Operation Manual

CUBASE ESSENTIAL 5

Personal Music Production System

steinberg

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About this manual

Welcome!

This is the Operation Manual for Steinberg's Cubase Essential. Here you will find detailed information about all the features and functions in the program.

About the program versions

The documentation covers two different operating systems or "platforms"; Windows and Mac OS X.

Some features and settings are specific to one of the platforms. This is clearly stated in the applicable cases. In other words:

⇨ If nothing else is said, all descriptions and procedures in the documentation are valid for both Windows and Mac OS X.

The screenshots are taken from the Windows version of Cubase Essential.

Key command conventions

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

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

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

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

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

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

2

VST Connections: Setting up input and output busses

About this chapter

Cubase Essential uses a system of input and output busses to transfer audio between the program and the audio hardware.

- Input busses let you route audio from the inputs on your audio hardware into the program. This means that when you record audio, you will always do this through one or several input busses.
- Output busses let you route audio from the program to the outputs on your audio hardware. When you play back audio, you will always do this through one or several output busses.

As you can see, the input and output busses are vital when you work with Cubase Essential. This is why you find this chapter at the beginning of the Operation Manual – once you understand the bus system and know how to set up the busses properly, it will be easy to go on with recording, playing back and mixing.

Setting up busses

Strategies

In Cubase Essential, you can create up to 16 stereo busses or up to 32 mono busses.

⇨ The bus configuration is saved with the project – therefore it is a good idea to add and set up the busses you need and save these in a template project (see "Save as Template" on page 289).
When you start working on new projects, you start from this template. That way you get your standard bus configuration without having to make new bus settings for each new project. If you need to work with different bus configurations in different projects, you can either create several different templates or store your configurations as presets (see "Other bus operations" on page 12). The templates can of course also contain other settings that you regularly use – sample rate, record format, a basic track layout, etc.

Input busses

- Most likely you need at least one stereo input bus assigned to an analog input pair. This would let you record stereo material. If you want to be able to record in stereo from other analog input pairs as well, you add stereo input busses for these, too.

- Although you can record mono tracks from one side of a stereo input, it may be a good idea to add a dedicated mono input bus. This could be assigned to an analog input to which you have connected a dedicated microphone pre-amp for example. Again, you can have several different mono busses.
- You probably want a dedicated stereo input bus assigned to the digital stereo input, for digital transfers.

Output busses

- You probably want one or several stereo output busses for monitoring and listening to stereo mixes.
- For digital transfers, you need a stereo bus assigned to the digital stereo output as well.

Preparations

Before you set up busses, you should name the inputs and outputs on your audio hardware.

The reason for this is compatibility – it makes it easier to transfer projects between different computers and setups. For example, if you move your project to another studio, the audio hardware may be of a different model. But if both you and the other studio owner have given your inputs and outputs names according to the setup (rather than names based on the audio hardware model), Cubase Essential will automatically find the correct inputs and outputs for your busses and you will be able to play and record without having to change the settings.

Use the Device Setup dialog to assign names to the inputs and outputs of your audio hardware:

1. Open the Device Setup dialog from the Devices menu.

2. Make sure that the correct driver for your audio hardware is selected on the VST Audio System page, so that the audio card is listed in the Devices list.

3. Select your audio card in the list.
The available input and output ports on your audio hardware are listed on the right.

4. To rename a port, click its name in the "Show as" column and enter a new name.

- If needed, you can also disable ports by deactivating them in the "Visible" column.
Disabled ports will not show up in the VST Connections window when you are making bus settings. If you attempt to disable a port that is used by a bus, you will be asked whether this is really what you want – note that this will remove the port from the bus!

5. Click OK to close the Device Setup dialog.

⇨ If you open a project created on another computer and the port names do not match (or the port configuration is not the same), the Missing Ports dialog will appear.
This allows you to manually re-route ports used in the project to ports available in your system.

Mac OS X only: Retrieving channel names

For some audio cards, you can automatically retrieve the ASIO channel names for the ports of your audio hardware:

1. Open the Device Setup dialog via the Devices menu.

2. On the VST Audio System page, select your audio card on the "ASIO driver" pop up menu.

3. In the Devices list to the left, select your audio card.
The available settings are displayed.

4. In the settings section to the right, click the Control Panel button.
This opens the control panel for your audio hardware.

5. Activate the "Use CoreAudio Channel Names" option.

6. When you now open the VST Connections window to set up the busses in your system, you will find that the port names in the Device Port column correspond to the names that are used by the CoreAudio driver.

