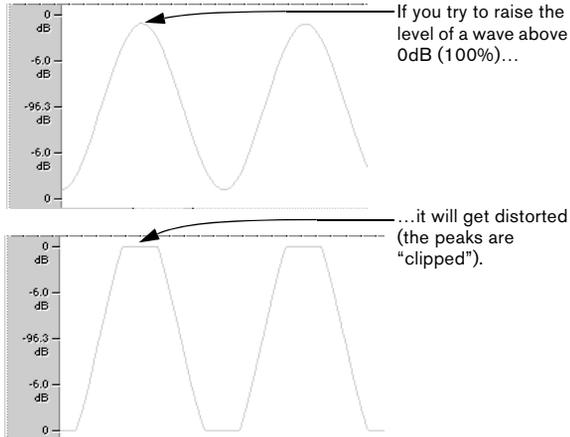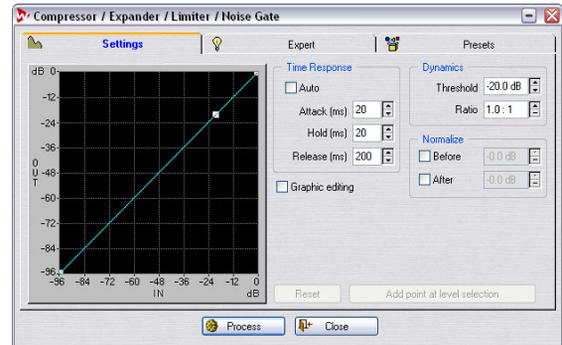
Dynamics

This dialog allows you to tailor the dynamics of the audio, to create effects like compression, expansion, limiting and noise gating. Since dynamic processing of audio is a big subject, we will not be able to describe all the possibilities in this short text. Please study the included presets which implement examples of the above-mentioned functions and experiment with the controls to get a feeling for what they do.

The Time Response controls

The settings in this section apply regardless of whether you use the graphic editing possibilities or not. These controls govern how a variation in sound level in the material affects the amount of processing.

The Attack parameter, for example, is related to the beginning of new sounds in the material (for example each new "hit" in a drum recording). Raising the Attack time means that more of the beginning of each sound (the attack) will pass through unprocessed.

We recommend that you try the Auto feature first, and if that doesn't give the desired result, use the individual controls instead.

The Normalize controls

These are used to normalize the sound before and/or after processing. Please note the following:

- The effect of all dynamic processing depends on the amplitude (level) of the material to be processed. Therefore, if you process a number of files with slightly different levels (for example using presets or batch processing) the effect of the processing will be different from file to file. To avoid this, activate "Normalize before".
- On the other hand if you are experimenting with different settings, this means that after activating "Normalize before" you may have to re-adjust the Threshold level. See "Level Normalizer" on page 68 for more information on normalizing.
- One reason for setting the "Normalize before" value to less than 0 dB (full level) is if you are expanding, which might introduce clipping if the signal is too strong to start with.

The Dynamics controls

When the Graphic Editing switch is deactivated, the dynamics processor works very much like a simple compressor. Use the Threshold and Ratio settings to set the amount of compression.

About graphic editing

When the Graphic Editing check box is activated, you can specify any input to output function. This allows you to "draw" limiters, noise gates, expanders, etc. and combinations of all these. See the presets for examples.

- The curve shows input level along the horizontal axis and output level along the vertical axis. With a straight line diagonally, each input level is represented by the same output level (the signal is not processed at all).
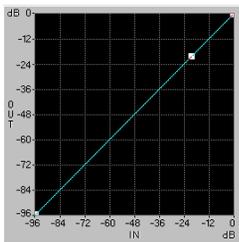
No processing

- If the curve starts at 45° and then tilts downwards from any point, signals above this point will have a lower output level than input level. In other words, a gain (compression) reduction is performed.
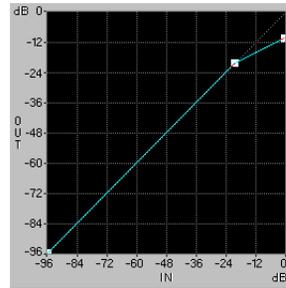
Compression

- If the curve is tilted upwards instead, the output level will be higher than the input level, which is referred to as expanding.
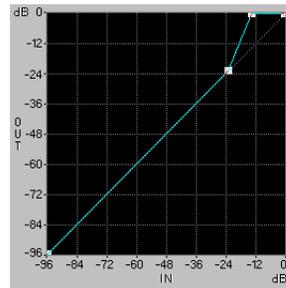
Expansion

- If the curve is horizontally flat from some point, the output level will be the same regardless of input level. This is referred to as limiting.

Limiting

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Off-line processing
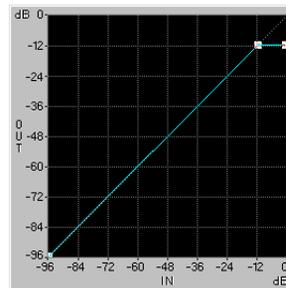
- If the curve starts out horizontally flat and then rises upwards, signals in the flat area will be eliminated completely. This is called (noise) gating.
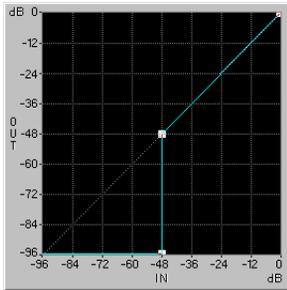
Gating

Setting up the curve

- You can drag any breakpoint in the curve to any position, using the left mouse button.

- When you move breakpoints closer to the left side or the bottom of the graph, you will note that the number of positions is more limited. This is due to the nature of digital audio, where, for lower levels, a smaller number of "bits" is used to represent the data.

- You can add a new breakpoint by clicking anywhere on the curve with the left mouse button.

- You can delete a breakpoint by clicking on it with the right mouse button.

- The Reset button restores the curve to a straight line with only one breakpoint.

- The "Add point at level selection" button adds a breakpoint at the level indicated by the current level selection (see "Level selections" on page 43 and the example below).

An example of using "Add point at level selection"

The "Add point at level selection" function can be used to create a noise gate with a threshold at a certain level. Let's say you have a recording of narration, with noise between the phrases that you'd like to remove:

1. Make a regular selection in a section that only contains background noise.
The longer this selection, the more accurate the result will be.

2. Select "Extend to peaks" from the Select submenu on the Edit menu.
The selection height now represents the level of the background noise.

3. Open the Dynamics dialog and set it up for graphic editing.

4. Remove all breakpoints from the graph.

5. Click on the "Add point at level selection" button.

6. Add a second breakpoint, "manually", to the left of the one that just appeared.

7. Drag this second breakpoint so that it appears directly below the other one, at the bottom of the graph.
See the noise gate example above.

8. Adjust the Attack, Hold and Release settings as desired.

9. Go back to the Wave window and select the section to be gated.

10. Open the Dynamics window and click the Process button.

11. Listen to the result, and if necessary, Undo, adjust the settings and Process again.

Expert settings

The Dynamics dialog also has a special tab devoted to "expert" settings.

Level envelope
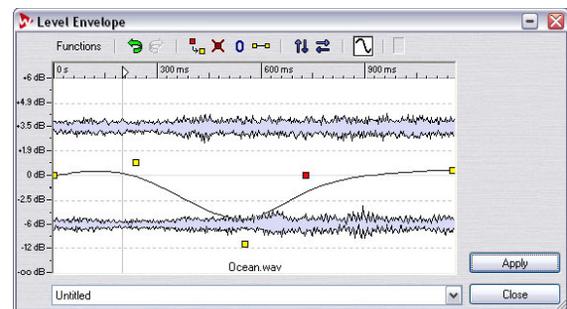
This dialog allows you to create a volume envelope which can be applied to a selected range or a whole file.

The dialog consists of a waveform view in the middle, with an envelope curve (initially a straight line) running through it. A vertical ruler displays the level change in dB, and the horizontal ruler displays the time line. You can boost the level up to 6 dB and decrease it down to silence.

Basic operation procedure

By adding points to the envelope curve you can create an envelope curve that will change the volume of the material over time.

1. Double click on the envelope curve to add a point.
A point will be added where you click.

2. If you click on the point it will be selected (red color) and by click-dragging you can move it in any direction.
The curve changes accordingly in the waveform display.

▪ When you point the mouse in the display (or move a point), the current position and level change is shown continuously in the field above the display.

3. You can keep adding as many points as you like to the curve.
You cannot move a point past a another point in the horizontal direction.

4. You can select several points using [Shift] and move them together.
By clicking on the envelope curve itself (not on a point) you can move the whole curve up or down.

Envelope functions in the dialog

The functions are selectable in three ways (the same options in all cases):

▪ From the Functions menu.
▪ By clicking the icons above the display.
▪ By right-clicking in the display.

The following options are available in the dialog:

Option	Description
Deselect all points	This will deselect all selected points.
Delete selected points	Deletes all selected points.
Reset selected points	Resets all selected points to 0dB.
Reset whole envelope	This removes all added points.
Flip Vertical	This will flip the current envelope vertically (in the level axis).

Option	Description
Flip Horizontal	This will flip the current envelope horizontally (in the time axis).
Smooth envelope	This allows you to create spline curves, for smoother level changes.

Fade-in and fade-out

A fade-in is a gradual increase in level and a fade-out is of course the opposite. There are two ways of applying fades in WaveLab Essential: by using the Easy Fade function or by using the Fade dialog.

Easy Fades

The Easy Fade function allows you to very quickly apply a fade-in or fade-out to an audio file, without having to make any settings:

1. To create a fade-in, make a selection from the start of the audio file to where you want the fade-in to end.
Similarly, to create a fade-out, you should make a selection from the position where you want the fade to start, to the end of the audio file.

2. Select "Easy Fade" from the Process menu, or press [Ctrl]-[D].
A fade is applied to the selection. The shape of the fade is governed by the Default fade/crossfade setting in the Preferences–Wave edit tab.

Using the Fade dialog

The Fade dialog allows you to specify the desired shape of the fade, and to create fade-ins or fade-outs anywhere in a file:

1. Make a selection that spans from where you want the fade to start to where you want it to end.

2. Select fade-in/out from the Process menu to open the Fade dialog.

3. Use the Type options to select a fade-in or a fade-out.

4. Set the Offset and Damping parameters.

A graph in the waveform indicates the resulting shape. The Damping value indicates how much the wave will be attenuated at the Offset point. A 6dB Damping with a 50% Offset normally gives the most natural results. See "Crossfade" below for more details.

Crossfade

A crossfade is a gradual fade between two sounds, where one is faded in and the other faded out. This function allows you to do just that. It also lets you create plain mixes of two sounds.

Performing a regular crossfade

The material you want to crossfade can either be in two different sections of the same file, or it can be in two different files.

Since the crossfade is a type of paste operation, you must start by getting the section into which you want to fade (the later part of the fade) onto the clipboard.

1. Select the section into which you want to fade.

2. Select Copy, from the Edit menu.

Now it's time to move over to the section from which you want to fade, which might very well be in another Wave window:

3. Select the section from which you want to fade-out.

⚠ This selection cannot be longer than the selection you just copied, or the program will not be able to perform the crossfade!

The length of this selection will determine the length of the actual crossfade (check the length on the status bar). In a typical case, this selection will be at the end of the wave. See below for details.

4. Select Crossfade from the Process menu.

The dialog appears and crossfade slope indicators are shown in the current selection.
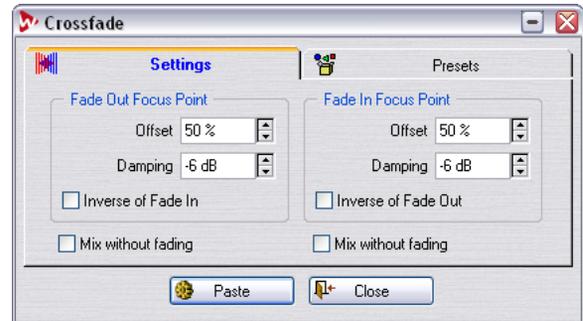
5. Make sure that "Mix without fading" is not activated in either section.

6. Adjust the Offset and Damping parameters as desired.

The shape of the two curves is indicated in the selection. See below for details.

7. Click the Paste button.

⚠ Please note that if both waves already have full level sections in the crossfade area (for example if you have normalized both waves), clipping (and hence distortion) might occur! If this happens, reduce the amplitude of both waves by 3 to 6 dB and try again. Also note however, that if one of the "Inverse of Fade In/Out" boxes is checked, clipping can never occur.

How the fade is done

- As described above, the length of the fade is determined by the size of the selection in the file into which you paste.
- The pasted material has to be longer than the selection you paste "into" (or there won't be enough material to finish the fade).
- Any "excess" material in the copied selection will appear after the fade (at "full level"). The wave is lengthened as needed.
- Any material that originally appeared after the selection in the file into which you paste, will be moved so that it now appears after the newly pasted material.

About the curves

The design of the fade and crossfade curves is based on psycho-acoustic research material, in order to give as pleasant and harmonic a result as possible.

For each of the two sections – the fade-out and the fade-in – you can select an Offset and a Damping value. When you adjust these values, the curves in the wave are adjusted accordingly so that you can see what kind of crossfade you will get.

The Offset factor determines where in the fade section the file will play at its "mid level" (normally half the level, see below).

The Damping parameters adjust the "steepness" of the fade. For example, a -6dB setting for the fade-in will result in a normal fade, where the level is half the original when it reaches the Offset point. Values closer to 0dB will emphasize the beginning of the fade-in wave. Values closer to -18dB will make the fade-in sound drop drastically at the beginning of the fade.
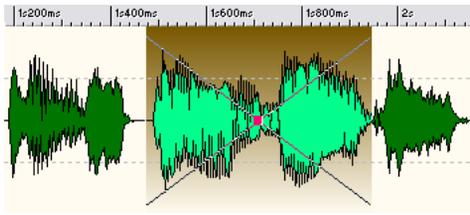
Here, the default -6dB Damping curves with 50% Offsets are selected. This gives you a normal crossfade with the focus on the middle of the fade.
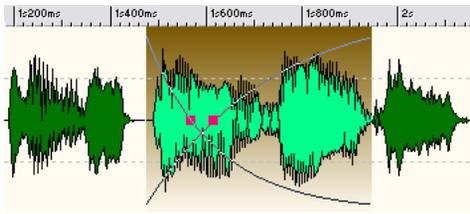
In this example, the Offsets have been moved so that the focus of the fade is more to the left. This means the fade-out is faster than the fade-in. However, both Damping factors are still set to the standard -6dB.

Mix without fading

If you activate "Mix without fading" for either section, it will play at full level throughout the entire fade.

An example

Let's say you have two environmental sound effects you want to fade between, "city" and "restaurant". You want to fade from "city" to "restaurant". The two sounds are in different windows.

1. Select the entire "restaurant" wave and copy it.

2. Make a selection in the "city" wave, from a point close to the end.
The length of this selection is equal to the length of the fade.

3. Open the crossfade dialog, set both Offsets to 50%, both Damping settings to -6dB, deactivate both "Mix without fading" options and click the Paste button.
The "city" wave is now lengthened, so that it starts as it originally did, then fades over to the beginning of the "restaurant" wave and ends like the "restaurant" wave.

Invert Phase

This turns the signal "upside down", which is the same as inverting the phase by 180°. No settings are needed for the operation.

There is no audible change when you invert the phase of a mono signal. However, if one channel in a stereo pair is out of phase with the other, this will lead to artifacts such as a drop in the bass register and a "blurred" stereo image.

The most common use for this function is therefore to fix a stereo recording where one of the channels has accidentally been recorded out of phase with the other.

Reverse

This function reverses the selection, as if playing a tape backwards. No settings are needed.

Eliminate DC Offset

This function removes a problem that most often appears due to mismatches between various types of recording equipment.

⚠ This function should be applied to whole files, since the problem is normally present throughout the entire recording.

A DC offset is when there is too large a DC (direct current) component in the signal. If the DC offset is really bad, it can be visible as the signal not being visually centered around the "zero level axis". However, the DC offset can be significant without actually being seen.
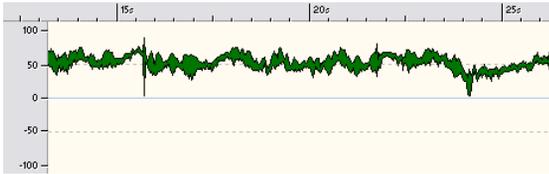
A wave with a serious DC offset

A DC offset is problematic for two reasons:

- It affects where the zero crossings appear, which in turn affects the smoothness of splices between audio files.
- Certain processing options do not give optimal results when performed on files with a DC offset.

Checking for and eliminating DC Offset

1. Select the wave you want to check and fix.

2. Select "Eliminate DC Offset" from the Process menu.
A dialog appears stating the amount of DC offset.

3. Click OK or Cancel.

Waveform Restorer

This lets you remove intermittent clicks and pops in an audio file. First make a selection encompassing the artefact you want to remove, then apply one of the available methods. Usually, you will have to use a high zoom factor to be able to locate and select the undesired element.

The Waveform Restorer lets you select one of several available restoration methods. The selected method is described in the dialog.

Time Stretch

Time stretch is an operation that allows you to change the length of a recording without affecting its pitch. Actually the standard term "time stretch" is a bit misleading since you can of course also make the material shorter.

This function is most often used to make a section of audio fit in with some other material. Therefore this dialog is set up exactly for that. You select the material to be stretched and use the options in the dialog to find a stretch factor (the "Percentage"). This is done by specifying the desired length, or the desired tempo, all according to what the situation requires.

Opening the dialog

When you open the dialog, the following information about the selection is displayed:
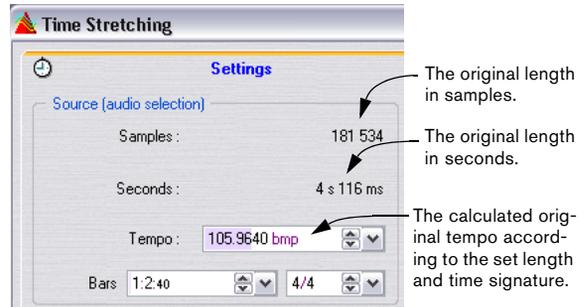
The original length in samples.

The original length in seconds.

The calculated original tempo according to the set length and time signature.

Specifying a percentage directly

If you know by how many percent you want to change the length, you can enter this value in the "Percentage" field.

Calculating the percentage by specifying a new length

- If you know the desired length in samples, adjust the Samples value in the "Desired result" section.

- If you know the desired length in minutes, seconds and milliseconds, adjust the corresponding value in the "Desired result" section.
Regardless of which you choose, the other values and the Ratio are updated accordingly.

Calculating the ratio by specifying a time code range

If you want to fit the selection to a certain range, for example in a video or film sequence, you can specify the start and end of this range as time code values:

Enter the start position here.

Enter the desired end position here.
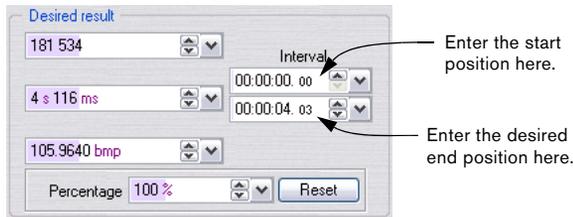
The other values and the Percentage are updated accordingly.

Calculating the Percentage by specifying a new tempo

If you know you want the selection to play back in a certain tempo, after the stretch, proceed as follows:

1. If you know the current tempo of the selection, type it in the Tempo field in the Source part of the dialog.

2. If you don't know the exact current tempo, but the length of the selection and the time signature, you can specify these instead, in the Bars and signature fields, and the Source tempo will be calculated for you.

⚠ Please note for these operations to work properly, the exact specified source tempo or length must be selected. Any deviation from the real values will be transferred to the stretched audio.

3. Type in the desired tempo in the Tempo field in the "Desired result" section.

Reset

The Reset button resets the Percentage to "100%".

Additional settings

Setting	Description
Quality	There are three Quality settings, "Quick Process", "Standard" and "High Quality". The High Quality mode provides very high quality pitch correction, but the process will take longer. For most uses, the Standard mode is probably sufficient.
Preserve pitch	When this option is activated, the pitch of the audio material will not be affected when you apply Time stretch. This is the normal mode of operation. If you turn this off, the pitch will change proportionally with the Time stretch ratio, much like when speeding up or slowing down a tape recorder.
Audio quantize	When this option is activated, the length of the resulting file will be exactly the one displayed in the "Desired result" section of the dialog. When it is deactivated, the actual file length may differ by a few milliseconds. If you don't need this accuracy, you should leave the option deactivated, for a slightly better audio quality.
Rhythm accuracy	This is only available if "Standard" or "High Quality" mode is selected. Set this parameter according to whether the rhythmic feel of the audio material has a high priority or not. If you set this to a high value, the timing and rhythmic feel will be preserved as far as possible, which is important for drum tracks, etc. If you set it to a low value, the audio quality can be slightly better, but sections of audio might be moved slightly (in the milliseconds region) in the process.

Limitations

Time stretch is a very complicated Digital Signal Processing (DSP) operation. It requires complicated mathematical operations and always affects the sound quality to some extent:

▪ For speech, stretch factors within a ±30% limit will normally provide very good results.
▪ For composite music, try to limit the range to ±10%.
▪ For sensitive material, like solo piano, try not to exceed ±3%.

Pitch Correction

Pitch Correction is a function which allows you to detect, and to change, the pitch of a sound, with or without affecting its length.
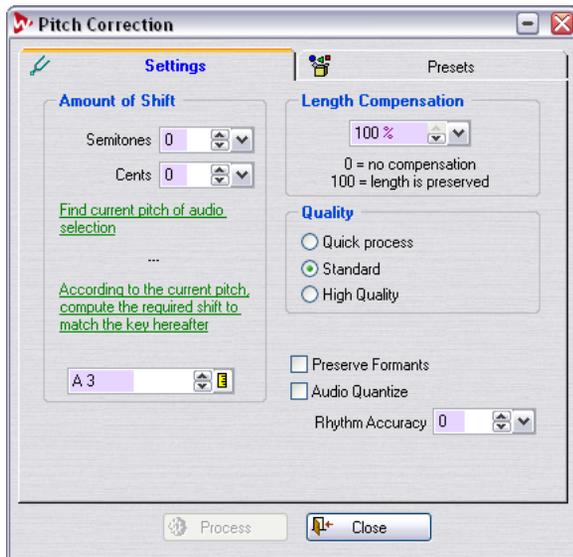
Amount of shift

This allows you to specify the amount of pitch change in semitones and/or cents.

Pitch detection

WaveLab Essential can analyze an audio selection and detect the pitch of the audio. Click the "Find current pitch of audio selection" button to perform the detection. The found pitch is displayed below the button.

You also have the option to automatically compute the required pitch shift, based on the currently detected pitch and the pitch specified in the value field below the "According to the current pitch, etc." button. When the button is clicked the "Amount of Shift" parameters are automatically adjusted to the computed pitch shift.

Length compensation

This allows you to set how the length of the selection should be affected by the operation.

- A setting of 100 means that the length will be the same after the operation.
- A setting of 0 means that the program will behave like a tape recorder does when the speed of its tape is varied. For example, if you raise the pitch by one octave, the sound will become half as long.
- Intermediate values will give results in between these two extremes.
- For large transposition values, the lower this setting is, the better the quality of the effect will be.

Additional settings

| Setting	Description
Quality	There are three Quality settings, "Quick Process", "Standard" and "High Quality". The High Quality mode provides very high quality pitch correction, but the process will take longer. For most uses, the Standard mode is probably sufficient.
Audio Quantize	When this option is activated, the processed file will have the exact same sample length as the original. When it is deactivated, the resulting file length may differ by a few milliseconds. If you don't need this length accuracy, you should leave the option deactivated, for a slightly better audio quality.
Preserve Formants	When this option is activated, changing the pitch of vocal material will give a more realistic result. When you are processing non-vocal material, you should leave this option deactivated, since it uses a slightly slower processing algorithm. Warning: this algorithm might increase the signal level. If your audio material has a high level, you may need to lower its level before pitch shifting.
Rhythm Accuracy	This is only available if "Standard" or "High Quality" mode is selected. Set this parameter according to whether the rhythmic feel of the audio material has a high priority or not. If you set this to a high value, the timing and rhythmic feel will be preserved as far as possible, which is important for drum tracks, etc. If you set it to a low value, the audio quality can be slightly better, but sections of audio might be moved slightly (in the milliseconds region) in the process.

Harmonization
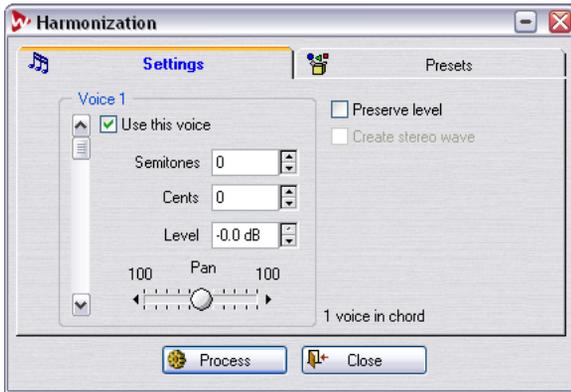
This is a variation of the Pitch Correction, which allows you to create not only one shifted voice, but up to sixteen!

Setting up the voices

1. Set the scroll bar to the voice for which you want to make settings.
Which voice is currently shown is indicated just above the scroll bar.

2. Activate the voice by clicking the check box.

3. Set up the amount of pitch shift for this voice, by adjusting the Semitones and Cents values.
The maximum range is ±36 semitones (±3 octaves). The cents value adjusts the pitch within one semitone, that is, 50 means a quarter tone.

4. If you want one of the voices to play back the original wave (at the recorded pitch), activate one voice for this and set both its Semitones and Cents settings to 0.

5. If you are processing a stereo selection or if you have activated "Create stereo wave" (see below), you can adjust the stereo position of the voice by using the Pan control.
If you pull the slider all the way left or right, this voice will be played in that channel only.

6. Use the scroll bar to select the next voice and set this up like the first.
The text to the right of the Pan control tells you how many voices are activated.

Additional controls

Control	Description
Preserve level	When this is activated, the resulting audio will have the same level as the original, even though a number of voices have been added.
Create stereo wave	If you are operating from a mono selection you can still create a stereo wave by activating this option. The processed wave will then open in a new window.

Please note that by specifying very small pitch shift amounts (a few cents only) and panning the detuned voices hard left and right, you can create stereo material out of mono recordings without a noticeable change in pitch. Please try to keep a balance in the detuning. If for example you set one voice to +5 cents, set another to -5 cents.

Hi-fi Chorus
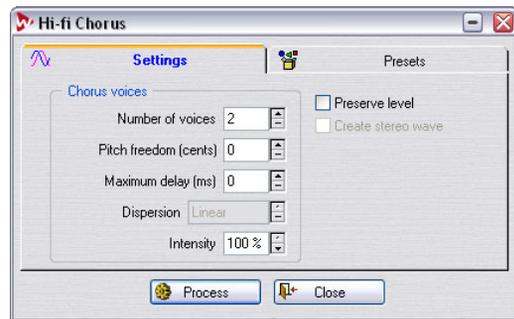
This chorus works slightly differently from many others. Often chorusing is achieved by delaying a copy of the signal, continuously varying the amount of delay and mixing the delayed signal back in with the original.

While this is adequate for many purposes, WaveLab Essential takes a more natural approach to creating chorus. Since a chorus effect is about making a recording sound as if it was performed by many "identical musicians", WaveLab Essential takes just that approach. It multiplies the recording up to 100 times and detunes and delays each "voice" slightly and – if so desired – pans the voices across the stereo image.

EQ
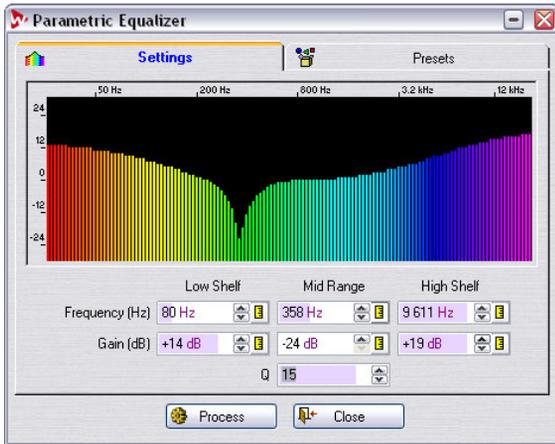
This is a three-band equalizer with high and low shelving filters and a full parametric mid-frequency band. The following parameters are available on the Settings tab:

Parameter	Description
High Shelf Gain	Determines the boost or cut (in dB) of the high shelving filter.
High Shelf Frequency	Sets the frequency of the high shelving filter. Frequencies above this value will gradually be increased or reduced in level, according to the High Gain setting.
Mid Shelf Gain	Determines the boost or cut (in dB) of the Mid range EQ.
Mid Shelf Frequency	Sets the center frequency of the Mid range EQ. Frequencies around this value will be affected by the Mid Gain.
Mid Q	Use this parameter to set the width of the Mid range, i.e. how wide a frequency range around the Mid Frequency should be affected by the Mid range EQ. The higher this value, the "narrower" the Mid range.
Low Shelf Gain	Determines the boost or cut (in dB) of the low shelving filter.
Low Shelf Frequency	Sets the frequency of the low shelving filter. Frequencies below this value will gradually be increased or reduced in level, according to the Low Gain setting.

Presets tab

The Presets tab features a list of EQ presets, with self-explanatory names.

▪ To load a preset, select it in the list and click the "Load" button.

▪ If you have modified a preset which you wish to save, use the "Update" button.

▪ You can also save your own presets by typing in a name and clicking the "Add" button.

Convert sample rate

This function allows you to change the sample rate of a recording. This is very convenient if you have a file that you wish to use in a certain audio system and find that the file was recorded at a sample rate this system doesn't support. Please note that Sample rate conversion can also be done as part of the Saving process (see "Saving in another format (Save as…)" on page 51).

Please note the following:

▪ Sample rate conversion from a low frequency upwards does not improve sound quality. The high frequencies that were lost due to a low recording frequency cannot be restored by a conversion.

▪ When you sample rate convert down to a lower frequency, high frequency material will be lost (this is part of the mathematics behind digital audio). Therefore, do not convert down and then up again, since this will lead to a degradation in sound quality (unless that's exactly what you're after). Instead, use the Undo and Redo functions.

Performing the sample rate conversion

1. Select Convert sample rate from the Process menu.
This opens the Sample Rate dialog.
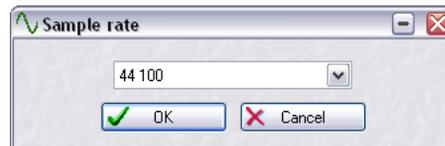
2. Select the desired sample rate from the pop-up menu and click OK.

If you want to change any other audio properties (e.g. the bit resolution or stereo/mono status), you can do this in one of two ways:

- Open the Audio Properties dialog from the Edit menu and make the desired settings (see "Editing audio properties" on page 55).
- Open the Audio File Format dialog by selecting "Save as" on the File menu and clicking the Properties button in the lower section of the dialog (see "Saving in another format (Save as…)" on page 51).

⚠ Sample rate conversion is always applied to the entire file. Any selection you have made is not used in any way for this operation.

Support for reNOVAtor™

If this audio restoration plugin is installed on your system, you can select it from the Tools menu.

This menu option is enabled if a wave window is open and an audio selection is active (it can be both channels or a single channel).

Selecting "reNOVAtor…" from the menu opens this plug-in and the active audio range is edited. The plug-in window is non-modal, hence you can work in WaveLab Essential without closing the plug-in.

Go to http://www.algorithmix.com/en/renovator.htm for more info.

10

Master Section

Introduction

The Master Section is the heart of WaveLab Essential's "Real-time Engine" and the final block in the signal path, before the audio is sent to the audio hardware (or to an audio file on disk). This is where you adjust master levels, add effect processors and dither.

The settings and processors in the Master Section are taken into account in the following cases:

⇨ When playing back an audio file in a Wave window.

⇨ When playing back an Audio CD Montage.
Note that the Master Section effects are global for all clips and tracks in a Montage, as opposed to the individual clip effects.

⇨ When using the Render function with any of the above.
The Render function writes the output of the Master Section to a file on disk, allowing you to apply Master Section processing to a Wave or mix down a Montage to an audio file. See "Rendering" on page 91.

About the "Use Master Section" option

If you don't need the Master Section at all, you can turn it off completely by deactivating the Use Master Section setting on the Options menu. This will save processor power, but makes the following sections of the program unavailable:

▪ The Master Section window, including processors and dithering.
▪ The functions of the Monitor window.
▪ Audio CD Burning from the Audio CD Montage.

The Master Section window

To open the Master Section window, you can either select it from the Specialized Windows submenu on the View menu or press [Ctrl]-[F9].

There are four slots for inserting effect processors. Effects can be turned on or off with the On buttons, and reordered by dragging the slots.

Indicates that an effect is activated.

The Effects pane allows you to add and manage effect processors. See "The Effects pane" on page 85.

Indicates that the level faders are active (any setting other than 0.00), or that the Mono button is activated.

Level faders.

The Master Level pane. This is where you adjust the final output level. See "The Master level pane" on page 83.

Activate this for mono output.

Here you can insert a post-master fader effect or other dithering plug-ins, replacing the internal dithering.

Indicates that dithering is on.

The Dithering pane lets you add dithering when mixing down to a lower bit resolution. See "The Dithering pane" on page 88.

Options for the internal dithering algorithm.

Click here to render the output to a file.
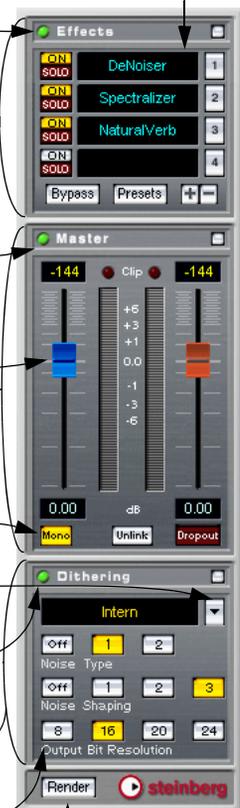
⇨ When you open the Master Section, active effect processor panels will also appear (if they haven't been hidden).

To close the Master Section, select it from the menu again or press [Ctrl]-[F9].

Showing and hiding panes

You can independently hide the three Master Section panes in any combination:

▪ Clicking on the Hide button for a pane will "fold" it, leaving only the pane title bar visible.
This is useful for saving screen space, if you e.g. don't need to see the Dithering settings. Note that the green indicator for the pane will still be visible when the pane is hidden, allowing you to see at a glance whether effects, master volume or dithering are used or not.

▪ To show a hidden pane, click its Hide button again.
▪ Right-clicking (or [Ctrl]-clicking) a Hide button will hide the other two panes and bring the clicked pane to view (if hidden).
▪ Double clicking a Hide button will hide or show that pane and the pane(s) below it.

About the signal path

The three panes in the Master Section window correspond to the Master Section's three "processing blocks": Effects, Master Level and Dithering. The signal passes through these blocks from top to bottom, as shown in this figure:
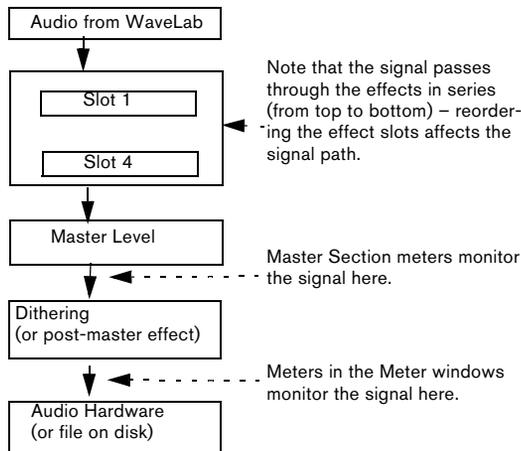
The Master level pane

The Faders

The faders in the Master level pane govern the final output level. Use these in conjunction with the level meters (those next to the fader, or even better, the meters in the Level Meter window) and the clip indicators to optimize the level of the signal sent to the audio hardware.

⚠ It's particularly important to avoid clipping (signal levels exceeding the available headroom), especially when mastering. Clipping is indicated by the Master Section's clip indicators (see below) and by the number of clip indicators in the Level Meter.

To adjust the level, use the following methods:

1. To make coarse adjustments, click a fader handle and drag it.
You can also click directly anywhere along the fader scale to move the fader handle there immediately.

2. For fine adjustments, click on the upper or lower half of the fader handle.
This raises or lowers the level by a small amount.

▪ To reset a fader to 0.00 dB, press [Ctrl] and click anywhere on the fader.
When both faders are set to 0.00 (and the Mono button isn't activated), the Master level section will not affect the signal at all. This is indicated by the green indicator for the Master pane going dark.

▪ You can control the faders using a wheel mouse.
This has to be activated in the Preferences–Environment tab.

The fader settings are shown numerically below each fader.

About the Unlink mode

The Unlink button determines whether the faders should be individually adjustable (indicated by a lit Unlink button) or "ganged". Normally, you will probably want Unlink deactivated, so that moving one fader also moves the other by the same amount. Turning on Unlink allows you to correct improper stereo balancing by adjusting the channels' levels individually. Note:

⇨ If you offset the faders (with Unlink turned on) and then deactivate Unlink again, you can adjust the overall level without changing the level offset between the channels.

In other words, moving one fader will move the other one by the same amount, relative to its current setting. Note that the faders use an exponential scale – this means that when you move one fader, the other does not follow in a linear fashion on the screen. However, the audio result is what you expect.

⇨ Fader offsets are not preserved at the end of the range of movement.

The Meters

The Master Section meters show the signal level of the signal before dithering (or any other plug-in you have applied post-master fader – see "Adding other plug-ins to the Dithering pane" on page 89). Use these to get an overview of the signal levels.

▪ The numeric fields above the faders show the peak levels (the highest signal levels reached) for each channel.

They will hold these values until you click on them to reset them.

▪ The red "LEDs" above the meters are clip indicators, which will light up whenever the signal clips (exceeds the maximum available headroom).

If this happens, you should lower the faders, reset the clip indicators by clicking on one of them, and play back the section again until no clipping occurs.

⚠ For critical level metering, we recommend using the Level Meter (see "The meters" on page 64). Not only is this more detailed, it's also applied after the whole Master Section (after dithering) and will thus show the actual signal level sent to the audio hardware.

The Mono button

If you activate the Mono button, the two channels will be summed to mono. Furthermore, the output level is automatically reduced by -6dB, to avoid clipping. The Mono button is useful for checking mono compatibility of stereo mixes, etc.

⇨ If the Mono button is activated, the green indicator for the Master level pane will be lit, even if the master level isn't adjusted.

This helps you avoid accidentally leaving the Mono button activated.

The Dropout indicator

This indicator lights up whenever WaveLab Essential fails to properly play back as little as a single sample of the currently selected wave. A dropout is most likely to occur when your computer does not have the processing power to adequately handle all effect processors you have inserted.

To avoid dropouts, try the following:

▪ Use fewer effects.

You might be running out of processing power.

▪ Consider "Rendering" the processing rather than running it in real time. Then master from the processed file without any processors plugged in. See "Rendering" on page 91.

Dropouts never occur when "Rendering" to a file.

▪ Do not process any files in the background while mastering digitally to a DAT for example. See "Working with multiple files" on page 92.

▪ If neither of the above helps, please 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 (and if your master needs to be flawless) we recommend that you re-master. Stop playback, click on the dropout indicator to reset it, and try again.

⇨ As mentioned above, this indicator lights up as soon as even a single sample is not played back correctly. This type of precision is not often required, but it's there if you need it.

The Effects pane

WaveLab Essential allows you to insert up to four effect plug-ins in series (plus an additional, post-master fader plug-in, normally used for dithering, see "The Dithering pane" on page 88). Three plug-in formats are supported in the Master Section:

▪ WaveLab Essential-specific plug-ins, included with the program.

▪ VST plug-ins.

Steinberg's VST plug-in format is supported by a lot of programs and plug-in manufacturers. You will find a number of VST plug-ins included with WaveLab Essential; other plug-ins can be purchased separately from Steinberg or other manufacturers or in some cases downloaded from the Internet.

Note that if you have additional VST plug-ins installed on your computer, these can optionally be available in WaveLab Essential (provided that they are installed in the "Shared VST Plug-ins" folder). Whether the effects in the "Shared VST Plug-ins" folder should be available in Wave-Lab Essential or not is set in the Preferences–VST tab. You can also specify an extra VST plug-ins folder in the Preferences if you wish, meaning that you can have access to both the effects in the "Shared VST Plug-ins" folder and the effects in some other folder containing VST plug-ins.

▪ Plug-ins that adhere to the Microsoft DirectX standard.

These are known as DirectX or DX plug-ins and are also widely available.

Selecting effects and managing slots

To select an effect plug-in for a slot, click on the slot (or the numbered button to the right of the slot) and select an effect from the pop-up menu that appears. Note that effects can be organized in groups (see "Organizing plug-in processors" on page 186), in which case they will appear in hierarchical submenus.
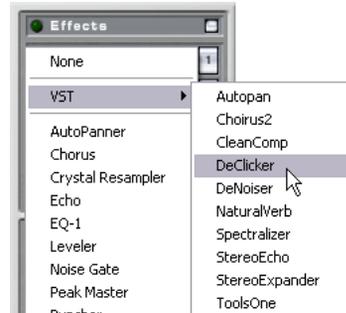
Selecting an effect from the VST group.

⚠ The number of effects available on the menu depends on which plug-ins you have installed. It's also possible to globally deactivate or exclude effects you don't need, as described in the section "Activating and deactivating plug-ins and groups" on page 187.

When you have selected an effect, it is automatically activated (the On button lights up), and its control panel appears as a separate window (see "Making settings – The Effect control panels" on page 86 for more on effect control panels).

▪ You can turn off an effect (without removing it) by clicking its On button.

To activate the effect again, click the On button so that it lights up.

▪ To hide the control panel for an effect, right-click its On button (or right-click the effect slot and select Hide from the pop-up menu that appears).

A hidden control panel can be shown by right-clicking the On button again (or by selecting Show from the same pop-up). You can also have one effect panel shown and automatically hide all the other panels, by right-clicking the Solo button for the slot.

▪ Clicking the Solo button for an effect will bypass all other effect slots, allowing you to check the sound of that effect only.

You can also bypass effects manually in their control panels – see below.

▪ You can change the order of the slots (and thus the order in which the signal passes through the effects) by clicking a slot and dragging it to a new position.
When you drag, a dotted outline shows the position of the slot.
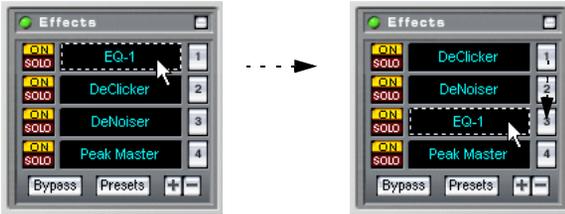
▪ To remove an effect from a slot, right-click the slot and select Remove from the pop-up menu that appears.
This is the same as selecting "None" from the effect selection pop-up menu.

Making settings – The Effect control panels

The control panel window is where you make settings for an effect. Plug-ins can either have specialized control panels (with any combination of knobs, sliders, buttons and displays) or use standard panels.

Bypass, Mute and Preset

As you can see in the figure above, the three buttons above the actual panel are common to both kinds of control panel windows. They have the following functionality:

▪ Clicking the Bypass button will temporarily bypass the effect.
Unlike turning off the On button for the slot, the bypass function does not free up any processing power. Note that you can bypass all effects except one by using the Solo button for a slot. It's also possible to bypass all effects by using the global bypass button in the Effects pane. Also note that bypassing effects is for playback only, and does not affect rendering. To deactivate an effect when rendering, use the On/Off buttons in the Master Section effect pane.

▪ The Mute button turns off the signal output from the effect.
This means that you will no longer hear your signal because it won't even reach the next stage (either another slot or the master faders).

▪ The Preset button allows you to select and edit presets for the effect.
This is described in the section "Working with effect processor presets" on page 87.

Standard panels

A standard panel shows parameter names and values in the display to the left. To make settings, use the slider beside the corresponding parameter.

Custom panels

An effect plug-in can actually have any control panel that the plug-in designer desires. There are several examples of custom panel plug-ins included with WaveLab Essential.

For information about the panels for additional plug-ins, see the documentation for each plug-in.

Working with effect processor presets

With WaveLab Essential comes a number of "factory presets" for the included processors, which you can either select and use as is, or use as a starting point for your own settings. Additional plug-in processors may provide their own "factory presets".

⇨ To access the presets for an effect, click the Preset button in its control panel window.

The result and available functions depend on the type of plug-in:

WaveLab Essential specific plug-ins

Applying and saving presets for WaveLab Essential specific processors 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 will open a separate Preset dialog. The options in this dialog are exactly the same as for dialogs with Preset tabs. See "Presets" on page 30 for more details.

VST-compatible plug-ins

VST 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 appears:

Item	Description
Load/Save Bank…	This allows you to load and save complete sets of presets. The file format is compatible with Cubase.
Load/Save Default Bank	This allows you to load the default set of presets (as will appear when first loading the plug-in) or save the current set of presets as the default bank.
Load/Save Effect	Lets you load or save one preset at a time. Also compatible with Cubase.
Edit name of current program…	This allows you to define a name for the preset, which might be displayed in the panel (depending on the plug-in).
Preset List	This allows you to select one of the currently loaded presets.

DirectX plug-ins

Here, the same functionality is provided as for WaveLab Essential plug-ins. In addition, you can import "native" presets created for the plug-in.

About the effect plug-ins supplied with WaveLab Essential

Included with WaveLab Essential is a large number of plug-ins for all kinds of purposes, audio compression, chorus, stereo enhancement, reverb, etc. The parameters for each plug-in are described in the "Plug-in Processor Reference" in the online documentation.

Installing additional effect plug-ins

If you have purchased or downloaded additional plug-ins (VST or DirectX), you need to install these to be able to use them in WaveLab Essential. Normally, plug-ins come with an installer application of some kind, along with a manual or installation notes – make sure to follow the instructions in these when installing the plug-in.

About installing DirectX plug-ins

Normally if the DirectX plug-in has been installed properly, it will automatically be "visible" in WaveLab Essential. If it isn't, you need to "update the Windows registry" so that it is. Proceed as follows:

1. In Windows, locate the actual plug-in file on your hard disk.

These are "dll" (dynamic link library) files, which means they normally have the extension ".dll". Sometimes other extensions are used as well.

2. Drag and drop the file icon, either onto the WaveLab Essential program icon, or somewhere in the WaveLab Essential application window.

A dialog box will ask you whether you want to register the plug-in or not.

Organizing plug-ins

You can specify which plug-ins should be available in the program and how these should be organized on the menus. See "Organizing plug-in processors" on page 186.

The Dithering pane

The Dithering pane allows you to add dithering to the signal before it's sent to the audio hardware or to a file on disk. You can choose between WaveLab Essential's internal dithering algorithm or any external dithering plug-in of your choice. First, some theory:

What is dithering?

Dithering is a method for reducing quantization errors in digital recordings. In the case of WaveLab Essential, 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.

The theory behind this is that during low level passages, only a few bits are used to represent the signal, which leads to quantization errors and hence distortion. To the ear, 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.

By adding a special kind of noise at an extremely low level, the quantization errors are minimized. Indeed, the added noise can be perceived as a very low-level quiescent hiss added to the recording. However, this is hardly noticeable and much preferred to the distortion that otherwise occurs.

⇨ The reason for the dithering block to be last in the Master Section is that the output level must not be changed after dithering a signal.

When should I apply dithering?

The basic rule-of-thumb is that you should dither when moving to a lower bit resolution. One obvious instance of this is when converting an audio file to a lower resolution (e.g. preparing a 24-bit file for mastering to CD, which uses 16-bit format).

However, even if you're playing back or rendering a 16-bit file to the same resolution, you need to dither if you're using any real-time processing whatsoever in WaveLab Essential! The reason for this is that WaveLab Essential 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 real-time processing, the audio data will be treated at this high resolution instead of the original 16 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. In fact, the only time when a 16-bit file will be 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).

Selecting a dithering algorithm

To select and activate a dithering algorithm, click on the arrow button next to the plug-in slot in the Dithering pane, and select one of the options from the pop-up menu that appears. The default option is "Intern" (WaveLab Essential's internal dithering algorithm). However, you can also add other plug-ins to this list, see "Adding other plug-ins to the Dithering pane" on .

Once you have selected a dithering algorithm, dithering is active (as indicated by the green indicator for the Dithering pane). It will apply to all playback (through the Master Section) or rendering.

⇨ To turn off dithering completely, right click in the slot and select "Remove" from the pop-up menu that appears. This is the same as selecting "None" from the effect selection pop-up menu.

Making settings

When dithering, there are no hard and fast rules for how to set up the parameters – this largely depends on the type of material. We recommend that you experiment and let your ears be the final judge.

Internal dithering

Parameter	Description
Noise Type	Determines the dithering method used: In "Off" mode, no dithering is applied – use this as a Bypass function. The "Type 1" mode is the most "all-round" type of method. The "Type 2" mode emphasizes higher frequencies more than Type 1.
Noise Shaping	This parameter alters the character of the noise added when dithering. Again, there are no hard and fast rules, but you may notice that the higher the number you select here, the more the noise is moved out of the ear's most sensitive range, the mid-range.
Output Bit Resolution	This is where you specify the intended bit resolution for the final audio, after dithering, regardless of whether you will "Render" the settings or play back in real-time. It is very important to set this to the correct resolution! Dithering will change the sample resolution, but not the sample size. E.g. when dithering 24-bit to 16-bit, the file will be still be 32-bit in size, although only 16 bits of information will have significance. Hence, when rendering to a 16-bit file, specify the desired file resolution to avoid wasting space!

Adding other plug-ins to the Dithering pane

If you have purchased another dithering plug-in that you prefer, you can use this instead of the internal dithering. It's also possible to insert some other type of plug-in in the Dithering pane – it will be applied after the Master level faders (possible useful plug-ins would be maximizers, limiters, etc.).

⚠ Please remember that the meters in the Master Section monitor the signal before the Dithering pane! To avoid clipping, check the Level Meter and adjust the output level setting of the plug-in, if available.

To make a plug-in available on the plug-in slot pop-up menu in the Dithering pane, proceed as follows:

1. Pull down the Options menu and select "Organize Master Section plug-ins…".
A dialog appears, listing all plug-ins installed in your system. See "Organizing plug-in processors" on page 186.

2. Locate the plug-in in the list.
Note that plug-ins can be placed in groups (folders) in the list – click the plus sign next to a folder to view the contents of a group if needed.

3. Activate the checkbox in the PM column for the plug-in.
PM stands for "Post Master fader".

4. Click OK to close the dialog.

Now, the plug-in will appear on the pop-up menu in the Dithering pane, and can be inserted after the Master Level faders (as with the regular dithering types). You make settings for the plug-in like you would for effects in the Effects pane. Note also that the plug-in will still be available for selection as a regular, pre-master effect.

Master Section presets
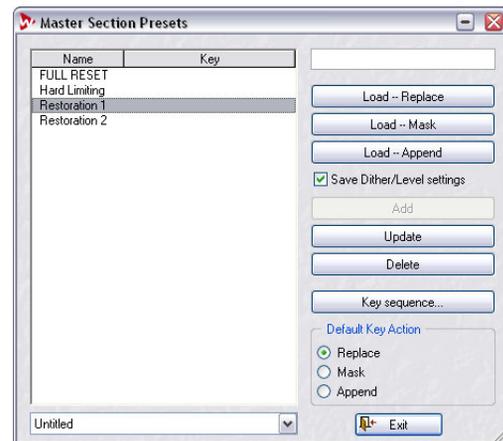
You can turn all settings currently made in the Master Section into a preset. This includes which processors were used, what settings were made for each one of them, and dithering options.

Creating presets

To create a new preset, proceed as follows:

1. Set up the Master Section as you want it.
This includes selecting Processors, making settings, and setting dithering options.

2. Click the Presets button in the Effects pane.

3. Type in a name for the preset in the upper right corner.

4. If you want the dithering options and Master level settings to be part of the preset, make sure "Save Dither/ Level settings" is activated.
This is the default.

5. Click Add.

⇨ The presets are saved automatically when you quit the program. The next time you load the program, the presets are ready and waiting, just as you left them.

Loading a preset

To load a preset, select it in the list to the left, and click on one of the Load buttons, depending on the desired load method:

• The Replace method replaces all settings in the Master Section with the setting in the preset.

• The Mask method replaces only those slots in the Master Section that are actually used in the preset.

• The Append method fills the unused slots in the Master Section with the settings in the preset.
If there are not enough free slots available to load the entire preset, a warning message will appear.

Modifying a preset

1. Set up the Master Section as desired.
If you only want to adjust a few settings in an existing preset, you may want to load this first, as described above.

2. Go back to the "Master Section Presets" window.

3. Select the preset you want to overwrite with the new settings.

4. Click the Update button.

• To update settings for the last loaded preset you can [Ctrl]-click the Presets button.
This will save any changes without having to open the dialog.

Deleting a preset

To delete a preset, select it in the list to the left and click the Delete button.

Using key sequences for presets

If you want to invoke a preset via a key command sequence, you can do this by defining key sequences.

A key sequence contains between one and three keys that must be pressed in a certain order to recall the preset.

Defining key sequences

1. Select the preset for which you want to create a key sequence, and click the key sequence button.

2. If you want to clear the current key sequence, click Clear.

3. Make sure Catch mode is active.

4. Press the first combination of keys that you want to use.
You can include modifiers ([Shift], [Ctrl], [Alt], etc.) if you like. There is also a setting that makes the program distinguish between two modifiers with the same label, on each side of the space bar.

5. Proceed with the following key(s).

6. Disable Catch mode.
This is just a safety measure so that you don't accidentally erase or add to your current key sequence, when pressing more keys.

7. Close the dialog.

8. Use the Default Key Action buttons to decide whether your key sequences will invoke the "Replace", "Mask" or "Append" load method.
This setting is global to all Key sequences.

Using key sequences

Key sequences can only be invoked when the Master Section Presets dialog is closed. Press the keys in the order they were entered in the dialog, and the preset is loaded.

Saving and loading preset groups

You can save one or more created presets as a preset group for easy access. If you have added presets to the Preset window and want to save them as a group, use the drop-down menu at the bottom of the dialog to enter a name for the group and save it.

This function is useful if you are working on several projects, since it makes for a convenient way to keep specific Master Section presets for specific projects well organized and easily accessible.

Rendering

While the Master Section can perform all processing in real time during playback, it's also possible to save the audio output to a file on disk. This is done with the Render function.

There are several uses for Rendering:

▪ Mix down a complete Audio CD Montage to an audio file.
This can be a goal in itself, but can also be necessary if your Montage uses e.g. more effects than the system can handle in real time. By Rendering it to a file first, and creating a CD from this file instead, you can avoid dropouts and CD burning failure.

▪ Mix down a file in a Wave window to a new audio file, complete with Master Section effects, dithering and other settings.
You can freely choose the format of the new audio file, allowing you to create an mp3 file and add effects at the same time, for example.

▪ "Apply" all settings in the Master Section to a file in a Wave window.
This is the same as the previous option, but the Master Section processing will transparently and permanently be "applied" to the current file instead.

⚠ Rendering Audio CD Montages is described in the Audio CD Montage chapter (see "Mixing down – The Render function" on page 131). This section describes Rendering waves.

What is rendered?

When you use Render, all Master Section settings (effects, master levels, dithering, etc.) are included in the resulting audio file. In other words, what you hear is what you get.

⇨ One thing to note: the Bypass switch affects playback only, while the effect On switches affect both playback and Rendering.

Calling up the Render dialog and filling out the options

Click the Render button to call up the following dialog:
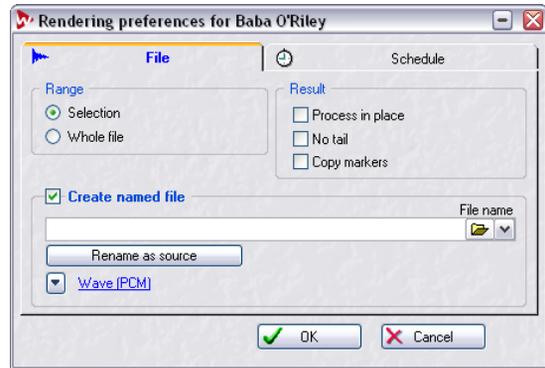
The Render dialog for Wave windows (for information on Rendering Audio CD Montages, see "Mixing down – The Render function" on page 131).

Here is what the options mean:

Range

This is where you specify what part of the wave to render.

Option	Description
Selection	Process only the portion that is currently selected in the Main view.
Whole file	Process the entire file.

Result

Here, you can choose whether the original wave file should be changed ("applying" the Master Section settings) or whether a new audio file should be generated.

Option	Description
Process in place	Modifies the original file. If you wish to keep the changes, you need to save the file again. Note: if you use this for adding effects to a file, you may want to activate the "Activate Global Bypass" option on the Schedule tab (see below).
No tail	If this is activated, the resulting file will end where the original did, even if the processing adds material (like for example echoes or reverb tails).
Copy markers	If this is ticked, the resulting new file will contain all markers present in the original file.

Create named file

If this is activated, the resulting new file will be saved (not temporary). The field below the checkbox allows you to specify a name and location for the file, and you can click the audio properties button to set the desired audio format. Clicking the "Rename as source" button will set the file name to the same as the file being processed (but retaining any path you have specified above).

⇨ If you click the audio properties button at the bottom of the dialog, you open the Audio File Format dialog in which you can choose the desired format of the file and make settings for the conversion and encoding.

Options on the Schedule tab

- The On Start options determine what WaveLab Essential should do before rendering:

Stop playback	Stops playback to free up some processing power. This option is not available if playback is already stopped.
Open Monitor window	Opens the Monitor window, see "The Monitor window" on page 93.
Minimize window	The file window is minimized to free up screen space.

- The On Completion options determine what should happen after rendering:

Beep	WaveLab Essential will beep to signal that the operation is completed.
Show message box	WaveLab Essential will display a message to confirm the operation. Click OK to continue.
Restore audio window	Upon completion, WaveLab Essential will restore a minimized window (see above) to its original size.
Activate Global Bypass	WaveLab Essential will automatically activate the Bypass switch in the Master Section's Effects pane (see "Bypass, Mute and Preset" on page 86) upon completion. This allows you to play the processed file back after rendering, without hearing the effects "twice" (applied to the file and activated in the Master Section).

- The Priority setting lets you specify how fast the file should be processed.

Relax Background	The file is processed in the background, but priority is given to audio playback and to your continued work on other files. This makes WaveLab Essential as responsive as possible, but slows down processing.
Background	The file is processed in the background but with a lower priority given to your continued work on other files. This makes processing faster but the program less responsive. Try this mode when several files should be processed in the background.
Fast	Processing is given a high priority. A fairly high-performance computer may be required to avoid dropouts in playback.

⚠ Any dropouts that occur as a result of too little processing power left will only affect the played file. Files processed in the background will always be free of dropouts!

Processing the file

Once everything is set up correctly, click OK to initiate the processing. Or, if you change your mind, click Cancel.

⇨ Tip: If you just need to process the current audio selection in place, you can press [Ctrl] while clicking on the Render button. This will process the audio selection in place without opening the dialog.
Other settings are kept from the last time you accessed the dialog.

Working with multiple files

Once you have applied settings to one wave, as described below, you can continue with processing the next. The processing of the first wave will continue in the background. This way you can apply processing to as many waves as desired. Please also note that each wave can have its own priority setting, as described below.

⚠ If you are rendering to MP3 format, you should only render one file at a time.

The Monitor window

This window allows you to monitor the ongoing processes and check how hard your computer's CPU is working with various tasks.

To open this window, select "Monitor" from the Specialized Windows submenu on the View menu or press [Ctrl]-[F10].

The window has two displays, selected by clicking the corresponding tab at the bottom of the window.


The Progress display

The Progress display shows a list with the following columns:

Column	Description
Name	The name of each wave or montage being processed.
Progress	How much of the wave has been processed so far.
Remaining time	This indicates how much time is required to finish the processing.
Priority Boost	The priority assigned to this particular processing (see "The Priority setting lets you specify how fast the file should be processed." on page 92 and below).

Process menu

Even while a wave is being processed, you can change its settings. Position the pointer in the monitor window and press the right mouse button.
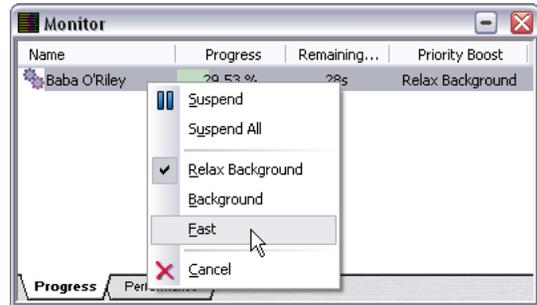
The following options are available:

Option	Description
Suspend/Resume	Suspends processing of the wave. The menu option changes to Resume so that you can activate processing again. When a process is suspended, more CPU power will be available to the other processes.
Suspend/Resume All	Halts/starts processing of all waves.
Relax Background, Background, Fast	Changes the priority status for the wave, see "Relax Background" on page 92.
Cancel	Cancels the processing operation for the selected wave, in which case the message in the Priority Boost column reads Cancelled until WaveLab Essential has performed all the necessary clean up operations.

The Performance display
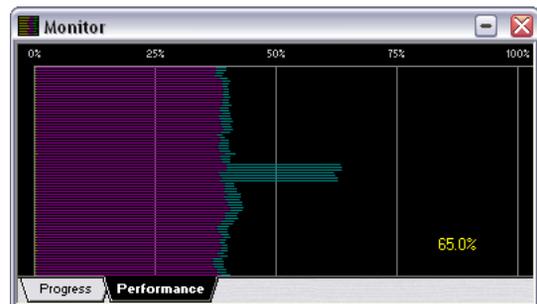
The Performance display provides an overview of the processing power currently being used.

- The yellow lines refer to the power used for providing input to the Master Section, i.e. reading waves from disk. Please note that the values are an approximation.
- The purple lines indicate the processing power that is required for all processors currently running in the Master Section. The shorter the line, the less the load on the CPU. This is a very precise measurement.
- The blue lines reflect the processing power required by the output device.
- There is also a number indicating processor usage in percent.

Customizing the Performance display

You can customize the way the processing information is displayed. If you want to see more of what is going on, resize the window.

Other options are available if you position the cursor anywhere in the black part of the window and press the right mouse button.
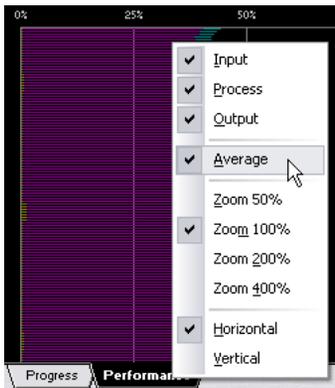
The following options are available:

- You can activate/deactivate the Input, Process, and Output information (see above).
- To get an exact (but not as smooth) picture of the processor usage, deactivate Average.
- You can select a Zoom factor for the display (50%~400%).
- You can change the direction of the status information flow (horizontal or vertical).

11

Batch file encoding

Basic procedure

WaveLab Essential can open and play both uncompressed and compressed files in a number of different formats, including WAV, AIFF, MP3, WMA (Windows Media Audio) and OSQ (Original Sound Quality), which is WaveLab Essential's proprietary lossless audio format.

It's also possible to convert WAV or AIFF files to another format. While this can be done by opening a file and selecting "Save As" or "Save Special/Encode" on the File menu, you can also convert several files in one go (batch conversion).

Proceed as follows:

1. Select "Batch file encoding…" from the Tools menu.
The "Encode audio files" dialog opens.

2. Click on the green "plus" symbol.
A file selector opens, where you can select the desired audio files (WAV or AIFF). Files must have the same sample rate and number of channels (e.g. stereo/mono).
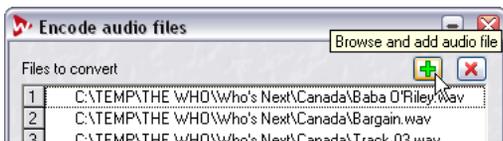
Click here to add files.

3. In the file type pop-up select one of the available formats (WAV or AIFF) and then – in the file list – select the desired files. If necessary, use the [Ctrl] and/or [Shift] keys to select several files. Confirm your selection by clicking "Open".
This brings you back to the "Encode audio files" dialog.

⚠ Note that it is possible to simultaneously batch encode audio files of different formats, given that all the files have the same sample rate and number of channels.

4. Select the destination folder for the converted files from the corresponding pop-up menu.

5. Select the desired destination format by clicking the audio properties button at the bottom of the dialog.
This opens the Audio File Format dialog in which you can select the desired format and make settings for it.
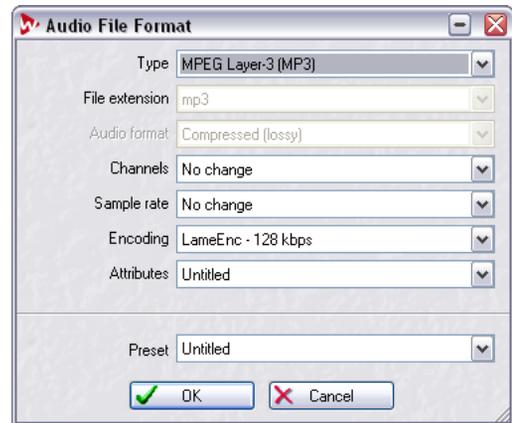
6. For some compressed file formats, clicking on the arrow button to the right of the Encoding and Attributes menus calls up dialogs where you can set the encoding parameters and enter text strings.

12

Markers

Introduction
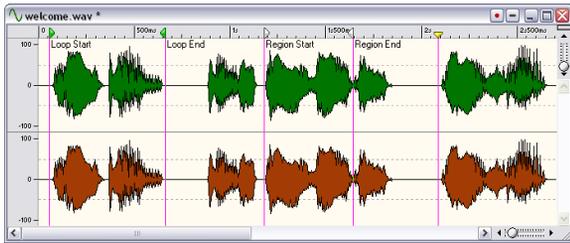
What are markers for?

Markers allow you to save and name certain positions in a file. You can use these positions later on in various ways:

- Set the wave cursor to a marker.
- Select all audio between two markers.
- Loop the section between two markers, etc.

There is no limit to the amount of markers you can have in a file.

⚠ This chapter describes how to use markers in Wave windows.
Audio CD Montages have their own markers, see "Using markers in the Montage" on page 127.

## The various marker types

The following marker types are available:

Marker type	Description
Generic	This is mainly used for locating certain important positions and for editing (for example selecting all audio between two positions). Generic markers can be created directly during recording if needed (see "About dropping markers during recording" on page 62).
Loop start and end	These are used for defining loop points. This is useful for editing purposes as well as when creating loop sounds (e.g. for samplers).
Region start and end	Use these to define start and end points for generic regions. This is useful for editing purposes and can be created directly during recording if needed (see "About dropping markers during recording" on page 62).

About marker pairs

Two of the marker types come in pairs: Loop and Region.

Since you can't have a region that starts but never ends, a loop end point without a start, etc., special rules exist for creating, deleting and moving these types of markers.

- Loop and region markers only have a functionality when balanced.

You can enter just a start marker, but its purpose will be defeated by the lack of a corresponding end marker. Furthermore, if you delete a start marker, the corresponding end marker will also be deleted.

About importing and saving loop markers

There are a few points to be aware of when importing files with loops into WaveLab Essential. This is because the loops can be defined in two places: Wave and AIFF file formats have the ability to contain loop points, and WaveLab Essential stores loop points as markers separately for each file, in ".MRK" files. So, there's a potential risk for conflict:

- When you import a file that has never been used in WaveLab Essential before, and which contains loops, the loops are "imported" and displayed as loop markers (in addition, the sample note and detune information described in the section "Editing sample attributes" on page 170 is imported, if present).
- When you then save the file in AIFF or Wave format, the loop points are stored, both as part of the actual file (so that other applications can read them) and in the ".MRK" file (for WaveLab Essential).
- When you open a file that has been used in WaveLab Essential before, loop indications that were originally in the file, before you used it in WaveLab Essential, are ignored. Only the loop information in the ".MRK" file is used.

The Marker toolbar

This is a special control bar for markers. It can be brought up from the Control Bars submenu on the View menu.
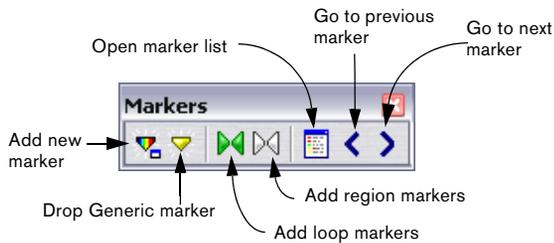
Creating markers

Dropping markers on the fly

To add a marker on the fly, proceed as follows:

1. Play back the file.

2. When the cursor reaches the position where you want a marker, do one of the following:

• Press [Insert].

• Click the Drop marker button on the Marker toolbar.

• Select Drop Marker from the time ruler speed menu.
You can give the marker a proper name later.

⇨ The markers dropped this way are generic.

Creating a marker from "stop mode"

1. Set the wave cursor to where you want the marker to appear.

2. Do one of the following:

• Click on the New Marker button on the Marker toolbar.

• Click with the right mouse button on the time ruler and select New Marker from the menu that appears.

• Press [Ctrl]+[Insert] as a shortcut for the "New Marker" operation described above.

3. Select a marker type.

4. Fill out the other options in the dialog and click OK.
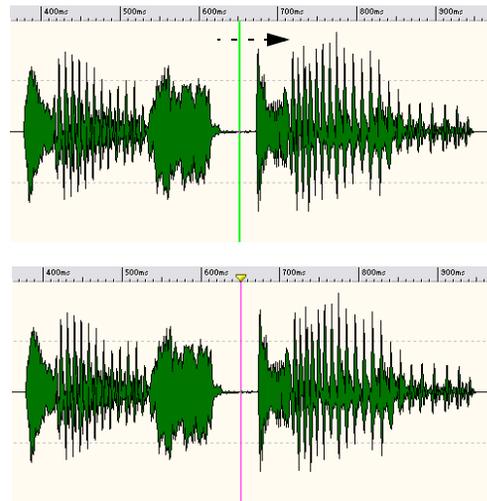
The new marker appears at the wave cursor position.

Dropping markers while recording

You can drop markers during a recording. For example, if you are auditioning some material while transferring it from DAT tape to WaveLab Essential, you can add markers at important positions, as they are coming up. The marker types you can add are: Generic, Region start and Region end. See "About dropping markers during recording" on page 62.

Creating marker pairs from the Marker toolbar

To create a loop or a generic region, you can use the Marker toolbar:

**1.** Make a selection that spans the area you want to enclose by a marker pair.

2. Click on the corresponding marker pair symbol on the Marker toolbar.
Markers are added at the start and end of the selection.

About the marker list

There is a marker list window that displays all markers in a wave. This can be used for various purposes, for editing, deleting and locating to markers, as described in the following sections.

Opening the list

To open the marker list, either select "Specialized Windows"/"Wave Marker List" from the View menu, or click the corresponding button on the Marker toolbar.
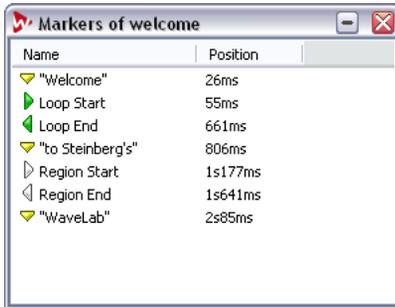
The marker list

▪ To sort the list alphabetically, click on the "Name" heading.

▪ To sort the list according to position, click the "Position" heading.
This is the default when you first open the window.

Marker appearance and visibility

Hiding marker heads

To hide/display the marker triangles from the ruler, click with the right mouse button in the ruler and select Hide/Show Marker Heads.

Changing the appearance of marker lines

To hide the marker lines in the waveform, click with the right mouse button in the waveform and select Elements. From the menu that appears, set things up so that neither Solid markers, nor Dotted markers are activated.

Hiding all markers of a certain type

There's a special dialog for hiding markers of certain types. To open it:

▪ Click with the right mouse button on the time ruler and select Visibility, or…

▪ Open the marker list, click with the right mouse button on a marker and select Visibility.

In this dialog you can show/hide markers of any type.

Editing, converting and naming markers

The Edit Marker window can be used to change existing marker's properties. There are several ways to open this window with settings for a certain marker:

▪ Right click on the marker in the time ruler and choose "Edit Marker" from the menu that appears.
▪ Hold down [Alt] and double click on the marker.
▪ Open the marker list, select a marker and click with the right mouse button on a marker and select Edit or press [Return].

To transform a marker into any other type, select that type in the list to the left.

To rename a marker, uncheck "Automatic naming" and type in a name of your own choice. The name of the marker will then be visible beside it. The name of the marker will also be shown as a "tip" if you move the mouse pointer over the marker head and wait for a moment.
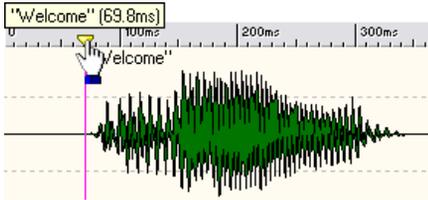
The name of the marker is shown as a "tip".

▪ If the marker is a loop end marker you can change the number of loop repetitions by unchecking Infinite and specifying your own number of loops.

Moving and duplicating markers

To move a marker, press the mouse button over the triangle "Head" and drag to the new position.

⇨ If "Magnetize bounds" is activated (see "Dropping on markers (Magnetize bounds)" on page 102) the marker "snaps" to the edges of the selection, the cursor's position and the beginning and end of the wave.

⇨ If you hold down [Shift] while dragging a marker in the ruler, you will be duplicating it instead of moving it.

Deleting markers

⚠ When you delete one marker in a marker pair, the other marker will also be deleted.

Deleting one marker from the Wave window

1. To delete a marker in the Wave window, click with the right mouse button on the head of marker you want to delete.

2. Select Delete.
Alternatively you can drag the marker out of the window.

Deleting in the marker list

1. Hold down [Ctrl] and double click in the ruler.
The wave markers window appears.

2. Click with the right mouse button on the marker you want to delete.

3. Select Delete.

Deleting all markers of a certain type

1. Click with the right mouse button on the time ruler.

2. Select "Delete Multiple Markers…".

3. Check the marker types that you want to delete.

4. Click OK.

Operations involving markers

Setting the wave cursor to a marker position

To move the wave cursor to a certain marker, do one of the following:

▪ Double click on the marker triangle.
This is probably the most convenient option if the marker is currently visible in the window. This even works during playback!

▪ Open the marker list and select one of the markers on it.
This is probably the most convenient option if the marker is outside the current view.

▪ Activate "Magnetize bounds" on the Options menu.
Click on the ruler close to the marker, or drag the cursor to a position close to the marker.

Browsing markers

You can move the wave cursor from marker to marker by clicking the arrow buttons on the Marker toolbar, or by using the keys [4] and [5] on the numeric key pad.

Starting playback from a marker

There are several ways to make playback start from a certain marker:

▪ Locate to a marker, as described above, and activate playback from there.

▪ Double click on a marker in the marker list.

▪ Select one of the marker related options on the Transport bar (see "Setting the start point for playback" on page 58 for details).

Selecting between markers

To select all audio between two adjacent markers, double click between them.

Double clicking here…

…selects the audio between the markers.
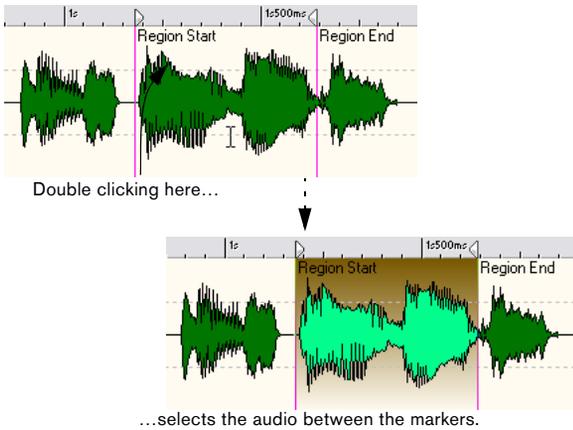
You can extend the selection to consecutive markers, by continuing to drag to the left/right.

To select all audio between any two markers, double click just to the right of the leftmost one, hold down [Shift] and double click just to the left of the rightmost one.

Make this selection by dou-
ble clicking as above…

…then press [Shift] and double
click to the left of the rightmost
marker…
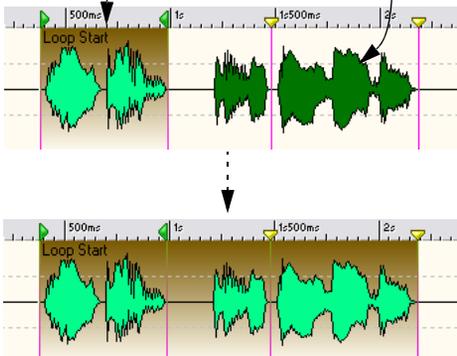
…to select all audio between the leftmost and rightmost markers.

Dropping on markers (Magnetize bounds)

For any operation involving drag and drop of audio material you can use a marker position as start point for the section you drop. This is useful when it is very important that the dropped material is inserted at a very specific position.

1. Make sure Magnetize bounds (on the Options menu) is activated.

2. Drag the selection, and position the mouse pointer close to a marker line.
The "drag line" snaps to the marker line.

3. Make sure the marker line and the drag line appear on top of each other, then release the mouse button.

If you point at a marker when using drag and drop, the audio will be inserted there.
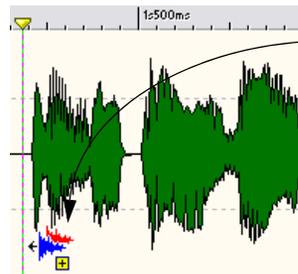
Looping

Loop markers are primarily intended for creating loop sounds (e.g. for samplers) as described in the section "Sampling and creating loops" on page 169, but you can use loop markers in various additional ways:

▪ Set up a loop and repeat it indefinitely during playback, while editing material inside the loop.
For more information on playback and loops, see "Looping" on page 58.

▪ Set up a loop with a specified number of repetitions, to check out how a repetition effect will sound.

▪ Note that you can nest loops, that is you can have loops inside loops.

13

The Audio CD Montage

Introduction

The Audio CD Montage is an environment that lets you non-destructively edit, play back and arrange audio clips as tracks on an audio CD. Features include clip-based effects, volume automation, wide-ranging fade and cross-fade functions and direct audio CD recording.

The Audio CD Montage is a great tool for mastering and music CD creation, but also for general multimedia work, radio spot production, etc.

Basic terminology

The Audio CD Montage can contain two stereo or mono audio tracks. These provide a way for the user to structure the work graphically, but should not be viewed 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 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.

In addition to audio tracks you can create a video track (see "Using video tracks" on page 130) in the Audio CD Montage.

The Audio CD Montage window

The CD view selected in the upper pane

Tracks   Clips   The Track View
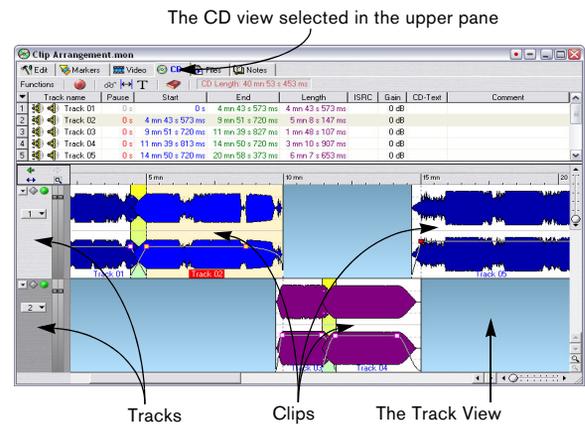
About the two panes and the views

The Audio CD Montage window is divided into two "panes". The lower pane always shows the tracks and the clips, while the upper pane shows one of six views, as listed below.

▪ You can resize the upper and lower panes by dragging the divider between the panes up or down.

▪ You can choose to view the upper pane or the Track View only, by selecting "Show tabs only" or "Show Tracks only" from the main View menu.
To revert to the standard view (showing both panes), pull down the View menu again and deselect the selected option.

▪ You select views for the upper pane by clicking the tabs at the top of the Montage window (see below).
Apart from the actual displays, the different views may have different menus and icon bars.

The following views are available:

View	Description
Edit	This is where you configure various options for editing, fading, selecting, etc.
Markers	This view allows you to add and manage markers in the Montage. See "Using markers in the Montage" on page 127.
Video	Displays the contents of the video track in the upper pane of the Audio CD Montage. See "Using video tracks" on page 130.

View	Description
CD	This is where you prepare for writing a CD directly from the Audio CD Montage (see "Preparing the Audio CD Montage for CD burning" on page 132).
Files	Contains various tools for audio file management, including direct import of audio files into the Montage. See "The Files view" on page 117.
Notes	A standard notepad.

▪ If the Montage window is too narrow to show all tabs, two arrow buttons are displayed in the upper right corner of the window.

Use these to "move" the row of tabs so that you can see and click the one you want.

About naming

Most of the views contain one or several menus. To make it clear which menu is meant in each case, we use the following syntax:

▪ X view : Y menu

For example, "Edit view : Options menu" means the Options menu in the Edit view.

The ruler

At the top of the Track View in the Audio CD Montage window, there is a ruler, similar to that in the Wave window. To change the ruler format, right-click in the ruler and make a selection from the pop-up menu that appears.
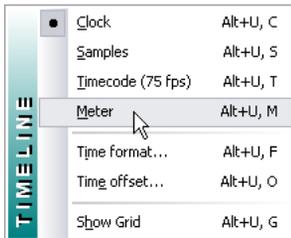
Selecting Meter format on the ruler pop-up menu

▪ Depending on the selected format, you can make detailed display settings by selecting "Time format…" from this pop-up menu.

▪ It is also possible to offset the ruler, so that "zero" is somewhere other than at the actual start of the Montage (this is done by selecting "Time offset…").

The time grid

If you like, a "grid" can be displayed in the Track View, consisting of vertical lines at every labeled position in the ruler. To show or hide the grid, right-click in the ruler and activate or deactivate the "Show Grid" option on the pop-up menu.
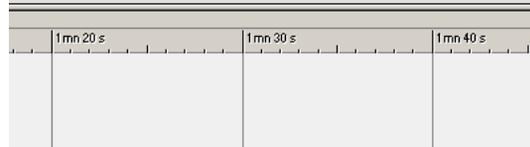
Time grid activated

Assembling the Montage

Creating a new Montage

1. Pull down the File menu and open the New submenu.

2. Select the "Audio CD Montage…" item.
The Sample rate dialog appears.

3. Specify the preferred sample rate.
The audio files that you want to use in the Montage must have this sample rate.

⚠ If you plan to burn a CD from the Audio CD Montage, you have to select the 44.1 kHz sample rate.

4. Click OK.
A new Audio CD Montage window appears, containing one stereo track.

⚠ If you have saved a template (see "Saving a Montage template" on page 129), the Sample rate dialog will not automatically be displayed (since the new Montage will use the sample rate saved in the template).

Alternative ways to create a Montage

There are other ways to generate a new Montage "automatically":

▪ By importing Audio CD tracks directly to a Montage.
When using the Import Audio CD tracks function on the Tools menu, you can automatically create an Audio CD Montage playing the imported tracks. See "Convert to Montage" on page 145.

▪ By opening a Wave file and selecting "Create Audio CD Montage from Wave" on the Edit menu.
This option is also available in the Open – Wave dialog (File menu).