⇨ If you want to use the project later on with an earlier version of Cubase Essential, you will have to re-assign the port connections in the VST Connections window (see below).

Mac OS X only: Port selection and activation

On the settings page for your audio card (opened via the Device Setup dialog, see above), you can specify which input and which output port should be active. This allows you, for example, to use the Microphone input instead of the Line input or even to deactivate the audio card input or output completely, if required.

⇨ This function is only available for Built-In Audio, standard USB audio devices and a certain number of other audio cards (e.g. Pinnacle CineWave).

The VST Connections window

You add and set up busses in the VST Connections window, opened from the Devices menu.
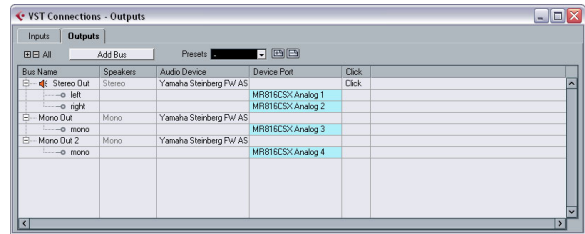
This window contains the Inputs and Output tabs for viewing input busses and output busses.

Depending on which tab you have selected, the window lists the current input or output busses, with the following columns:

Column	Description
Bus Name	Lists the busses. You can select busses and rename them by clicking on them in this column.
Speakers	Indicates the speaker configuration (mono, stereo) of each bus.
Audio Device	This shows the currently selected ASIO driver.
Device Port	When you have "opened" a bus (by clicking its + button in the Bus Name column) this column shows which physical inputs/outputs on your audio hardware are used by the bus.
Click	You can route the click to a specific output bus.

Adding a bus

1. Click the Inputs or Outputs tab depending on which you want to add.

2. Click the Add Bus button.
A dialog appears.
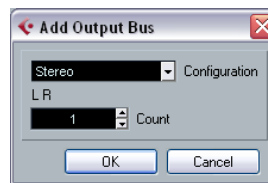
3. Select the desired (channel) configuration.
You can add stereo and mono busses.

▪ Alternatively you can right-click in the VST Connections window and add a bus in the desired format directly from the context menu.

The new bus appears with the ports visible.

4. Click in the Device Port column to select an input/output port for a channel in the bus.

The pop-up menu that appears lists the ports with the names you have assigned in the Device Setup dialog. Repeat this for all channels in the bus.

Setting the Main Mix bus (the default output bus)

The Main Mix is the output bus that each new channel in the Mixer will be assigned to when it is created.

Any of the output busses in the VST Connections window can be the default output bus. By right-clicking on the name of an output bus, you can set this bus as the Main Mix bus.
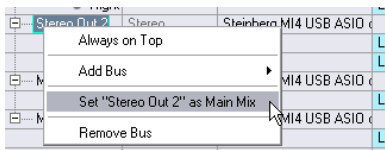
Setting the default output bus in the VST Connections window.

When creating new audio, group or FX channels in the Mixer, they will automatically be routed to the default bus.

⚠ The default bus is indicated by an orange colored speaker icon next to its name in the VST Connections window.

Presets

On the Inputs and Outputs tabs, you will find a Presets menu. Here you can find three different types of presets:

▪ A number of standard bus configurations.

▪ Automatically created presets tailored to your specific hardware configuration.

On each startup, Cubase Essential will analyze the physical inputs and outputs provided by your audio hardware and create a number of hardware-dependent presets with the following possible configurations:

▪ one stereo bus
▪ various combinations of stereo and mono busses
▪ a number of mono busses

▪ You can also save your own setups as presets.

To store the current configuration as a preset, click the Store "+" button and enter a name for the preset. You can then select the stored configuration directly from the Presets pop-up menu at any time. To remove a stored preset, select it and click the "-" button.

Other bus operations

▪ To change the port assignment for a bus, you proceed as when you added it: Make sure the channels are visible (by clicking the "+" button next to the bus, or by clicking the "+ All" button at the top of the window) and click in the Device Port column to select ports.

▪ To remove a bus you do not need, select it in the list, right-click and select "Remove Bus" from the pop-up menu, or press [Backspace].

Using the busses

This section describes briefly how to use the input and output busses you have created. For details refer to the chapters "Recording" on page 50 and "The Mixer" on page 79.

Routing

When you play back an audio track (or any other audio-related channel in the Mixer), you route it to an output bus. In the same way, when you record on an audio track you select from which input bus the audio should be sent.

▪ You can select input and output busses in the Inspector, using the Input and Output Routing pop-up menus.
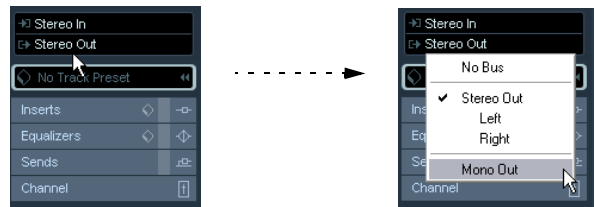
⇨ For audio-related channel types other than audio track channels (i.e. VST instrument channels, ReWire channels, Group channels and FX channels), only the Output Routing pop-up menu is available.

When selecting an input bus for a track you can only select busses that correspond to the track's channel configuration. Here are the details for input busses:

- Mono tracks can be routed to mono input busses or individual channels within a stereo input bus.
- Stereo tracks can be routed to mono or stereo input busses.

For output busses any assignment is possible.

⚠ Assignments that will lead to feedback are not available in the pop-up menu. This is also indicated by a one-way symbol.

To disconnect input or output bus assignments, select "No Bus" from the corresponding pop-up menu.

Viewing the busses in the Mixer

⇨ Note that only the output busses are available in the Mixer – not the input busses.

The available output busses are represented as output channel strips in the Mixer (shown in a separate pane to the right). You can show or hide output channels by clicking the corresponding button in the Mixer common panel:

Hide Output Channels

Output channels

The output channels are shown to the right in the Mixer. Here you can do the following:

- Adjust the output level for the busses with the faders.

- Open the Channel Settings window to add effects or EQ. These will affect the whole bus. Examples of effects you may want to add here include compressors, limiters and dithering, see the chapter "Audio effects" on page 95.

About monitoring

The Main Mix bus (the default output bus) is used for monitoring (see "Setting the Main Mix bus (the default output bus)" on page 12).

You can adjust the monitoring level in the Mixer.

3

The Project window

Background

The Project window is the main window in Cubase Essential. This provides you with an overview of the project, allowing you to navigate and perform large scale editing. Each project has one Project window.

About tracks

The Project window is divided vertically into tracks, with a timeline running horizontally from left to right. The following track types are available:

Track type	Description
Audio	For recording and playing back audio events and audio parts. Each audio track has a corresponding audio channel in the Mixer. An audio track can have an automation track for automating mixer channel parameters, effect settings, etc.
Folder	Folder tracks function as containers for other tracks, making it easier to organize and manage the track structure. They also allow you to edit several tracks at the same time, see "Folder tracks" on page 37.
FX Channel	FX channel tracks are used for adding send effects. Each FX channel can contain up to eight effect processors – by routing effect sends from an audio channel to an FX channel, you send audio from the audio channel to the effect(s) on the FX channel. Each FX channel has a corresponding channel strip in the Mixer – in essence an effect return channel, see the chapter "Audio effects" on page 95. All FX channel tracks are automatically placed in a special FX channel folder in the Track list, for easy management. An FX channel can also have an automation track for automating mixer channel parameters, effect settings, etc.
Group Channel	By routing several audio channels to a Group channel, you can submix them, apply the same effects to them, etc. (see "Using group channels" on page 90). A Group channel track contains no events as such, but displays settings and automation curves for the corresponding Group channel. Each Group channel track has a corresponding channel strip in the Mixer. In the Project window, Group channels are organized as tracks in a special Group Tracks folder.
Instrument	This allows you to create a track for a dedicated instrument, making e.g. VST instrument handling easier and more intuitive. Instrument tracks have a corresponding channel strip in the Mixer. Each instrument track can have an automation track in the Project window. However, Volume and Pan are automated from within the Mixer. For more information on instrument tracks, see the chapter "VST instruments and instrument tracks" on page 110.
MIDI	For recording and playing back MIDI parts. Each MIDI track has a corresponding MIDI channel strip in the Mixer. A MIDI track can have an automation track for automating mixer channel parameters, insert and send effect settings, etc.

Track type	Description
Marker	The Marker track displays markers which can be moved and renamed directly in the Project window (see "Markers" on page 38). A project can have only one marker track.
Arranger	The Arranger track is used for arranging your project, by marking out sections in the project and determining in which order they should be played back. See the chapter "The Arranger track" on page 72 for details.
Video	For playing back video events. A project can have only one video track.