Handling tracks

Creating and managing tracks is done in the area to the left of the tracks in the Track View (from now on called the Track Control area). In the middle of this area is a button with the number of the track. Clicking this button brings up the track pop-up menu, which contains most of the track functions.
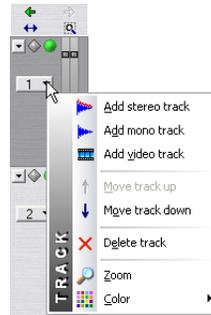
Adding tracks

There are two different track types available in the Montage: audio and video (see "Using video tracks" on page 130).

1. Click on the track number button for a track next to where you want to add a new track.
The track pop-up menu appears.

2. Select one of the Add items at the top of the menu.
You can choose what type of track to insert and, if an audio track is to be inserted, whether the new audio track should be mono or stereo. By default, the new track is added below the focused track. If you wish to place it above the focused track rather than below, press [Ctrl] when adding the new track.

Moving tracks

To move a track up or down in the Track View, proceed as follows:

1. Click on the track number button for the track that you want to move.
The track pop-up menu appears.

2. Select "Move track up" or "Move track down".

Deleting tracks

To remove unwanted tracks, proceed as follows:

1. Click on the track number button for the track that you want to delete.
The track pop-up menu appears.

2. Select Delete track.
If there are clips on the selected track, you will be asked whether you really want to delete the track. Click OK to proceed.

⚠ Deleting a track with clips will also delete the clips! However, the audio files to which the clips refer will not be affected. Also remember that you can recover accidentally deleted clips by using the Undo function.

Folding tracks

To save screen space, you can fold tracks that you don't need to have visible. This is done by clicking the arrow button at the top left corner of the Track Control area.
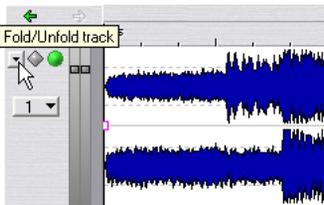
Click on the arrow…
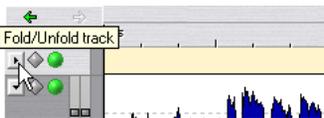
…to fold the track.

To unfold a folded track, just click on the button again, or double click anywhere in the folded track.

Adding audio clips to the Montage

You can create clips by copying audio selections from Wave windows into the Audio CD Montage. There are several ways to do this:

⚠ You cannot add a mono clip to a stereo track or vice versa. Also, the clip's audio file has to have the same sample rate as the Audio CD Montage.

By using drag and drop from Wave windows

Select the audio section that you want the clip to refer to, and drag the selection into the Montage window and drop it on a track.

A clip is created, named after the original audio file. You can change the name of clips in the Audio CD Montage, as described in the section "Renaming files and clips" on page 117.

▪ If you want to drag the whole audio file from the Wave window to the Audio CD Montage, you don't need to make a selection first.
Instead you can click on the Document icon at the upper right corner of the Wave window and drag it to the Montage.

▪ You can also drag files into the CD view's track list.

By inserting from open Wave windows

If one or several Wave windows are open, you can right-click an empty area on a Montage track and select any open Wave from the pop-up menu that appears.

If several Wave windows are open you can also select "Insert all open waves" from the pop-up to insert them all.

By using Copy and Paste

1. In the Wave window, select the audio section that you want the clip to refer to.

2. Select Copy from the Edit menu, or press [Ctrl]-[C].

3. Make the Audio CD Montage window active. In the Track Control area, select the track on which you want to put the clip, then click at the desired position in the track.
This selects the track (as indicated by the highlighted Track Control area to the left) and sets the Montage cursor position (as indicated by the vertical line).

4. Select Paste from the Edit menu, or press [Ctrl]-[V].

⚠ Once you have added the desired clips from an audio file, you don't need to have the original Wave window open. Should you need to edit the original (source) audio file, you can access it from the clip speed menu, as described in the section "Editing source files" on page 117 (any editing done to the source audio file is immediately reflected in all clips referring to the file).

By dragging from the Files view

This way, you can add clips without having Wave windows open:

1. Select the Files view by clicking the Files tab.
The view now shows a file navigation environment, similar to the Windows Explorer.

2. Use the left pane to locate and open the folder containing the audio files you want to import.
The contents of the folder is shown in the right pane.

3. Locate the desired audio file(s) and drag them to a Montage track.

By importing files

1. In the Track Control area, select the track on which you want to put the clip, then click at the desired position in the track.
This selects the track (as indicated by the highlighted Track Control area to the left) and sets the Montage cursor position (as indicated by the vertical line).

2. Right-click in an empty area on the track and select "Insert audio file(s)…" from the pop-up menu that appears.
A regular file dialog appears.

3. Locate and select the file(s) you want to import, and click Open.
The new clips are then added.

By copying clips from another Montage

If you have more than one Montage open, you can copy clips from one Montage to another. This can be done either by using drag and drop (from the Track View) or by using Copy and Paste. You can also use this method to copy clips within the same Montage.

⚠ When dragging or selecting clips in the Track View, you need to click at the appropriate mouse zone, as explained in the section "About the mouse zones (audio tracks only)" on page 113.

By dragging clips from the CD view

You can add clips (that are already used in the Montage) by using drag and drop from the CD view's track list.

About the auto-grouping options

The Track and Global auto-grouping icons.

There are two auto-grouping options that can be used when inserting clips. If any of these auto-grouping options are activated in the Edit view, clips to the right of the insertion point will be moved to the right to "make room" for the inserted clips.

If you are adding several clips at the same time, these options affect the result in the following way:

- If "Track auto-grouping" is activated, clips on the same track, to the right of the insertion point, will be moved to the right to "make room" for the added clips.
- If "Global auto-grouping" is activated, clips on all tracks, to the right of the insertion point, will be moved in the same way.

Zooming and navigating

Horizontal and vertical zoom controls
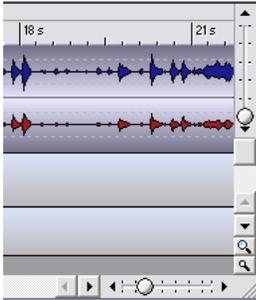
The zoom "levers" in the upper and lower right corners of the Montage window work just like in the Wave windows.

Note that changing the vertical zoom does not affect the height of the tracks. Rather, it affects the vertical magnification of the waveforms within each (audio) clip.

Zooming in the ruler

As in the Wave windows, you can adjust the horizontal zoom by clicking in the ruler and dragging the pointer up or down with the mouse button pressed. Drag up to zoom out and drag down to zoom in.

⇨ If you hold down [Shift] while zooming this way, the Montage cursor position isn't affected.

Changing the height of tracks

The height of the tracks (and thereby the number of tracks displayed in the Montage window) is governed by the track magnification controls in the lower right corner of the Montage window.

• Click on the large Magnifying Glass icon to "zoom in" – increase the height of the tracks.
This is the same as displaying one track less. When only one track is displayed, this icon will be greyed out.

• Click on the small Magnifying Glass icon to "zoom out" – decrease the height of the tracks.
This is the same as displaying one track more. When all tracks are visible, this icon will be greyed out. Consequentially, if the Montage only contains one track, both Magnifying Glass icons will be greyed out.

• You can zoom in on a single track, making it fill the window.
This is done by clicking the numbered button to the left of the track to bring up the track pop-up menu, and selecting "Zoom".

Zooming with the Rubber Band tool

1. Click the magnifying glass icon in the top left corner of the Track View.
The pointer takes on the shape of a "four-way arrow" with a magnifying glass.

2. Click and drag a rectangle in the Track View, to indicate the section you want to zoom in on.
When you release the mouse button, the Track View is magnified, so that the section in the rectangle fills out the display. Note that the magnified view will include any tracks fully or partially enclosed by the rectangle.
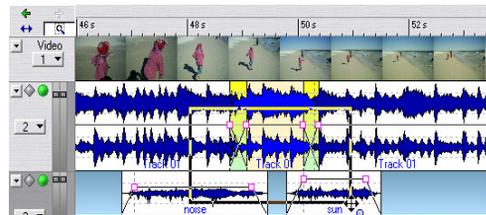
Drag a rectangle and release the mouse button…
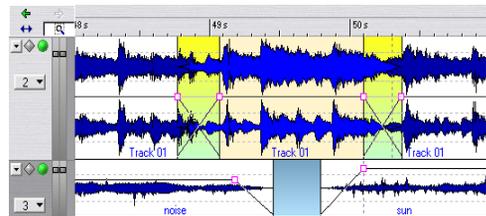
… and the selection is magnified to fill out the Track View display.

3. Deactivate the Rubber Band tool by clicking the icon again, or by right-clicking anywhere in the Track View.

• It is also possible to temporarily select the Rubber Band tool, by holding down [Ctrl] and aiming in an empty area of the Track View.

Zooming in on a single audio clip

If you want to study an audio clip in detail, you can zoom in on it so that it fills up the track display:

1. Point at the audio clip.
Make sure you don't aim at an envelope curve.

2. Click with the right mouse button.
The clip speed menu appears, containing various clip-based functions and settings.

3. Select "Zoom", and from the submenu that appears, "Whole Clip".
The Track View zooms in on the clip.

Zooming and navigating in the Edit Overview

When the Edit view is selected (by clicking the Edit tab), the upper pane shows an Overview of the Montage, with clips displayed as boxes. You can use this Overview to zoom in or out, and for navigating to other sections of the Montage. This is done by moving and resizing the Track View rectangle in the Overview:

The Track View rectangle
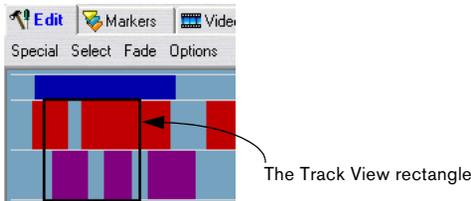
• The Track View rectangle indicates the section of the Montage currently displayed in the Track View.

• You can zoom in or out, vertically or horizontally, by resizing the Track View rectangle.
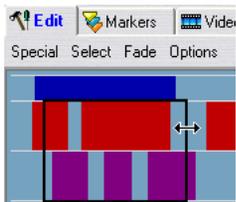
You can also resize the rectangle horizontally by holding down [Shift] and clicking. This will instantly move the closest edge of the rectangle to the clicked position.

• You can drag the Track View rectangle to view other sections of the Audio CD Montage.

• Clicking on one of the clip boxes outside the Track View rectangle will make the Track View zoom in horizontally on that clip.
The number of tracks shown will not change.

• Double clicking on one of the clip boxes in the Overview will make the Track View zoom in horizontally and vertically on that clip.

• Right-clicking anywhere in the Overview will make the Track View zoom out, so that the whole Audio CD Montage is visible.
The Key Command for this is [J].

• To identify a clip in the Overview, position the pointer over its box.
The name of the clip is displayed.

Moving the Montage cursor

To move the Montage cursor, you can either click at the desired position, use the Transport bar or use the computer keyboard.

• You can click in the ruler, in an empty section of the Montage or within a clip (anywhere except in the mouse zone used for copying clips by dragging, and on the volume envelope line).
The mouse zone concept is described in the section "About the mouse zones (audio tracks only)" on page 113.

• The buttons on the Transport bar work as in the Wave windows.
The Fast Forward and Rewind buttons scroll the playback position forwards or backwards, while the start and end buttons move the playback position to the start or end of the Montage.

• The left and right arrow buttons on the computer keyboard can be used to move the Montage cursor in finer steps.
If you hold down [Ctrl] and press the left or right arrow button, the Montage cursor will jump to the nearest clip edge (start or end position of a clip). It is also possible to move the Cursor by using the Page Up, Page Down, Home and End keys.

Undoing view and position changes

There is a separate "Undo history" for zoom, view and position changes in the Audio CD Montage. This allows you to undo one or several changes, in the following way:

▪ To undo the latest change to the view, click the green left arrow to the left of the Track View ruler (or press [7] on the numeric keypad).

You can repeat this as long as there is any change to undo (as long as the green left arrow is lit). This Undo history includes changes to zoom, view and cursor position.
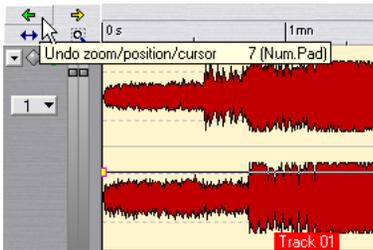
▪ To redo an undone view change, click the yellow right arrow to the left of the Track View ruler (or press [8] on the numeric keypad).

## Maximizing the width of the Audio CD Montage

If you click the double arrow icon at the top left corner of the Track View, the Montage window is enlarged horizontally to fill the screen.
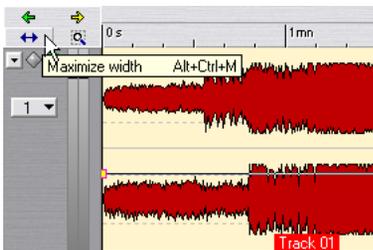
Playing back

Playback in the Audio CD Montage works in much the same way as in the Wave windows.

⇨ Audio tracks are routed through the Master Section.
This allows you to add global effects to the Audio CD Montage or use the Render function to create a mixdown audio file (see "Mixing down – The Render function" on page 131).

Mute and solo

You can mute or solo tracks in the Montage by using the corresponding buttons in the Track Control area:
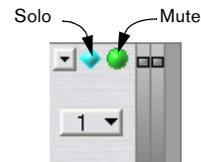
▪ Note that a track is muted when the green button is dark.

▪ Note that a track is soloed when the Solo button is blue (lit).

▪ The Solo buttons are exclusive, that is, solo can only be activated for one track at a time.

The track activity indicator

The track activity indicator
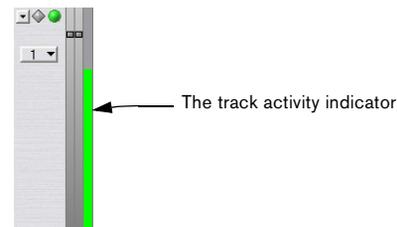
The track activity indicator is located on the right side of the Track Control area. This shows the volume level for audio tracks. It is not intended to give exact level readings but rather to provide an overview of which tracks are currently playing back audio, and at what approximate level.

About the track gain faders
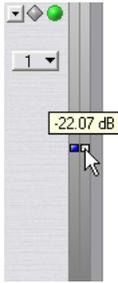
The track gain faders are located to the left of the track activity indicator in the Track Control area. They provide a simple way of adjusting the level for all clips on an audio track.

▪ The track gain is independent from both the volume envelope and the clip gain.

▪ The track gain can be lowered down to -48 dB, and increased up to 6 dB.
If you change the level by dragging the faders, the fader handles change from grey to red/blue to indicate that the level is offset from the default 0 dB setting. If you point at the faders, the current gain setting is shown.

▪ In the audio chain, the track gain affects the level post any clip effects and before the Master Section.

▪ The track activity meter does not reflect the track gain setting, nor is track gain reflected in the waveform.

▪ Press [Shift] and drag a fader handle to change the level for the left or right side of a stereo track separately.
Press [Ctrl] and click on the fader to reset the level to 0 dB.

Playing back individual clips and selections

When editing and rearranging the Audio CD Montage, it can be useful to audition the individual clips and selections. This is done using the clip speed menu:

1. Right-click on the clip you want to play back (make sure you don't click on the envelope curve, as this will open another speed menu).
The clip speed menu appears.

2. Select one of the "Play" items.
"Play clip" plays back the clip you clicked on.
"Play (with Pre-roll)" plays back the clip you clicked on, starting slightly before the clip.
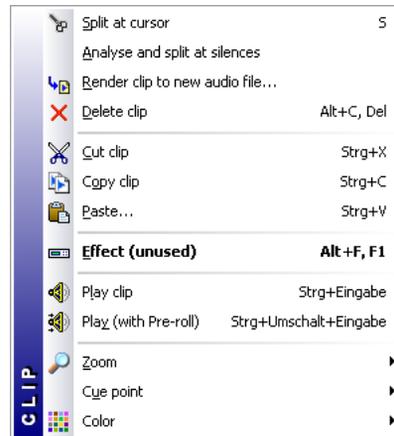
The clip speed menu

Playing back from the ruler

You can use the ruler to quickly locate to a position and start playback from there:

▪ Double clicking in the ruler starts playback from that position.
Playback continues until you press Stop (or until the end of the Montage).

▪ If you double click in the ruler and keep the mouse button pressed, playback will start from that position and stop when you release the mouse button.
After stopping, the Montage cursor will return to the position where you clicked. This is a handy way to quickly locate and audition positions in the Montage.

▪ If you single click in the ruler during playback, playback will immediately jump to that position.
This even allows you to "jump" between different document windows.

Rearranging clips

About the mouse zones (audio tracks only)

Basic rearranging of clips in the Audio CD Montage is done by clicking and dragging with the mouse. However, the results of dragging with the mouse depend on where in the clip you click. The different areas in a clip are called mouse zones.
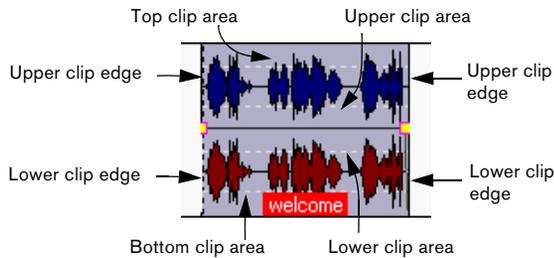
The mouse zones have the following basic functionalities:

| Mouse zone	Description
Top clip area	Copy clip by dragging (see "Duplicating clips" on page 115).
Upper, lower and bottom clip area	Select clips and move clips by dragging (see "Selecting clips" on page 113 and "Moving clips" on page 114).
Upper and lower clip edges	Resize clips by dragging the edges (see "Resizing clips" on page 115).

Magnetic bounds

When you move and edit clips, it is often useful to have them snap to other clips as well as to significant positions in the Montage. To facilitate this, certain items can be "magnetic":

Item	Description
Start of Audio CD Montage	The start of the Audio CD Montage.
Clip's cue-point	A position within a clip that you set using the clip speed menu (see "Using cue points" on page 116).
Clip's head	The start of a clip.
Clip's tail	The end of a clip.
Audio CD Montage markers	Markers in the Audio CD Montage window (see "Using markers in the Montage" on page 127).
Cursor	The Montage cursor position.

Activating Snap

In order to activate the Magnetic bounds option, you activate the Snap function by clicking the "Enable snapping" icon in the Edit view (or by pressing [N] on the computer keyboard).

Now, when you move or resize a clip and its edges (or its cue point) get close to one of the Magnetic positions, two things happen:

▪ The clip snaps to the magnetic position.
▪ A label is displayed, indicating what the clip snaps to.
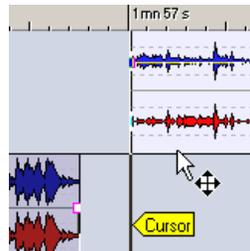
To deactivate Snap, click the icon again or press [N].

Selecting clips

To select a clip (for copying, deletion, etc.), click in the bottom clip area.
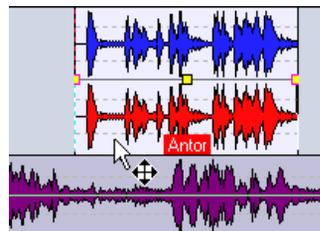
Selected clips are normally displayed in a different color. You can edit this color, as described in the section "Defining custom colors" on page 182.

▪ You can select multiple clips by [Ctrl]-clicking.
This works in the same way as selecting multiple objects in other Windows programs.

▪ Holding down [Shift] and clicking allows you to select a range of consecutive clips (on the same track).

Again, this is similar to how you select ranges of objects in other Windows programs.

Using the Select menu

The Edit view : Select menu holds several items for selecting clips:
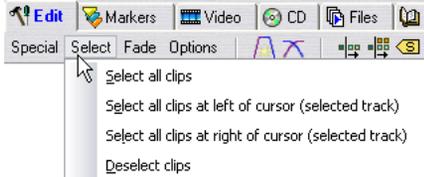
Option	Description
Select all clips	Selects all clips in the Montage.
Select all clips at left of cursor (selected track)	Selects all clips with the endpoint to the left of the Montage cursor, on the selected track.
Select all clips at right of cursor (selected track)	Selects all clips that start to the right of the Montage cursor, on the selected track.
Deselect clips	Deselects the currently selected clips.

About selected and focused clips

The program makes a distinction between selected and focused clips:

▪ A selected clip is a clip you have selected using the any of the procedures described above.

Several clips can be selected at the same time.

▪ The focused clip is the clip you selected (or 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:
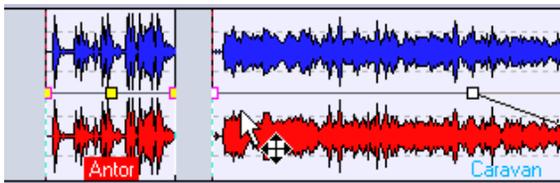
Clicking on the selected clip to the right makes it the focused clip.

Moving clips

To move a clip, proceed as follows:

1. If you want to move more than one clip, you need to select these clips first.

2. Position the pointer over the clip, in the lower clip area.

The pointer takes on the shape of a "four-way arrow".
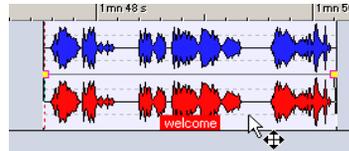
3. Click and drag the clip(s) in any direction.

▪ The clip(s) will snap to any activated magnetic bounds, see "Magnetic bounds" on page 113.

▪ If you move clips sideways, the auto-grouping settings are taken into account, as described below.

If you move the clip over another track, auto-grouping is temporarily disabled until you release the mouse button.

▪ If you click on a clip, keep the mouse button pressed and then press [Shift], movement is restricted to vertical.

This is useful if you want to move a clip to another track without accidentally changing its horizontal position.

▪ You cannot move mono clips to stereo tracks or vice versa.

Moving with auto-grouping

There are two options on the Edit view : Options menu that affect the result when you move clips horizontally: Track auto-grouping and Global auto-grouping. There are also separate icons for these options on the toolbar in Edit view mode:
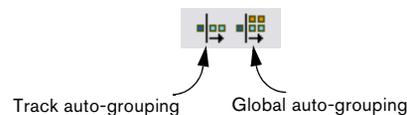
Track auto-grouping   Global auto-grouping

▪ If Track auto-grouping is activated when you move a clip sideways, all clips to the right of it on the destination track will be moved by the same amount.

▪ If Global auto-grouping is activated when you move a clip sideways, all clips to the right of it in the whole Audio CD Montage will be moved accordingly.

About overlapping clips

You can move clips so that they overlap each other on the same track. Please note:

▪ The tracks in the Audio CD Montage are polyphonic, which means that each track can play back several overlapping clips at the same time.
Overlapping clips will be transparent, allowing you to see the underlying clips and their waveforms.

▪ To select an overlapped (underlying) clip, double click in the bottom clip area.

▪ There is an automatic crossfading option that automatically adjusts the volume envelope curves when you overlap clips.
This is described in the section "Using crossfades" on page 122.

Duplicating clips

To make a copy of a clip, proceed as follows:

1. If you want to copy more than one clip, you need to select these clips first.

2. Position the pointer over the clip, in the top clip area.
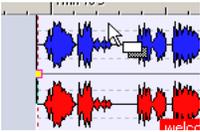
3. Click and drag the clip(s) in any direction.
While you are dragging the clip(s), a dotted line indicates where the first of the copied clips will end up.

4. Release the mouse button.

▪ The clip(s) will snap to any activated magnetic bounds, see "Magnetic bounds" on page 113.

▪ You cannot copy mono clips to stereo tracks or vice versa.

Duplicating with auto-grouping

If you are copying more than one clip at the same time, the auto-grouping settings in the Edit view affect the result (see "Moving with auto-grouping" on page 114):

▪ If Track auto-grouping is activated when you duplicate clips, all clips on the destination track, to the right of the new copy, will be moved to the right, to "make room" for the new clips.

▪ If Global auto-grouping is activated when you duplicate clips, all clips to the right of the new copy in the whole Audio CD Montage will be moved to the right in the same way.

Resizing clips

In this context, "resizing" means moving the start and end points of a clip, so that more or less of the original audio file is "revealed" with the audio source being "static".

As with other clip operations, the mouse zones determine when this function is used, and the pointer changes shape accordingly.

The "Resize clips" pointer.

Resize clips

You move the clip's start or end point to the left or to the right:

1. Point at the left or right edge of the clip.
It doesn't matter whether you click in the upper or lower half of the edge.

2. Click and drag to the right or left.

▪ You cannot drag the edge of a clip past the start or end point of the audio file it refers to.

▪ The clip edges will snap to any activated magnetic bounds, as described in the section "Magnetic bounds" on page 113.

▪ When you drag the right edge of a clip this way, the auto-grouping settings on the Edit view : Options menu are taken into account.
As when copying clips, this means that if Track auto-grouping is activated, all the following clips on the track will be moved when you resize the clip (so that the distance between the clip's right edge and the next clip on the track remains the same).
If Global auto-grouping is activated, the same is true, but for clips on all tracks in the Audio CD Montage.

Resizing all selected clips

▪ If you press [Alt] when resizing, all selected clips will be resized by the same amount.

Splitting a clip

You can split a clip in two, using the following method:

1. Set the Montage cursor to the position at which you want to split the clip.

2. Position the pointer over the cursor, in the top clip area.
The cursor takes on the shape of a pair of scissors.

3. Double click.
The clip is split in two. The two clips will have the same name and settings. Envelopes and fades (see "The volume envelope" on page 117) are converted, so that the two clips play back as before.

▪ If the options "Create default fades in new clips" is activated on the Edit view : Fade menu, a crossfade is automatically created between the resulting left and right clip.

▪ You can also split a clip by setting the Montage cursor and selecting "Split at Cursor" from the clip speed menu, or by pressing [S] on the computer keyboard.

Analyse and split at silences

You can use this function from the clip speed menu to split a clip into two or more separate clips. The clip will be analysed and split at its silent passages automatically. After this a dialog will come up, allowing to adjust the pause times between the separate clips.

Deleting clips

There are two principal ways to delete a clip:

▪ Right-click on the clip to bring up the clip speed menu, and select "Delete clip".

▪ Select it, and press [Backspace].
Instead of using [Backspace], you can press the [Delete] key or select "Delete" from the main Edit menu.

Using 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.
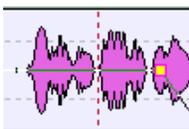
A cue point

When you move a clip, its cue point will be magnetic to any edges, markers or other Magnetic bounds positions (see "Magnetic bounds" on page 113). There are several uses for this:

▪ Set the cue point at a "relevant" position in the audio and use it to align the clip with other clips, etc.
▪ Set the cue point before the start of a clip, allowing you to position clips in a row with pre-defined spaces (by magnetizing the cue point to the end of the previous clip).
▪ 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 (see "Using crossfades" on page 122).

To set the cue point for a clip, proceed as follows:

1. If you want to set the cue point at an arbitrary position, move the Montage cursor to that position.
This may be within the clip or outside it.

2. Right-click on the clip to bring up the clip speed menu.

3. Open the Cue point submenu.

4. Select one of the functions on the submenu:

Option	Description
Set at cursor	Sets the cue point at the current Montage cursor position.
Follows fade-in end point	Sets the cue point at the clip's fade-in junction point (the left purple handle in the volume envelope). The cue point will follow the handle if you move it. See "Editing fades" on page 121.
Follows fade-out start point	As the previous option, but for the fade-out start point.

⚠ Each clip can only have one cue point. This means that if you repeat the procedure above and select another option on the submenu, the cue point will be moved to a new position.

Managing clips and source files

There are some functions to help you check and manage the relationship between the clips and their source audio files:

The Files view
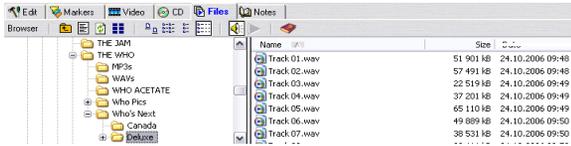
The Files view shows the files and folders on your hard disk, and can be used for importing audio files via drag and drop into the Audio CD Montage (see "By dragging from the Files view" on page 108).

Editing source files

Editing the Montage may require that you process or edit the actual audio files referenced by the clips. This is done in the following way:

1. Double click in the Top Clip area (the mouse zone used for dragging/copying clips), or drag the clip from there onto the WaveLab Essential desktop.

A Wave window opens, showing the referenced source audio file with a selection corresponding to the clip.

2. Edit the file as desired, save it and return to the Audio CD Montage.

Please note the following:

⇨ Any editing you perform this way will affect all clips that use the audio file (including clips in other Audio CD Montages).

⇨ You can undo/redo all changes in Wave windows, and these changes will be reflected immediately in all open Montages.

⇨ If you reduce the length of the source audio file, so that it ends before the clip end point, the end of the corresponding clip(s) will be displayed in another color (inverse video), to alert you.

⇨ If you use "Save as" to save the source audio file under another name, the Montage will now refer to that new file instead.

This is true for all open Montages that refer to the file.

Renaming files and clips

You can rename source files and have all open Montages that reference the audio files automatically be updated. Just use the Rename dialog (see "Renaming files and documents (Rename)" on page 53).

You can also freely rename clips within a Montage simply by double clicking the clip's name label (this will in fact take you to the CD view automatically, where you can rename the clip in the track list).

The volume envelope

It is possible to create independent volume envelope curves for the clips in the Audio CD Montage. These envelope curves are used to automate volume, to create fades and crossfades, and for muting sections of clips.

How the envelope is displayed

All clips display a volume envelope curve. Actually, you should view the volume envelope as three separate envelopes: the fade-in part, the "sustain part" and the fade-out part. The purple points to the left and right on the curve are the fade-in and fade-out junction points that separate the fade parts from the sustain part.
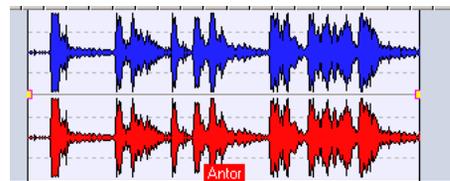
The default volume envelope, with zero fade-in and fade-out times.

The fade-in and fade-out parts of the envelope are described in the section "Using fades and crossfades in the Montage" on page 121. The following pages describe the "sustain part" of the envelope, that is, the section between the two fade junction points.

Graphic display of envelope curves

The envelope curve indicates at a glance if points, fade-ins or fade-outs have been defined. In addition to the curve, changes in the volume envelope are also reflected in the waveform itself.
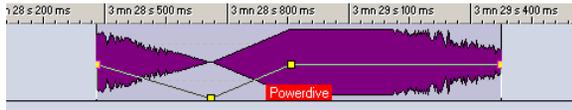
A defined volume envelope curve with the waveform reflecting the envelope changes.

The volume envelope mouse zone

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. Proceed as follows:

1. Place the mouse pointer on the curve.
The mouse pointer takes on the shape of a circle with two arrows pointing up and down, indicating the envelope mouse zone. A label also appears displaying the current clip volume in dB.
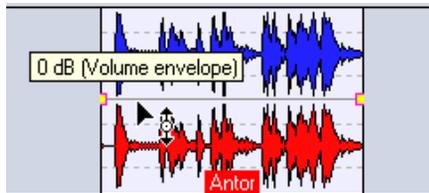
The volume envelope mouse zone

⚠ The envelope mouse zone is always linked to an envelope curve.

2. Click and drag the curve up or down to change the clip volume and release the mouse button.
A label appears displaying the new clip volume in dB.

## Editing envelopes

About using key commands

On the envelope speed menu, you will find that most functions have key commands. These will affect the envelope curve with the focus.

⇨ The focused envelope curve is displayed with yellow handles for the envelope points.
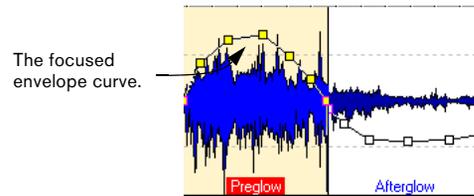
To set the focus to an envelope curve, click on it.

Adding volume envelope points

The volume envelope points allow you to "draw" volume curves in the clip. To add a point, double click on the envelope curve (or select "New point" from the envelope speed menu). You may add as many points as you like.

Selecting envelope points

⚠ The following sections apply to both volume and fade envelope points. In other words, you can select, deselect and move both sustain and fade envelope points.

Clicking on an envelope point selects it (it becomes red). You can also select several envelope points. The following rules apply:

▪ [Shift]-click (on a point) to select all points between a previously selected point and the current point.

▪ [Ctrl]-click (on a point) to select non-contiguous points in the envelope curve.

▪ [Alt]-click (anywhere in the clip) and draw a selection rectangle.
All points inside the rectangle become selected.

Deselecting points

You can deselect all selected points by clicking on a selected point or by selecting "Deselect all points" from the envelope speed menu. To deselect a single point (amongst other selected points), [Ctrl]-click the point you want to deselect.

Dragging volume envelope points

▪ To move a point, click on it and drag it in any direction.
The junction points (the points separating the Fade parts and the sustain part) will only move horizontally this way. To move a junction part vertically, press [Ctrl] and drag.

▪ To move several selected points, click any selected point and drag in any direction.
All selected points will be moved.

▪ Clicking on a curve segment (i.e. the part of an envelope curve between two selected points) allows all currently selected points to be moved vertically.
You are constrained to vertical movement using this method.

▪ Clicking on a curve segment (i.e. the part of an envelope curve between two selected points) and then pressing [Shift] allows all selected points to be moved horizontally.
You are constrained to horizontal movement using this method.

▪ [Ctrl]-clicking on the envelope curve and dragging it up or down will select (and move) the two nearest points to the right and left respectively.
You are constrained to vertical movement using this method. This method is useful as a shortcut for quickly adjusting the level of a curve segment.

▪ [Shift]-clicking on the envelope curve and dragging it left or right will select (and move) the two nearest points to the right and left respectively.
You are constrained to horizontal movement using this method. This method is useful when working with "Duck according to other track" (see "Duck according to other track" on page 119) since it allows you to quickly adjust the position of duck regions.

▪ Clicking and dragging the envelope curve up or down selects (and moves) all points.
You are constrained to vertical movement using this method. Note that points set to the minimum value are not affected.

▪ Holding down [Alt] and dragging the envelope curve up or down adjusts the corresponding envelopes in all selected clips.
This is a quick way to adjust the level or pan of several clips at the same time.

Deleting volume envelope points

⚠ The junction points between the sustain and fade parts of the envelope cannot be deleted.

There are three ways you can delete points:

▪ By double-clicking on a point.

▪ By right-clicking on the point and selecting "Delete point" from the envelope speed menu.
▪ By selecting points and selecting "Delete selected point(s)" from the envelope speed menu.

Resetting points and envelopes

There are various ways to reset the envelope:

▪ To reset a point to 0dB, right-click on the point and select "Reset point" from the envelope speed menu.

▪ To reset the whole envelope curve to default, right-click the envelope curve and select "Reset all" from the speed menu.

▪ To reset the sustain part of the volume envelope only, select "Reset sustain to 0dB" on the envelope speed menu.
All volume envelope points will be removed, but any defined fades will be left untouched.

Duck according to other track

This feature allows you to create ducking effects between clips on two adjacent tracks. Normally, ducking is when the signal level on one track or channel is automatically lowered by the presence of another signal on another track or channel. With "Duck according to other track" it is not the presence of another signal that causes ducking to take place, but the presence of another clip on an adjacent track.

The most obvious application of this feature is when mixing background music with a voice-over. When the voice-over starts, the level of the music is automatically lowered and when the voice-over stops, the level of the music is restored to the original level. This is done by automatically creating volume envelope curves. In the following example we have chosen to use "music" on the track to which ducking will be applied and a "voice-over" on an adjacent track that will cause ducking to take place.

⚠ The clips that cause ducking must be located completely inside the time range of the clip to which ducking is applied.

⚠️ If the clip(s) that cause ducking contain silent passages, ducking will not work properly. These clips have to be edited so that each phrase is a separate clip without any silence. This is because it is not the signal level that activates the ducking, but the clip itself.

⚠️ When "Duck according to other track" is performed it is applied to one clip at a time. If the music (in our example) consists of several clips that have been spliced together, only one of the clips will be ducked by the voice-over. One solution is to repeat the function for each clip, another is to use the "Render" function (see "Mixing down – The Render function" on page 131) in the Master Section to create a specific (single) file from the separate clips, and re-import this as a new clip in the Montage.

Proceed as follows:

1. Place the clips containing the music and the voice-over on separate adjacent tracks.
Make sure the voice-over clips are located inside the time range of the music clip.
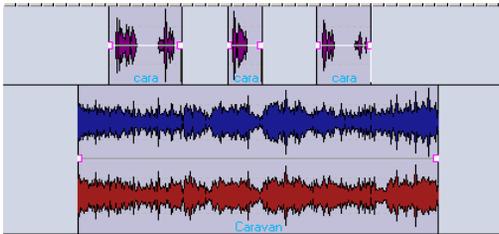
The three voice-over clips on the upper track are placed inside the time range of the music bed on the track below.

2. Open the envelope speed menu for the clip containing the music, and select "Duck according to other track…".
The Ducking options dialog opens.
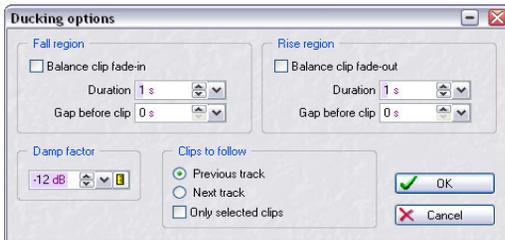
The Ducking options dialog

3. Click the appropriate "Previous track" or "Next track" radio button in the "Clips to follow" section (according to whether the voice-over track is above or below the music track in the Montage).
For now, we will use the default settings for the other dialog options.

4. Click "OK".
The level of the music is automatically lowered by the voice-over clips, as shown in the illustration below.
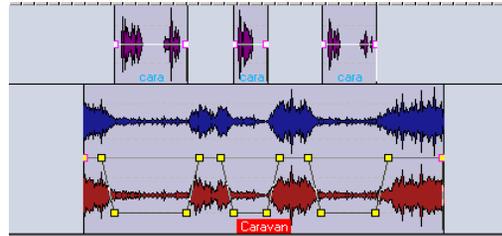
After applying "Duck according to other track"

The following parameters can be set in the Ducking options dialog:

Parameter	Description
Fall Duration	The time it takes for the level to fall when ducking starts.
Rise Duration	The time it takes for the level to rise to the original level after ducking ends.
Gap before Clip (Fall)	The time between the end of the Fall region and the start of the voice clip.
Gap before Clip (Rise)	The time between the end of the voice clip and the start of the Rise region.
Balance clip fade-in	If this is ticked, any Duration or Gap settings in the Fall region will be ignored. Instead the ducking envelope will lower the volume according to the time of the voice clip's fade-in curve.
Balance clip fade-out	If this is ticked, any Duration or Gap settings in the Rise region will be ignored. Instead the ducking envelope will raise the volume according to the time of the voice clip's fade-out curve.
Damp factor	This sets the amount of ducking, i.e. the level of attenuation applied to the affected clip.
Clips to follow	This determines whether the track that will cause ducking to take place is positioned before or after the track that will be ducked. If "Only selected clips" is ticked only the selected clips on the specified track will cause ducking.

Using fades and crossfades in the Montage

There are a number of different options to choose from when creating and editing fades and crossfades in the Montage. These are described in the following sections.

Creating fades

As mentioned earlier, 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, proceed as follows:

1. Click on the fade-in point at the beginning of a clip and drag it to the right.

The resulting linear (by default) fade-in 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.
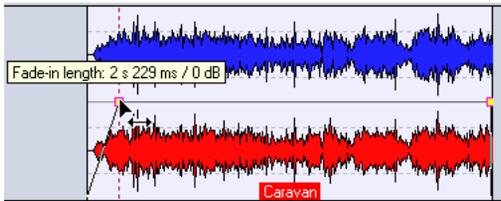
A linear fade-in

2. To create a fade-out, use the same basic procedure but instead click and drag the fade-out point at the end of the clip to the left.

▪ By default you can only move the fade junction points horizontally. To move them up or down, you need to hold down [Ctrl] and drag.

Editing fades

The operating procedure when creating and editing fades is identical to volume envelopes. Please refer to the volume envelope section for details.

▪ To make editing of fades easier, there are special Zoom options on the clip speed menu, for zooming in on the fade-in or fade-out area.

⚠ Note that the fade junction points (the points separating the fade parts from the sustain part) have a special property: If you move a junction point, all other points in the corresponding fade are moved proportionally, to maintain the shape of the fade!

Fade Options

Editing the fades of all selected clips

If you press [Alt] and change a fade-in or fade-out point, this will affect all selected clips simultaneously.

Create default fades in new clips

If this option is ticked on the Edit view : Fade menu, all new clips that are imported or recorded in the Montage will get the default fade-in and fade-out shape and length. This is also true for clips that are created by splitting a clip.

Using the fade- in/out ROM presets

If you select "Fade-in/out ROM Presets" on the envelope speed menu, a submenu opens where you can select various preset curves.

⚠ The fade-in/out ROM presets are only selectable on the envelope speed menu if the respective fade-in/out length in the clip is defined, i.e. not set to zero.

The following curve types can be selected (in these examples fade-in curves are used – the corresponding fade-out curves would of course display the mirror image):

Fade-in curve type		Description
Linear		This is the factory default fade curve. A straight line between two points.
Sinus		This produces a fade-in curve that starts out moderately fast but planes out towards the end. This curve type will provide a constant power crossfade.

Fade-in curve type		Description
Square-root		This creates a curve that fades in quickly then planes out. This curve type will provide a constant power crossfade.
Sinusoid		This creates an s-shaped fade, with a medium slow start and end fade.
Logarithmic		This creates a curve that fades in fast in the beginning, reaching full level early in the fade.
Exponential		This creates a curve that fades in slowly in the beginning.
Exponential +		This creates an even more pronounced exponential curve.

Using crossfades

A crossfade is a gradual fade between two clips, where one is faded in and the other faded out. Crossfades in the Montage are created automatically when clip edges overlap. To create an automatic crossfade, proceed as follows:

1. Click on the Edit tab and open the Edit view : Fade menu.

2. Select the menu item "Automatic crossfading – free overlaps".
This can also be selected by clicking the automatic crossfade icon.