About parts and events

The tracks in the Project window contain parts and/or events. Events are the basic building blocks in Cubase Essential. Different event types are handled differently in the Project window:

- Video events and automation events (curve points) are always viewed and rearranged directly in the Project window.
- MIDI events can always be found in MIDI parts, which are containers for one or more MIDI events. MIDI parts are rearranged and manipulated in the Project window. To edit the individual MIDI events in a part, you have to open the part in a MIDI editor (see "The MIDI editors" on page 210).
- Audio events can be displayed and edited directly in the Project window, but you can also work with audio parts containing several events. This is useful if you have a number of events which you want to treat as one unit in the project. Audio parts also contain information about the time position in the project.
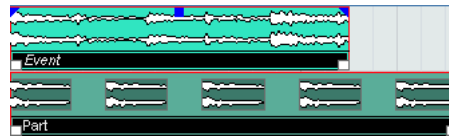
An audio event and an audio part

Audio handling

When you work with audio files, it is crucial to understand how audio is handled in Cubase Essential:

When you edit or process audio in the Project window, you always work with an audio clip that is automatically created on import or during recording. This audio clip refers to an audio file on the hard disk that itself remains untouched. This means, that audio editing and processing is "non-destructive", in the sense that you can always undo changes or revert to the original versions.

An **audio clip** does not necessarily refer to just one original audio file! If you apply some processing to a specific section of an audio clip, for example, this will create a new audio file containing only this section. The processing will then be applied to the new audio file only, leaving the original audio file unchanged. Finally, the audio clip is automatically adjusted, so that it refers both to the original file and to the new, processed file. During playback, the program will switch between the original file and the processed file at the correct positions. You will hear this as a single recording, with processing applied to one section only. This feature makes it possible to undo processing at a later stage, and to apply different processing to different audio clips that refer to the same original file.

An **audio event** is the object that you place on a time position in Cubase Essential. If you make copies of an audio event and move them to different positions in the project, they will still all refer to the same audio clip. Furthermore, each audio event has an Offset value and a Length value. These determine at which positions in the clip the event will start and end, i.e. which section of the audio clip will be played back by the audio event. For example, if you resize the audio event, you will just change its start and/or end position in the audio clip – the clip itself will not be affected.

⇨ If you want to use one audio file in different contexts, or if you want to create several loops from one audio file, you should convert the corresponding regions of the audio clip to events and bounce them into separate audio files. This is necessary since different events that refer to the same clip access the same clip information.

Window Overview

Toolbar

Info line

Ruler

Inspector
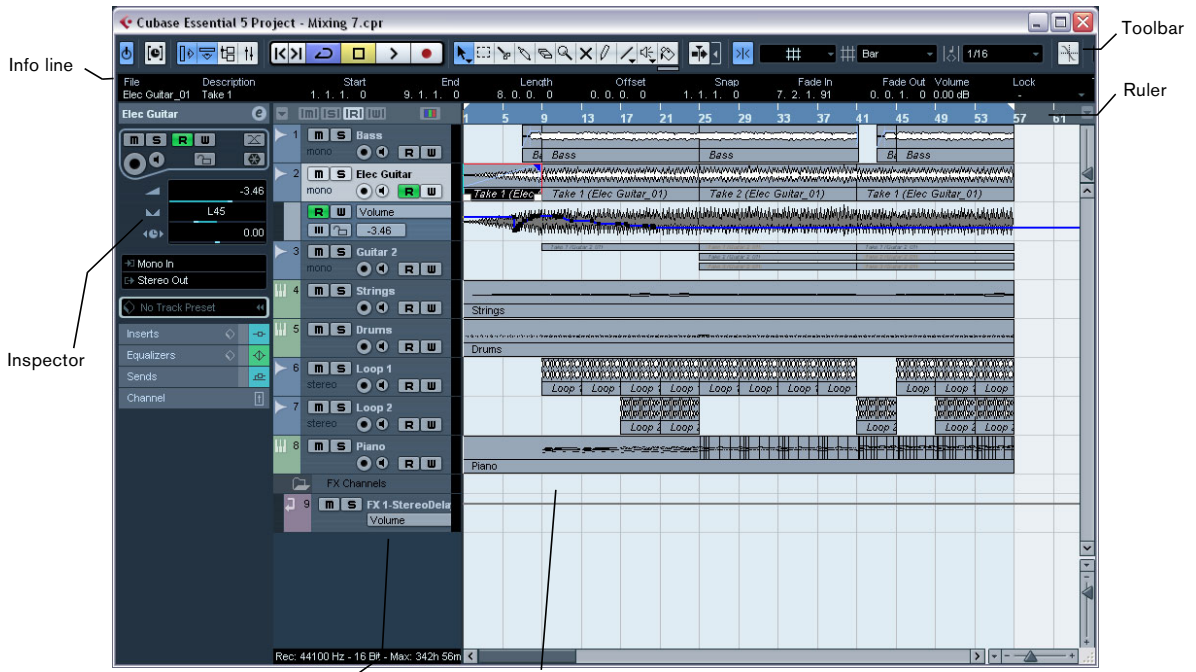
The Track list with various track types

The event display, showing audio parts and events, MIDI parts, automation, markers, etc.

The Track list

The Track list displays all the tracks used in a project. It contains name fields and settings for the tracks. Different track types have different controls in the Track list. To see all the controls you may have to resize the track in the Track list (see "Resizing tracks in the Track list" on page 23).

▪ The Track list area for an audio track:

Mute & Solo

Track name

Record Enable & Monitor

Automation Read/Write

Track activity indicator

Show/hide automation

Edit channel settings

Lock track button

Freeze Audio Track
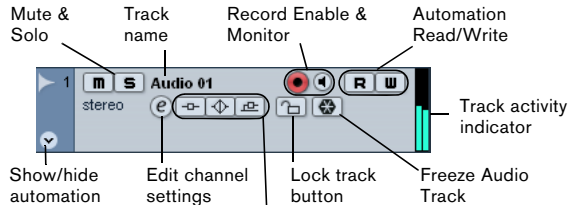
Indicate whether effect sends, EQ or insert effects are activated for the track. Click to bypass.

▪ The Track list area for an automation track (opened by clicking the Show/Hide Automation button on a track):

Automation Read/Write

Mute

Lock track

Automation parameter (click to select parameter)
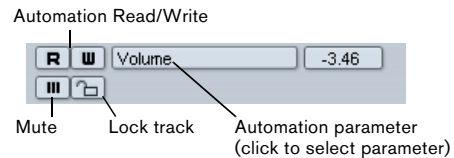
▪ The Track list area for a MIDI track:

Effect sends/insert effects indicators and bypass

Record Enable & Monitor

Mute & Solo

Track name

Automation Read/Write

Track activity indicator

Edit channel settings

MIDI Output

Bank

Patch

MIDI channel

Drum map and Lock track buttons
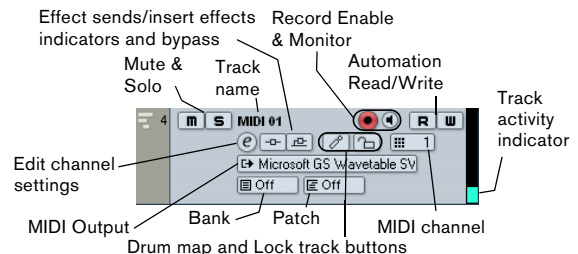
The Inspector

The area to the left of the Track list is called the Inspector. This shows additional controls and parameters for the track you have selected in the Track list. If several tracks are selected (see "Handling tracks" on page 26), the Inspector shows the setting for the first (topmost) selected track.

To hide or show the Inspector, click the Inspector icon in the toolbar.

The Inspector icon

▪ For most track classes, the Inspector is divided into a number of sections, each containing different controls for the track. You can hide or show sections by clicking on their names.

Clicking the name for a hidden section brings it into view and hides the other sections. [Ctrl]/[Command]-clicking the section name allows you to hide or show a section without affecting the other sections. [Alt]/[Option]-clicking a section name shows or hides all sections in the Inspector.
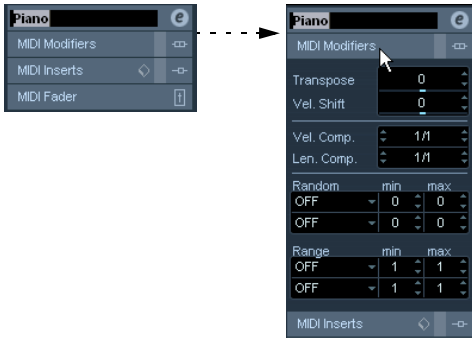
▪ You can also use key commands to show different Inspector sections.

These are set up in the Key Commands dialog, see "Setting up key commands" on page 305.

⇨ Hiding a section does not affect its functionality.

For example, if you have set up a track parameter or activated an effect, your settings will still be active even if you hide the respective Inspector section.

Which sections are available in the Inspector depends on the selected track.

⇨ Please note that not all Inspector tabs are shown by default. You can show/hide Inspector sections by right-clicking on an Inspector tab and activating/deactivating the desired option(s).

Make sure you right-click on an inspector tab and not on the empty area below the Inspector, as this will open the Quick context menu instead.
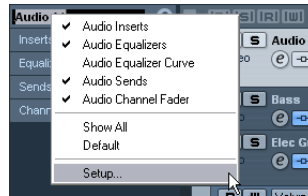
The Inspector Setup context menu

Inspector sections

The Inspector contains the controls that can be found on the Track list, plus some additional buttons and parameters. In the table below, these additional settings and the different sections are listed. Which sections are available for which track type is described in the following sections.