The automatic crossfade icon

3. Move a clip so that it overlaps the edge of another clip.
The crossfade is automatically created in the overlap; by default two equal length linear fade curves, one fading out and the other fading in. This will also happen if you paste a clip so that it overlaps another clip.
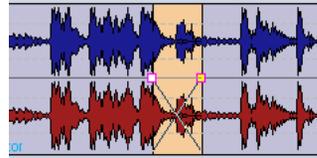
Crossfade option

The automatic crossfade option on the Edit view : Fade menu determines if automatic crossfades will be created in the Montage:

▪ Automatic crossfading – free overlaps.
If this is activated, automatic crossfades are created when a clip overlaps the edge of another clip on the same track, and the length of the overlap determines the length of the crossfade.

Editing crossfades

The factory default automatic crossfade is linear, using the same shape and fade lengths for both the fade-in and fade-out. Most of the time, an unaltered linear or sinus crossfade will produce the desired result. You can, however, create crossfades with totally independent shapes and lengths for the fade-in and fade-out curves. The following rules apply:

▪ You can edit the fade-in and fade-out curves in crossfades in exactly the same way as fades.

▪ To change the crossfade time (the width of the crossfade zone) "symmetrically", press [Shift] and move left and right.

▪ Press [Ctrl] and move left and right to "slide" the crossfade region while keeping its length.
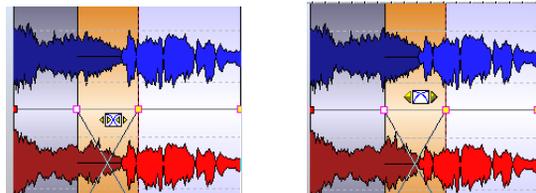
Changing the crossfade time (left), and sliding the crossfade region (right).

⇨ Please note that for these two functions to work, the mouse pointer must not be positioned on an envelope curve point inside the crossfade region.

If the mouse pointer is positioned on an envelope point, this point was the priority and you cannot change the crossfade time nor slide the crossfade region.

▪ 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 another clip's adjacent edge (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.
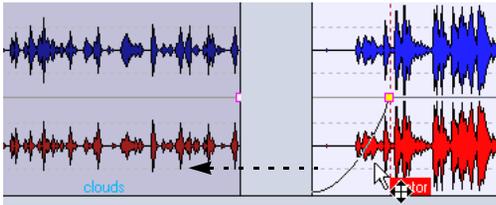
Dragging the right clip so that it overlaps the left clip…
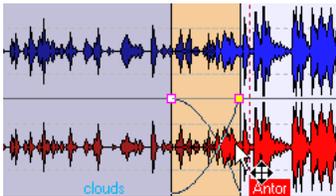
…will use the right clip's fade shape (as a corresponding fade-out), to create a crossfade.

⚠ Note that the above only applies if the unmoved clip's fade-out length is set to zero.

▪ If both clips have different defined fade curves at their adjacent edges when creating a crossfade, this will create an asymmetrical crossfade, based on the defined fade curves.
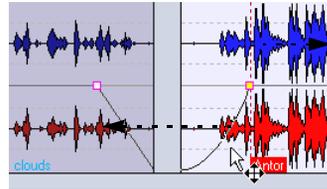
Dragging the right clip so that it overlaps the left clip…
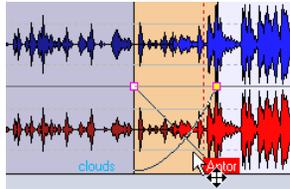
…creates a crossfade based on the already defined fades.

Adding effects to clips

The Montage supports VST effect plug-ins for individual clips. The standard WaveLab Essential and DirectX plug-ins cannot be used as clip or track effects in the Montage, but VST versions of several standard WaveLab Essential effects are provided, as well as several of the standard Cubase VST effects. Each clip in the Montage can be independently processed by one VST effect plug-in. Effects are configured either as Inserts, when all sound is processed by the effect, or as Send effects ("Split mode") where the balance between the unprocessed sound and the effect send level can be adjusted.

⚠ Only clip effects for clips that are active at the current playback position will consume any CPU power.

⚠ DirectX plug-ins from Waves Ltd. can be used as Montage effects by using the Waves VST shell.

⚠ The first time you play a Montage after opening or cloning it, the program has to load all effects into memory. If you have a lot of effects, this may result in a short silence before playback starts.

Adding a clip effect slot

To add an effect to a clip, proceed as follows:

1. Open the clip speed menu by right-clicking the clip.

2. Select "Effect (unused)" from the menu.
A slot is created and a dialog box opens where various settings relating to that slot can be made. Leave the dialog open for now.

Selecting an effect for a slot

1. Click on the button marked "Effects".
A pop-up menu opens containing all installed VST plug-ins.

2. Select one of the effects from the menu.
The chosen effect's parameters appear to the left in the dialog.

3. Change the parameter settings as desired.

4. When you are done, click "Close" to close the dialog or leave it open if you want to make more adjustments later.
You can continue working with the Effect dialog open. It is also possible to have several Effect dialogs open.

If a clip effect has been added, the number [1] is displayed before the clip name. This is to indicate that an active effect slot is used for that clip.

⚠ You can add effects during playback. However, if you add an effect with a latency larger than zero (displayed to the right in the Effect dialog, see "Latency" on page 125), you should stop and restart playback to avoid timing discrepancies.
Also, 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.

Removing an effect from a slot

1. To remove a clip effect from a slot, open the clip speed menu and select the effect you want to remove from a slot.
The effect window opens.

2. Click on the "Effects" button, and select "Remove" from the pop-up menu that appears.
The effect is removed from the slot. You can now either select a new effect for the slot or leave the slot unused.

⚠ Unused slots do not consume any CPU power.

Effect type: Insert or Split Mode?

Clip effects can be configured either as Insert or Send effects. This is done using the "Split mode" setting in the Effect dialog (see "The Effect dialog" on page 125).

▪ When Split mode is deactivated for an effect, it is treated as an insert effect.
This means the whole clip signal is routed through the effect. Typical insert effects would be compressors, auto panners or distortion units, etc.

▪ When Split mode is activated for an effect, it is treated more as a send effect.
In this mode, you can adjust the send level to the effect. Note that Split mode is different to conventional send effects in that the effect signal is mixed directly into the audio path and not to an effect return section. Typical Split mode effects would be reverb, chorus or delay, etc.

⚠ Some effects are always in Insert mode or always in Split mode. For these effects, the Split mode setting is greyed out and cannot be changed.

The Effect dialog

The Effect dialog

When an effect is selected, the left part of the Effect dialog contains the parameters for the effect. The right part of the dialog contains a number of options and functions that are common (although some settings may be disabled depending on the effect type, as explained above).

The dialog contains the following common elements:

Dialog item	Description
Send level slider	This controls the send level for the chosen effect. Only available when Split mode is selected.
Latency	Certain effect plug-ins that have to analyze the sound before passing it on, will introduce a latency (delay) in the audio path. WaveLab Essential automatically compensates for this delay with regard to other tracks. However, real-time changes (like turning an effect knob) will be delayed according to the maximum latency found among all clips (the largest sum of latencies for a single clip). Plug-ins with latency cannot be used as Split mode effects (see below).
Tail	Effects like reverb and delay produce audio "tails", i.e. the effect sound continues after the clip sound ends. If for example you add echo to a clip without specifying a tail value, the echo effect is muted as soon as the clip ends, which is in most cases undesirable. Set the tail length so that the effect is allowed to decay naturally. The maximum tail setting is 30 seconds.
Split mode	If Split mode is activated for an effect, the send level for the effect can be adjusted, as described in the section "Effect type: Insert or Split Mode?" on page 124. For some effects, this setting cannot be changed.
Bypass	If this is activated, the effect is bypassed.

Dialog item	Description
Effects button	This button opens the Effects menu where you can select to remove the slot's current effect, or select a new one from the menu for the same slot. Changing the effect using this menu will erase any unsaved changes to the previously selected effect.
Preset button	This button opens the preset menu where you can load or save effect banks or effects. There are also two items named Load and Save Default Bank. Saving as default bank will store the effect settings in the same folder as the plug-in's .dll file, and each time you load the plug-in this bank will automatically be loaded. This is the way to customize the default presets of a plug-in.
Functions button	This button opens the Functions menu which allows you to copy and paste effect settings between clips. See "Copying effect settings to another clip" below.

Copying effect settings to another clip

You can copy both the effect type and its settings and paste them into another clip. Proceed as follows:

1. Select the effect you want to copy the settings from.

2. Select "Copy" from the Functions menu in the Effect dialog.

3. Right-click the clip which you want to paste the effect's settings, and either select "Effect (unused)" or an existing effect slot (if you want to replace the existing effect).

4. Select "Paste" from the Functions menu.
The copied effect type is added to a new slot along with the effect settings you copied.

⚠ Stereo plug-in settings can't be pasted onto mono clips (the same applies for mono plug-in settings and stereo clips).

Undoing effect changes

It is possible to undo changes to the effect settings. However, WaveLab Essential will only "register" the changes (thus making them undoable), when the Effect dialog loses focus. Therefore, if you have made an effect setting change that you want to undo:

1. Click on another window, so that the Effect dialog loses focus.
The new effect setting is registered by WaveLab Essential.

2. Select Undo as usual.

3. Go back to the Effect dialog to continue working (if you wish).

The Meta Normalizer

The Meta Normalizer, found on the Edit view : Special menu, is a special tool for setting clip gain levels. The processing is non destructive, i.e. it will not affect the source audio files.

The Meta Normalizer operates in two or three passes. It first analyses the peak or RMS levels on all clips in the Montage. Then it processes the clips according to the highest possible level found amongst the clips, so that they will all play back at equal peak or RMS levels. This is achieved by automatically adjusting the clips "Gain" setting in the CD view's track list. Note that the gain level of a clip can either be amplified or reduced. The two purposes of the Meta Normalizer are to equalize the loudness between all clips (useful e.g. when producing a CD) and to ensure that the full mixdown of the Montage will never clip. Depending on how much the levels differ between clips, there are a number of options available to ensure that the applied processing optimizes the levels without clipping.

⚠ The audio path in WaveLab Essential uses 32 Bit floating point processing. You can therefore "overload" it, i.e. use levels above 0 dB, without running the risk of causing clipping in the signal path. The only section of the audio path that can introduce clipping is the output of the Master Section, and this can also be taken care of by the Meta Normalizer.

The Meta Normalizer dialog
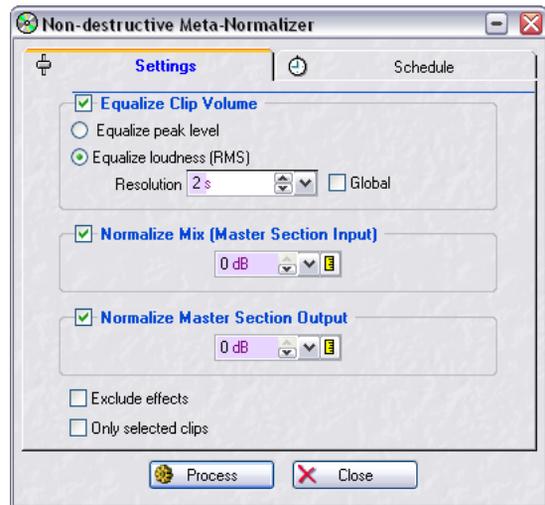
The Meta Normalizer settings dialog

Selecting the Meta Normalizer from the Edit view : Special menu opens a dialog where you can set up various options before applying the processing. The dialog is divided into two pages; "Settings" and "Schedule", which you can switch between by clicking on the appropriate tab at the top of the dialog. In the Settings dialog you specify how the clips will be processed, and in the Schedule dialog you set up options related to the performance of the processing (which always happens in the background).

The options on the Settings tab in the Meta Normalizer dialog are listed on the next page.

▪ When you have set up the Meta Normalizer dialog, click the "Process" button to activate processing.
Processing happens in the background. You can go on working in WaveLab Essential during the processing, although not in the Montage being processed.

The following options are available in the Meta Normalizer dialog:

Option	Description
Equalize Clip Volume	Selecting this will process all clips in the Montage according to the highest possible level or loudness found amongst the clips, so that they will all play back at equal levels.
Equalize peak level	Select this option if you want to use peak levels as a basis for determining what is considered "equal level" when executing Equalize Clip Volume.
Equalize loudness (RMS)	Select this option if you want to use RMS (Root Mean Square) levels as a basis for determining what is considered "equal level" when executing Equalize Clip Volume. RMS normally produces more natural results than using Peak levels, since this method is better at detecting the perceived "loudness" of a sound.
Global	When this is activated, the RMS value is calculated over the whole clip. That is, the overall loudness of entire clips will be used as a basis for calculating the loudness.
Resolution (0 – 10 seconds)	This option is only relevant if "Equalize Loudness (RMS)" has been selected and "Global" is deactivated. It is used to set the size of the audio sections that are analysed when calculating the loudness. The loudest section found will be used. The smaller this value, the more sensitive the method will be to peaks in the material.
Normalize Mix (Master Section Input) (-24 to 0 dB)	If this is selected, the entire Montage mix will be normalized to a preset level at the Master Section input. The maximum level that can be used is 0 dB. Since there is no risk of clipping in the 32 bit internal audio path, you can usually turn off this feature.
Normalize Master Section Output (-24 to 0 dB)	If this is selected, the entire mix will be normalized to a preset level at the Master Section output. The maximum level that can be used is 0 dB. This function is useful before you mix down or create a CD. Note that this function affects the output of the Master Section, which is "outside" the actual Montage. Therefore, the effect of this function is not saved when you save the Montage.
Exclude effects	If this is selected, effects will not be taken into account when processing with the Meta Normalizer.
Only selected clips	If this is selected, only selected clips will be processed with the Meta Normalizer.

Using markers in the Montage

Separate markers are provided for use in the Montage. Markers are used in the Montage in much the same way as in the source Wave windows. See "Markers" on page 97 for details regarding marker types and the basic functionality of markers.

Creating markers

The quickest way to create a marker is to right-click in the area above the ruler and select a marker type from the pop-up menu that appears. Right-clicking this way automatically moves the cursor to the click position (provided that you don't click on an existing marker) and inserts the marker at the cursor position – i.e. the position at which you click.

Creating markers by right-clicking can be done regardless of what view is currently selected.
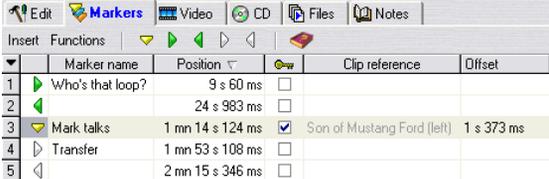
The Markers view

When the Markers view is selected, you can create markers at the Montage cursor position by using one of the following methods:

- By selecting a marker type from the Markers view : Insert menu.
- By clicking on one of the marker icons.
- By pressing the [Insert] key (this creates a Generic marker).

⚠ You can also use any of the above methods to create markers at the current cursor position while playing back.

Moving markers in the Track View

To move a marker in the Track View, you click and drag it. The "Enable snapping" setting on the Edit view : Options menu applies.

Deleting markers

There are three ways to delete markers in the Montage:

▪ By right-clicking the marker head and selecting "Delete marker" on the menu.

▪ By selecting the markers and then selecting "Delete selected markers" on the Markers view : Functions menu.

▪ By dragging the marker up and dropping it outside the ruler.

Editing in the markers list view

Clicking on the Marker tab opens the Markers view in the upper pane of the Montage. By default, this list contains all markers currently in the Montage. Below the Montage tabs there is a row of marker icons, and to the left of them are the Markers view : Insert and Functions menus. The markers list columns are used for editing and/or displaying the following marker data:

Option	Description
Type	This column displays the corresponding marker type icon. Clicking the icon opens a pop-up menu where you can select a new marker type for the current marker position.
Name	Displays the marker name. Double click the name field to type in a new name. This can also be done by double clicking to the right of the marker head in the area above the ruler (the pointer changes shape when you move it into the "Marker name zone").
Position	This column displays the markers' time positions. Double click to edit.
Lock	If this is ticked, the marker cannot be moved by dragging the marker head.
Clip reference	By selecting one of the Functions menu items "Make current marker relative to start of focused clip", "Make current marker relative to end of focused clip" or "Make current marker relative to audio of focused clip" you can lock a marker position to the left or right edge of a clip, or to its audio position. This column displays the name of the clip to which a marker is locked.
Offset	Depending on which of the three Functions menu items described above is chosen, this column displays the time offset between the clip and the marker position.

About locking marker positions to clips

As described in the table above, you can lock markers to clips by selecting one of the Functions menu items "Make current marker relative to start of focused clip", "Make current marker relative to end of focused clip" or "Make current marker relative to audio of focused clip". If selected, the marker will remain in the same position relative to the clip start, end or audio position even if the clip is moved in the Montage or is resized.

Selecting the Functions menu item "Detach current marker from its relative clip" removes the marker's clip reference and the marker position is no longer locked to the clip.

About attaching markers to clips

On the Functions menu there are two items that control if and how markers you insert should be automatically attached to existent clips. If a marker is attached to a clip, the marker will move with and maintain its relative position to the clip if the clip is moved or resized.

Activating the option "Attach automatically new markers to the most suitable clip" results in the following:

▪ If a marker is created within the boundaries of a focused clip or a clip on a focused track, the marker is attached to the audio of that clip (as per the option "Make marker relative to audio of focused clip" described above).
▪ If a marker is created outside of any clips on the focused track (or if there is no clip on the focused track) but within the boundaries of a clip on any other track, the marker will be attached to the audio of that clip.

⇨ Note that the marker must be inserted within 2 seconds from a clip edge in order to get attached.

Activating the option "Full clip attachment" will cause attached markers to not only remain in position relatively to clips when you move them, but also to be attached during clip operations. That means; if you copy a clip, the attached markers will also be copied. If you delete a clip, the attached markers will also be deleted.

File handling in the Audio CD Montage

Saving the Montage

You save the Montage using the Save or Save As commands on the File menu. Audio CD Montage files have the extension ".mon".
A couple of things to note:

⇨ The Montage files do not contain any audio data in themselves.
Rather, they contain references to audio files. This means that you must make sure not to delete, move or rename any audio files referenced by Montages.

⇨ You can use the Rename dialog to rename (and/or move) audio files and automatically update all clip references.
See "Renaming files and documents (Rename)" on page 53.

⇨ If the Audio CD Montage contains clips that refer to untitled audio files, you will be asked to save these audio files before you can save the Montage.

Saving a Montage template

Once you have set up the Audio CD Montage window the way you want it, you can save it as a template. The template file contains all settings and options in the Montage, but no clips. Next time you create a new Audio CD Montage (by selecting New Audio CD Montage on the File menu), the Templates dialog will come up and you can select to open a template, which is used as a basis for the new Montage. This allows you to create custom track layouts and other settings, stored in different templates.

To save a template, pull down the File menu and select "Save as template…".

⇨ When a new Montage is created based on the template, the new Montage will automatically get the sample rate saved in the template.

Opening Montage files

To open a saved Audio CD Montage (.mon) file, pull down the File menu and select "Audio CD Montage…" from the Open submenu.

If any of the audio files referenced in the Montage cannot be found, you will be asked to locate them manually. In the file dialog that appears, it's also possible to replace the missing file with another – useful if you have renamed the original audio file.

Closing the Montage

Closing the Montage is done as with any document window, by clicking the window's close button or by selecting Close from the File menu. If you have unsaved changes, you will be asked whether you want to save the Montage before closing it.

Cloning Montages

It is possible to make a "clone" of an Audio CD Montage by using "Quick cloning". The new clips in the new Montage will reference to the original audio files.

Quick cloning

This is useful if you want to create several versions of the Montage, for example experimenting with variations. Note however that any processing or editing you apply to the actual audio files will be reflected in both Montages, since they share all file references.

1. Select the Edit view by clicking the Edit tab.

2. Pull down the Edit view : Special menu and select "Quick cloning (reuse audio files)".
A clone of the Audio CD Montage is created and appears in a new untitled window.

You can also create a "quick clone" by clicking the Document icon of the Montage window and dragging to an empty area in the WaveLab Essential window.

Using video tracks

⚠ To be able to use video tracks, DirectX 9 must be installed.

You can edit audio in sync with video placed on a video track in the Montage. Video tracks are created from the track pop-up menu, just like audio tracks.

Adding video clips to the video track

There are several ways you can add video clips:

▪ By right-clicking somewhere on the empty video track and selecting "Insert file(s)".
A file dialog opens where you can locate the video clip you wish to insert. The clip will be inserted at the cursor position.

▪ By dragging from the Files view (see "By dragging from the Files view" on page 108).

▪ By copying video clips from another Montage (see "By copying clips from another Montage" on page 108).

Playing back a video clip

Video clips are displayed as clips on the video track, with thumbnails representing the frames in the film. If you start playback, the video is played back in the Track view for the video track.
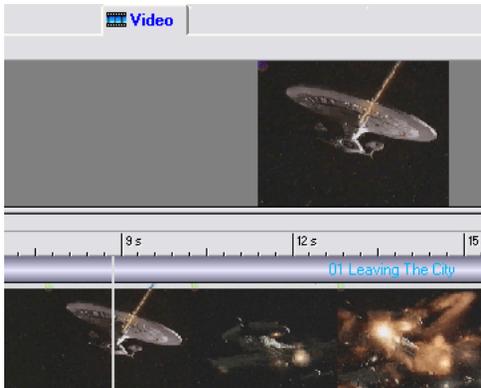
Viewing video clips in the Video view

You can also view the film in the upper Montage pane if you select the Video view. To view the video in full screen mode, press [Shift]+[A]. Use this same command to reset the view.

The Video view Options menu

There are two items on the Video view : Options menu:

▪ Play video in track (at cursor).
If this is ticked, the video frames will play back in the Track view at the cursor position. If this is off, the frames will be displayed as non-animated thumbnail images.

▪ No video playback in track when this tab is open.
If both options are ticked, the frames will be displayed as non-animated thumbnail images when the Video view is selected, but otherwise play back.

Editing video clips in the Montage

You can perform basic functions like moving the video clip by dragging it in the time line, lock the clip position, use Split at cursor, copy and paste, etc. All available functions are displayed on the clip speed menu for a video clip.

Mixing down – The Render function

The Render function in the Master Section allows you to "mix down" the whole Montage (or sections of it) to a single audio file.

The Render function can be used in many ways:

• It's useful if you want to burn a CD from a CPU-intensive Montage, as it allows you to first render all clip effect processing and then burn the CD in a second pass (see "About the two CD write methods" on page 133).

• The Render function is useful for "printing" the effect processing for CPU-intensive Montages prior to the "final" rendering, allowing you to add more effects, etc.

1. If you want to render the whole Montage from start to end, proceed to step 3.

2. If you want to render some of the clips only, select these.

3. If necessary, mute or unmute tracks.

⚠ Only unmuted audio will be included in the rendered file(s)!

4. Click the Render button in the Master Section window.
The Rendering preferences dialog appears.
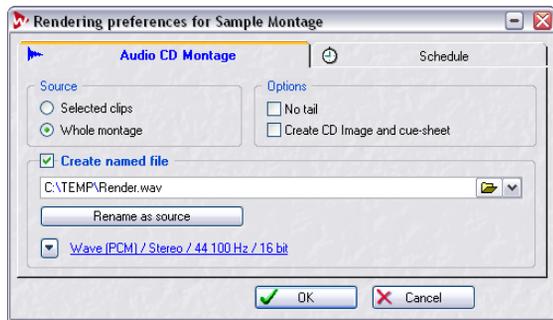
5. Use the radio buttons in the Source section to specify what you want to include in the created file.
The Selected Clips option will only be available if you have selected clips (in step 2 above).

6. Activate the options as desired:

Option	Description
No Tail	When this is activated, any audio appended by the Master Section effects (such as echoes and reverb tails) will be cut off. Note that this doesn't affect the Tail setting for clip effects (see "Tail" on page 125).
Create CD image and cue-sheet	This option (available when "Whole Montage" and "Create named file" are selected) lets you export an Audio CD Montage as a CD image with an accompanying cue sheet (a text file identifying the CD tracks in the image file). The cue sheet and the image file it describes can then be imported into any CD recording application that supports this function, and written onto CD.

7. Select whether you want to create a named file or not.
If you activate "Create named file", you must specify a name and location for the file. If you don't activate the option, a temporary file is created, with the bit resolution specified in the Preferences dialog–File tab.

8. If "Create named file" is selected you can click the item at the bottom of the dialog to open the Audio File Format dialog.
Here you can specify the various audio properties for the file(s) to be rendered. For certain compressed file formats (mp3/mp2/WMA/Ogg Vorbis), you can make encoding settings from the Encode pop-up menu.

9. Close the Audio File Format dialog when you are done.

10. Click the Schedule tab to make settings for Priority, Start and Completion actions (see "Options on the Schedule tab" on page 92).

11. Click OK to create the file.

Preparing the Audio CD Montage for CD burning

The descriptions in this section cover preparations for CD burning. A CD can be burned directly from within the Montage:

1. Make sure the Audio CD Montage contains exactly the material you want on the CD.

⇨ Note that CD tracks must be at least 4 seconds long.

2. Click the CD tab to select the corresponding CD view.
This contains a CD track list with each clip in the Montage representing one track on the audio CD.

3. Select "Adjust pauses between clips…" from the Functions menu or click the horizontal "double-arrow" icon.
A dialog appears, which contains a number of settings that help you adjusting the pauses between the clips or CD tracks, respectively.

4. Set the options as desired:

Set specific pause time	Set the amount of pause time you want to have between the CD tracks.
Do not create a pause between two contiguous clips	This is only availale if the above option is set, which then will not create pauses if clips are connected by crossfades or snapping to each another.
Round existing pauses to closest second	This will adjust existing pauses so that they match exact full seconds.

5. Click Apply.
The dialog closes. Now, pauses between CD tracks are adjusted according to your settings. You can check the result in the CD view's list of CD tracks.

6. If needed, you can adjust the CD track pauses manually in the CD view's list of CD tracks, or by dragging the clips in the Track view.

7. Select "Check…" from the CD view : Functions menu or click the "glasses" icon.
WaveLab Essential will check the CD list and inform you whether it's OK or not (this check is also performed automatically before actually burning a CD from the Montage).

8. If the Check gave a warning message, make manual adjustments and repeat the Check procedure until the list is OK.

You may get warning messages for several reasons, including:

- You have CD tracks that are shorter than 4 seconds.
- The pause before the first CD track is shorter than 2 seconds.
- The CD is too long (the total length of the CD is displayed in the control bar at the top of the tab).

Editing the CD view list

Once you have prepared a CD track list as described previously, you can go ahead and write the CD.

However, there are some additional settings you can adjust in the CD view track list:

- You can hide or show CD track list columns by using the column pop-up menu (accessed by clicking the arrow button to the left of the column headings).
You can also drag and resize columns as usual.

- You can adjust all settings in the list by clicking or double clicking the desired item (except for the "Start", "End" and "Length" values, which can be set by moving or resizing the according clip).

- You can change the order of CD tracks by dragging tracks in the CD view list.

Edit CD-Text

This CD view : Functions menu item opens the CD Text editor, where you can input the track's title, artist and other information. It will be burnt onto the CD as CD Text. Some CD Players support CD Text and display this information during track playback.

About the two CD write methods

The final phase of CD creation can be done in two ways:

▪ By burning directly from the CD view in the Montage. This is an easy process, but puts some demand on your computer. Keep in mind that even if your Audio CD Montage plays back without problems, the CPU load will be four times as high if you burn in 4x speed (since the audio file has to be rendered four times as fast)!

▪ There is, however, an option in the CD Write dialog to "Render a temporary file before burning" that alleviates this problem – see "About the "Render to temporary file before burning" option" on page 135. This method is recommended if your Audio CD Montage contains a lot of clip effects (or is otherwise CPU intensive), since it separates the audio file rendering from the CD burning process. It is also recommended if you want to create multiple copies of the CD.

In both cases, all clip effects are used and the Montage is processed through the Master Section, including any activated effects and the dithering/noise shaping stage.

Now you can proceed with burning the CD as described in the next chapter.

Rendering a CD image and cue sheet

This is an option that enables you to export an image file of the Audio CD Montage (including clip effects, Master Section settings etc.), which can then be used in other CD recording applications.

1. Open the Master Section and click the Render button. The Rendering Preferences dialog appears.

2. Select the "Whole Montage" option in the Range section and activate the "Create named file" option.

3. Specify a name and location for the file, and make sure the Wav 16 bit format is selected.

4. Select the "Create CD image and cue-sheet" option in the Options section.

5. Click OK. Now, the whole Montage is rendered to a CD image file, with an accompanying cue sheet (a text file identifying the CD tracks in the image file). The cue sheet and the image file it describes can then be imported into any CD recording application that supports this function, and written onto CD.

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Burning an audio CD

Introduction

This chapter describes the basic CD burning process, as well as some general reference information about the CD format.
It does not, however, describe the necessary preparations for creating a CD from an Audio CD Montage. In other words, this chapter assumes that the respective preparations have been completed, and that you are ready to execute the actual CD burning.

Please refer to the chapter "The Audio CD Montage" for a description of the respective preparations before following the instructions in this chapter.

Selecting a CD-R unit

Before you start writing, you must specify which CD-R unit WaveLab Essential should use (for example, you can have more than one unit connected at a time, and switch between them from within WaveLab Essential).

1. Click the CD tab in the Audio CD Montage and select "Write CD" from the Functions pop-up menu.
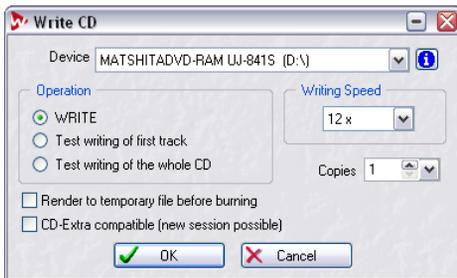
2. Use the Device pop-up menu to select your recorder.

3. Click the "i" (info) button next to the Device name.
This will show you details about, and settings for, your specific CD-R unit.

Testing an audio CD before burning

There are two ways to check a CD before burning:

Check

The "Check" command on the Audio CD Montage Functions menu (CD tab selected) scans through the audio CD and checks that the settings conform to the CD standard. This command does not access the CD-R recorder in any way, it only checks the setting in the list against a set of rules.

This check is automatically performed when you try to actually burn a CD.

"Test writing of first track" and "Test writing of the whole CD"

These two options in the Write CD dialog actually simulate writing of one or all tracks to the CD. This takes all settings into account, including the writing speed (1x, 2x, etc.), or whether a disk image should be rendered first (see below), etc.

- If the test fails, try writing at a lower speed.
- If the testing of all tracks is successful, you can be sure there will be no problems with writing the actual CD.

About the "Render to temporary file before burning" option

This is an additional option in the Write CD dialog that can be used in case you have a slow computer and/or a lot of CPU-load intensive effects, etc. in the Montage. If this item is ticked, a disk image is created before burning, which eliminates the risk of buffer underruns.

- This option is included in the test writing if it is ticked beforehand.
Therefore if it was on when testing, it should be on when writing.

- If this option was off, and the whole CD was test written successfully, there is no need to activate it when burning.
It will only make the write time longer, without providing any "extra" safety.

Writing a CD

Once you have set up the CD Montage, we suggest the following work order for burning the CD. These steps are not mandatory though, just a recommendation.

⚠ Please observe the precautions indicated in the Troubleshooting chapter in the online documentation before writing your first CD!

1. Listen through the CD once more from the Montage, to check that all starts, ends and transitions are OK.

2. Select Check from the CD tab – Functions menu, to check that all settings conform to the Red Book standard.
This is done automatically before burning, but you might want to do this anyway at this point.

3. Insert a fresh CD-R disc into your drive.

4. Select Write CD.

5. Select the speed at which you expect to be able to burn from the small pop-up menu.

6. Use the test options in the dialog to check that you will actually be able to write the CD at that speed.

7. If you want to create a CD in the CD-Extra format, activate the CD-Extra Support option in the dialog.
See below.

8. Once the Montage has passed the test, switch to "WRITE" and press OK in the dialog.
If you run into problems, check the Troubleshooting chapter in the online documentation.

• In the progress dialog that appears while the CD is recorded, you will find an option called "Eject CD on success". If you activate this option, the CD recorder will automatically eject the CD once it's finished.

CD-Extra support

When writing an audio CD as described above, it is possible to prepare it for CD-Extra support. CD-Extra is comparable to Mixed Mode CDs in that both of these formats allow for the writing of both audio and data on a single CD. However, unlike Mixed Mode CDs, the audio on CD-Extra CDs is placed on the first track(s) of the CD and the data follows subsequently. This means that the audio will start to play immediately when the CD is used in a regular audio CD player, without having to skip to track 2. Also, when creating a CD-Extra CD, you can make use of all the functions available in the Montage.

⚠ Please be aware that some computer CD drives may not recognize CDs in the CD-Extra format. Plextor drives are recommended.

If you are writing an audio CD and want to prepare it for CD-Extra, do the following:

1. Put a checkmark in the "CD-Extra compatible" box in the Write CD dialog.
This will prepare the CD for further writing of data later. Much like a multi-session CD.

2. Write the audio CD as described above.

3. The next step is to create a Data CD/DVD containing the data you want to incorporate on the CD.
How to create a Data CD/DVD is described in the section "Creating a new Data CD/DVD Project" on page 140.

4. In the Write dialog for the Data CD/DVD (described in the section "The Write dialog for the Data CD/DVD" on page 142), select the options "Track At Once" for Write Method and "Close CD" for Closing Method.

5. Click on "Write".
The data will now be added to the CD after the audio you added previously, and the CD-Extra is created and finalized (no further writing is possible).

The audio CD format – Background information

This text aims to provide you with some background information on the CD format, to help you better understand how to create your own CDs. This is a big subject, and we will only be able to touch upon it here. For more information, try a text-book on the subject, or search the Internet for more information.

The basic CD formats

There are a number of different formats for the contents of a CD disc. You are probably familiar with audio CDs, CD-ROMS, and CD-I. These are all slightly different, although they use the same media – CD discs. The audio CD specification is called Red Book. It is this standard to which WaveLab Essential conforms.

Red Book CD is not a real file format

Those of you who are computer literate might know about file formats. Please note that Red Book CD is not a real file format. All the audio on the CD is stored in one big chunk, one file if you will. This is different from hard disks, for example, where each file is stored separately. Understanding the fact that all the audio is in fact one long stream of digital data is something that will probably help you better understand the limitations of the format.

The different 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. These are:

Event	Description
Track Start	There can be up to 99 tracks on one CD. Each is identified by its start point only.
Track Sub-Indexes	On advanced CD players, you might have noted that 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. Why? Well, 75 x 588 = 44100, and since the sampling frequency of the CD format is 44100kHz (samples per second), this equals one second of audio. When you specify positions on the CD, in Wave-Lab Essential, you do it in the format mm:ss:ff, where mm is minutes, ss is seconds and ff is 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 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 (position) 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 aren't 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 actually 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 (so called because it is stored in the "P" and "Q" bits). This PQ data is of major importance to anyone who wants to create their own CD, so please let us explain it in further detail.

PQ codes and WaveLab Essential's solution to handling them

The PQ codes convey information about track start, sub-indexes and pauses, as described above. They also contain the timing information (minutes, seconds, frames). To fit all this information in, a block of PQ information is spread out over 98 small frames.

Specifying PQ codes is not complex. However, when creating a CD there are a number of rules you must take into account. For example, there should be some silent frames before each track, sub-indexes should be slightly early, there should be pauses at the beginning and end of the entire CD, etc.

When creating CDs from an Audio CD Montage, these rules and settings are handled by WaveLab Essential to ensure your CD will work properly.

ISRC codes

In addition to the basic PQ codes, there is something called "International Standard Recording Code", identification that is only used on CDs intended for commercial distribution. WaveLab Essential allows you to specify an ISRC code for each audio track.

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).

UPC/EAN codes

UPC stands for "Universal Product Code". Some CD/DVD-R units allow you to specify this code, which is a thirteen-digit catalog number for the disc. Also known as EAN.

Pre-emphasis

Pre-emphasis works by boosting (or pre-emphasizing) high frequencies before burning the CD, and cutting (de-emphasizing) them when playing back. The theoretical result of this is that the desired audio is returned to normal sound, but any other high frequency content (noise) in the recording is reduced.

Disc-At-Once – Writing CD-Rs for duplication into "real" CDs

WaveLab Essential only writes audio CDs in Disc-at-Once mode. There are three good reasons for this:

▪ 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, without ever turning off the recording laser. There are other ways of writing a CD, namely Track-At-Once

and MultiSession. 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 Essential always writes a CD on the fly, that is, it does not create a CD image before burning. This method makes writing CDs faster and requires much less disk space. However, if for some reason you need to, WaveLab Essential lets you join all audio tracks into one large file that can be used as an "image" of the entire CD.

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Data CD/DVD Projects

Introduction

A Data CD/DVD project is an environment that can be used to compile and write a data only CD-ROM/DVD-ROM or Mixed Mode CDs.

- Data discs exclusively contain computer data. This can be files of any type. However, the files are stored on the CD/DVD in such a way that an audio CD player cannot recognize them.
- The difference between a Mixed Mode CD and a normal audio CD is that the Mixed Mode CDs contain both computer data and audio data that can be played back by a CD player.
- On a Mixed Mode CD, the computer data occupies track 1, and the music occupies the subsequent tracks.

⚠ An alternative to a Mixed Mode CD is the "CD-Extra" format, which also allows audio and data to be combined on the same CD. To create a CD-Extra, you first create and write an Audio CD Montage and then add the data. See .

Creating a new Data CD/DVD Project

⚠ For DVD, creating a new Data CD/DVD project as described below will enable you to create a data only DVD-ROM disc.

Creating a new Data CD/DVD project for data discs or Mixed Mode CDs

To create a new Data CD/DVD project, select "Data CD/DVD" from the New submenu on the File menu. A new Data CD/DVD window appears.

Source window

Destination window
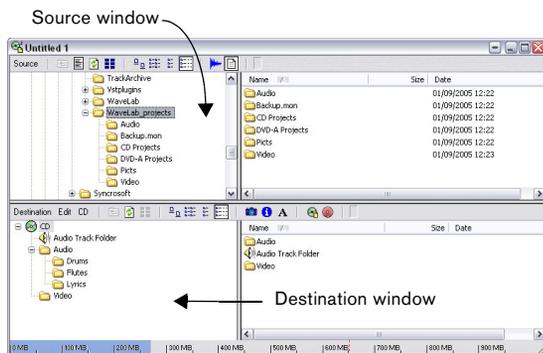
The principle is simple: The Data CD/DVD window has two main window panes; the source window on top and the destination window below.

The source window shows the contents of your hard disks (or other storage media) in a way much like the Windows Explorer: with a folder hierarchy "tree" to the left and the contents of the selected folder shown to the right. The destination window shows the contents of the CD/DVD to be recorded, again with two panes in the same manner.

- To compile a data only CD-ROM/DVD-ROM or a Mixed Mode CD, drag files and/or folders from the upper into the lower window pane.

You can record the CD/DVD as soon as you have placed all files in the lower pane.

- In the destination window, you can rename, remove or open files.

- You can save and open Data CD/DVD files from the File menu, as with other document types.

Data CD/DVD files have the extension ".cdp".

Source window settings

You can decide how files and folders are displayed in the source window (as icons, as a list, etc.) by selecting one of the items on the Source menu (or by clicking the corresponding icon) on the source window toolbar.

To help navigating, you can use the functions "Up one level" and "Recent paths". The latter (only available as an icon on the toolbar) displays a menu listing all recently used paths, allowing you to quickly go back to any of the listed folders.

The Source window Source menu contains the following view options:

Function	Icon	Description
Refresh		Click on this icon to update the contents of the window. This is useful if, for instance, storage media has been added or removed.
Show Audio and Video Files		If this function is active, the right part of the window pane only shows audio and video files, if available.
Show All Files		If this function is active, the right part of the window pane shows all file types.

Destination window settings

View settings

Use the Destination menu to adjust how files and folders are displayed in the destination window, just like in the source window.

Getting size information

At the bottom of the Data CD/DVD window, a ruler shows you the current and the maximum size of the project. On the CD/DVD menu you can set the ruler to display either a CD scale or a DVD scale, as well as define the actual available space of the destination media you intend to use (see "Define media size…" on page 141). Holding the mouse pointer over the ruler brings up a pop-up tip, showing you the exact size of the project, and a dotted, vertical red line in the ruler shows you the maximum available space on the destination media. This allows you to quickly assess the used and remaining space for the project.

You can also select "Properties" from the Destination window Edit menu, to get information about the number of files on the CD/DVD and their total size.

Editing the CD/DVD contents

You can move items between folders on the CD/DVD by using drag and drop, just like you drag them from the source window to add them. There are also various options on the Edit menu for adjusting the contents of the CD/DVD to be created:

▪ To add a new folder (within the selected folder), select "New Folder".
See "Creating a Mixed Mode CD" on page 142 for a description of the "Add Audio Track Folder" function.

▪ To rename the selected folder, select "Rename" from the menu and type in a new name.

▪ To remove the selected file or folder from the Data CD/DVD, select "Remove".
If a folder was selected, this and all its contents will be removed. Note that this only removes files from the Data CD/DVD, not from the hard disk.

▪ To open the selected file or folder, select "Open".
There is also an "Open in WaveLab Essential" item, for opening audio files and other documents in WaveLab Essential.