Parameter	Description
Auto Fades Settings button	Opens a dialog in which you can make separate Auto Fade settings for the audio track, see "Making Auto Fade settings for a separate track" on page 71.
Edit Channel settings	Opens the Channel Settings window for the track, allowing you to view and adjust effect and EQ settings, etc., see "Using Channel Settings" on page 86.
Volume	Use this to adjust the level for the track. Changing this setting will move the track's fader in the Mixer window, and vice versa. See "Setting volume in the Mixer" on page 84 to learn more about setting levels.
Pan	Use this to adjust the panning of the track. As with the Volume setting, this corresponds to the Pan setting in the Mixer.
Delay	This adjusts the playback timing of the audio track. Positive values delay the playback while negative values cause the track to play earlier. The values are set in milliseconds.
Input Routing	This lets you specify which Input bus or MIDI input the track should use. See "Setting up busses" on page 10 for information about Input busses.
Output Routing	Here you decide to which output the track should be routed. For audio tracks you select an output bus (see "Setting up busses" on page 10) or Group channel, for MIDI tracks you select a MIDI output and for instrument tracks, you select the instrument to which it is routed.

Parameter	Description
Inserts section	Allows you to add insert effects to the track, see the chapters "Audio effects" on page 95 and "MIDI realtime parameters and effects" on page 192. The Edit button at the top of the section opens the control panels for the added insert effects.
Equalizers section	Lets you adjust the EQs for the track. You can have up to four bands of EQ for each track, see "Making EQ settings" on page 87. The Edit button at the top of the section opens the Channel Settings window for the track.
Equalizer Curve section	Lets you adjust the EQs for the track graphically, by clicking and dragging points in a curve display.
Sends section	Allows you to route an audio track to one or several FX channels (up to eight), see the chapter "Audio effects" on page 95. For MIDI tracks, this is where you assign MIDI send effects. The Edit button at the top of the section opens the control panel for the first effect in each FX channel.
Channel section	Shows a duplicate of the corresponding Mixer channel strip. The channel overview strip to the left lets you activate and deactivate insert effects, EQs and sends.

Audio tracks

For audio tracks, all settings and sections listed above are available.

Instrument tracks

As explained in the chapter "VST instruments and instrument tracks" on page 110, the Inspector for an instrument track shows some of the sections you would find for VST instrument channels and MIDI tracks.

MIDI tracks

When a MIDI track is selected, the Inspector contains a number of additional sections and parameters, affecting the MIDI events in realtime (e.g. on playback). Which sections are available for MIDI tracks is described in the chapter "MIDI realtime parameters and effects" on page 192.

Arranger track

For the Arranger track, the Inspector displays the lists of available Arranger chains and Arranger events. See "The Arranger track" on page 72 for details.

Folder tracks

When a folder track is selected, the Inspector shows the folder and its underlying tracks, much like a folder structure in the Windows Explorer or Mac OS X Finder.

⇨ You can click one of the tracks shown under the folder in the Inspector to have the Inspector show the settings for that track. This way, you don't have to "open" a folder track to make settings for tracks within it.

FX channel tracks

When an FX channel track is selected, the following controls and sections are available:

- Edit button
- Volume control
- Pan control
- Output Routing pop-up menu
- Inserts section
- Equalizers section
- Equalizer Curve section
- Sends section
- Channel section

FX channel tracks are automatically placed in a special folder, for easier management. When this folder track is selected, the Inspector shows the folder and the FX channels it contains. You can click one of the FX channels shown in the folder to have the Inspector show the settings for that FX channel – this way you don't have to "open" a folder track to access the settings for the FX channels in it.

Group channel tracks

When a Group channel track is selected, the following controls and sections are available:

- Edit button
- Volume control
- Pan control
- Output Routing pop-up menu
- Inserts section
- Equalizers section
- Equalizer Curve section
- Sends section
- Channel section

Just like FX channel tracks, all Group channel tracks are placed in a separate folder – when this is selected, the Inspector shows the folder and the Group channels it contains. You can click one of the Group channels shown in the folder to have the Inspector show the settings for that Group channel – this way, you don't have to "open" a folder track to access the settings for the Group channels in it.

Marker tracks

When the marker track is selected, the Inspector shows the marker list. For more information, see the section "Markers" on page 38.

Video tracks

When a video track is selected, the Inspector contains a lock button for locking the track (see "Locking events" on page 34) and a Mute button for interrupting video playback.

The toolbar

The toolbar contains tools and shortcuts for opening other windows and various project settings and functions:

Constrain Delay Compensation

Show/hide info line

Active project indicator

Open Mixer

Show/hide Inspector   Open Pool

Project window tools

Transport controls
(Previous/Next Marker, Cycle, Stop, Play, and Record)

Autoscroll and Suspend
Autoscroll when Editing

Grid Type
pop-up menu

Snap to Zero
Crossing

Snap on/off   Snap Type   Quantize
Type

Color pop-up
menu
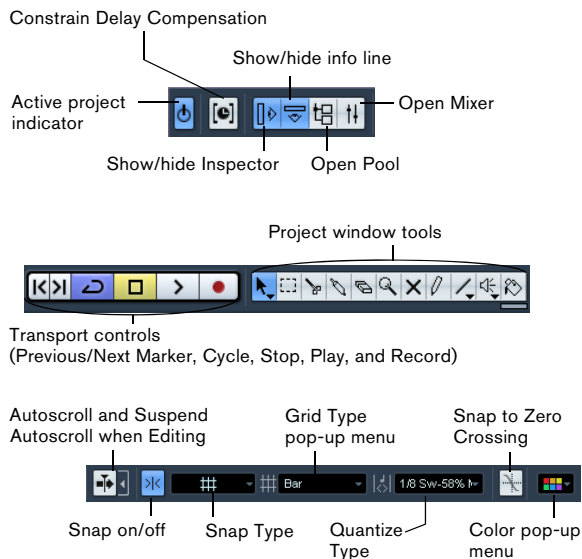
⇨ In addition to these, the toolbar can contain a number of other tools and shortcuts, not visible by default. How to set up the toolbar and specify which tools should be displayed or hidden is described in the section "Using the Setup options" on page 298.

The info line

File	Description	Start	End
Bass	Bass	9. 1. 1. 0	25. 1. 1. 0

The info line shows information about the currently selected event or part in the Project window. You can edit almost all values on the info line using regular value editing. Length and position values are displayed in the format currently selected for the ruler (see "The ruler" on page 21).

▪ To hide or show the info line, click the Show Event Info Line button on the toolbar.

The following elements can be selected for display and editing on the info line:

▪ Audio events
▪ Audio parts
▪ MIDI parts
▪ Video events
▪ Markers
▪ Automation curve points
▪ Arranger events

When several elements are selected

▪ If you have several elements selected, the info line will show information about the first item in the selection. The values will be shown in yellow to indicate that several elements are selected.

▪ If you edit a value on the info line, the value change is applied to all selected elements, relatively to the current values.
If you have two audio events selected and the first is one bar long and the other two bars long, the info line shows the length of the first event (one bar). If you now edit this value to 3 bars in the info line, the other event will be resized by the same amount – and will thus be 4 bars long.

▪ If you press [Ctrl]/[Command] and edit on the info line, the values will be absolute instead. In our example above, both events would be resized to 3 bars. Note that [Ctrl]/[Command] is the default modifier key for this – you can change this in the Preferences (Editing–Tool Modifiers page, under the Info Line category).

Editing Transpose and Velocity for MIDI parts

When one or several MIDI parts are selected, the info line contains Transpose and Velocity fields.

▪ Adjusting the Transpose field transposes the selected parts in semitone steps.
Note that this transposition doesn't change the actual notes in the part – it's just a "play parameter", affecting the notes on playback. The transposition you specify for a part on the info line is added to the transposition set for the whole track.

▪ Adjusting the Velocity field shifts the velocity for the selected parts – the value you specify is added to the velocities of the notes in the parts.
Again, this velocity shift only affects the notes on playback, and again, the value you specify is added to the Vel.Shift. value set for the whole MIDI track in the Inspector.

Getting on-the-fly info with the Arrow tool

If the option "Select Tool: Show Extra Info" is activated in the Preferences (Editing–Tools page), a tooltip will be shown for the Arrow tool, displaying information depending on where you point it. For example, in the Project window event display, the tool will show the current pointer position and the name of the track and event you're pointing at.

The ruler

The ruler at the top of the event display shows the timeline. Initially, the Project window ruler uses the display format specified in the Project Setup dialog (see "The Project Setup dialog" on page 22), as do all other rulers and position displays in the project. However, you can select an independent display format for the ruler by clicking the arrow button to the right of it and selecting an option from the pop-up menu (you can also bring up this pop-up menu by right-clicking anywhere in the ruler).