The CD/DVD menu

The CD/DVD menu contains items for preparing and writing the disc:

| Function	Description
Disk Label…	Opens a dialog where you can name the CD/DVD to be recorded.
CD/DVD Info…	Displays the total number of files as well as the total file size on the CD/DVD to be recorded.
Add photo viewer to CD/DVD…	This opens a dialog where you can select to add a simple photo viewing application to CDs/DVDs that contain photo images. The viewer application is called ImageViewer.exe and is added to the root of the CD/DVD. It can only be used to visualize the photos on the CD/DVD. Note that the CD/DVD does not need to exclusively contain photos.
Write CD/DVD…	Opens a dialog from where you can start recording the data or Mixed Mode CD (see below).
Save as ISO Image…	An ISO image is a file that holds the entire contents of a data CD or DVD (files and folders).
Create Label set…	This allows you to create labels for your CDs. See "Selecting a template" on page 148 for more information.
Edit text variables…	Opens a dialog where you can edit and create text variables as used for CD labels (see "Defining user variables" on page 152).
Export text variables in ASCII…	This saves the current text variables as an ASCII text document in a tabulated format, suitable for editing in a spreadsheet application such as Microsoft Excel.
CD Scale/DVD Scale	These items allow you to select whether the ruler at the bottom of the Data CD/DVD window should display a CD scale or a DVD scale, showing the available amount of storage space. Since a DVD can hold considerably more data than a CD, you should for proper reference select the appropriate option depending on which kind of media the material you are compiling is intended to end up.
Define media size…	Opens a dialog in which you can specify the available storage space of the destination media. If you for instance are using a DVD disc that can hold more data than the "standard" 4 700 MB, you can specify how much it can hold, to get a correct visual reference of the available space when preparing the DVD.

Creating a Mixed Mode CD

To create a Mixed Mode CD (i.e. a CD with both audio and data), proceed as follows:

1. Select the "root" of the CD in the left destination window pane.

2. Select "Add Audio Track Folder" from the Destination window Edit menu.

An Audio Track Folder item appears in the destination window. This cannot be moved or removed.

3. Drag any audio files you want included as audio tracks from the source window to the audio track folder.

The Write dialog for the Data CD/DVD

When you select "Write CD/DVD…" on the Destination window's CD/DVD menu, you will first be asked for a name for the CD or DVD to be created. After entering a name and clicking OK, the "Write virtual Disc" dialog appears. Here you can make all the necessary settings for the CD or DVD to be recorded.

Item	Description
Write	The CD/DVD writing process is started.
Close	The dialog is closed.
Settings	This opens a dialog where you can make settings for your CD/DVD recorder. The content of this dialog depends on the recorder used.
Disc Info	If a writable disc is in the CD/DVD recorder, you can use this option to get information about its size and available space.

Item	Description
Write speed	Here you can select a write speed supported by your recorder.
Write method	Here you can select a Write method supported by your CD recorder. If you are adding the data portion to a CD-Extra CD, you must select "Track At Once" (see "CD-Extra support" on page 136). For DVD, there are no write method options.
Closing method	Here you can select a closing method. If you are adding the data portion to a CD-Extra CD, you must select "Close CD" (see "CD-Extra support" on page 136).
Simulation	Here you define if and how a simulation should be performed before the actual writing process. Simulating the writing process lets you find out whether the writing process will be successful, or if problems might occur.
Write to hard disk first	If this function is active (ticked), the writing program first writes an image file onto your hard disk (which must have enough free space to hold the file). An image file has the advantage that the data to be recorded doesn't have to be converted into CD format during burning, as this is done when the image file is created. The actual burning (recording) procedure will therefore be faster and performed with greater reliability and less risk of malfunction.
Default	Click on this button to save the current dialog settings as default. The next time you open the dialog, they will automatically be set.
Advanced	If you click the "Advanced" button, the dialog is extended downwards and you get access to five tabs. These let you make a number of additional settings for the writing process.

⚠ Note that at the end of the DVD burning process it can take up to 15 minutes to close the DVD. Please be patient.

16

Importing audio CD tracks

Importing audio CD tracks into WaveLab Essential

WaveLab Essential provides the ability to read audio tracks from regular CDs. This makes a digital copy of the audio from the CD directly into an audio file on your hard disk.

Although WaveLab Essential supports a large number of CD drives, there are some restrictions you should be aware of:

⇨ There are a number of different, not very well standardized protocols for retrieving audio from a CD-ROM/CD-R drive.

WaveLab Essential tries to support as many of these methods as possible, but there are no guarantees it will work with any particular drive. Some brands that reportedly use the same method still have slightly different implementations which might cause problems.

⇨ Please observe and respect any copyright notices on the CDs from which you are reading tracks!

To import CD tracks, proceed as follows:

1. Insert the CD into the CD-ROM/CD-R unit.

2. Pull down the Tools menu and select "Import Audio CD tracks".

3. Select the drive from which you want to read from the pop-up menu at the top of the dialog.

4. Select a read speed from the pop-up menu just beside this.

5. If necessary, click Refresh so that the list of tracks is updated.

The window now lists the tracks on the CD, plus some information about each track. Please note that the Copy Protection and Pre-emphasis columns are for information only, you cannot change these settings.

• By default, the tracks will be named "Track XX", where XX is a number starting at 01. You can adjust the auto numbering scheme by right-clicking in the list and selecting an option from the pop-up menu that appears.

This pop-up menu also contains some additional functions for saving individual tracks directly as files, appending a track to the current Montage, etc.
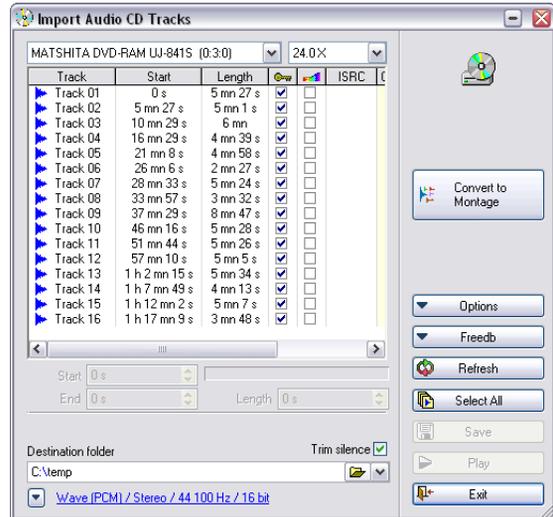
The "Import Audio CD Tracks" dialog

6. Click on the Folder button at the bottom of the dialog to select a destination folder for the file(s).

The files will be saved with the name that is shown in the track list. To rename a file, double click on it in the track list and type the desired name.

⚠ The tracks must have unique names if you want to import them all. If two or more files have the same name, a warning dialog will appear when the second one is imported, allowing you to either cancel the operation or to replace the first file saved with that name.

7. If you want to import to a format other than Wave, click on the file format button at the bottom of the dialog and select the desired format from the Audio File Format dialog that appears.

See "Supported file formats" on page 49 for information about the available file formats.

8. If required, you can select one file and click Play.
This will play the beginning of the track so that you can check it out.

⇨ If you notice that playback starts too late into the track – i.e. a small part of the beginning of the track is "cut out", you can specify a pre-roll value to ensure that the entire beginning of the track is read.
This is done by selecting the option "Define reading of audio before and after CD track…" on the Options menu, and entering the desired pre-roll value in the dialog that appears. You can also specify a post-roll value to ensure that the entire end of the track is read. The technical reason behind this is that it's not possible to locate, or position, to anything closer than a frame – a block of data on a CD. Thus, if there is data in the middle of a frame, you might have to specify a pre-roll or post-roll so that the whole frame is read. See "About frames, positions, small frames and bits" on page 137 for more information.

9. Select as many tracks as you wish from the list.
You can use [Ctrl] and [Shift] to make multiple selections, or use the Select All button.

▪ You can also "drag and drop" one or more CD tracks onto WaveLab Essential's desktop or into an Audio CD Montage to save them.
In the latter case, you can drop them in the CD view track list or directly into the track pane. For this to work, the item "Enable Drag and Drop to Audio CD Montages" must be activated on the Options pop-up menu.

10. If you have only selected one file, you can import just a part of the track by adjusting the start and end/length values.
The bar graph shows the part of the track that will be imported.

11. Click the Save button.
The track(s) are retrieved. Optionally, each is opened in its own window. This is specified in the progress indication menu that appears during importing.

About the Freedb function

You need to be connected to the Internet to use the Freedb function.

Clicking the Freedb button opens a pop-up menu where you can use some functions provided by Freedb to get information about your CDs. Freedb maintains a worldwide database of CD information.

▪ When an audio CD is inserted, you can query the database to get the track names of this CD, and more.
▪ If the CD is not yet recorded in the database, you have the option to become a participant by describing the CD and submitting your description to the database. Find more information on this at www.freedb.org.

File format – Converting CD track(s) to other formats

The extracted audio files are saved in WAV (Wave) format by default. You can, however, directly save files in other audio formats by clicking the button at the bottom of the dialog to open the Audio File Format dialog, and select the desired file format from the Type menu.

Among the formats available are the following compressed audio formats: MP3, MP2, WMA and Ogg Vorbis.

When any of these formats is selected, you can click the Encoding field and select "Edit…" from the pop-up to open the corresponding Encoding dialog, where you can specify the bit rate and other attributes of the file to be created.

CD reading method

In rare cases, the default method of extracting audio samples from a drive does not work. In such cases you can change the extraction method used by selecting the "CD reading method" item on the Options pop-up menu. This opens a dialog with several optional audio extraction methods.

⇨ Do not change the settings if you are not having problems!

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 on the Options pop-up menu. When activated, each CD track is read several times until the exact same result is found (check sums are used).

Convert to Montage

The "Convert to Montage" function can convert a CD to an Audio CD Montage. Once you have converted to a montage, you can reorder tracks, remove some tracks or add new tracks. You can use this function to create mixed compilations of CDs.

Notes

- Note that 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.
- There are several other functions on the Options pop-up menu.
- If you import a CD track with Emphasis, and later want to use this on a CD of your own, remember to activate Emphasis for that track in the CD view of the Audio CD Montage.

17

Creating labels

Introduction

The Label Editor allows you to design and print custom labels for your CD and DVD projects. You can design separate layouts for front, inside, back and disk labels. Both text information and a wide range of image file formats can be imported and edited in various ways.

About variables and templates

Every Data CD/DVD Project, Audio CD Montage or Import Audio CD Tracks session has a default set of "variables", text that consists of a short code string plus a value. Variables provide information about a project, such as track titles, personal data, etc. There are two types of variables: factory and user editable.

Factory variables automatically provide information based on the contents of a project, and user editable variables can be customized to suit the current project.

Templates are ready-made layouts that will use the information provided by the variables.

You can freely customize the properties of a template layout by using the Label Editor. Add new images or other objects, delete or edit existing objects, etc.

Selecting a template

The first thing you do before the Label Editor is opened is to select a template. As mentioned previously, templates provide some information based on the current project, and have ready-made layouts:

1. Open the project you wish to create labels for.
This can be a Data CD/DVD Project, an Audio CD Montage or an Import Audio CD Tracks session.

2. Select the "Create Label set…" menu item.
Where this menu item is located depends on the type of project; for Audio CD Montages it is on the Functions menu, for Data CD/DVD it is on the CD/DVD menu, and for Import Audio CD Tracks it is on the Options menu.

3. A dialog appears, allowing you to select a template for your project.
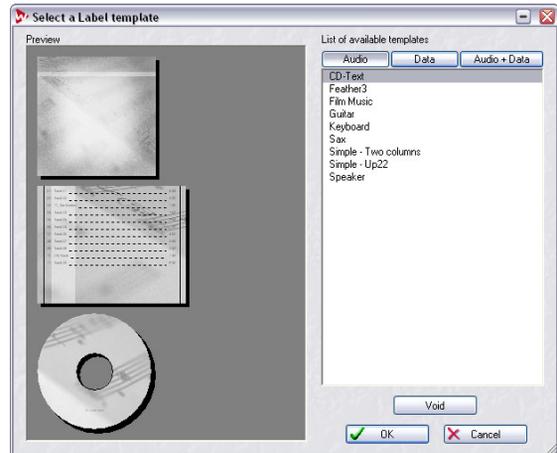
To the right in the dialog there is a list of available templates, divided into three groups "Audio", "Data" and "Audio + Data". By clicking on the corresponding tab the available templates for the selected project type are shown in the list. To the left in the dialog, preview images of the front, back and the disk labels are shown.

4. Select a template, and click OK.
The Label Editor window opens, displaying the CD case front label.

▪ If you do not wish to use a template at all you can select "Void" in this dialog.
This will open the Label Editor with totally empty labels, allowing you to build your own labels from scratch by adding objects, specifying backgrounds, etc.

▪ You can also save user templates.
See "Saving a label set as a user template" on page 152.

Using the Label Editor

Overview

The Label Editor always displays one of the three available views or pages: the front, back or disk case label. You switch between these pages by selecting the corresponding tabs below the toolbar. The layout is completely independent for each page.

⇨ Please note that the front label can be either single- or double-sided.
This option is set in the Page Layout dialog on the Printing menu.

The Label Editor window displays a frame with the currently selected label (front, back or disk) layout. Layouts are made up of editable objects – images, text boxes, lines or circles. You can also select either an image or color as background for the layout as a whole.

Horizontal and vertical rulers   Front/back/disk layout buttons

Toolbar

Circle object

Text box object
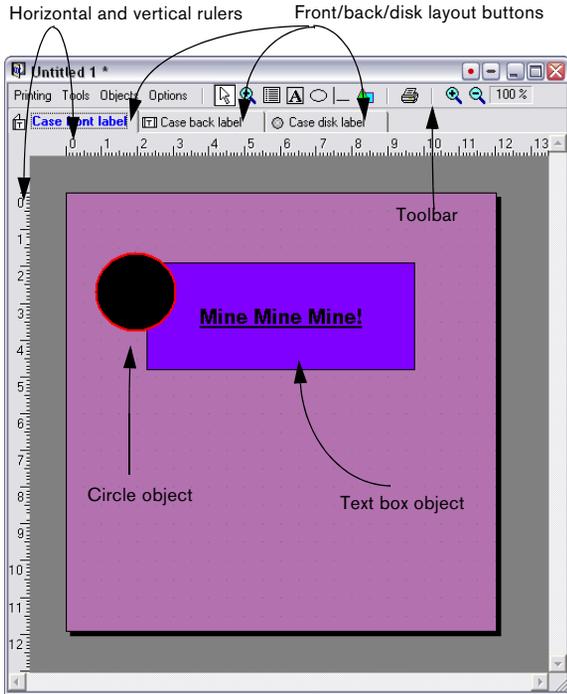
Basic object handling in the Label Editor

The Label Editor tools

Insert box with text   Insert circle   Insert line
Insert image

Insert track list

Selection tool   Zoom object   Print label   Zoom in/out
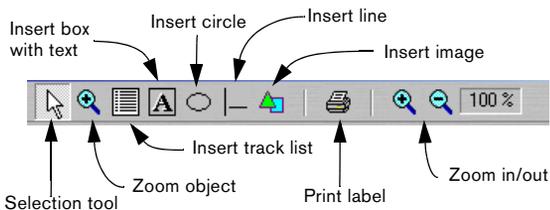
Tools can be selected in three ways:

- From the Tools menu
- By clicking the corresponding icon on the toolbar
- By right-clicking in the background area (not an object), and selecting from the speed menu that appears

The following tools are available:

Tool	Description
Selection tool	Used to select, resize or move objects.
Zoom Object & Zoom In/Out	This is used to zoom in on a selected object, keeping it in view. The Zoom In/Out zooms the layout as a whole in or out. You can go back to normal magnification (1:1) by selecting "Zoom 100%" from the Options menu.
Insert track list	This will produce an automatically generated track list, based on the tracks belonging to the current project.
Insert box with text	Creates a text box object.
Insert Circle	This will insert a circle or ellipse object.
Insert Line	This will insert line objects.
Insert Image	This will insert an image.
Set background color… (menu only)	Allows you to define a color for the background of the layout.
Set background image… (menu only)	Allows you to define an image for the background of the layout.

Selecting objects

Click an object with the Selection tool to select it.

- Selected objects are indicated by a dotted outline, and square "handles", which can be used to scale the size of the object.
- To select several objects, hold down [Shift] or [Ctrl] and click. Selected objects can be de-selected by [Shift]-clicking.
- When several objects are selected, one of the objects will always have "focus". The focus is indicated by red handles on this particular object. You can move the focus to any of the selected objects by [Ctrl]-clicking.
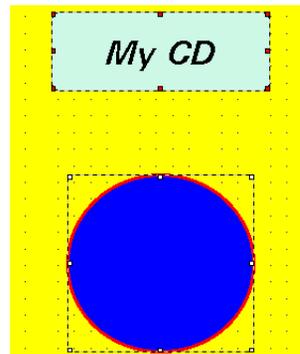
Two objects selected, with the upper having the focus.

Resizing objects

If you click on a handle of a selected object, the pointer changes to a double arrow, indicating that you can resize the object by dragging. Images or circle objects will be scaled, whereas dragging the handles of text box objects will resize the size of the box, not the text itself.

⇨ You can also right-click an object and select "Edit Position and Size…" from the speed menu.
A dialog appears, allowing you to edit size (width and height) numerically, in cm/mm.

Inserting new objects

Inserting new objects is done by selecting the corresponding tool, and clicking and dragging in the layout. When you release the mouse button, a dialog appears, allowing you to define basic properties for the inserted object. Note that this does not apply to image objects, where instead a standard file dialog appears.

⇨ The Edit Properties dialog is also selectable from the Objects menu and by right-clicking objects and selecting from the speed menu.
See "About the Edit Properties dialog" on page 151 for a description of the items available in the Edit Properties dialogs.
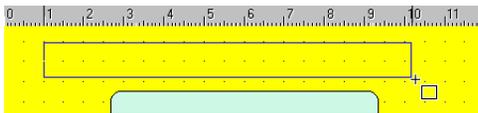
Inserting a text box object

Deleting objects

To delete objects, select them and use the [Delete] key.

Copy/move object

If you manually move an object with the right mouse button pressed, a small pop-up menu appears when you release the button allowing you to either select to copy the object to the new position or to move it there.

Positioning objects

There are several methods you can use to position objects:

- Manually – by dragging objects using the Selection tool.
- Automatically in relation to the layout frame. You can have an object centered (horizontally or vertically) by right-clicking it and selecting the corresponding item from the speed menu.
- Automatically in relation to other selected objects (see "The Objects menu" on page 151).
- By selecting "Edit Position and Size…" from the Objects (or context) menu and adjusting the position numerically in the dialog that appears. Note that this adjusts the position of the object with focus.

You specify the position from the left side and the top of the layout frame, in cm/mm. Click "Apply" to apply the position change without closing the dialog.

About the grid, rulers and magnetize options

On the Options menu, you will find two items, "Show Grid" and "Show Rulers". If these are ticked, the background of the layout will show a dotted grid, and also vertical and horizontal rulers that show the current position of the mouse pointer. Both these items help you to position objects with fine precision in the layout. The grid spacing can be specified in the Preferences dialog on the Options menu.

You can also use magnetize so that objects will snap either to grid positions, to other objects or to the frames limits (or all three), by selecting the corresponding Options menu item.

About the Edit Properties dialog

The Edit Properties dialog can be opened in three ways:

- By selecting an object and selecting "Edit Properties" from the Objects menu
- By right-clicking an object and selecting the same item from the speed menu
- By double-clicking an object

The contents of the dialog varies depending on the object type.

The Objects menu

The Objects menu can be selected from the toolbar, or opened by right-clicking an object (speed menu). The items on the Objects menu are greyed out if no object is selected.

If one object is selected, the following Object menu items are available:

Item	Description
Edit properties…	See "About the Edit Properties dialog" on page 151.
Edit position and size…	See "Positioning objects" on page 150.
Edit display condition	This allows you to decide whether an object will be displayed or not, depending on whether a given variable is empty or not.
Bring to front	This brings any object that is partially obscured by another overlapping object to the front.
Send to back	This sends any object that partially or completely overlaps another object to the back.
Center horizontally	Centers a selected object horizontally in the layout.
Center vertically	Centers a selected object vertically in the layout.
Lock movement	This locks the position of the selected object.
Select all	Selects all objects.
Select all with the same size	Selects all objects with identical dimensions to the selected object.

If several objects are selected when opening the Objects menu, the following additional items are available:

Item	Description
Apply same properties as focused object	This item allows you to apply properties from the focused object to all of the selected objects of the same type.
Space evenly horizontally	This distributes the selected objects horizontally, using the top center handle as a guide. This means that the top center handles in each selected object will be exactly the same distance from each other horizontally.
Space evenly vertically	This distributes the selected objects vertically, using the side center handle as a guide. This means that the side center handles in each selected object will be exactly the same distance from each other vertically.
Place under each other	This will place all selected objects directly under each other.
Align with focused object (several items)	These menu items will align selected objects to the position of the focused object. You can select to align to any side (left/right/top/bottom), or to the horizontal or vertical center of the object with the focus.
Resize as focused object (several items)	These menu items will resize all selected objects to either the same size as the focused object or to the same width or height as the focused object.
Group/Ungroup	This will group all selected objects so that they act as one object when selected or moved (keeping the relative positions to each other). Ungroup deselects the grouping.

About label sets

You can save as many label sets as you like for a project. However, whenever you open the Label Editor by selecting the "Create Label" menu item, a new label set opens which is untitled and only contains the auto-generated data.

Whenever you have edited layouts in the Label Editor, you will be asked to save it as a label set if you close the Label Editor or exit the program without first having saved your changes. If you don't save, any changes are lost.

⇨ It is important to note that any work performed in the Label Editor is not saved with the project – it has to be saved separately as a label set.

⇨ Saved label sets (with the extension *.lab) contain all the layout work performed in the Label Editor.

It is, however, not dynamic. This means that if you have added to or changed the Data CD/DVD Project, Audio CD Montage, etc. in any way after saving a label set, these changes will not be reflected in the saved label set, unless you save it as a user template (see below).

Saving a label set

To save a label set, select "Save" or "Save As…" from the File menu with the Label Editor open and as the active window (on top).

Opening a label set

To open a saved label set, select "Open" from the File menu and "Label Set…" from the submenu that appears.

Saving a label set as a user template

If you have saved a label set, you can make this appear on the list of available templates in the "Select a Label Template" dialog. Label templates are label sets that reside in designated subfolders inside the WaveLab Essential program folder. The path to the Label template folders (starting from the main WaveLab Essential program folder) is "Presets\Label\Templates\". Here you will find four folders: "Audio/AudioData/Data/Images". Place (or save directly) a label set in the appropriate folder. It will now appear as a new template next time you open the "Select a Label Template" dialog.

Defining user variables

Apart from the auto-generated data such as media information, date and time, etc., you can define a number of user editable variables that are local to the project you are working on. Once you have defined a set of user variables, this is automatically saved with the current project. To define user variables, proceed as follows:

1. Open the project you wish to set user variables for.

This can be a Data CD/DVD Project, an Audio CD Montage or an Import Audio CD Tracks session.

2. Select the "Edit text variables…" menu item.

Where this menu item is located depends on the type of project; for Audio CD Montages it is on the Functions menu and for Data CD/DVD Projects it is on the CD/DVD menu. Selecting this item opens a dialog containing a list of folders similar to the structure in the Windows Explorer.
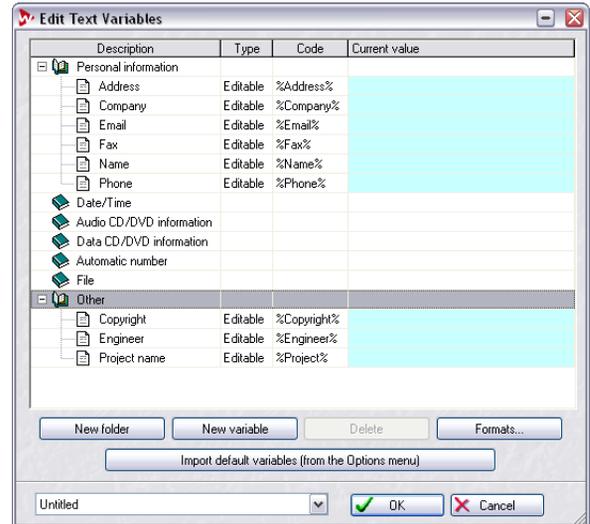
▪ Only the variables in open folders (and "Editable" written in the Type column) can be edited.

The editable variables vary according to the type of project.

3. To define a value for a default variable, for example copyright or personal information, double-click in the Current Value column for the relevant description.

A text box opens where you can type in the relevant information.

4. Click OK when done.

Creating new variables

You can create new variables and define values for them. The new variable will automatically be put in the currently selected folder (or in the folder with a currently selected variable). Proceed as follows:

1. Either create a new folder by clicking the "New Folder" button, or select a folder that you want to add a new variable to.

If you chose the former option, select the new folder.

2. Click the "New Variable" button.

A new editable variable appears in the selected folder.

3. Double-click in the Description column beside the new variable to open a text box where an appropriate description can be typed in.

For example "Producer".

4. Double-click in the Current Value column to enter the relevant information for the new variable, i.e. the name of the producer.

5. To create a code that can be used to refer to the variable in the Label Editor, type in an appropriate name beginning and ending with "%" in the Code column.

To use the earlier example, this would be written "%Producer%".

6. Click OK when done.

Once you have entered your personal data you can save the text variables file as a preset, see below.

On the Options menu there is a default set of text variables that is always available. Use this as a clean slate for creating new variables.

Saving variable sets as presets

Clicking the name field pop-up at the bottom of the window opens a menu which allows you to save sets of variables as presets. After having saved one or more variable sets as presets, you can switch between different presets of already "filled in" variables by selecting one from the name field pop-up. A preset could typically represent the information belonging to a client you work with regularly, for example. Naturally, the auto-generated variables will still adapt to the current project as usual.

Exporting text variables in ASCII

This option opens the current text variables as an ASCII text document in a tabulated format, suitable for editing in a spreadsheet application such as Excel.

Where this menu item is located depends on the type of project; for Audio CD Montages it is on the Functions menu, and for Data CD/DVD Projects it is on the CD/DVD menu.

Printing labels

You print your labels directly from the Label Editor, either on standard paper or on special media label paper (usually available in computer peripheral stores, etc.).

Calibrating the printer

If you are printing on special label paper, it is very important that the printer is "calibrated", that is, the measurements in the program (for margins, positioning, etc.) must be exactly the same as the actual results you get when printing. This is not as important when you print on standard paper (since the printouts then don't have to fit exactly in specific positions on paper).

To calibrate the printer, select "Calibrate printer" from the Printing menu in the Label Editor and follow the steps in the dialog that appears.

⚠ You only need to do this once (unless you switch to another printer).

Setting up page layouts

The Page Layout dialog contains various settings relating to how the page layout will be printed. It's important to note that you make page layout settings individually for each one of the three label types (case front, case back and disc label). These are also printed individually.

⚠ If you are using special label paper, these will typically come with a measurement sheet, showing the exact size and positioning of the labels.

To set up the page layout, select the desired label type (by clicking the corresponding tab) and select "Page layout…" from the Printing menu in the Label Editor. Note that there are different settings for the three different label types.

Printing

Printing is done independently for the three label types. However, there are two settings that are global for all three label types:

1. Pull down the Options pop-up menu and select "Preferences".
The "Label editor preferences" dialog appears.

2. Use the "Printing" checkboxes to determine whether the frames around the labels should be printed, and whether cut markers should be printed (making it easier to cut out the labels from the printed paper).

Now, you are ready to print:

3. Select one of the label types by clicking its tab.

4. Select "Print" from the Printing menu in the Label Editor window.
The "Print label" dialog appears, allowing you to make printer settings, preview the result and specify a number of copies.

5. Click Print.

6. Select the next label type by clicking on its tab, and proceed from step 3 above.

18

Analysis

Global analysis

Introduction

What does the "Global analysis" dialog do?

This dialog allows you to perform advanced analysis on your audio to find certain areas with specified properties. It can be used to find problem areas (glitches, distortion), etc., or to check general information such as the pitch of a sound.

How does it work?

When you analyse a section of an audio file, the program scans it and extracts overall information which it displays in the dialog.

However, during analysis, it also "pin-points" sections in the file that meet specific characteristics, for example, sections being very loud or very silent. You can then browse between these points, set markers at these places or zoom in on them.

About the tabs

- The Peaks tab is used for finding individual samples with very high values.
- The Loudness tab is for finding sections with high amplitude.
- The Pitch tab is for finding out the exact pitch of a sound or section.
- The Extra tab tells you about DC offsets and the significant bit resolution.
- The Errors tab helps you find glitches and sections where the audio has been clipped (recorded or processed at too high a level).

General operations

Opening the "Global analysis" dialog

1. Make a selection in the wave file that you want to process.

This selection can be of any length and in one or both channels. If you want to analyse the entire file, hit [Ctrl]-[A]. If "Process whole file if no selection exists" is activated in the Preferences - Wave edit tab, the whole file will be processed automatically if no selection has been made.

2. Select "Global analysis…" from the Analysis menu.
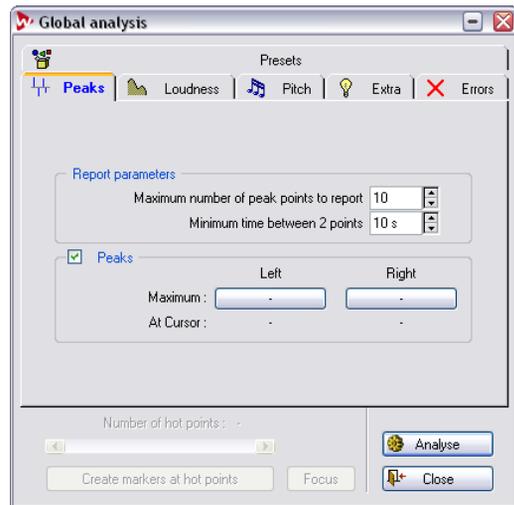
Deciding what types of analysis to perform

As described above, there are several types of analysis that can be performed. Each of them takes some time, so you may want to make sure that only the types you are actually interested in are included in the analysis.

It doesn't hurt to have more options activated than you need, but it will slow down the process. The pitch analysis in particular uses up a lot of processing time, because by its very nature it is complicated.

If the section you are analyzing is very short, it doesn't matter much whether all options are activated.

- Click on the Peaks tab and decide whether you want peak analysis by activating the "Peaks" option.
- Click on the Loudness tab and decide whether you want "RMS Power" analysis performed.
- Click on the Pitch tab for the program to find the "Average Pitch".
- On the Errors tab, decide whether you want the program to search for "Glitches" and/or "Clipping".

Setting parameters and performing the analysis

1. Set up the parameters.

On most of the tabs, you will find settings determining exactly how the analysis should be performed. For example, on the Peaks tab there are two parameters:

▪ "Maximum number…" allows you to set an upper limit for the number of peaks reported. For example, if you set this to "10", the program will only report the ten highest peaks in the file.
▪ "Minimum time…" allows you to specify the minimum interval between two peaks found. For example, if this is set to "5 s", there will always be at least five seconds between the reported peaks.

These two settings allow you to make sure that the reported peaks are not all in the same area.

2. If desired, move the wave cursor to a new position.
The Peak and Loudness tabs report values specifically for the position of the wave cursor, so if this is of interest, you should make sure the wave cursor is at the position for which you want a readout.

3. Click Analyse.

Checking and browsing the results

Checking the results on the Pitch and Extra tabs is simple, since there is only one value returned for the whole section of analysed audio. Just click on the tab and read off the values in the dialog (for details about the values, see later in this chapter).

For the other tabs, slightly more advanced options are available. This is since all these analysis methods provide their results as a number of positions in the file, positions that indicate peaks, glitches, etc. We call these "hot points".

You can browse (jump) between these points in a very practical way. Proceed as follows:

1. Click on the tab that represents the values you are interested in.
For example, let's say you click the Loudness tab.

2. Check the display for maximum/minimum values in the entire section analysed.
For the Loudness tab, these values represent the maximum and minimum amplitudes in the left and right channels respectively (for a stereo file).

3. Decide which of these values you want to browse.
For example, say you want to browse the minimum amplitudes in the right channel.

4. Click on the button that currently displays this value.
The value displayed is for the "hot point" with the highest/lowest value. In our example, you would click the button in the lower right corner.

Click here to browse the minimum levels for the right channel.
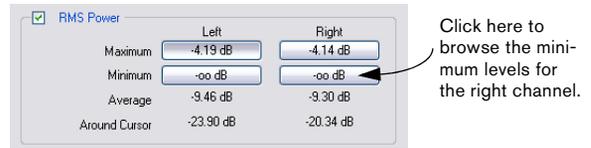
5. Check the "Number of hot points" value at the bottom of the dialog. It displays how many positions in the file the analysis found.
In our example it shows how many positions with low amplitude in the right channel meet the criteria specified by the parameters in the dialog.

Here you can see the number of "hot points" found.

6. Use the scroll bar below the "Number of hot points" value to browse between the positions found.
The wave cursor jumps between the points found by the analysis, and the display scrolls if needed.

7. When you want to browse another property, click on the corresponding tab (if required) and then on the value button that represents it.
For example, to check the amplitude of the left channel instead, click that button. To check peak values, click on the Peaks tab and then on one of the value buttons on that tab.

The result of the analysis is saved until you close the dialog or click Analyse again.

Creating markers

If you like you can add markers at the "hot points":

1. Select a property and channel for which you want to add markers.
You will add markers for the same property as you are currently browsing, so this selection is done with the value buttons, as described above.

⚠ Since you are always browsing one channel at a time in a stereo file, markers can be added for only one channel at a time.

2. Click the "Create markers…" button.
Temporary markers are added at all "hot points".

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 labelled "3 (L)".

Focusing

You can also focus the display on a certain "hot point":

1. Use the "Number of hot points" scroll bar to move the position indicator to the position you are interested in.

2. Click the Focus button.
Now two things happen:

• The wave display zooms in on the selected point.

• The "Global analysis" dialog is "folded in" so that only its title bar is visible.

The Peaks tab
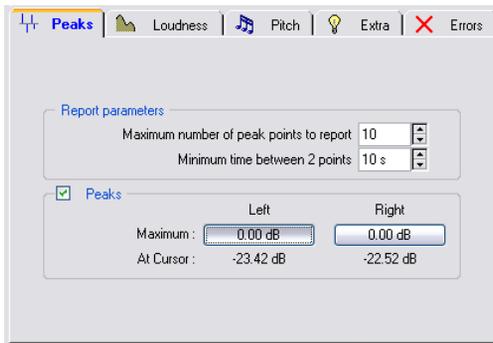
This is used to find peak values in the audio, that is, single samples with very high values.

Parameters

There are two report parameters:

• "Maximum number…" allows you to put restrictions on how many points will be reported. For example, setting this to "1" will make the program report only the highest peak (or one of the peaks with the highest value – if there are several with the same value).
• "Minimum time…" lets you set things up so that the points don't occur too close. Settings this to "1 s" will ensure there is always at least a second between reported points.

Result

The Result fields show you the following values:

Option	Description
Maximum	The highest peak in the analysed section.
At Cursor	The level of the sample at the wave cursor position, at the time of the analysis.

The Loudness tab
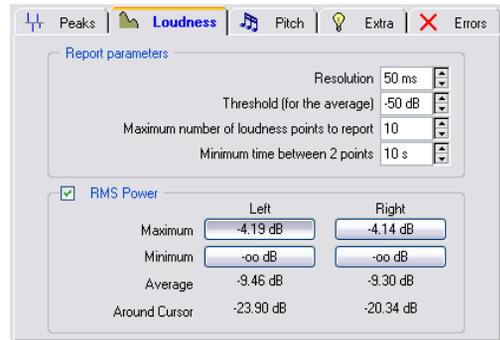
This finds loud and weak sections in a more "intelligent" manner than the Peaks tab. The theory behind this is that there might be a single sample with a high or low value somewhere, but this may not necessarily mean that this section is perceived as loud/weak.

To find sections that the ear perceives as significant in volume, you must look at a longer section of audio. To do this you measure a consecutive section of samples and then average their value. WaveLab Essential does just this, using a mathematical method called RMS (Root Mean Square) which is well known for its accuracy.

Parameters

The parameters on the Loudness tab are slightly more complicated than those for Peak analysis:

• "Resolution" is the length of audio measured and averaged. If this value is lowered, very short passages of loud/low audio will be detected. When it is raised, the sound will have to be loud/low for a longer period to result in a hot point.
• "Threshold…" is used for recordings where there are pauses, to make sure the average value is calculated correctly. A pause could "fool" the algorithm. Therefore you can set up a value, and all audio below that value will be considered silence and will not be taken into account for the average value.

▪ "Maximum number…" and "Minimum time…" are the same as on the Peaks tab, see above.

Result

The Result fields show you the following values:

Option	Description
Maximum and Minimum	The level of the highest and lowest points in the analysed section.
Average	The overall loudness of the whole analysed section.
Around Cursor	The loudness at the wave cursor position at the time of the analysis.

The Pitch tab

The Pitch tab shows the values from WaveLab Essential's extremely accurate pitch detection algorithm. This can be used for pitch shifting, for example, to get one sound in tune with another.

There are no parameters to set. 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 analysed section, the "hot point" controls in the lower section of the dialog are not used on this tab.

Usage guidelines

▪ 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 the analysed section has a reasonably stable pitch.
▪ The material must be relatively well isolated from other sounds.
▪ It is preferable to analyse 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 fool the algorithm.

The Extra tab

This tab shows you two things:

▪ The average DC Offset in the analysed section.
See "Eliminate DC Offset" on page 74 for details.

▪ The Apparent Bit Resolution.
This attempts to detect the actual resolution in the audio, i.e. how many bits are really used. This is useful e.g. if you want to check whether a 16 bit file really uses 16 bits (or if it was actually recorded with only 8 bit resolution and then expanded up to 16 bits).

The Errors tab
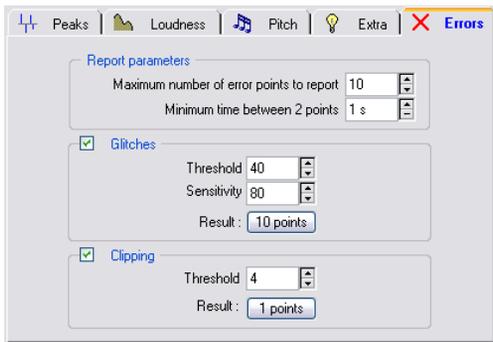
This tab actually reports two totally separate things:

• 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 a sound has been recorded at too high a level or when digital processing has raised the level past what the system can handle, hard clipping occurs. This will be heard as a very harsh type of distortion.
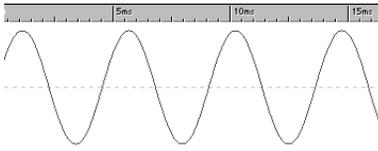
A sine waveform before clipping…
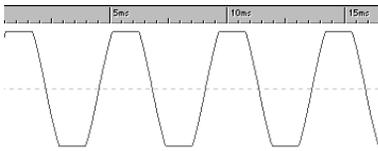
…and after.

Report parameters

"Maximum number…" and "Minimum time…" are the same as for the Peaks tab, see above.

Glitch parameters

• "Threshold" is a value for setting how drastic a change in level has to be reported as a glitch. The higher this value, the less sensitive the detection.

• "Sensitivity" is a length value. It represents the length of time that the waveform must exceed the threshold to be reported as a glitch. The higher this value, the less sensitive the detection.

⚠ It is not 100% certain that the points found by the algorithm are real glitches. Please zoom in and play back to check whether the found points really indicate a problem.

Clipping parameters

The program checks for a number of consecutive samples at full value, to determine whether clipping has occurred. "Threshold" is a setting to determine the exact number of these consecutive samples which must occur for the program to report clipping.

Results

This reports the number of glitches and clipping instances that have been found.

Working with presets

As with effect processors you can create presets for all the settings in the dialog for quick recall. See "Presets" on page 30 for details.

3D Frequency Analysis

This function allows you to view a wave file in the frequency domain rather than in the time domain. Although a wave display (time domain) tells you a lot about where one sound starts or ends in a file, for example, it doesn't say anything about the timbral contents of the file. A frequency graph (frequency domain) does.

The graph used in WaveLab Essential is actually something often referred to as an FFT (Fast Fourier Transform) plot.

Creating the graph

1. Select the part of the file you want to analyse.
If you select a stereo recording, a mix of the two channels will be analysed.

⚠ The length of the selection affects the accuracy of the analysis. For short selections the result will be very detailed. For longer selections (over a minute or so) it will not give equally detailed results, since the harmonic content might vary "between the measure points", which is then not shown in the display. You might for example make a separate analysis of the attack (beginning) of a sound, since the most drastic variations usually occur there.

2. Select "3D Frequency analysis options" from the Analysis menu and click on the Frequency tab. Adjust the settings if needed.
These are the only settings that cannot be redone when the graph is already open.
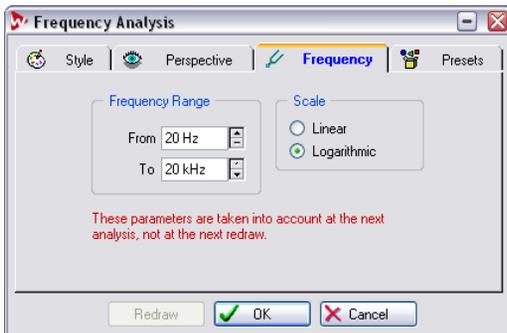
3. If you only want to see a plot for a part of the frequency range, adjust the "From" and "To" values.
The range must always span at least three octaves.

4. Decide if you want the frequency axis in the graph to be linear or logarithmic.
Logarithmic is often the most natural choice since each octave (doubling of the frequency) is then represented by an equal distance on the frequency axis.

5. Click OK to close the dialog.

6. Select 3D Frequency analysis from the Analysis menu.
The wave is analysed and the graph opens in a new window.

The frequency graph shows you how the different frequency components vary over time. A high "mountain" means that this frequency is very prominent at that particular time.

Adjusting the view

There are a number of settings you can make that affect the way the graph is displayed.

1. Either select "3D Frequency analysis options…" from the Analysis menu, or double click directly on the graph. Click on the Style tab.
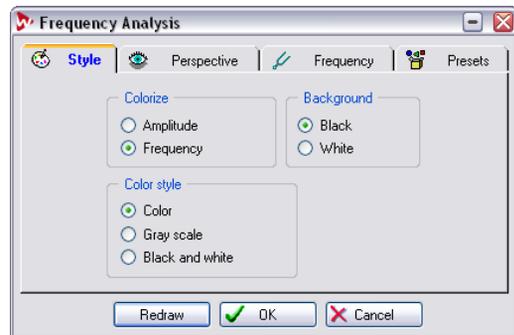
2. Decide whether you want the graph to be in color, grey scale or black and white.

3. Decide whether you want to use a change in color to represent the amplitude (the height of each mountain determines its color) or if you want it to represent frequency (the frequency spectrum is drawn in colors ranging from red to purple).

4. Decide on a background color (black or white).

5. To view the effect of your changes, click Redraw.

6. Click the Perspective tab.
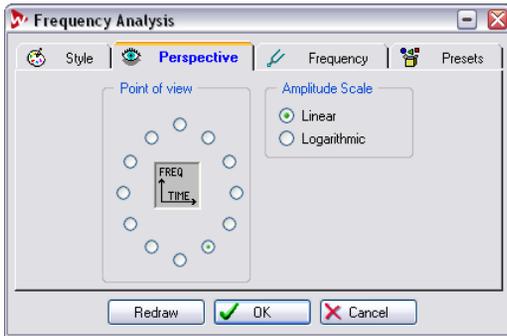
7. Decide from which point of view you want to examine the graph (use the "freq/time" figure as a directional guide).

8. Decide whether you want a linear or exponential amplitude display.

The Wave window's level rulers use a linear display, so this is a natural choice to start with.

9. Again, if you so desire, click Redraw.

Working with multiple views

If you wish you can view the same graph in several windows, but with different style and perspective settings. This allows you to get a better view of an otherwise crowded graph.

• To open a second view of the graph, drag-create a window, see "Working with multiple windows" on page 25.
• To make settings for one of the windows, select it, open the "3D Frequency analysis…" options dialog from the Analysis menu and proceed as described above.

Examples of how the graph can be used

The graph can be used for example for the following purposes:

• To see how the frequency spectrum is distributed in a mix.
• As a basis for EQ-ing, so that you know which frequencies to reduce or boost.
• To see which parts of the audio spectrum a certain background noise occupies (for removing by filtering).
• For educational purposes – these graphs tell you a lot about how different sounds are "built".

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Podcasting

Introduction

Podcasting is a method of distributing multimedia files over the Internet, e.g. for playback on mobile devices and personal computers. A Podcast can be downloaded automatically, using software capable of reading "RSS feeds". RSS stands for "Really Simple Syndication" and is a standard for distributing news and other information via the Internet.

An RSS news feed sends short messages on a certain topic (e.g. sports, music, etc.), made available from a web site. In order to read the messages, the user employs a program (e.g. a special feed reader or an Internet browser) that has the ability to monitor multiple feeds and automatically download new messages on a regular basis.

Technically speaking, a Podcast is an RSS feed including data content, such as audio or video files. Like a kind of "show" with new episodes released regularly, for an audience that wants to listen when, where and how they want. As such, this is a great way to make information available to anyone.

As you know, WaveLab Essential is capable of editing and producing audio material, but it also has the ability to create and publish Podcast episodes at will. And all this without ever quitting the program!

All you need, except for WaveLab Essential itself, is some webspace with an FTP account for it in order to upload the Podcast data.

Creating a new Podcast

In order to create a new Podcast from scratch, pull down the File menu, and select "Podcast..." from the New submenu.

This will bring up a new Podcast window where you can enter all information required for the Podcast (usually this will be paths to mp3 audio files along with some textual information).

Alternative ways to create a Podcast

There are other ways to create a Podcast, which can be shortcuts, depending on what kind of documents you already have opened in WaveLab Essential.

Given that a Wave window is the currently active document:

▪ Pull down the Edit menu and select "Create Podcast from Wave...".

This will create a new Podcast window, with the audio file already being selected for episode 1.

▪ Pull down the File menu and select "Add to Podcast..." from the Special submenu.

A dialog appears from which you can either select a Podcast currently open in WaveLab (if any), or browse and open an existing Podcast from your harddisk. In both cases, a new episode will be added to the Podcast, with the audio file selected for this episode. Alternatively, you can also choose to create a new Podcast from this dialog, with the audio file already being selected for episode 1.

Given that an existing Podcast window is currently open:

▪ Select "Clone this Podcast..." from the Podcast window's Options menu.

An untitled copy of the existing Podcast is created, containing all information of the original Podcast. Alternatively, you can drag the Podcast window's Document icon onto the WaveLab Essential desktop to achieve the same.

Podcast templates

WaveLab Essential allows to store Podcast templates from open Podacst windows:

▪ Pull down the File menu and select "Save as template..."

This will store the currently active Podcast window's information in a template. Next time when you create a new podcast by using any of the methods described above, you can choose this template, so that the information is already filled in the new Podcast window.

The Podcast window
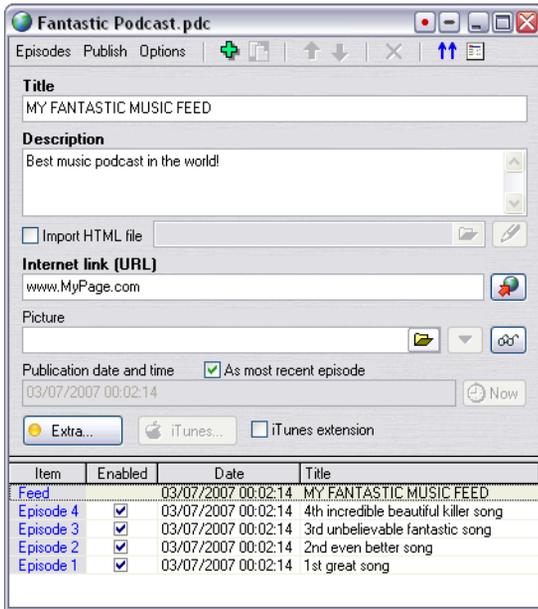
A Podcast window including four episodes.

The Podcast window is divided into two panes. The lower pane shows an item list of the basic feed and all episodes included in the Podcast.

The upper pane shows the information for the feed or an episode, depending on the item selected in the list below. This is where you will be adding files, Internet links or textual information to the Podcast feed and its episodes.

Adding, moving and deleting episodes

There are two ways to add an episode to a Podcast:

▪ Select "New" from the Podcast window's Episodes menu.
This will add a new untitled episode without any information being present.

▪ Select an existing episode in the Podcast window's item list, then select "Duplicate" from the Episodes menu.
This will add a new episode, copying all information from the existing episode to the new one.

Episodes can be moved by using the "Move up/down" functions in the Podcast window's Episodes menu. Alternatively, you can also re-order episodes by using drag-and-drop in the item list.

In order to delete an episode, select it in the item list and use the "Delete" function in the Episodes menu.

⇨ There must be at least one episode present in the Podcast.

Adding information to the Podcast

The upper pane of the Podcast window shows various fields and settings that are related to the basic feed or an episode, depending on what you have selected in the lower pane's item list (the fields are slightly different for the feed and episodes).

⇨ Field labels in bold letters point at a field that is mandatory to fill. For quick publishing of your Podcast it is sufficient to fill these fields only.

Following settings are available for the feed:

Setting	Description
Title	Sets the title of the feed (e.g. the topic of your podcast). This is a mandatory field.
Description	Further description of the feed content (HTML tags are also allowed). This is a mandatory field.
Import HTML file	Allows to browse for an HTML document, replacing the description above. Clicking the "Pen" button launches your HTML editor (see "Global Podcast options" on page 166), which allows for more complex designs.
Internet link (URL)	Your feed's main link presented to the user. Use this to direct people to a certain website that is related to your feed. This is a mandatory field. Clicking the "Link" button will open the specified URL in your system's default Internet browser, to make sure that the link is correct.
Picture	You may add a picture to your feed. This picture cannot be larger than 144 x 400 pixels according to the RSS standard, but it is possible to automatically resize the picture, if required (see "Global Podcast options" on page 166). Clicking the "Glasses" button will open the specified picture in your system's default image viewer.
Publication date and time	Allows to set the feed's publication date and time. If "As most recent episode" is checked, this will automatically be set accordingly. Clicking the "Now" button will set your system's current date and time.

These settings are available for episodes:

Setting	Description
Title	Sets the episode's title. This is a mandatory field.
Description	Further description of the episode content (HTML tags are also allowed). This is a mandatory field.
Import HTML file	Allows to browse for an HTML document, replacing the description above. Clicking the "Pen" button launches your HTML editor (see "Global Podcast options" on page 166), which allows for more complex designs.
Internet link (URL)	An additional link related to the episode. Clicking the "Link" button will open the specified URL in your system's default Internet browser, to make sure that the link is correct.
Audio file	Sets the path to the audio file you want to add to the episode. This could be any file type that is supported by WaveLab Essential, but should be an mp3 file for best possible compatibility. Clicking the "Arrow" button allows to directly add any file that is currently open. Alternatively, it is also possible to drag an opened audio file's Document icon onto the Podcast window's upper pane. Clicking the "Play" button will open the specified file in your system's default media player.
Publication date and time	Allows to set the episode's publication date and time. Clicking the "Now" button will set your system's current date and time.

Please note the following:

• When using HTML files and publishing the Podcast, any picture files that may be referenced by the HTML file will automatically be uploaded without any intervention (for this to work, HTML files should be in unicode "utf-8" or "Windows Latin code 1252" format).

• All fields support WaveLab Essential's "Default text variables" from the Options menu (see "Defining user variables" on page 152).

• It is possible to add an open Podcast to a Data CD/DVD project, using "Add to Data CD/DVD" from the Special submenu of the File menu. This way you can easily backup the complete Podcast including all accompanying media files to a CD for example.

Optional information

Clicking the "Extra..." button in the Podcast window's upper pane allows to specify optional information for the feed and the individual episodes. The information here is not mandatory and rarely used. Feed receiving programs may or may not take advantage of these settings, and this is why they are gathered in an extra dialog (your Podcast will play perfectly without specifying anything here, but you may go ahead, if you so desire).

If any optional information is set in this dialog, the small "light" within the "Extra..." button will turn from orange to green.

iTunes extension

If your Podcast should be received using Apple's iTunes application, you may want to activate the "iTunes extension" checkbox in the feed settings. This enables the "iTunes..." button to specify additional feed and episode information.

Again, the information here is not mandatory, and your Podcast will play fine in iTunes, even without the iTunes extension activated. But making proper settings here (e.g. in the Categories and Keywords sections) may help your Podcast getting distributed more easily among iTunes users.

Global Podcast options

There are some additional options you can set, which are valid for all Podcast windows. Selecting "Global options..." from the Podcast window's Options menu brings up this dialog:
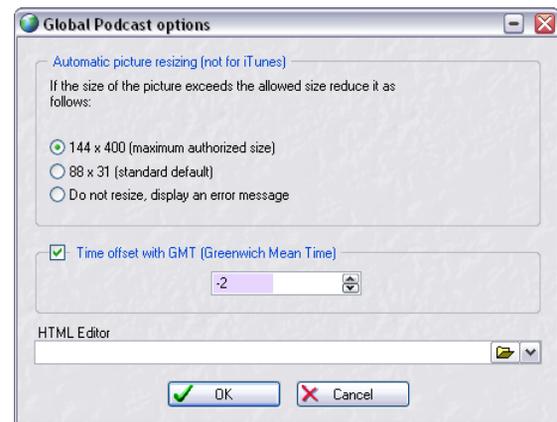
The Global Podcast options dialog.

The following options are available:

Option	Description
Automatic picture resizing	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 harddisk will not be modified.
Time offset with GMT	The displayed dates and times are "local". If your system is properly set, WaveLab Essential will automatically adjust the time offset in relation to GMT correctly. However, if you want to have time and date relative to a different time zone, adjust the value here.
HTML Editor	Sets the path to the external HTML editor, which will be launched when clicking the "Pen" button in the feed or episode "Import HTML file" setting.

Publishing the Podcast

When you are finished with adding files and information to your feed and episodes, you can directly publish the Podcast to the Internet from within WaveLab Essential, using the built-in FTP client.

The requirement for this to work of course is, that you must have some webspace with an FTP account for it in order to upload data, so that you can make your Podcast available at a publicly accessible Internet address.

FTP site manager

WaveLab Essential's FTP site manager stores all information required for the Podcast upload process. Selecting "FTP site..." from the Podcast window's Publish menu brings up the FTP site dialog:
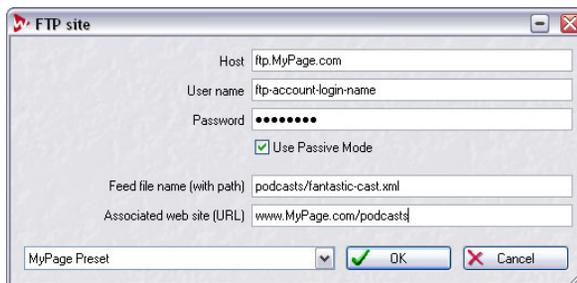
FTP site dialog.

Following settings are available and must be specified:

Setting	Description
Host	Your own FTP address.
User name	Your login user name to your own FTP address.
Password	The password to your user name.
Use Passive Mode	This should be left activated and only changed if you experience problems with the FTP connection.
Feed file name (with path)	The Podcast file name, as you want it to end up on your FTP site (extension .xml), including the relative path to it. Both, file name and path, are part of the Podcast's final public Internet address, so you may want to avoid long names.
Associated web site (URL)	Your own web site address, including the path to the feed (see above).

Here's an 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 Podcast's media files will then be uploaded onto the FTP at "ftp.MyPage.com/podcasts".

▪ The Podcast file itself (and as such the Internet address to be distributed) will be found at "www.MyPage.com/podcasts/fantastic-cast.xml".

Each Podcast stores its own complete FTP site information. It's also possible to save and recall FTP site presets using the Preset functions at the bottom left of the dialog.

Uploading the Podcast

Once you have specified the FTP site settings, uploading the Podcast is rather simple by using the functions in the Podcast window's Publish menu.

Following upload functions are available:

Function	Description
Update all items on FTP	Uploads/updates the XML Podcast file on the FTP; also uploads all items' media files, but only if they are not already present on the FTP. This is the most common function to upload and update your Podcast.
Upload/Replace all items on FTP	Same as above, but always uploads/replaces all items' media files; useful if you have changed the audio data, for example.
Update selected item on FTP	Uploads/updates the XML Podcast file on the FTP; also uploads the media file of the currently selected item in the list, but only if it is not already present on the FTP.
Upload/Replace selected item on FTP	Same as above, but always uploads/replaces the media file of the currently selected item in the list; useful if you have changed the audio data, for example.

⇨ Please note that when we say "all items", we in fact mean all items which have their "Enabled" checkbox activated in the item list. If not enabled, these episodes are simply omitted from the Podcast.

⇨ Uploading happens in a separate background process, so that you can continue working in WaveLab Essential, in case uploading takes time.

Checking the Podcast

Selecting "View XML source document..." from the Podcast window's Publish menu launches your system's default XML editor, in order to visualize the contents of the feed XML file produced by WaveLab Essential.

And as a final check, select "View published Podcast..." from the Podcast window's Publish menu, to open your system's default Internet browser and receive the Podcast you have just published from the Internet.

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Sampling and creating loops

Introduction

This chapter describes various operations related to creating loop sounds (e.g. for samplers).

Looping is a common technique used in samplers to simulate the infinite (or at least very long) sustain of many instrumental sounds. WaveLab Essential has tools for creating smooth loops, even for the most complex types of sounds.

What we normally refer to as audio files in WaveLab Essential are probably called "samples" in your sampler. In this chapter we will adhere to this terminology and call audio recordings "samples".

Using WaveLab Essential with Steinberg HALion

If you are the lucky owner of Steinberg's HALion software sampler, you can use WaveLab Essential as your sample editor. You can add samples by dragging audio file selections from WaveLab Essential onto the HALion Key Zone Editor or by using copy and paste. It is also possible to transfer multiple samples from WaveLab Essential to HALion in one go, using the following procedure:

1. Open and set up the audio files in WaveLab Essential.
You may for example need to adjust the root key settings in the "Sample attributes" dialog (see "Editing sample attributes" on page 170), so that they correspond to the proper pitches of the files.

2. If you have edited the files in any way, make sure they are saved.
This is very important, since HALion will load the actual file from disk.

⇨ If you haven't edited the actual audio, but only the loop markers or sample attributes (e.g. root key settings), you should save the file(s) with the "Save as" command.
This is because those settings are stored in the file headers, which are only rebuilt when the audio is re-saved. If the audio portion of a file hasn't been changed, WaveLab Essential will not re-save the audio on a regular "Save" – hence you should use "Save as".

3. Make a selection range in one of the files, covering the section you want to use as a sample.

4. Press [Ctrl]-[Shift]-[C].
With this function, no audio is copied, only the audio file reference and the position of the selected region.

5. Make a new selection in another file and press [Ctrl]-[Shift]-[C] again.
The file and region information for the new selection is added to the clipboard, without removing any previous information there.

6. Copy the regions of as many audio files as you like in the same way.

7. When you have copied the desired regions, go to the Keyzone Page view in HALion and press [Ctrl]-[V].
The copied regions appear as separate samples in HALion, assigned to keys corresponding to their original root key settings.

⇨ If you are using HALion with Cubase SX/SL, and have selected WaveLab Essential as your external Wave Editor, you can open HALion samples for editing in WaveLab Essential directly from the sampler, by selecting "Edit in Cubase SX/SL".

Editing sample attributes
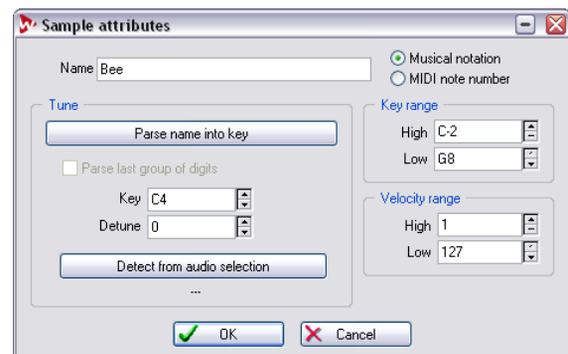
The "Sample attributes" dialog.

This menu item on the Sampling menu allows you to make settings for a sample. They do not process the sample in any way, they just give it properties that your sampler may or may not take advantage of.

Setting	Description
Name	The name the sample will have in the sampler. If the sample is an already named file, the name is displayed here, but you can change it if you wish. Note that not all samplers support all characters. Furthermore, if the name is too long, it will be truncated.
Parse name into key	If a sample is named so as to denote its root key (e.g. "Bass C0" – a sample of a bass in the key C0), clicking this button will automatically fill in the key field (see below) with the root key information taken from the file name. Note that you can also use this method for samples that are named so as to denote their MIDI note numbers (see below).
Parse last group of digits	This is available when you select MIDI note number notation (see below), and can be useful when you want to use the Parse name into key option (described above). In cases where samples are named with multiple groups of numbers – e.g. "Piano_01_112" – you need to activate this option to let WaveLab Essential know that the last group of digits is the one denoting the MIDI note number.
Key	This specifies which key will play back the sound at its original pitch.
Detune	This 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	If you click this button, WaveLab Essential will analyse the sample and determine its pitch and amount of detune. For this to work properly, the sample must be of such a nature that it is possible to clearly detect a pitch (it won't work properly with chords and drum loops for example).
Musical notation/MIDI note number	These radio buttons let you choose whether to display the different key values in the dialog with the key's pitch or the key's MIDI note number. In musical notation, keys are denoted according to their pitch (e.g. C3 – meaning the note C in the third octave). Each key corresponds to a MIDI note number, from 0 – 127. The key C3 for example, corresponds to the MIDI note number 48. MIDI note numbers make it possible for samplers to automatically map samples to the correct keys.
Key range	If a sample is part of a multi-sample key map, you can specify the key range for the sample, i.e. which keys should be able to play it.
Velocity range	If a sample is part of a multi-sample key map with velocity switchable samples, you can here specify the velocity range for the sample – the minimum and maximum velocity values that should trigger the sample.

Basic looping

Instrumental sounds in samplers rely heavily on looping. Looping a sound allows you to repeat a section of the sample indefinitely, to create a sustain of unlimited length. An example of this would be an organ sound. Without looping you will only be able to play notes as long as the original recording. With looping, notes can be of any length.

Finding a good loop point takes a bit of practice. Here is some advice:

- There are only two types of loops: very long and very short. Loops of intermediate lengths usually don't work very well.
- A long loop will sound 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 – will be hard to loop since the start point of the loop will be louder than the end. A flute will be much simpler, because the sound in the sustain section is very stable.
- Very short loops (covering only a few cycles or periods) can almost always be found, but may sound "static" and unnatural.
- A loop should normally start a short time after the "attack" portion, that is, when the sound has "stabilized" to a sustaining note.
- If you try to set up a long loop, it should end as late as possible, but before the sound starts decaying to silence (if it does).
- If you go for a short loop, it is harder to say exactly where in the sound to put it, but it should definitely be towards the end.

More information about looping in general, and the exact capabilities of your sampler in particular, can be found in the sampler's manual. Below follows a description of WaveLab Essential's set of tools for setting up loops.

Adding, moving and playing loop markers

Loop markers are added, moved and otherwise edited just as any other type of marker. This is described in the section "Introduction" on page 98 and onwards.

⚠ Please note the points about marker pairs (see "About marker pairs" on page 98).

Here is a brief description on how to create a basic loop:

1. Make a selection that corresponds to the area you want looped.
If you like, you can play back with "Loop selection" activated on the Transport bar and adjust the selection during playback.

2. Bring up the Marker toolbar.

3. Click on the loop marker icons (the green ones).
The selection is now enclosed by loop markers.

4. Make sure that "Loop as marked" is activated on the Transport bar.
Click the Playback end position/Loop mode button to open the corresponding pop-up.

5. Play back and adjust the position of the markers to change the loop.
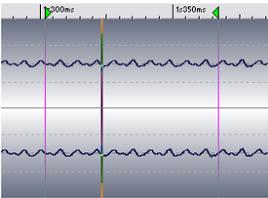
A basic loop setup using markers.

⚠ Note that it takes a while for changes in the loop to take effect on playback. Exactly how long depends on your buffer settings, see "About loop updating and short loops" on page 58.

Getting a good loop by just dragging the markers around might be hard. Most often you will hear a click or an abrupt change in timbre at the turning point, which is hard to get rid of by dragging the markers.

We suggest you only use this method for setting up the basic length of the loop (leaving clicks, etc. as they are) and then use the Crossfade Looper and Loop Tone Equalizer (described below) to perfect it.

Using the Crossfade Looper

What is the Crossfade Looper?

The Crossfade Looper is a special tool for creating "seamless" loops. It allows you to "nudge" the loop points while at the same time providing visual feedback of the "join" between the start and end point.

The Crossfade Looper can also automatically find loop points for you, by scanning the area of the waveform that is in the current loop points' vicinity. You can specify parameters for how "finicky" the program should be when suggesting loop points.

Finally, if you can't find a good enough loop point using the methods described above, the Crossfade Looper allows you to process the waveform to allow for smoother loops. It does this by crossfading areas of the waveform close to the loop start and end points.

Opening the Crossfade Looper

Before you open the Crossfade Looper we suggest you set up a basic loop as described on the previous pages. Then proceed as follows:

1. If you have several loops, place the wave cursor somewhere inside the one you want to work on.
This can be done by clicking somewhere between the loop markers.

2. Select Crossfade Looper… from the Sampling menu.

3. Click on the "Loop points" tab.
This tab should be your starting point, since this is where you adjust the loop points.

⇨ The following sections describe the common procedures for using the Crossfade Looper.

About the Crossfade Looper dialogs

The Crossfade Looper dialogs are non-modal. While they are open, you can still access other windows (e.g. the Transport bar). However, all editing of the Wave window on which you are working is blocked out (except moving the current pair of loop markers, of course).

Furthermore, each time you click Apply, the process starts out from the wave data as it was when you opened the Crossfade Looper (since you want to be able to try out various types of crossfading without re-processing the wave each time). This affects the undo function: there is only one step of undo and no redo in the Crossfade Looper.

Moving the loop points "manually"

Let's assume you have set up a basic loop that you are happy with, except for glitches or "bumps" at the turning point. You can then use the Crossfade Looper to move the points manually, in small steps, to eliminate the glitch.

This is actually technically no different from moving the loop points in the wave display, but the features of this dialog makes it much easier to find good loop points, since the display gives you visual feedback as you go along. We also recommend that you have playback going on in "Loop as marked" mode since you will then also hear what you are doing!

The two ways of moving loop points

There are two ways of moving the loop points: dragging in the actual waveform (position the mouse pointer in the display and drag sideways) and using the "nudge" buttons.

You can drag either side of the waveform directly…

…or use the nudge buttons.
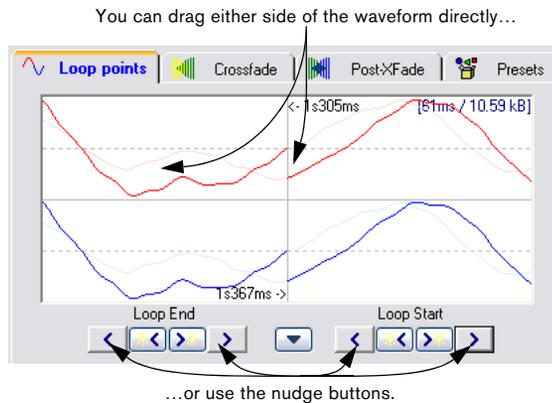
▪ Dragging in the waveform allows you to perform larger moves more quickly.

▪ The nudge buttons are more useful for fine-tuning since they move the points by one screen pixel. This means that in 1:1 zoom mode, each press on a nudge button moves the loop point a single sample.

The various moving options

▪ By moving the left part of the display, you are moving the end point to a later (left) or earlier (right) position.
▪ By moving the right part of the display, you are moving the start point to a later (left) or earlier (right) position.
▪ If you activate Linking, both the start and end points will move simultaneously. That is, the loop length will be exactly the same, but the entire loop will move.
▪ You can switch to the Wave window and adjust the markers there, if needed.

Using the auto-find feature

If desired, you can have the program search for good loop points automatically. This is technically no different from adjusting the loop points yourself, only that the program uses pattern matching algorithms to suggest loop points for you.

Let's say that you want to let the program find a better start point for the loop. You first set up a start and end loop marker, to get a basic loop, as described above. You then invoke the automatic searching, and the program searches the waveform from the current start point, trying to find a section that is as similar as possible to the area just after the current end point. When it finds a match it stops.

You decide how similar the section must be to be considered a match.

Setting up the parameters

The auto-find parameters.

There are two parameters for the auto-find feature, desired correspondence and search accuracy.

▪ Search accuracy is a parameter for determining how many samples should be included in the analysis. Higher values result in greater accuracy, but also longer processing times.

- Desired correspondence is a value for how well the found section must resemble the section to which it is compared, to be considered a match. WaveLab Essential uses two methods for comparison, "phase match" and "join match" (which provide much better matching than the simple zero crossing detection used by most other programs. Phase matching also ensures that no harmonic cancellation will occur when you crossfade, see later in this chapter). First phase matching is performed and then, to "fine tune", a join match is employed. A value of 1000 will most likely fail completely, since it requires a 100% perfect match.

Searching

1. Set up the search parameters.

2. Click on one of the buttons in between the "nudge" buttons.
Each time you click, the program scans from the current point (forwards or backwards, depending on which button you clicked) until it finds a point that matches. It then stops. If you wish you can stop at any time by clicking the right mouse button, by using the Stop button on the status bar or by hitting [Esc]. The program will then jump back to the best match found so far.

3. Check the loop by playing back.

4. If you think there might be a better point, at some later or earlier position, just click the button again, and scanning continues from this point onwards.

Remember that you can always go back to the main Wave window and adjust the markers manually.

Working with candidates

Often you will want to try various alternatives before committing to a loop. To be able to compare several alternatives, WaveLab Essential offers looping candidates. These allow you to store sets of loop points in memory locations for later recall.

When you have set up the loop points as desired, you store them by selecting "Save candidate" from the options pop-up menu in the dialog, and then selecting one of the five memory locations.
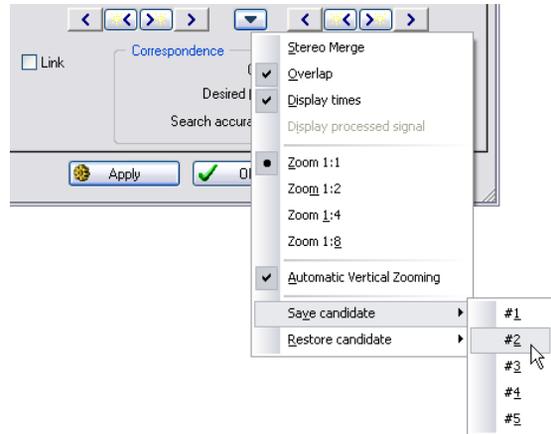
To recall a stored candidate, select "Restore candidate" from the pop-up menu, and then select the desired memory location from the submenu. The points are now recalled and the loop points in the wave are moved to the positions stored in the memory location.

⇨ To compare several candidates, you can for example have playback going, select them one after the other, and listen to the difference.
Once you have found your candidate, you can select OK to exit this window or proceed to crossfading.

Things to note about candidates

- There is only one set of candidates per Wave 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 so that you don't recall the wrong set.
- Crossfading is not part of the candidate, only loop positions are. You should decide on a candidate to use before you apply crossfading.

Creating a crossfade

What is a crossfade and when do I need it?

Sometimes it is impossible to find a loop that doesn't cause any glitches. This is especially true for stereo material, where you might be able to find a perfect candidate for either channel, but not for both at the same time.

One solution to this problem is to use crossfading. This technique "smears" the material around the end loop point so that it loops perfectly. It does this by mixing material before the loop start with material just before the loop end.

The only problem with this technique is that it alters the waveform and hence changes the sound. However, normally you can find settings that minimize this problem.

Setting up

1. While still at the "Loop points" tab (in the Crossfade Looper dialog), try to create as good a loop as you can.

2. Click on the Crossfade tab.

3. Make sure the Crossfade check box is activated.
There is a corresponding check box on the Post-Crossfade tab. This lets you choose if regular crossfading and/or post-crossfading will be performed when you click Apply later.
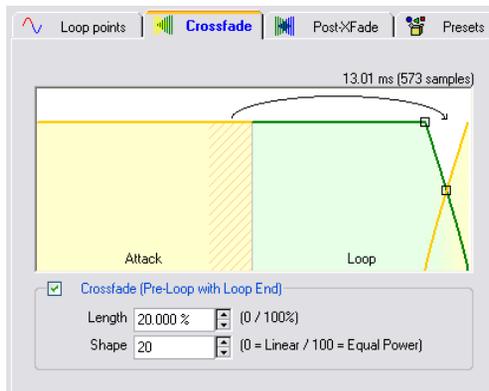
The Crossfade tab with crossfading activated.

4. Decide on a length for the crossfade either by dragging the length handle or by adjusting the Length value below the graph.
The length is used to adjust the amount of the audio file that will be processed. This area is always located just before the end of the loop, but the Length value adjusts how far towards the start of the loop it stretches. As you can see, an equally large area before the loop start is used as basis for the processing. However, this area is not processed, just analysed.

Generally you will want the crossfade to be as short as it can be, with an acceptable result:

- Using a long crossfade will be a better guarantee that the loop will be smooth. However, more of the waveform will be processed and hence changed in character.
- Using a short crossfade will ensure the sound is affected as little as possible. However, the loop might then not be as smooth as otherwise.

5. Decide on a crossfade shape, by dragging the shape handle or by adjusting the shape value.
The considerations for this are the same as when creating other crossfades, see "Crossfade" on page 73. 0% means that the sound level will be equal in the middle of the crossfade, whereas 100% means that the energy will be equal in the middle of the crossfade. Use low values for "simple" sounds and high values for "complex" sounds.

Applying and checking the crossfade

When you click Apply, the sound is processed. If you have playback going, repeating the loop you will hear the change take effect after a short while.

⇨ You can check the crossfade visually by opening the "Loop points" tab and activating "Display processed signal" on the options pop-up menu.
When this is activated, the display will show the waveform as it looks when crossfaded. When the option is deactivated, the display will show the waveform as it originally was. Switching back and forth allows you to compare the two.

⇨ You can undo the crossfade by selecting Undo from the Edit menu.

⇨ If you click OK, the dialog closes and crossfading is made permanent.
If you click Cancel instead, the dialog closes and the waveform is reverted back to the way it was before crossfading.

⚠ Do not move the loop points after performing a crossfade! The waveform has been processed specifically for the current loop settings!

Creating a post-crossfade

The post-crossfade is accessed from its own tab.
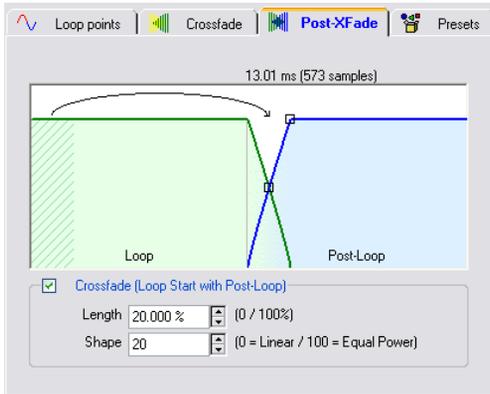
This is identical to the regular crossfade, but it is applied to the area after the loop. This means that it is used to fade the material so that there will be no glitch when playback continues out of the loop.

⚠ If you intend to use the sound in your sampler in such a way that the area after the loop is never played, you don't need to worry about this feature at all! Some samplers don't even allow you to play the area after the loop. However, if you do intend to use the area after the loop it is very important to have post-cross-fade activated!

The post-crossfade looks at the part of the waveform that occurs just after the loop start and processes a certain area beginning at the end of the loop. The Length parameter adjusts the size of this area.

Everything else is identical to regular crossfading, see above.

Working with presets

As with effect processors, you can create presets for settings in the dialog for quick recall. See "Presets" on page 30 for details. This comes in extremely handy for example when processing a number of similar files, for example for creating a multisample (several instrumental samples mapped across the keyboard).

Using the Loop Tone Equalizer
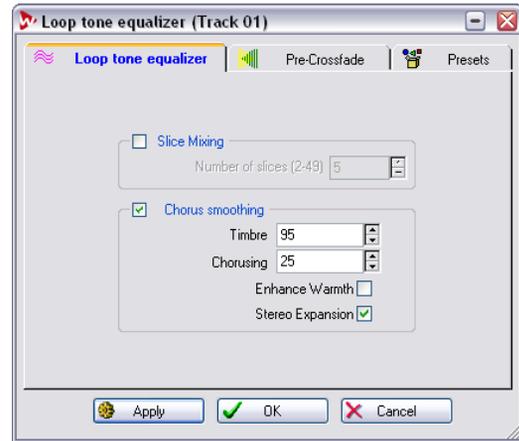
The Loop Tone Equalizer is a function for looping those un-loopable sounds, for example sounds that constantly decay in level or continuously change in timbre. The Loop Tone Equalizer applies drastic processing to the sound that evens out changes in level and timbral characteristics, before and during the loop.

It does this by using one of the following two methods:

▪ Slice mixing

A number of slices is specified for the looped section. If for example you specify eight slices, the loop is cut up into eight sections of equal length. These sections are then 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 cancellation (due to phase offsets) occurs.

▪ Chorus smoothing

This has nothing to do with a conventional chorus effect, but uses a method known as "Phase Vocoding" to filter the harmonics. This method is recommended for looping ensemble and choir sounds.

You can use both slice mixing and chorus smoothing in conjunction, but it is highly unlikely that you will ever need to. Note also that the original length of the loop will not be changed by the processing.

In addition to the above, the Loop Tone Equalizer 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 Equalizer, proceed as follows:

1. Set up a basic loop of the length you desire.
This will probably not be a very good loop. If it was you wouldn't need to use the Loop Tone Equalizer.

2. Select Loop Tone Equalizer from the Sampling menu and click on the Loop Tone Equalizer tab.

3. Make sure that either slice mixing or chorus smoothing is activated and make the desired settings.
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, 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 20 milliseconds.

For chorus smoothing, you can make the following settings:

Option	Description
Timbre	This governs the amount by which the timbral characteristics of the sample should be evened out. The higher the value, the more pronounced the effect.
Chorusing	The delay time of the chorus effect varies with the modulation, which causes a sweeping effect. What this parameter does is determine the width and speed of the chorus sweep.
Enhance Warmth	Creates a smoother, warmer sounding effect.
Stereo Expansion	This increases the width of the sample in the stereo sound image.

4. Switch to the Pre-Crossfade tab and set up a crossfade.
You will need to use this feature since the Loop Tone Equalizer itself changes the timbre inside the loop and only there. This will mean that the transition into the loop will not be as smooth as expected, unless you apply crossfading. Generally, this is the same as the crossfade in the Crossfade Looper window. However, the difference is that this crossfade is made before and up to the loop start. The processed material created by the Loop Tone Equalizer is added to the original material before the loop.

5. Click Apply, and the sound gets processed.
If you have playback going, repeating the loop, you will hear the change take effect after a short while.

⇨ You can undo the crossfade by selecting Undo from the Edit menu.

⇨ If you click OK, the dialog closes and processing is made permanent.
If you click Cancel instead, the dialog closes and the waveform is reverted back to the way it was before processing.

⚠ Do not move the loop points after performing the processing! The waveform has been processed specifically for the current loop settings!

About the end of the loop – Post-crossfading

After using the Loop Tone Equalizer, the transition from the end of the loop to the end of the file in many cases won't be very natural. This can be fixed as follows:

1. Close the Loop Tone Equalizer and open the Crossfade Looper.

2. Click on the Crossfade tab and deactivate the Crossfade option (the check box).

3. Click on the Post-Crossfade tab and make sure Crossfade is activated.

4. Set up the post-crossfade parameters and click Apply.

Working with presets

As with the Crossfade Looper, you can create presets for settings in the dialog for quick recall. See "Presets" on page 30 for details.

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Customizing

What is customizing?

When we talk about customizing, we mean making settings so that the program behaves and looks the way you want it to!

Preferences
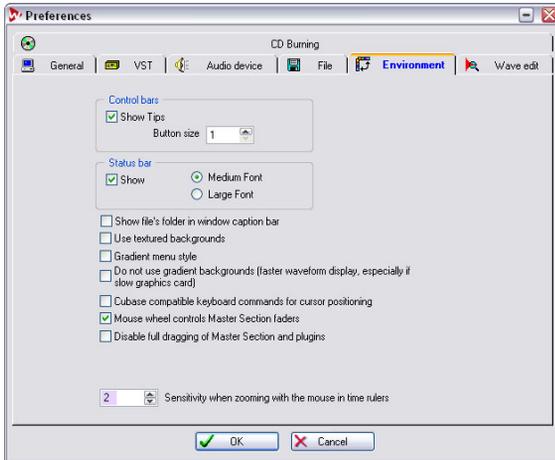
In the Preferences dialog on the Options menu you will find a number of settings, collected on tabs, for tailoring the look and behavior of the program.

Saving the preferences

To make sure the preference settings "stick", select the General tab and make sure "Save preferences on exit" is activated. When this is activated, all your preferences settings (as well as all menu options, etc.) are automatically saved when you Quit the program.

Creating startup preferences

To make sure the program starts with the same preference settings each time you launch it, proceed as follows:

1. Set up all preferences as desired and make sure "Save preferences on exit" is activated.

2. Quit the program.

3. Launch the program again, and deactivate "Save preferences on exit".

Now you can change the preferences for this session, but the settings you had when you last quit will be the ones you get next time you launch the program.

Folder editing
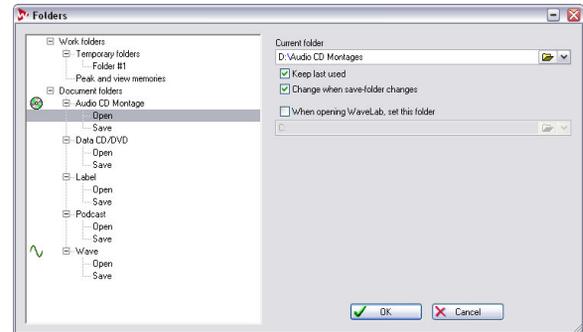
Navigating to the right folder via file dialogs can sometimes be time consuming, but WaveLab Essential gives you the option to optimize these operations.

If you select "Folders" from the Options menu, a dialog opens where you set for the saving and opening of preferences for WaveLab Essential's various folders.

To the left in the dialog is a tree list with two root folders; "Work folders" and "Document folders". Work folders are the folders associated with temporary files, and Document folders are all folders associated with WaveLab Essential specific files and documents (Wave, Audio CD Montage, etc.).

Work folders

The Work folders are usually set up after installing Wave-Lab Essential, as the folders specified for temporary files have an important bearing on WaveLab Essential's overall performance. See for a description of how to set up these folders.

Document folders

For each WaveLab Essential document type, you can specify paths to open and save folders (given that the document can be saved). This is done in the following way:

1. Click on the plus sign for a document type in the tree list.
All document types will have Open and Save sub-items.

2. Select either Open or Save.
Now you can specify a path to a folder which will be automatically selected when opening or saving a document of this type.

For each folder, you can specify the following:

Item	Description
Current folder	Here you can specify a path to a folder to use for Saving or Opening documents of the selected type.
Keep last used	The last folder used for saving or opening documents of the selected type will be selected the next time you open or save from the file dialog.
Change when save/ open folder changes	Use this if you want the folder to be redefined if the opposite operation is performed (open vs save). If you set this option both for the Open and Save folders, then these folders will always be the same.
When opening WaveLab Essential set this folder	If you want to reset the folder to a specific folder each time you open WaveLab Essential you can specify a path here.

Saving the window layout

If "Open last window layout on startup", on the Preferences–General tab is activated, the program will open in exactly the same state as it was when you last quit (with the option activated). The snapshots, and even the document windows you had open (and their "layout") will automatically be reopened.

You can use this to create a startup "layout" that will always appear when you launch WaveLab Essential:

1. Set up all windows as desired.

2. Make sure "Open last window layout on startup" is activated and quit the program.

3. Launch the program again, and deactivate "Open last window layout on startup".
The next time you launch the program, it will open with the windows set up as in step 1 above, regardless of whether you have changed the window layout since.

⇨ If you hold down [Ctrl] when quitting the program, the effect of the "Open last window layout on startup" setting is reversed. If it was activated, it will be deactivated and vice versa.

⇨ If you hold down [Ctrl] when launching the program, no window layout is loaded.

Styling WaveLab Essential – Wave windows

It's possible to "style" the Wave windows to your liking, by adjusting colors (of waveforms, background, cursor lines, etc.) and changing the look of the ruler and other window details.

By saving the current window style as default, you can change the style that is normally used when you open or record an audio file in a Wave window.

On the following pages, we will first describe the general procedure for how to change the default style, then describe the elements you can change.

Changing the default style

1. Set up a Wave window to look the way you want it.
Note that this also includes the ruler formats – see .

2. Select "Save current window style as default" from the View menu.
Now, all Wave windows (which have not been opened before) will be shown in the style you specified.

The elements of a style

⇨ When you change any of these style settings and want to make the changes available to other Wave windows, you need to save them as the default style.
If you don't do so, newly opened Wave windows will automatically be reset to the default style!

Waveform elements

To change the waveform elements, right-click on a waveform (in the overview or in the main display), select Elements and then select the desired item from the submenu that appears.

⚠ Note that you make separate settings for the main waveform display, the overview and for the two channels in a stereo file! Which section you make settings for depends on where you click.

Item	Description
Time Ruler	Specifies whether or not the display should have a time ruler.
Level Ruler	This only applies to the Main view display. It is used to set whether or not there should be a ruler showing levels.
Solid/Dotted Markers	These two (mutually exclusive) items are used to set the style of the marker lines extending across the waveform. If neither is activated, the marker lines are hidden.
Range Indicator at top/bottom	The range indicator is a small "barber shop striped" bar that indicates which part of the waveform is shown in the main display. These two items are used to set whether it should appear at the top or bottom of the overview.
Thin/Medium/Fat Cursor	These three items are used to set the thickness of the cursor line.
Solid/Dotted zero level axis	These two (mutually exclusive) items are used to set the style of the line crossing the waveform at zero level (in the middle). If neither is activated, the zero level axis is hidden.
Solid/Dotted half level axis	As above, but for the two lines crossing the waveform at ±50% level.
End of file indicator	Allows you to show/hide the line that indicates the end of the file.

Colors

To set the color of a certain element in the display, right-click in the Wave window, select Colors and then select an element from the submenu that appears. In the standard Windows color dialog that appears, select or define a color and click OK.

⇨ For the display background colors, there are separate "top" and "bottom" settings – the resulting display background will be a gradient "fade" from the top color to the bottom color.

If you prefer a single background color (or if you need to speed up display redraws, typically with slower graphic cards), you can turn this feature off by activating "Do not use gradient backgrounds" in the Preferences–Environment tab. The background color will then be a 50/50 mix of the top and bottom color.

⚠ Again, when changing colors for the waveform images, you make separate settings for the main waveform display, the overview and for the two channels in a stereo file, depending on where you click.

Ruler style

To change the look of the rulers (done separately for the Overview and Main view), right-click on the ruler, select style and then select one of the options from the submenu that appears:

Option	Description
3D/Mingled	These two (mutually exclusive) items allow you to select whether the ruler should have its own looks (3D) or whether it should "inherit" the color of the waveform background.
Font	Opens up a dialog box that allows you to set a font for the text/numbers on the ruler. Select a font, style, size, effect and color and click OK.
Tick Color	This allows you to set the color for the tick marks on the ruler. A standard Windows color dialog is used.

Styling WaveLab Essential – Audio CD Montage windows

Using custom colors

You can create and assign different color schemes to different clips or tracks to make it easier to find your way through the Montage:

▪ To assign a color scheme to a track, open the Track menu and select a color scheme from the Color submenu.
The selected color scheme is used for all current clips on the track, as well as for clips you add later on. However, note that this color selection is overridden by the clip colors.

▪ To assign a color scheme to an individual clip, right click on the clip to bring up the clip speed menu, and select a color scheme from the Color submenu.
Clip color selections (if other than default) override track colors.

▪ The Mute color overrides all color settings above.

Defining custom colors

You can redefine all colors on the Color pop-up menus, as well as the colors for various other elements in the Audio CD Montage. This is done in the Audio CD Montage Colors dialog, using the following procedure:

⚠ There are many items of different color displayed in a Montage. If you redefine colors, be careful not to choose colors which cause some elements to "disappear" (e.g. black marker lines on a black background).

1. Pull down the View menu and select "Audio CD Montage colors…".
The Audio CD Montage Colors dialog appears. For the menu item to be available, the active window must be a Montage window.

2. In the Items list, select the element for which you want to edit the colors.
By clicking the plus sign next to a heading, you display the sub elements for that item. The available elements are described in the section "The color elements" on page 183.

3. Use the three sliders (red, green and blue) to adjust the color of the selected element.
The current color is displayed in the field to the right. You can also see the changes in the Audio CD Montage window while you are editing.
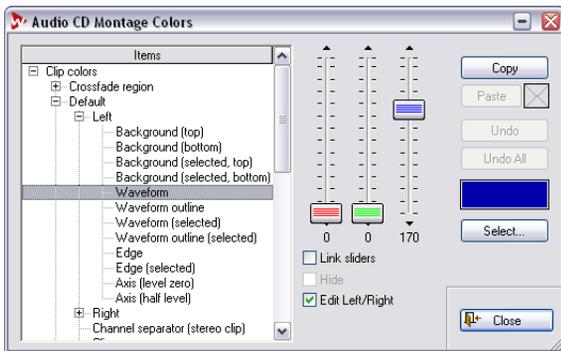
• If you are editing a clip color element, you can make separate color settings for the left and right sides of stereo clips.
If you want the same color for the left and right sides, you must make sure that the checkbox Edit Left/Right is activated (it is by default).

When this is activated, settings for the left side of a clip are automatically "mirrored" on the right side, and vice versa.

• If you activate the Link sliders checkbox, you can adjust all three sliders at once, by moving one of them.
This is useful if you want to adjust the brightness of the color, without affecting the hue.

• Some elements can be hidden totally by activating the Hide option.
When this is activated, it is not possible to make any color adjustments (since the element won't be visible in the Audio CD Montage anyway).

• It is also possible to select colors from a standard Windows color dialog, opened by clicking the Select button.

4. If you make a mistake, you can undo your latest adjustment by clicking the Undo button.
To undo all changes you made since you opened the dialog, click Undo All.

5. If you want to apply the same color to several elements, you can use the Copy and Paste buttons.
Set up the color, click Copy, select the next element and click Paste to apply the same color settings.

• You can also copy an entire color scheme (for example, copy all settings for one of the custom schemes to the default scheme) by dragging and dropping in the Items list.

6. If you are editing one of the color definitions (the items that appear on the track and clip color menus), you can rename the color by clicking on the name in the Item list and typing a new name.
In the Items list, the color definitions that can be renamed are displayed in blue.

7. When you're finished, click Close to close the window.

The color elements

Clip colors

Under the heading Clip Colors you can select colors for various elements in the following clip types:

Option	Description
Crossfade Region	Allows you to set the background color for overlapping clip sections.
Default	The default colors, used for clips for which you haven't selected any specific color.
Muted	The colors used for all muted clips.
Custom	These options correspond to the items on the Color submenus (on the Track menu and clip speed menu). These can be renamed, as described above.

For each item, you can select colors for a number of different clip elements. You can make separate adjustments for the left and right sides of a stereo clip, though by default, editing a color for the left side will automatically change the same setting for the right side and vice versa (see "Defining custom colors" on page 182). For mono clips, the "Left (mono)" setting is used.

The following color elements are available:

Option	Description
Background top/bottom (normal/selected)	The background colors of the clip (unselected and selected, respectively). The resulting display backgrounds will be gradient "fades" from the top colors to the bottom colors (this can be turned off in the Preferences–Environment tab, as described in the section "Colors" on page 181.
Waveform (normal/selected)	The waveform color for unselected and selected clips, respectively.
Waveform outline (normal/selected)	The color of the waveform outline (unselected and selected clips, respectively).
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.

Option	Description
Focused Clip name	The name label of the focused clip (see "About selected and focused clips" on page 114).
Focused Clip name background	The name label background of the focused clip.

⚠ For the Crossfade Region item, you can only select colors for "Background".

Miscellaneous colors

This section of the Items list in the dialog contains color settings for other elements in the Track View:

Option	Description
Background top/bottom	The background colors of the Track View.
Cursor	The color of the Montage cursor. Note that because of the blinking Cursor, the selected colors will appear in inverse video in the Montage.
Cue-Point	The color of the vertical dotted cue point lines.

Working with window layouts

Window layouts are used for creating various "work displays" for different situations. The following items are stored in window layouts:

- The size, position and minimize/maximize properties of document windows. This does not include the contents of the window, just the properties of the window "frame" itself. For example, if some Wave window was included in the window layout, the Wave you currently have open when you load the preset will be sized and moved accordingly.
- Positions of non-modal dialog boxes, such as the off-line processors. This includes opening any such windows.
- Positions of plug-in processor panels.

⚠ Windows that are already open will never be closed as a result of recalling a window layout.

Window layouts are managed in the Window Layouts dialog on the View menu. The procedures are the same as when handling regular presets (for detailed descriptions, see "Presets" on page 30):

- To create a new window layout, set up the display as you want it (see the list above) and use the Window Layout dialog to name and add the new layout.

▪ To modify an existing window layout, set up the display as you want it, select the window layout in the dialog and click the Update button.

▪ To load an existing window layout, select it in the dialog and click Load.

Using key sequences

You can use key sequences for recalling window layouts, just as with many other items (see "Customizable key commands" on page 184). This can be used for quick and easy window control. For example, open a single document window, maximize it, save a window layout and assign it to a key sequence. Later, this key sequence can be used to maximize the active window only.

Setting default size and position for windows

As mentioned above, while window layouts can be used for storing the size and position of windows, it also stores settings for various dialog boxes. If you only wish to determine a default size and position for different types of windows (Waves, Audio CD Montages, etc.), you can instead use the option "Remember active window's layout as opening setting" on the View menu. This is a quick and effective way of organizing your working environment the way you want it.

To set a default size and position for a certain type of window, proceed as follows:

1. Open or create the desired type of window.

2. Size and position it the way you like.

3. Pull down the View menu and select "Remember active window's layout as opening setting".
A dialog appears asking you to confirm the option.

4. Click "Yes" to continue.

All windows of that type will now open in this same size and position.

⇨ Loading a window layout as described above will override this setting.

Creating a Favorites menu

The Favorites item on the File menu allows you to assemble a list of files that you want to be able to open quickly – a library if you will.

▪ To add a file to the list, make sure its window is active and select "Add current document" from the Favorites-Functions submenu.

▪ To open a file from the list, select it.

▪ To clear the whole list, select Clear List from the Favorites–Functions submenu.

▪ To update the list so that it only lists files that actually still exist in the specified locations on your hard disk(s), select Validate List from the Favorites–Functions submenu.
Files that can't be found are removed.

Customizable key commands

In addition to the fixed key commands for selecting from menus, etc., there are a number of operations for which you can set up your own commands.

You can do this by specifying a key sequence – a sequence of between one to three keys that must be pressed in a certain order to invoke the operation.

Key sequences are listed and managed in the "Keyboard Commands" dialog, opened from the Options menu.
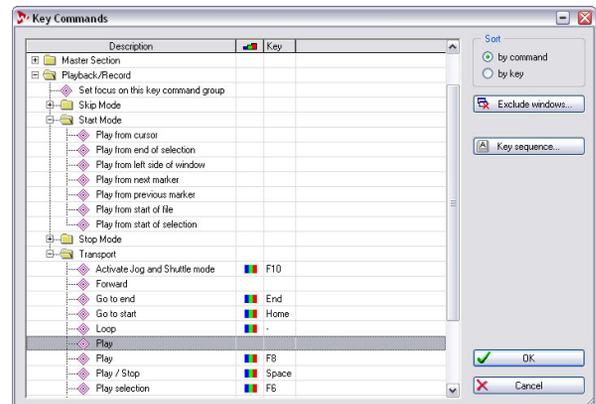
About the list of operations

The main part of this dialog is occupied by the list of available operations that can be called up via key sequences. You can choose to view this list in one of two ways, with the "Sort" buttons in the upper right corner of the dialog:

- "Sort by Command" organizes the operations in folders, in groupings that relate to various sections in the program.
- "Sort by Key" lists all commands in a "flat" fashion (no folders), and sorts the list alphabetically via the defined key commands, which allows you to easily find a command assigned to a certain key.

Regardless of which mode you select, the actual available operations are the same, it's just the view that changes.

The "dynamic" items in the list

Please note that the number of items in the list varies with other settings in the program. For example, if you have assigned key shortcuts to plug-ins, in the Plug-in manager, they will appear in this list too. Otherwise they will not.

The columns

- The Description column lists the operations available.
- The next column allows you to choose between two modes that determine when a key sequence is available and when it is not, see "Setting enable options" on page 185.
- The Key column shows the Key sequence defined for the operation.

Defining key sequences

1. Select the operation for which you want to create a key sequence.

2. Click the "Key Sequence…" button.

3. If you want to clear the current key sequence, click Clear.

4. Make sure "Catch mode" is active.

5. Press the first combination of keys that you want to use.
You can include modifiers ([Shift], [Ctrl], [Alt], etc.) if you like. There is also a setting that makes the program distinguish between two modifiers with the same label, on each side of the space bar.

6. Proceed with the following key(s).

7. Disable "Catch mode".
This is just an optional safety measure so that you don't accidentally erase or add to your current key sequence, when pressing more keys.

8. Close the dialog.

⚠ It is possible to define the same key sequence for two operations. If you do, one of them will be invoked. To see which, select "Sort by key" and locate the items in the list. The top one is the one that will be used.

Setting enable options

Once the key sequence has been defined, you may want to set the Enable Options for the operation. This is done by selecting from the pop-up in the middle column:

Option	Description
Enabled all time	This key sequence is always active.
Enabled if active window…	This key sequence can be used for all windows, except the ones added to the "Exclude Windows" lists, described below.

Excluding windows (Key commands)

This is mainly for plug-in windows. Since some plug-ins, especially from third-party manufacturers, have their own set of key commands, you may want to disable WaveLab Essential key commands for these windows.

Let's say you assign a key command to "apply" in the Master Section, and a certain plug-in already uses the same key combination for an internal operation. Then, pressing this key command might lead to the wrong operation being invoked when this plug-in has the focus.

"Exclude windows" allows you to prevent this situation:

1. Click the "Exclude windows" button.

2. Type in the name of the window in the Window exclusion list.
You can include DOS "wildcard" characters. For example to exclude all products from the manufacturer Waves, you can type "Waves∗".

3. Close the window.

Using key sequences

To use a key sequence, press the keys/buttons specified in the dialog, and the corresponding operation is performed.

⚠ Key sequences can only be executed after you have closed the Key Commands dialog.

About some special key commands

There are some key commands that might require an explanation:

Command	Description
Set focus on this key command group	This allows you to re-use key commands for certain groups. For example, let's say you set up things so that [Ctrl]+[F10] is the key command for setting the focus to the Master Section. You then assign simple key commands to the Master Section items, for example [A] for "Apply" and [R] for "Remove all plug-ins", even though these keys may be used for other sections of the program. You can then Press [Ctrl]-[F10] followed by any of the single commands to control most aspects of the Master Section.
Bypass all defined key commands/ Enable all key commands	This can be used when an installed plug-in, from a third party manufacturer, has its own set of key commands. You can then temporarily disable all WaveLab Essential key commands to be able to use the plug-in's own.
Bypass all defined key commands except those set to "Enabled all time"	Same as above but disables all key commands except those where you have set the Enable Option to "Enabled all time".
Plug-in Slot commands	To assign a certain processor to a certain slot, in the Master Section, you need two key sequences. Selecting a slot is done by a key sequence in the "Slot selection" section, and selecting a plug-in is done in the "Slot Commands" section.

Organizing plug-in processors

Introduction

You may find that you need to organize your processors into sensible groups. Why? Well, a host of plug-ins are included with the program, and additional ones can be added. Also, sometimes when you install a package of DirectX plug-ins you get effects that are of no relevance to WaveLab Essential (or even to audio) and therefore just clutter menus.

To organize how your plug-ins appear on menus in the program, open the "Organize Master Section plug-ins" dialog on the Options menu.

⚠ This organizes plug-ins accessed from the Master Section, not the VST plug-ins in the Montage. Note however, that you can exclude some VST plug-ins completely, see "Handling VST plug-ins" on page 188.

About the plug-in list
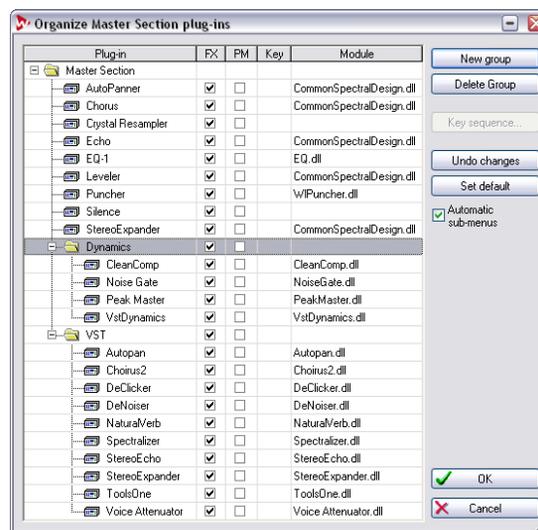
The "Organize Master Section plug-ins" dialog

These are plug-ins that can be used in the program. They are processors, or effects, that can be added to the Master Section slots (see "The Effects pane" on page 85).

Groups

In the Master Section folder in the list, you will find sub-folders, representing groups of plug-ins.

By organizing your plug-ins into folders, you arrange the way they appear on menus in the program. How you organize your effects is of course up to you, but initially, they are categorized according to their technical "type", regular WaveLab Essential plug-ins in one folder, VST plug-ins in another, DirectX plug-ins in yet another, etc. (see "The Effects pane" on page 85 for more details on these types of plug-ins).

⚠ VST and DirectX plug-ins need to be in a group, whereas WaveLab Essential plug-ins can be outside all groups.

The columns

• The Plug-in column displays the names of all the available plug-ins.
• The FX column determines whether a plug-in is active or not, see below.
• If the checkbox in the PM (Post Master) column is activated for a plug-in, it will be available for selection in the Dithering pane in the Master Section (after the master faders in the signal path). This allows you to use separately purchased dithering plug-ins and similar. See "Adding other plug-ins to the Dithering pane" on page 89 for more information.
• The Key column displays the key sequence defined for a plug-in.
• The Module column tells you the name of the plug-in (dll) file.

Activating and deactivating plug-ins and groups

By clicking in the FX column, you can activate/deactivate individual plug-ins or an entire group of plug-ins (see below for more information on groups). If you have plug-ins installed on your computer that you don't want to use in WaveLab Essential, this lets you disable them completely, thus reducing "menu clutter". The disabled plug-ins will still be applicable in other programs that can use them.

An example of this would be DirectX plug-ins. Many of these do not apply to audio at all and are of no relevance to WaveLab Essential whatsoever. By disabling these, you will make it easier to find the plug-ins that you really want to use in WaveLab Essential.

⚠ VST plug-ins can also be excluded, see "Handling VST plug-ins" on page 188.

Working with groups

The Master Section plug-ins can be organized into groups. This is done by adding subfolders to the Master Section folder and then dragging Plug-in icons into these folders.

When you then select from plug-in menus or display lists of plug-ins, the organization you have created will be reflected in the menu/list.

Here, a "Dynamics" group has been created, which then appears in the Master Section.
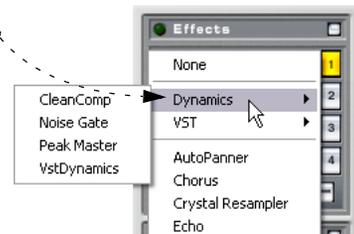
• To create a group, click the New Group button, enter a name and press [Return].
The group will initially appear at the end of the list, but when you start using it, the list will be resorted so that the groups are displayed in alphabetical order.

• To delete a group, select it and click Delete Group.
If the group contains any plug-ins, they will not be deleted. Instead, they will appear in the Master Section section, outside all other groups.

• Moving plug-ins between groups is done by dragging and dropping, just as when dragging files in the Windows Explorer.

• If you lose track of your changes and wish to return to the state that the list was in when you first opened the dialog, click Undo Changes.

▪ If you want to restore everything to the default "factory settings", click "Set default".

⚠ These settings are stored in the files "WaveLab Essential/Presets/Plug-ins/PlugInPrefAE.set" and "WaveLab Essential/System/plugins_es.set". If you ever encounter problems with "lost" plug-ins, delete these files and the program will re-scan and build a new list of plug-ins the next time you launch it. This can also be achieved by clicking the "Force plugin dectection at next launch" button in the Preferences–VST dialog (see below).

Handling VST plug-ins

If you have VST plug-ins installed on your computer that you don't need in WaveLab Essential, you can tell the program to ignore these on launch. This is done in the Preferences–VST dialog. It is possible to exclude single VST plug-ins, entire folders and subfolders containing VST plug-ins, and the "Shared VST Plug-ins" folder (if present on your system). The methods for doing this are all described below.

⚠ Note that unlike deactivating a plug-in in the Plug-in Manager (as described in the section "Activating and deactivating plug-ins and groups" on page 187) which will only remove it from the plug-in menu in the Master Section, "ignoring" a VST plug-in as described below will remove it from the whole program, including the Montage.

Proceed as follows to set up which VST plug-ins to use in WaveLab Essential:

▪ Open the Preferences dialog from the Options menu, and select the VST tab.

This contains the following items:

Item	Description
Use VST plugin shared folder	If you have additional VST plug-ins installed on your computer, these can also be available in WaveLab Essential, provided that they are installed in the "Shared VST Plug-ins" folder and this checkbox is activated. Next time WaveLab Essential is launched the plug-ins in this folder will be available.
Optional extra VST plugin folder (WaveLab Essential specific)	Here you can set a path to an "extra" VST plugin folder. As some plug-ins may not be usable in WaveLab Essential, you can set up a specific folder containing all the VST plug-ins you wish to use in WaveLab Essential.

Item	Description
Ignore plugins located in the following sub-folders	In this text field, you can type in the name of a folder or subfolder containing VST plug-ins that you want to exclude. If you want to exclude several folders, type in all their names, but separate each name with a semicolon.
Do not load the following plugins	In this list you can exclude individual plug-ins from being loaded by adding them to the list. Common VST instrument plug-ins (which cannot be used in WaveLab Essential) are already added to the list.
Faster graphics refreshing (consumes more computer power)	This can be useful for plug-ins that display e.g. meters. If changed, this option takes effect after closing and reopening the VST plug-in window(s).
Force plugin detection at next launch	Clicking this button lets WaveLab Essential re-scan and build a new list of all plug-ins next time it is launched.

Note the following:

▪ If VST plug-ins you want to exclude reside in one or several subfolders inside a main folder, you don't have to list all the subfolders. Excluding the main folder will also automatically exclude its subfolders.

▪ It's not necessary to type in the entire path to a folder you want to exclude (e.g. C:\plug-ins\reverb). Typing just reverb will suffice, since WaveLab Essential will look through the folders and subfolders on your C disk or partition upon startup, searching for the folder named reverb, and exclude it.

▪ On the other hand, if you have a main folder containing two or more subfolders and you only want to exclude the plug-ins in one of the folders and you also have another folder or subfolder with the same name as the one you want to exclude, you will need to type the path to the subfolder you want to exclude (e.g. C:\plug-ins\delay).
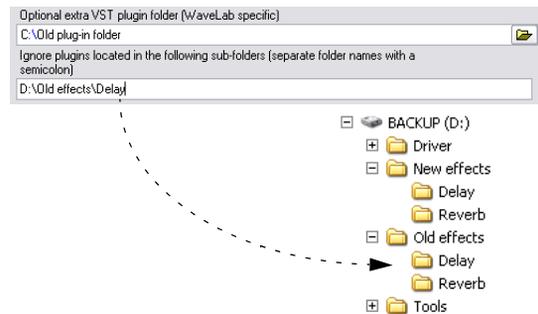
In this case, the subfolder "Delay" in the folder "Old effects" will be excluded, but the subfolder "Delay" in the folder "New effects" will be included.

- Quit WaveLab Essential and then launch the program again.
If you check the effect menus, you will find that the plug-ins in the specified folders are removed.

- If you change your mind and want to use the ignored plug-ins again, repeat the steps above but remove the folder names from the text field.

Excluding all plug-ins

If you wish, you can temporarily exclude all plug-ins so that none will be available in WaveLab Essential:

- Press and hold [Ctrl]+[Shift] when launching WaveLab Essential.
This will disable the Master Section and prevent all plug-ins from being loaded. This can be useful for troubleshooting purposes – i.e. to determine whether the loading of one or more plug-ins is causing problems.

- If you wish to have access to the plug-ins again, activate the Master Section.

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Plug-in processor reference

About WaveLab Essential plug-ins

These plug-ins use WaveLab Essential's own plug-in format, and cannot be used with other applications. Note:

⇨ As a rule, WaveLab Essential specific plug-ins can only be used in the Master Section (not as clip effects in the Audio CD Montage).
However, some WaveLab Essential effects are also included as VST plug-ins, available as clip effects in Audio CD Montages. This is indicated for each effect below.

⇨ You can specify which plug-ins should be available in the Master Section by using the Organize Master Section Plug-ins function on the Options menu.
This also allows you to specify which plug-ins should be available in the Dithering Pane (post-master fader).

⇨ Presets for WaveLab Essential plug-ins are handled like other presets in WaveLab Essential (processing functions, etc.).

Auto Panner

The Auto Panner (only available in the Master Section) pans the signals continuously between the left and right channel in the stereo image. It has the following parameters:

Parameter	Description
LFO Freq (0.1Hz~50Hz)	This parameter sets the speed of the panning. The higher the value, the faster the signal moves around in the stereo image.
Width (0~100%)	Use this parameter to specify the "width" of the pan movements. The value 100% causes the signal to move from the extreme left to the extreme right, while 0% disables the panning effect.
Waveform (Sine, Pulse)	Allows you to specify the way in which the signal moves from left to right. Select Sine if you prefer fluid movements, or Pulse to create abrupt panning "jumps".
Out Left, Out Right (-96dB~6dB)	These two parameters allow you to adjust the level of the left or right channel, useful e.g. for correcting the stereo image or adjusting the overall gain. The setting 0dB means no change of level, while -96dB means turning the channel off completely.

Chorus

The Chorus plug-in (only available in the Master Section) is a classic stereo chorus based on a sweeping delay, with the following parameters:

Parameter	Description
Delay (0.1~60ms)	Use this parameter to specify the basic time delay for the chorused signal with respect to the "dry" signal. The higher the value, the more prominent the effect. Low settings (up to 7ms) create flanger-like effects. Settings up to 25ms are for classic chorus while settings above this value are mainly for special effects.
Width (0~100%)	Use this parameter to specify how much the delay time is allowed to vary with the modulation. It is this variation in delay time that causes the sweeping effect. Note that the value 0% should probably be avoided since it might create the impression that you are experiencing phase problems.
Frequency (0.01~25Hz)	The Frequency parameter sets the speed of the sweep (the modulation). The higher the value, the faster the modulation. You will probably not use values above 7Hz except for special effects.
Feedback (0~100%)	This parameter specifies how much of the output from the effect is fed back to the input (the feedback signal is also phase inverted). The higher the value, the more prominent the effect. At short delay times, this creates a flanger-like effect. At larger settings it creates more of a slapback repetition type of sound.
Fb Balance (0~100%)	Use this parameter to set the volume of the Feedback signal (see above) in the mix. If this is set to 100%, and combined with a Feedback setting between 65% and 100%, the effect goes into self-oscillation.
Glimmer 1, Glimmer 2 (0~100%)	The two Glimmer parameters allow you to specify to what extent the Chorus signal should move around in the stereo image. They work in more or less the same way as the Auto Panner but only apply to the Chorus signals. Glimmer 1 processes the right channel signal, while Glimmer 2 processes a combination of the left and right channels (the actual left channel always remains at 0).
Stereo Spread (0~100%)	This parameter specifies the width the Chorus effect will occupy in the stereo sound image. The value 0% creates a mono impression, and since left and right channel signals are then mixed together, the Chorus becomes louder.
Mix (0~100%)	Use this parameter to specify the balance in level between the dry and the delayed signal. The value 0% means that only the dry signal will be heard, while 100% actually means a 50/50 mix between dry and effect signal.
Output Lev (-48dB~0dB)	This is an attenuator that allows you to reduce the output level of the Chorus effect, avoiding clipping and hence distortion. If the Clip indicator lights up continuously, lower this value.

Crystal Resampler

The Crystal Resampler plug-in (only available in the Master Section) is a professional sample rate converter providing exceptional transparency and preservation of the frequency content:

Parameter	Description
Sample Rate (6 - 96 kHz)	This defines the output sample rate while the input sample rate is determined by the sample rate of the active audio file or Audio CD Montage.
Quality (Preview (fast), Standard)	This defines the quality of the algorithm which is used. In Preview mode the CPU load is much lower than in Standard mode, but as a trade off the sonic quality of the resulting audio is also lower.

Echo

The Echo plug-in (only available in the Master Section) is a stereo echo effect with two separate delay lines. It has the following parameters:

Parameter	Description
Delay 1 (0.5~1000ms)	This sets the delay time of Delay 1, with respect to the incoming signal. Please note that the minimum value (0.5ms) creates an out-of-phase impression.
Feedback 1 (0~100%)	This sets the amount of delayed signal fed back into the Delay 1 block, to create repetitions. The value 100% means that the echo signal is repeated indefinitely, while 0% means there is only one repetition.
Link 1-2 (Off, Linked)	Select Off if you wish to use Delay 1 and Delay 2 as two independent blocks. Select Linked if the output of Delay 1 is to be connected to the Input of Delay 2.
Delay 2, Feedback 2	See Delay 1 (0.5~1000ms) and Feedback 1 (0~100%) above. These parameters are identical to these but apply to the second Delay block.
Del. Balance (0~100%)	This sets the stereo width of Delay 1 and Delay 2. When set to 100%, Delay 1 is assigned to the left channel, while Delay 2 is assigned to the right channel. The value 0% means that both Delay blocks are spread across the stereo field.
Vol Left, Vol Right (-96dB~0dB)	Use these parameters to correct volume imbalances brought about by the Delay effects. These parameters only apply to the Echo effect, the dry signal is not affected by these settings.

EQ-1

EQ-1 is available both as a VST and a WaveLab Essential plug-in. It can be used as a clip effect in the Audio CD Montage, or as a global effect in the Master Section.

This is a three-band equalizer with high and low shelving filters and a full parametric mid-frequency band. You can turn off each band separately by clicking the corresponding button, making it easy to compare the signal with and without EQ. The following parameters are available:

Parameter	Description
High Gain	Determines the boost or cut (in dB) of the high shelving filter.
High Frequency	Sets the frequency of the high shelving filter. Frequencies above this value will gradually be increased or reduced in level, according to the High Gain setting.
Mid Gain	Determines the boost or cut (in dB) of the mid band EQ.
Mid Frequency	Sets the center frequency of the mid band eq. Frequencies around this value will be affected by the Mid Gain.
Mid Q	Use this parameter to set the width of the Mid band, e.g. how wide a frequency range around the Mid Frequency should be affected by the mid band EQ. The higher this value, the "narrower" the mid band.
Low Gain	Determines the boost or cut (in dB) of the low shelving filter.
Low Frequency	Sets the frequency of the low shelving filter. Frequencies below this value will gradually be increased or reduced in level, according to the Low Gain setting.

Leveler

This plug-in is available both as a VST and a WaveLab Essential plug-in. It can be used as a clip effect in the Audio CD Montage, or as a global effect in the Master Section.

This "effect" simply reduces or boosts the signal level. This is useful for matching levels between effects. You may want to patch in the Leveler after an equalizer plug-in, for example. The parameters consist of volume settings for the left and right channels, and a Stereo Link setting (when activated, the Volume Left parameters control the level of both channels). Finally, a Mix to mono setting allows you to mix an incoming stereo signal to mono (much like the Mono button in the Master Section).

Noise Gate

This plug-in is available both as a VST and a WaveLab Essential plug-in. It can be used as a clip effect in the Audio CD Montage, or as a global effect in the Master Section.

The Noise Gate plug-in mutes any signal that falls below a specified threshold level. This can be useful for removing unwanted residual noise from audio material without having to manually clean up or mute soundfiles. Other applications include gating reverb "tails" and tightening percussion tracks.

Parameter	Description
Threshold (-144~-12dB)	This setting determines at what level the Noise Gate is activated. Any signal or portion of a signal that falls below the chosen threshold will be muted.
Rel Time (1~5000ms)	Determines how long the gate stays open after a signal below the Threshold level has been detected.
Rel Sens (1~100)	This setting is used to prevent the gate from being triggered on/off inadvertently when the signal is close to the threshold level.
Attack Sens (1~100)	Determines the time it takes for the gate to open. A low setting provides a fast transient response but a high setting will soften or mute the early portion of the sound which is triggering the gate.

Peak Master

This plug-in is available both as a VST and a WaveLab Essential plug-in. It can be used as a clip effect in the Audio CD Montage, or as a global effect in the Master Section. This plug-in provides a safe and transparent way of boosting the perceived loudness of audio material. By limiting transients and simultaneously raising the general level by compression, the Peak Master will increase the subjective loudness of the signal without risk of distortion inducing peaks.

Parameter	Description
Input Gain (-12~+24dB)	This allows you to adjust the input level to Peak Master. Use this to (typically) raise the loudness of the signal. Use extreme boost settings with caution as they can induce distortion.
Out Ceiling (-18~0dB)	This setting determines the maximum level at the Peak Master outputs.
Softness (-5~5)	This parameter affects the way the Peak Master operates. A high setting will maximize the perceived loudness effect but can in some cases result in a slight harshness of the sound. Adjust this parameter to optimize the balance between sound quality and the desired effect.

Puncher

This plug-in is available both as a VST and a WaveLab Essential plug-in. It can be used as a clip effect in the Audio CD Montage, or as a global effect in the Master Section.

The Puncher plug-in generates additional harmonics which are added to the audio material. The result is a more dynamic, and "punchier" sound, particularly when applied to drums and percussive material. Compared to the Peak Master the Puncher plug-in could be described as operating in almost the opposite way. Puncher leaves quieter parts untouched but will add power to the louder portions without causing clipping. The plug-in is optimized for peak signal levels between -10 and 0dB, the closer to 0dB, the better.

Parameter	Description
Density (Soft, Medium, Hard)	The difference between these 3 settings lies in the number of added harmonics. The setting you use depends on the audio material.
Effect (0~100%)	This adjusts the balance between the processed and the dry signal.
Input Gain (-12~24dB)	This sets the input level. Boosting the signal may cause clipping, so use this with caution. With no boost, Puncher will never cause clipping.

Silence

The Silence plug-in (only available in the Master Section) lets you add silent portions at the start and/or end of a file. This can be useful for example in conjunction with effects such as reverb and delay which produce audio "tails" – i.e. the sound of the effect lingers after the end of the file – since the sound of the effect would otherwise be muted at the end of the file. To remedy this, just place the Silence plug-in before the other plug-in in the Master Section and specify the length of the silent portion as necessary, so that the sound of the effect is allowed to decay naturally.

The Silence plug-in only has two parameters which let you define the length of the silent portions at the start and end of the file.

StereoExpander

The StereoExpander plug-in (only available in the Master Section) narrows or enlarges the stereo width of an existing stereo signal. This is set by the single "Width" parameter.

A value of 0% produces two equal output channels (the original stereo image is lost). Values between 1 and 49% correspond to a narrower stereo image. A value of 50% corresponds to the original signal. Values between 51 and 100% enlarge the stereo image.

VST Plug-ins

About VST Plug-ins

These plug-ins use Steinberg's widely adapted VST plug-in format. As a rule, VST plug-ins can be used by any VST-compatible application, although some plug-ins may still be limited to use with certain programs. Note:

⇨ VST Plug-ins can be used in the Master Section or as clip effects in the Audio CD Montage.

⇨ As with WaveLab Essential plug-ins, you can specify which VST plug-ins should be available in the Master Section by using the Organize Master Section Plug-ins function on the Options menu.
This also allows you to specify which plug-ins should be available in the Dithering Pane (post-master fader).

⇨ It's also possible to exclude VST plug-ins completely from WaveLab Essential, thereby removing them from the clip and track effects lists as well.

⇨ VST plug-ins have their own preset handling.
When you click the Preset button for this type of effect, a pop-up menu appears, allowing you to save or load effect programs (presets) or complete banks containing several programs.

Autopan

The AutoPan plug-in pans the signals continuously between the left and right channel in the stereo image. It has the following parameters:

Parameter	Description
LFO Freq (0.1Hz~10Hz)	This parameter sets the speed of the pan movements. The higher the value, the faster the processed signal moves around in the stereo image.
Width (0~100%)	Use this parameter to specify the "width" of the pan movements. Setting this to its maximum value causes the signal to move from the extreme left to the extreme right, while lowering it completely disables the panning effect.
Waveform	Determines the shape of the panning curve. Available curve shapes are Sine, Triangle, Sawtooth, and Pulse.
Out Levl	The stereo output level of the effect.

Choirus2

Choirus2 is a chorus effect, used for making the sound "warmer", etc. It has the following parameters:

Parameter	Description
Time	Use this parameter to specify the basic time delay for the chorused signal with respect to the "dry" signal. The higher the value, the more prominent the effect. Low settings create flanger-like effects, medium settings provides classic chorus while higher settings are mainly for special effects.
Width	Use this parameter to specify how much the delay time is allowed to vary with the modulation. It is this variation in delay time that causes the sweeping effect. Note that the value 0% should probably be avoided since it might create the impression that you are experiencing phase problems.
Lfo Freq	The Frequency parameter sets the speed of the sweep (the modulation). The higher the value, the faster the modulation. You will probably not use higher values (above 7Hz) except for special effects.
Feedback	This parameter specifies how much of the output from the effect is fed back to the input (the feedback signal is also phase inverted). The higher the value, the more prominent the effect. At short delay times, this creates a flanger-like effect. At larger settings it creates more of a slapback repetition type of sound.
Feed Bal	Use this parameter to set the volume of the Feedback (see above) in the mix. If this is set to 100%, and combined with a Feedback setting between 65% and 100%, the effect goes into self-oscillation.
Glimmer 1, Glimmer 2	The two Glimmer parameters allow you to specify to what extent the Chorus signal should move around in the stereo image. They work in more or less the same way as the Auto Panner but only apply to the Chorus signals. Glimmer 1 processes the right channel signal, while Glimmer 2 processes a combination of the left and right channels (the actual left channel always remains at 0).
Out Levl	The stereo output level of the effect.

CleanComp

CleanComp is a simple compressor that allows you to limit loud sounds, while at the same time boosting the overall loudness of the audio material.

Parameter	Description
Ceiling (0dB~-24)	This setting determines the maximum level at the CleanComp outputs.
Softness (-5~5)	This parameter affects the way CleanComp operates. A high setting will maximize the perceived loudness effect but can in some cases result in a slight harshness of the sound. Adjust this parameter to optimize the balance between sound quality and the desired effect.
Out Gain (0~+24dB)	This allows you to adjust the output level from CleanComp. Use this to (typically) raise the loudness of the signal. Use extreme boost settings with caution as they can induce distortion.

DeClicker

The DeClicker plug-in is specifically designed to eliminate single "clicks" or "pops" in a recording. One typical application is to clean up recordings made from vinyl records, but you may also find it useful for removing pops from microphone switches, oxidized connector noises, clicks from sync problems when transferring material digitally, etc.

⇨ Note that the DeClicker module is not optimized for crackles (a series of short clicks).

However, as it is often hard to distinguish between clicks and crackles, you might also be able to use it to improve your recording in this respect.

⇨ If the recording also contains background noise (hiss), you may want to combine DeClicker with the DeNoiser plug-in.

How DeClicker works

The Declicker process is divided into two steps:

▪ Analysis – when the audio signal passes through DeClicker, the selected analysis algorithm finds the clicks in the recording. You provide input to the analysis parameters by selecting a Mode and the Threshold and DePlop parameters.

▪ Removal – a de-click algorithm is applied to the audio, removing the clicks.

In many cases, the original audio material "hidden" underneath a click cannot be restored. This means there will be a gap once the click has been removed. DeClicker has the ability to automatically "redraw" the hence missing parts of the waveform. This feature can also be used to remove tape dropouts with a length of up to 60 samples (just above one millisecond at 44.1kHz).

The whole Declicking process can be visually monitored in the Input and Output displays of the DeClicker window (showing the incoming audio and the processed - De-Clicked - audio, respectively). This helps you to adjust the parameters. Furthermore, if you activate the Audition button, only the removed material will be heard (and shown in the Output display).

⚠ Make sure that no low-pass filter has been applied to your audio material before you edit it with DeClicker. This may affect the detection of clicks.

Parameters

Parameter	Description
Audition button	When this is activated, only the removed material will be heard. The Output display will also show the waveform image of the removed material in this mode.
Classic	When this is activated, the DeClicker attempts to remove both audible clicks and crackle noise. When it's deactivated, only single clicks will be removed while crackles (rapidly repeated clicks) are ignored. Which mode to choose depends on the source material. Note also that Classic mode requires less CPU power.
Threshold	This setting determines the amplitude (level) required for a click to be detected. In many cases, DeClicker's sensitive algorithms identify a lot more clicks than you can actually hear. To avoid wasting processing power to remove inaudible clicks, raise this parameter to a high value, and then lower it until all the artefacts that you actually want removed are detected. The lower the setting, the more clicks will be detected but also the higher the risk of audible artefacts. If in doubt, activate Audition mode and check that the removed material doesn't contain any actual musical or rhythmical information, etc.

Parameter	Description
DePlop	This setting controls a special highpass filter which works on signals below 150 Hz. It cuts away the "plop noise" which sometimes appears after eliminating a click. The slider adjusts the filter frequency (off - 150 Hz). Note: This function is best applied to older recordings, which often use a narrow frequency range. Be careful when applying this function to modern recordings, as you may risk removing parts of the useful signal!
Quality	This determines the quality of the click removal and audio restoration, with "4" being the best quality setting. Please note that selecting higher quality settings also means that more processing power is consumed. Also, note that in some situations it might be more productive to use a lower Quality value. One example of this is when two clicks follow each other in quick succession or when you tackle a click in a low level part that is followed by a loud part.
Mode	Which Mode to select depends on the source material. Standard mode is suitable for a wide variety of source material - try this option first. Vintage mode is suitable for restoring "antique" recordings (with limited high frequency content), while Modern mode is best suited for contemporary recordings with a wide frequency range (putting greater emphasis on distinguishing clicks from other strong impulses in the audio material).
Bypass	This will bypass the effect, allowing you to compare the DeClicked and unprocessed material.

Tips and Tricks

- By combining Vintage Mode and extreme Threshold and DePlop settings, you can create an interesting effect which "softens" material with particularly sharp attacks, e.g. percussion or brass.
- If you have material with digital distortion (clipping), try applying DeClicker. While it can't do miracles, it can at least make some improvement to the overall "hardness" introduced by the distortion.

DeNoiser

The DeNoiser plug-in lets you suppress noise without affecting the general sound quality. Or, in tech talk, the DeNoiser removes broad band noise from arbitrary audio material without leaving any "spectral finger print". The algorithm that this plug-in is based on has the ability to track and adjust itself to variations in background noise. This means the noise can be diminished without side effects, preserving the spatial impression, and without letting the result become "colorless". Many years of research were invested in developing the methods used.

Typical applications for the DeNoiser include cleaning or remastering recordings from old tape or vinyl, or noisy live recordings.

How DeNoiser works

DeNoiser is based on spectral subtraction. Each section of the frequency spectrum that has an amplitude below the estimated noise floor, is reduced in intensity by use of a spectral expander. The result is a noise reduction that does not affect the phase of the signal.

The figure below shows the signal flow:
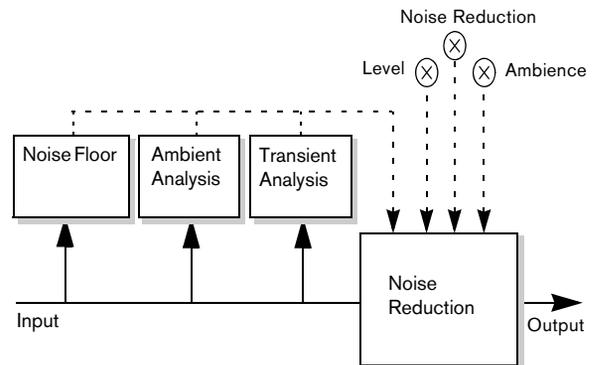
The solid line represents the actual audio signal, while the dotted lines represent control signals

The signal is continuously analyzed by the first module in the chain, to estimate the noise floor at any given time. This is sufficient when the noise level is constant or modulates slowly. When the noise level varies rapidly, the Ambience and Transient analyses help adjust the response of the noise reduction unit, allowing transient-rich material to maintain its liveliness and natural ambience.

⇨ When you process audio in DeNoiser, the plug-in will need a short time (less than a second) to analyze the material and set its internal parameters.

Since you would not want to include this short "startup sequence" in the final result, you should make it a habit to first play back a short section of the audio, thereby letting DeNoiser "learn" the noisefloor, and then stop and start over again from the beginning. The plug-in then remembers the settings internally.

The Noisefloor Display

The display to the left in the DeNoiser window is crucial when making settings. It contains the following three elements:

▪ **The dark green spectral graph.**
This shows the spectrum of the audio currently being played back. The horizontal axis shows the frequency (linear scale). The low frequencies are visible on the left side, the high ones on the right side. The vertical axis shows the signal amplitudes, thus the level (displayed as a logarithmic dB scale).

▪ **The yellow line.**
This is a spectral estimation of the noise floor. The average of this value is shown numerically below the display.

▪ **The light green line.**
This is simply a graphic representation of the Offset parameter.

The light green Offset line should be adjusted so that it appears as close above the yellow noise floor graph as possible. The dark green spectrum plot is there to help you fine-tune the Offset setting, so that only the noise is removed, not parts of the signal (ideally, the light green line should be between the yellow line and the spectrum plot).

Parameters

Parameter	Description
Freeze	If you activate this button, you "freeze" the noise floor detection process. The yellow noise floor graph in the display will hold its current value (as will the numeric noise floor value display below) until you deactivate Freeze. This allows you to take a closer look at the readings.
Reduction	Governs the amount of noise reduction. The display below this fader shows the amount of dB by which the noise level is being reduced. The final result also depends on the Ambience parameter, and on the automatic Ambience and Transient analysis of the original material, as described above.
Ambience	This parameter is used to specify a balance between the noise suppression and the amount of natural ambience, which is essential for a natural result. With a low Ambience setting, the sound can become somewhat lifeless and sterile. A high setting, on the other hand, preserves more of the ambient character of the sound, but the noise suppression is less effective.

Parameter	Description
Offset	This parameter serves as a threshold, governing the overall level at which the noise reduction is performed. For optimal noise reduction with a minimum of sound coloration, this parameter should be set to a value slightly above the noise floor level. To help you do this, the offset value is shown as a light green line in the noisefloor display, while the noise floor is shown as a yellow line.
A/B/Store	These are described below this table.
Classic	When this is activated, a less CPU-intensive version of the DeNoiser algorithm is used. Use Classic mode if you are short on processing power. However, for optimum noise suppression, we recommend that you deactivate Classic mode.
Bypass	When this is activated, the signal passes through the plug-in but you don't hear the results of the processing. Use this to compare the sound with and without processing. Note: the analysis is always performed, regardless of the Bypass switch. This allows you to monitor the noise floor, spectrum and level in the spectrum display.

Using the A/B setups

With the A/B buttons you can make instantaneous switches between two different DeNoiser setups, allowing you to quickly try out and compare different configurations. You can also use this feature for separate settings for two different sections of an audio recording. Proceed as follows:

1. Make the settings you want for setup A.

2. Click on [Store] and then on the [A] button.

3. Make the settings you want for setup B.

4. Click on [Store] and then on the [B] button.
Now the two setups are stored, and you can switch between them simply by clicking [A] or [B].

NaturalVerb

NaturalVerb is a high-quality reverb that adds ambience, or room-quality, to the sound. In addition to the standard size and decay parameters, NaturalVerb also features low- and high-pass filters, plus a gate for gated reverb effects.

To change the parameters, either drag the sliders up and down, or click in a slider area to set the slider. If you hold down [Shift], you can change the parameters with a higher degree of precision. If you hold down [Ctrl] and click in a slider area, the slider is reset to its default value.

If you click on the logo a diagram of the signal-chain is shown. The following parameters are available:

Parameter	Description
Pre-Delay	This governs the start time of the first "early reflection", i.e. how the sound is "bounced" off the walls in the simulated room environment. The value range is 0-100 milliseconds. The lower the value, the sooner the early reflection is heard.
HPF	This is a high-pass filter that only affects the reverb signal into the NaturalVerb, not the original audio signal. A high-pass filter lets high-frequency signals through while cutting off low-frequency signals. The slider allows you to set the frequency for the filter, and only sounds above the set frequency will be heard.
LPF	This is a low-pass filter that only affects the reverb signal into the NaturalVerb, not the original audio signal. A low-pass filter lets low-frequency signals through while cutting off high-frequency signals. The slider allows you to set the frequency for the filter, and only sounds below the set frequency will be heard.
Room Size	This regulates the size of the simulated room, and thereby the spaciousness of the reverb. The value range is 1-30, and the higher the value you specify, the bigger the room.
Decay	This lets you specify the length of the reverberation. The value range goes from 26 milliseconds to 11.63 seconds.
Damping	Damping can be used for attenuating the high frequencies of the reverb, thereby creating a softer, warmer sound. The higher the value, the more the high frequencies will be attenuated.
Stereo Mix	This parameter is used for balancing the reverb signal between the left and right channel inputs to the NaturalVerb. The value range is 0-100%. A setting of 0 means that the reverb signals for both channels are completely independent of each other (default), while a setting of 100 means that the reverb signals for both channels are equally mixed with each other (50/50). In between these, settings from 1-99% mean that each channel signal will contain that percentage of the other channel's signal.
Wet/Dry	This regulates the balance between the effect sound (wet) and the original, unprocessed audio signal (dry). If the slider is in the middle position (default), the output will be balanced equally. With higher values, the original signal will be more pronounced, and with lower values, the effect sound will be more dominant.

Parameter	Description
Gate button	Clicking this button turns the Gate section on and off. Gating cuts off signals below a certain set threshold level. That is, the Gate only opens to let signals above the set threshold through. Note that the three sliders directly above this button (Sensitivity, Threshold and Fade-Out) control the Gate effect, and therefore have no functionality when this button is in the Off position. Also note that the Gate only affects the reverb, not the original audio signal.
Sensitivity	This parameter determines how fast the Gate will open to let a trigger signal pass. The value range is 1-100 milliseconds. In order for this to have any effect, the Gate button must be in the On position.
Threshold	This is used for setting the reference signal level (in dB) for the Gate. Signal levels above the set threshold open the Gate and pass through, but signal levels below the set threshold close the Gate and are cut off. In order for this to have any effect, the Gate button must be in the On position.
Fade-Out	This parameter determines how long it should take for the Gate to close again after being triggered to let a signal through. The value range is 0-200 milliseconds. With higher values, more signal "residue" will be allowed to pass through the Gate before it closes, thereby producing a smoother cut-off. In order for this to have any effect, the Gate button must be in the On position.

Spectralizer

The Spectralizer is a type of audio "enhancer" or "exciter". It can be put to many uses:

▪ To restore lost harmonics in a recording.
▪ To improve the clarity and transparency of a recording.
▪ To make a recording sound "warmer".

How Spectralizer works

Most audio equipment introduces a slight low-pass filtering to the audio signal. This means you lose "high end" or "clarity". The lost high frequency components often have a level close to the noise floor. This means that simply using EQ to boost the high frequencies does not create the desired effect – the noise is amplified as much as the signal.

Spectralizer can actually re-synthesize lost harmonics based on existing lower frequencies in the material. This can create an acoustically more pleasing result than EQ-ing.

Spectralizer basically works by generating 2nd and 3rd harmonics or overtones.

- The second harmonic is a signal at twice the frequency (one octave) above the basic frequency (the fundamental).
- The 3rd harmonic is three times the fundamental (one octave and a fifth above it).

The reasons for limiting the processor to these two frequencies are; firstly, higher harmonics are most often perceived as "too high", and secondly, their amplitude normally doesn't follow that of the fundamental in a natural way.

⇨ Please note the relation between the Frequency parameter and the harmonics generated.

If the Frequency parameter for example is set to 4000, the 2nd harmonic generator will only create frequencies from 8000Hz upwards and the 3rd harmonic generator will add frequencies starting at 12000Hz.

Another part of this process is giving the added harmonics appropriate amplitude curves. The amplitude of the harmonics is based on the amplitude of the existing material, but you can control it to some extent using the Density and Kick parameters, see "Parameters" below.

The amplitude of the added harmonics is usually very low. The difference Spectralizer makes is sometimes only apparent on a psycho-acoustical level. To hear what is actually added to the signal, use the Solo button.

Parameters

The parameters are as follows:

Parameter	Description
Solo	When this is activated, the output will only contain the added Harmonics. The original unprocessed signal will not be heard on the output. This mode is used as a diagnostic tool to monitor what the current settings actually add to the signal.
Kick	When this is activated, even more Harmonics will be added when a transient (attack) occurs in the signal.
Frequency	This adjusts the frequency of the high-pass filter that appears just after the input. Signals with a frequency lower than this setting will not be affected by the processing. In other words, there will be no harmonics added to the frequencies that are too low to pass through the filter.
Density	This controls the amplitude "envelope" of the added harmonics. The higher the value, the more prominent the effect.
Input	This adjusts the overall input to the processor. Use this to both maximize the signal level and to make sure that internal clipping does not occur. Use the Meter and "Int. Clip" indicator to check the levels.

Parameter	Description
Gain	This adjusts the level of the signal just before it reaches the harmonic generators. As you increase this, you will most probably have to lower the Input setting to avoid clipping.
2nd	This sets the level of the 2nd harmonics in the mix.
3rd	This sets the level of the 3rd harmonics in the mix.
Mix	The Mix parameter adjusts the balance between the unprocessed signal and the added harmonics.
Int. clip	When this lights up, the signal has exceeded the maximum level that Spectralizer can handle. This will lead to unpleasant distortion and should definitely be avoided. If this happens, please lower the Input level and/or Gain.
Meter	This allows you to check your adjustments of the Input and Gain controls, so that the signal does not change drastically in level when passing through the Spectralizer.

Stereo Echo

The Stereo Echo is a delay with separate settings for the left and right channel. It can also be used as a single mono delay, in which case the maximum delay time will be doubled.

The Stereo Echo has the following parameters:

Parameter	Description
Delay 1	The delay time for the left channel. The maximum delay time is 1486 ms, unless you link both channels for mono operation, in which case the maximum delay time is 2972 ms - see below (1000ms = 1 second).
Feedback 1	This sets the amount of delayed signal fed back into the Delay 1 block, to create repetitions. Higher values result in a higher number of echo repeats.
Link 1-2 (Off, Linked)	Select Off if you wish to use Delay 1 and Delay 2 as two independent blocks. Select Linked if the output of Delay 1 is to be connected to the Input of Delay 2.
Delay 2, Feedback 2	These parameters are identical to these but apply to the second Delay block.
Del2 Bal	This parameter determines how much of the left channel output is sent to the right channel input. When set to 0.0 (fully left), then none of the left channel output is added to the right channel input; when it is set to 1.0 (fully right), the right input receives both its normal source and the complete output of the left channel.
Volume L	The output level of the left channel delay.
Volume R	The output level of the right channel delay.

StereoExpander

The StereoExpander plug-in narrows or enlarges the stereo width of an existing stereo signal. There is only one parameter, the horizontal stereo effect slider. Setting this to a value of -100% produces two equal output channels (the original stereo image is lost). Values between -99 and -1 correspond to a narrower stereo image. A value of 0 corresponds to the original signal, while values between 1 and 100 enlarge the stereo image.

Tools One

Tools One is an extremely useful "effect" for various applications.

The level faders allow you to adjust the level of the left and right channel respectively. You can [Shift]-drag to make detailed settings. [Ctrl]-clicking a fader resets it to 0 dB (no level adjustment). Normally, adjusting one fader automatically moves the other as well, but you can make separate adjustments for the channels by pressing [Alt] and dragging.

The two Phase switches let you invert the phase of the left or right channel (or both).

The Algorithm buttons let you adjust the stereo sound image. When none of the buttons are activated, the stereo image will be preserved as is. MS process mode can be used in one of two ways:

- To transform an incoming "regular" stereo signal so that it resembles a signal recorded according to the M-S (middle/side) principle. This technique is often used in broadcasting to record the direct signal source (usually a voice) using one microphone, and the ambience using a second microphone positioned at a 90° angle.
- To transform an incoming MS signal into a "regular" stereo signal (to simulate an "XY" recording technique, where neither microphone is placed directly in front of the signal source).

Channel Swap, finally, means that the left channel is assigned to the right side and the right channel to the left side.

Voice Attenuator

This plug-in can be used to remove lead vocals from a recording, to produce a "karaoke" effect. The principle concept is based on the fact that vocals are usually mixed to center position in the stereo field, and that the human voice occupies a limited area of the frequency spectrum.

Note, however, that it is nearly impossible to remove a vocal completely, without using very complex processing beyond the scope of this plug-in.

- If the Remove Mono button is activated, the plug-in will sum the right and the left channels (with one of the channels out of phase), in the frequency range set by the Low and High Frequency parameters. This method will only work with stereo material.
- If the Notch Filter button is activated, the plug-in will filter out the signals within the frequency range set with the Low and High Frequency parameters, by applying a notch (band reject) filter. This method can be used with both stereo and mono material.
- The Gain parameter allows you to adjust the output level of the plug-in.

VSTDynamics

General Information

The VST Dynamics plug-in combines five separate processors; AutoGate, Compress, AutoLevel, Limit and SoftClip, covering a variety of Dynamic Processing functions. The VST Dynamics window is divided into five sections, containing controls and meters for each processor. You activate the VST Dynamics panel by clicking the "On" button in the lower right corner. Once VST Dynamics is activated, you can turn the individual processors on and off by clicking on their labels. Activated processors have highlighted labels.

You can activate as many processors as you want, but remember that not all processors are designed to work together. For example, "Limit" and "SoftClip" are both designed to ensure that the output never exceeds 0dB, but achieve this in different ways. To have both of them activated would be unnecessary. The internal signal flow is printed in the lower right part of the Dynamics panel.

The following processors are available on the VST Dynamics panel (click an item in the list for more information about the corresponding processor):

-
-
-
-
-

AutoGate

Gating, or noise gating, is a method of dynamic processing that silences audio signals below a certain set threshold level. As soon as the signal level exceeds the set threshold, the gate opens to let the signal through. AutoGate offers all the features of a standard noise gate, plus some very useful additional features, such as auto calibration of the threshold setting, a look-ahead predict function, and frequency selective triggering. Available parameters are as follows:

Parameter	Explanation
Threshold	This setting determines the level where AutoGate is activated. Signal levels above the set threshold trigger the gate to open, but signal levels below the set threshold will close the gate.
Attack	This parameter sets the time it takes for the gate to open after being triggered. If the Predict button is activated, it will ensure that the gate will already be open when a signal above the threshold level is played back. AutoGate manages this by "looking ahead" in the audio material, checking for signals loud enough to pass the gate.
Hold	This determines how long the gate stays open after the signal drops below the threshold level.
Release	This parameter sets the amount of time it takes for the gate to close (after the set hold time). If the "Auto" button is activated, AutoGate will find an optimum release setting, depending on the audio program material.

Trigger Frequency Range

AutoGate has a feature that allows the gate to be triggered only by signals within a specified frequency range. This is a most useful feature because it lets you filter out parts of the signal that might otherwise trigger the gate in places you don't want it to, thus allowing more control over the gate function. The Trigger Frequency Range function is controlled using the control in the upper part of the AutoGate panel, and the slider located below it. The basic operation of the Trigger Frequency Range function is as follows:

1. While playing back audio, drag the slider to the "Listen" position.
You will now monitor the audio signal, and the gate will be bypassed.

2. While listening, drag the two handles in the Trigger Frequency window to set the frequency range you wish to use to trigger the gate.
You will hear the audio being filtered as you move the handles.

- Dragging the left handle to the right will progressively cut frequencies starting from the low end of the frequency spectrum.

- Dragging the right handle to the left will progressively cut frequencies starting from the high end of the frequency spectrum.

3. After setting the frequency range, drag the slider to the "On" position.
AutoGate will now use the selected frequency range as the trigger input.

4. To disable the Trigger Frequency Range function, drag the slider to "Off".
AutoGate will now use the unfiltered audio signal as the trigger input.

Calibrate Function

This function, activated by using the Calibrate button located below the Threshold knob, is used to automatically set the threshold level. It is especially useful for material with consistent inherent background noise in the audio material, like tape hiss for example. This may be masked by the audio content for most of the time, but becomes noticeable during silent passages. Use as follows:

1. Find a part of the audio material, preferably not too short, where only the background noise is heard.
If you can find only a short section with background noise, try looping it.

2. Play it back, and click on the Calibrate button.
The button will blink for a few seconds, and then automatically set the threshold so that the noise will be silenced (gated) during passages where there is no other signal present.

AutoLevel

AutoLevel reduces signal level differences in audio material. It can be used to process recordings where the level unintentionally varies. It will boost low levels and attenuate high level audio signals. Only levels above the set threshold will be processed, so low level noise or rumble will not be boosted. If the input level is greater than 0dB, AutoLevel will react very fast, because it looks ahead in the audio material for strong signal levels and can attenuate levels before they occur, thus reducing the risk of signal clipping.

Parameter	Description
Threshold	Only levels stronger than the set threshold will be processed.
Reaction Time Switch	This parameter sets the amount of time it takes for AutoLevel to adjust the gain. Set this according to whether the program level changes suddenly or over a length of time.

Compress

Compress reduces the dynamic range of the audio, so that softer sounds get louder or louder sounds get softer, or both. Compress functions like a standard compressor with separate controls for threshold, ratio, attack, release and make-up gain parameters.

There is also a separate display that graphically illustrates the compressor curve shaped according to the Threshold, Ratio and MakeUp Gain parameter settings. Compress also features a Gain Reduction meter that shows the amount of gain reduction in dB, and a program dependent Auto feature for the Release parameter.

Parameter	Description
Threshold	This setting determines the level where Compress "kicks in". Signal levels above the set threshold are affected, but signal levels below are not processed.
Ratio	Ratio determines the amount of gain reduction applied to signals over the set threshold. A ratio of 3:1 means that for every three dB the input level increases, the output level will increase by only one dB.
Attack	This determines how fast Compress will respond to signals above the set threshold. If the attack time is long, more of the early part of the signal (attack) will pass through unprocessed.

Parameter	Description
Release	Sets the amount of time it takes for the gain to return to its original level when the signal drops below the Threshold level. If the "Auto" button is activated, Compress will automatically find an optimum release setting, that varies depending on the audio program material.
MakeUp Gain	This parameter is used to compensate for output gain loss, caused by compression.

SoftClip

SoftClip is designed to ensure that the output level never exceeds 0dB, like a limiter. SoftClip, however, acts differently compared to a conventional limiter. When the signal level exceeds -6dB, SoftClip starts limiting (or clipping) the signal "softly", at the same time generating harmonics which add a warm, tubelike characteristic to the audio material. SoftClip is simplicity itself to use as it has no control parameters. The meter indicates the input signal level, and thus the amount of "softclipping". Levels in the green area (weaker than -6dB) are unaffected, while levels in the yellow-orange-red area indicate the degree of "softclipping". The deep red meter area to the right indicates input levels higher than 0dB.

⇨ Avoid feeding SoftClip with excessively high signal levels as audible distortion may occur, although the output level will never exceed 0dB.

Limit

Limit is designed to ensure that the output level never exceeds a certain set output level, to avoid clipping in following devices. Conventional limiters usually require very accurate setting up of the attack and release parameters, to totally avoid the possibility of the output level going beyond the set threshold level. Limit adjusts and optimizes these parameters automatically, according to the audio material. However, should you want to, you can adjust the Release parameter manually.

Parameter	Description
Threshold	This setting determines the maximum output level. Signal levels above the set threshold are affected, but signal levels below are left unaffected
Release	This parameter sets the amount of time it takes for the gain to return to its original level when the signal drops below the threshold level. If the "Auto" button is activated, Limit will automatically find an optimum release setting that varies depending on the audio program material.

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Troubleshooting

General problems

Can't create a temporary file

▪ Please check which drive is specified for your temporary files (in the Edit Folders dialog). You cannot use a CD-ROM disk or a write protected drive for your temporary files.
▪ Is the drive full? Please select a drive with as much free space as possible.

A drive/partition can't be found

▪ Is this volume a removable drive, or a CD-ROM? In that case, is the correct disk really in the drive?
▪ Have you renamed the Volume since you last used the program?

A file can't be deleted or renamed

▪ Is the volume write protected on which the file is residing? In that case, turn the write protection off.
▪ Is the file on a CD-ROM? Files can't be deleted from CD-ROMs.

The program opens/doesn't open with the same files each time

▪ This is not a bug, it's a feature! You can decide to have the program boot up as you last left it. This is done by activating/deactivating "Open last window layout on startup" in the Preferences dialog. See Preferences Topics.

My snapshots are gone!

There are two main ways to make sure your snapshots "stay" from session to session:

▪ Make sure "Save view settings in companion file" is activated in the Preferences - Wave edit tab. This will automatically save any snapshots associated with an audio file.
▪ Use Open last window layout on startup (described above) to make all settings remain just as you left them.

The wave isn't styled as when I opened it last

There are three ways to save your window styling, etc.:

▪ Make sure "Save view settings in companion file" is activated in the Preferences–Wave edit tab. This will automatically save any window settings associated with an audio file.
▪ Use "Open last window layout on startup" in the Preferences dialog to make all settings remain just as you left them.

Problems with opening files

The file doesn't appear in the Open dialog.

▪ Does the file have the right extension? Select "All files (*.*)" from the pop-up in the Open dialog and check again.
▪ Is the drive on which the file resides currently accessible? If you use removable hard disks or CD-ROMs, make sure the right disk is in the drive.

Can't open a file

▪ Is the file really a supported file type?
▪ Is it possible to open it in other programs that support files of the same format? If not, it is probably damaged.
▪ Try opening the file in the Media Player application, included with Windows. If that doesn't work, the file is probably damaged. Note that WaveLab Essential carefully checks the file headers: if any mistake in the format is found, WaveLab Essential does not open the file for safety reasons. This could happen (rarely) with some files created by non-professional software.
▪ Is the drive on which the file resides currently accessible? If you use removable hard disks or CD-ROMs, make sure the right disk is in the drive.

Problems with saving files

Can't save

▪ Is the volume on which you are trying to save write protected? For example, you cannot save anything on a CD-ROM.
▪ Is there enough space on the drive?
▪ Is the drive to which the file was last saved currently accessible? If you use removable hard disks or CD-ROMs, make sure the right disk is in the drive.
▪ Are you trying to overwrite another file with the same name? If so, is that file write protected? If it is, it can't be overwritten. Save under another name, or remove the write protection.
▪ Are you trying to overwrite another file with the same name? Is that file open? If it is, close it and try again.
▪ To get around all of the problems listed above, try saving to another disk/folder.

Recording problems

I can't record

- Are you trying to record at a sample rate/bit resolution that your card doesn't support? Check the documentation for the card to find out which formats it supports.
- Is the card really installed correctly? Try using some application included with the card to see if that works. Also try the "Sound recorder" included with Windows.
- Do you have the latest drivers for your card? Contact your dealer for the latest drivers.
- Is your temporary files location set up correctly and do you have enough free space on that drive?

I can't hear what i just recorded

- Do the meters move when you record? Do you get a waveform in the window? If you do, the recording is not the problem, it is the playback.
- Check the Mixer. Do you have the correct recording inputs activated, and are the levels set properly?
- If you can't seem to activate the correct inputs and levels from WaveLab Essential, try the mixer application that was included with your audio card. Some card drivers do not react correctly to the standard Windows commands transmitted by WaveLab Essential.
- Please check your cables and the devices you have connected. Is there really a proper audio signal coming in to the card?
- Have you selected the appropriate recording mode for the recording source? If you want to record an external audio signal through the active inputs on your audio hardware, you must select the "Audio input (hardware)" mode in the Record dialog.

There is too much noise in my recordings

- Have you adjusted your recording levels properly?
- Is the source connected to the proper input?
- Have you specified 8 bits as the bit resolution for the recording? Try 16 bits instead.
- Keep in mind that microphones provided with sound cards are very low quality.

The mixer can't be "created"

- Have you specified your audio card in the Preferences dialog? A mixer can't be created if "Microsoft Sound Mapper" is selected.
- Do you have the latest and correct drivers for your card? We have noted that some card drivers contain "bugs" that prevent a mixer from being created.

Playback problems

No playback at all

- Is the card really installed correctly? Try using some application included with the card to see if that works. Also try the "Media Player" included with Windows. If that doesn't work, there's something wrong with the card or the installation.

Playback is choppy

- Are you using a compressed hard drive? You should not use WaveLab Essential on such drives because they eat up too much processor power!
- To play a quality wave (e.g. 16 bit Stereo 44,1 kHz file) from a CD-ROM, your CD-ROM reader must be at least of a "Double Speed" type.

A file can't be played

- Is the file really in a format (sample rate, bit resolution mono/stereo) supported by your audio card? The format of the file is indicated on the status bar.

Playback can't be heard

- Do you have an application for the audio card that allows you to adjust playback volumes? Are these settings correct?
- Check the cables and the other audio equipment you use.

Editing problems

After editing I get clicks and pops

- Are you making "splices" in the middle of an audio section? If you do, we recommend that you make all cuts at zero crossings, to avoid clicks and pops.

After crossfading, I get distortion

- If both sections play at full level during the crossfade, it is possible that clipping will occur (although it is unlikely). If this happens, undo the crossfade, lower the gain of both sections (by 3 or 6 dB for example) and try again. The problem cannot occur if you check the "Inverse of Fade In" or "Inverse of Fade Out" options.

Troubleshooting and precautions

The following sections provide information concerning problems relating to CD/DVD burning, hardware devices, precautions for trouble-free CD writing as well as hardware and setup issues.

⚠ Please note that Steinberg cannot make any guarantees about the validity of your recorded audio CDs.

Problems and solutions

General instructions

The following text is written for problems relating to CD burning, but applies to DVD as well.

- If you run into problems, the first thing to check is your hardware and software setup. To isolate the problem, you could try using other CD burning software (for example a program supplied with the CD-R unit). If this doesn't work either, the problem isn't with WaveLab Essential, but with some other component in the system.
- When you insert a disk into the recorder, make sure you wait long enough before you start using it. You might have to wait several seconds. Watch any possible LEDs on the front panel. They will indicate when the unit is ready for use (see the operation manual for the unit for details).
- If your CD recorder doesn't respond, the first thing to do is to eject the disc and insert it again. This will reinitialize the recorder.

- If this doesn't work, you might try switching off the recorder (even if the computer is still on), wait three seconds and then turn it back on again. Often, only rebooting the computer is not enough.

Questions and Answers

- I have problems with a Phillips CDD-2000 unit.

If you have a real Phillips drive or a drive that contains this Phillips mechanism, you must make sure that the firmware version is 1.25 or later. A firmware update can be found at http://www.philips.com/sv/pcaddon.

- I have other problems writing a CD and/or importing CD audio tracks.

Well of course there could be many reasons for this. Check the "Day to day precautions for trouble free CD writing" section below. But, here are two more things to try:

Open the Control Panel, and double click on System. Select the Device Manager tab, select CD-R in the list (if this entry exists, which is not mandatory) and click on the Properties button and then select Settings. Disable the "Insert auto notification" to prevent Windows from reading from the CD-R during the writing process.

If you have problems at higher speeds, try lowering it. Even if your system writes correctly at 8x most of the time, it's safer to write at lower speeds.

- I have problems writing CDs when I specify ISRC and EAN/UPS codes, but otherwise things work fine.

If you try to write a ISRC code or EAN/UPC code, WaveLab Essential might return an error if: a) the CD recorder does not support this (not all do, or not all firmware versions do). b) the codes are not properly formatted: UPC/EAN: 13 numeric characters. ISRC: 5 alphanumeric followed by 7 numeric characters.

- A CD disc that I have created doesn't play correctly on my CD player.

The reflections of a "normal" CD and a CD-R are different (a CD-R reflects less light). A dirty lens on the CD player might disturb playback. This is more common on old CD players because their lasers do not properly calibrate for recordable CDs. Sometimes, the combination of disc brand and CD recorder brand can make a difference.

Day to day precautions for trouble-free CD writing

The most important thing to remember is that CD writing is a real-time operation where a laser burns depressions into the surface of the CD. This is done at a speed which cannot be slowed down or interrupted. Any interruption will most likely be fatal, rendering the CD-R disk useless. For these reasons you should make sure your system does not interrupt the CD-R writing once it's under way. Read the following points:

- Keep the CD-recorder on a vibration-free surface. Sudden "shocks" could cause writing interruptions.
- Do not read files directly from a CD, copy them to a fast hard disk first.
- Do not read files over a network. Networks usually are far too slow for CD-R writing.
- Turn off networking, at least for the hard disk drive from which you are reading, since the CD writing may be interrupted by anyone trying to access this drive.
- It is best to store the files on a hard disk partition that is 1 gigabyte in size, or smaller (since this means the sectors will be 16kByte rather than 32kByte).
- Do not read files from a hard disk with compression enabled!
- It is highly recommended that you keep your hard disk(s) defragmented at all times. Windows includes an application for this.
- If you have multiple hard drives in your system, put the audio files on your fastest drive! Also use a fast drive for WaveLab Essential's "temp" files.
- Turn off any screen savers, anti-virus, schedulers, animated icons and alarm or reminder programs that might interrupt the CD burning operation.
- Make sure any fax reception or background e-mail software is disabled.
- If you use the System Agent, make sure no activities are scheduled for the time you write to the CD. Do no use the "When Idle" option in the System Agent.
- Disable any System Monitoring programs.
- If you use the CD-R unit as a CD-ROM reader, make sure you quit the Explorer and close any "My Computer" windows before writing.
- Stop audio playback in WaveLab Essential before writing.

Hardware and setup issues

CD-R Drivers

- If you have previously installed another CD-R software product, you may run into driver conflicts. Normally this should not happen since WaveLab Essential has built-in drivers that are loaded as needed, and which usually override any other installed drivers. However, if you do have problems writing to CD-R, this is a point to check.
- If it isn't absolutely required, don't install any other driver for your CD-R unit (for example a driver that allows you to use the CD-R as a CD-ROM drive). The drivers might make Windows try to access the drive during writing, which can cause system interruptions.
- In the advanced BIOS settings of your SCSI host adapter, the following should normally be disabled:
  - Plug and Play SCAM Support
  - Support Removable Disks Under BIOS as Fixed Disks
  - BIOS Support for Bootable CD-ROM
  - BIOS Support for Int 13 Extensions

Networking Cards

Network cards can produce hardware interrupts which momentarily halt operation of all software. This can cause various problems. For CD writing, a non-networked machine is more stable than a networked one.

- If you need to keep your machine connected to a network try to not load the network card drivers when you plan to write CDs.

About Hard disks

- Many hard disks automatically perform something called thermal calibration at regular (but unpredictable) intervals. For this reason, drives sold as "A/V drives" are recommended, since they have built-in "intelligence" which delays any recalibration to times when the disk is not being used. Some drives not marketed as "A/V Drives" also have this capability, check with the vendor if in doubt.

CD-R disks

- There are many brands of CD-R disks. Always use one that has been tested and recommended by your CD-R drive manufacturer.
- CD-R discs are not as solid as real CDs. Handle them with care! Do not expose discs to sunlight for long periods, and avoid heat and humidity.

- The top (label) side of a CD-R disc is also vulnerable. Don't use alcohol-based pens to write on discs and don't put labels on unless they are specifically designed for CD-Rs (otherwise the glue on the label might eat through the surface).

Links and sources for more information

- A general CD-R site that might be of interest: http://www.osta.org/technology/cdqa.htm

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Key commands

File handling

Key Command	Function
[Ctrl]-[O]	Open wave file
[Alt]-[Enter]	Open wave file information window
[Ctrl]-[F2]	Open Audio CD Montage
[Ctrl]-[S]	Save current document
[Shift]-[S]	Save current document under new name and/or in a new location
[Ctrl]-[Shift]-[S]	Save all currently open documents
[Ctrl]-[N]	Create new wave
[Ctrl]-[W]	Close current document (and all its related windows)
[Ctrl]-[E]	Convert Wave to MP3 (Save special – Encode (MP3))
[Ctrl]-[Shift]-[E]	Convert Wave to MP2 (Save special – Encode (MP2))
[Shift]-[E]	Save current wave selection as a new wave file

View

The following commands scroll the window without moving the cursor:

Key Command	Function
[Ctrl]-[Home]	Start of Wave or Montage
[Ctrl]-[End]	End of Wave or Montage
[.] (Numeric keypad)	Cursor position

Overview

Key Command	Function
[Ctrl]-[J]	Zoom out to display the entire wave/Montage horizontally

Zooming

Main View

Key Command	Function
[G]	Zoom in horizontally
[Arrow up]	Zoom in horizontally (or Zoom out if Cubase compatibility is enabled)
[H]	Zoom out horizontally
[Arrow down]	Zoom out horizontally (or Zoom in if Cubase compatibility is enabled)
[Ctrl]-[Arrow up]	Zoom in horizontally to maximum zoom factor
[Ctrl]-[Arrow down] or [J]	Zoom out horizontally to display the entire wave or montage
[Shift]-[G] or [Shift]-[Arrow up]	Zoom in vertically (or Zoom out if Cubase compatibility is enabled)
[Shift]-[H] or [Shift]-[Arrow down]	Zoom out vertically (or Zoom in if Cubase compatibility is enabled)
[Shift]-[J]	Zoom in or out to get an optimized level display (best fit)
[K]	Zoom selection
[Ctrl]-[L]	Zoom in vertically to decrease the number of visible tracks (Montage)
[Ctrl]-[Shift]-[L]	Zoom out vertically to increase the number of visible tracks (Montage)

Processing

Key Command	Function
[N]	Level Normalizer
[Ctrl]-[G]	Change gain
[D]	Dynamics
[V]	Level envelope
[Ctrl]-[D]	Easy Fade
[Ctrl]-[F]	Fade in/out
[X]	Crossfade
[Ctrl]-[R]	Reverse
[R]	Waveform Restorer
[T]	Time stretch
[P]	Pitch Correction
[Ctrl]-[Q]	EQ

Playback and cursor position

Numeric keypad

Key Command	Function
[Enter]	Play (from current position)
[0]	Stop / Move to selection start / Move to beginning
[1]	Move cursor to selection start
[2]	Move cursor to selection end
[4]	Move cursor to previous marker
[5]	Move cursor to next marker
[.] (full stop)	Scroll to cursor
[/]	Loop on/off (current wave only)
[F]	Scroll during playback on/off

Function keys

Key Command	Function
[Space Bar]	Toggle Play / Stop
[F8]	Play (from current position)
[F7]	Stop / Move to selection end/ Move to selection start / Move to beginning
[F6]	Play selection

Cursor keys

Key Command	Function
[Arrow left]	Move cursor one pixel to the left
[Arrow right]	Move cursor one pixel to the right
[Ctrl]-[Arrow right]	Move cursor 1/10 of the window width to the right (or left if Cubase compatibility is enabled)
[Ctrl]-[Arrow left]	Move cursor 1/10 of the window width to the left (or right if Cubase compatibility is enabled)
[Ctrl]-[Page Up]	Move cursor one window width to the left (or right if Cubase compatibility is enabled)
[Ctrl]-[Page Down]	Move cursor one window width to the right (or left if Cubase compatibility is enabled)
[Home]	Move cursor to beginning
[End]	Move cursor to end
[Tab]	Toggle Cursor between left/right/both channels (stereo waves only)

Selecting

Key Command	Function
[Esc]	Toggle selection on/off
[Tab]	Toggle selection between left/right/both channels (stereo waves only)

Extending or making selections

The following commands create a new selection or extend the current one.

Key Command	Function
[Shift]-[Arrow left]	One pixel to the left
[Shift]-[Arrow right]	One pixel to the right
[Ctrl]+[Shift]-[Arrow left]	20 pixels to the left
[Ctrl]+[Shift]-[Arrow right]	20 pixels to the right
[Shift]-[Page Up]	20 pixels to the left (or right if Cubase compatibility is enabled)
[Shift]-[Page Down]	20 pixels to the right (or left if Cubase compatibility is enabled)
[Ctrl]+[Shift]-[Page Up]	One window width to the left (or right if Cubase compatibility is enabled)
[Ctrl]+[Shift]-[Page Down]	One window width to the right (or left if Cubase compatibility is enabled)

Making selections

The following commands always create a new selection:

Key Command	Function
[Shift]-[Home]	From cursor to start
[Shift]-[End]	From cursor to end
[Ctrl]-[A]	Select all

"One the fly" numeric keypad commands

The following commands are for selecting during playback. Please note that the keys on the numeric keypad must be used.

Key Command	Function
[Shift]-[1]	Set start of selection
[Shift]-[2]	Set end of selection
[+]	Press and hold to set start of selection, release to set end of selection.

Editing and Recording

General

Key Command	Function
[Shift]-[A]	Open Wave Attributes dialog
[Ctrl]-[U]	Open Audio Properties dialog

Cut and Paste

Key Command	Function
[Ctrl]-[X]	Cut
[Ctrl]-[C]	Copy
[Ctrl]-[V]	Paste
[Ctrl]+[Shift]-[V]	Paste Append

Delete and Silence

Key Command	Function
[Backspace] or [Del]	Delete current selection
[Ctrl]-[Space bar]	Silence current selection
[Ctrl]+[Shift]-[Space]	Insert silence
[Ctrl]-[Backspace]	Trim (to selection)

Recording

Key Command	Function
[*] (Multiply on the numeric keypad)	Open Record dialog

When Record dialog is open

Key Command	Function
[Ctrl]-[M]	Drop generic marker
[Ctrl]-[L]	Drop generic region start marker
[Ctrl]-[R]	Drop generic region end marker
[Ctrl]-[P]	Pause
[Ctrl]-[Enter]	Record
[Ctrl]-[0] (Numeric keypad)	Stop record
[Ctrl]-[Y]	Reset meters

Undo and Redo

Key Command	Function
[Ctrl]-[Z]	Undo
[F3]	Undo
[Ctrl]+[Shift]-[Z]	Redo
[F4]	Redo

Markers

Key Command	Function
[Ctrl]-[M]	Open marker list
[Insert]	Drop new marker at cursor position (for example during playback)
[Ctrl]-[Insert]	Create Marker

Miscellaneous

Key Command	Function
[F2]	Open Rename dialog
[Alt]-[Ctrl]-[M]	Maximize Wave or Montage window width
[W]	View Window layouts
[Ctrl]-[F9]	Show/hide Master Section
[Ctrl]-[F10]	Show/hide Monitor window
[Ctrl]-[P]	Open Preferences dialog
[M]	Magnetize Bounds on/off
[Z]	Zero crossing on/off
[7] (Numeric keypad)	Undo zoom/view/position change in Montage
[8] (Numeric keypad)	Redo zoom/view/position change in Montage
[Shift]+[F5]	Open a dialog where you can save a picture of the active window.

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