Option	Positions and lengths displayed as
Bars+Beats	Bars, beats, sixteenth notes and ticks. By default there are 120 ticks per sixteenth note.
Seconds	Hours, minutes, seconds and milliseconds.
Timecode	This format displays hours, minutes, seconds and frames. The number of frames per second (fps) is set in the Project Setup dialog (see "The Project Setup dialog" on page 22). You can choose between 24, 25, 29.97 and 30 fps or 29.97 and 30 dfps ("drop frame").

Option	Positions and lengths displayed as
Samples	Samples.
Time Linear	When this is selected, the ruler will be linear relative to time. This means that if there are tempo changes on the tempo track, the distance between the bars will vary in Bars+Beats mode.
Bars+Beats Linear	When this is selected, the ruler will be linear relative to the meter position – bars and beats. This means that if there are tempo changes on the tempo track, there still will be the same distance between bars in Bars+Beats mode. If the ruler is set to a time-based mode, the distance between seconds will vary depending on the tempo changes.

▪ The selection you make here affects the ruler, the info line and tooltip position values (which appear when you drag an event in the Project window).
You can also select independent formats for other rulers and position displays.

▪ To set the display format globally (for all windows), use the primary display format pop-up on the Transport panel, or hold down [Ctrl]/[Command] and select a display format in any ruler.

▪ If you use the "Timecode" option and the option "Show Timecode Subframes" is activated in the Preferences (Transport page), the frames will also display subframes.
There are 80 subframes per frame.

Operations

Creating a new project

You create a new project in the following way:

1. Select "New Project…" from the File menu.
A dialog appears, listing a number of project templates, including any custom templates you may have created (see "Save as Template" on page 289).

2. Select a template (or "Empty") and click OK.
A file dialog appears, allowing you to specify a location for the project folder. This will contain all files related to the project.
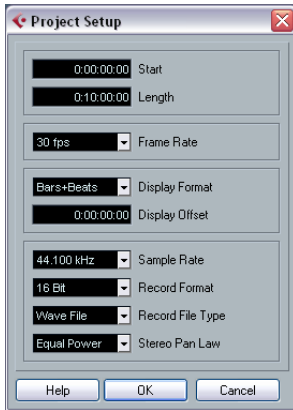
3. Select an existing folder or create a new one. Then click OK.
A Project window opens. If you selected a template, the new project will be based on this template, and include the corresponding tracks, events and settings.

The Project Setup dialog

General settings for the project are made in the Project Setup dialog. This is opened by selecting "Project Setup…" from the Project menu.

⇨ If the "Run Setup on Create New Project" option is activated in the Preferences dialog (General page), the Project Setup dialog will open automatically when you create a new project.

The following settings are available in the Project Setup dialog:

Setting	Description
Start	The start time of the project. Allows you to have the project start at another time than zero. Also used for setting the sync start position when synchronizing Cubase Essential to external devices (see "Setting up Cubase Essential for external sync to timecode" on page 267). When you change this setting you will be asked whether you want to keep the project content at its timecode positions. "Yes" means that all events will stay at their original timecode positions – i.e. they will be moved in relation to the start of the project. "No" means that all events keep their position relative to the project start.
Length	The length of the project.
Frame Rate	Used when synchronizing Cubase Essential with external equipment. If Cubase Essential is slave, this value is automatically set to the frame rate of the incoming sync signal. If Cubase Essential is the master, this determines the frame rate of the sent sync signal, see "Setting the Frame Rate" on page 265.
Display Format	This is the global display format used for all rulers and position displays in the program. However, you can make independent display format selections for the individual rulers and displays if you like. For descriptions of the different display format options, see "The ruler" on page 21.

Setting	Description
Display Offset	Offsets the time positions displayed in the ruler etc., allowing you to compensate for the Start position setting. Typically, if you synchronize Cubase Essential to an external source starting at a frame other than zero, you set the Start position to this value. However, if you still want the display in Cubase Essential to start at zero, set the Display Offset to the same value.
Sample Rate	The sample rate at which Cubase Essential records and plays audio.
Record Format/ File Type	When you record audio in Cubase Essential, the files that are created will be of this resolution and file type, see "Selecting a recording file format" on page 53.
Stereo Pan Law	Decides whether panning should use power compensation or not, see "About the "Stereo Pan Law" setting (audio channels only)" on page 86.

⚠ While most Project Setup settings can be changed at any time, you must select a sample rate once and for all when starting with a new project! All audio files must be of this sample rate to play back correctly.

Zoom and view options

Zooming in the Project window is done according to the standard zoom techniques, with the following special notes:

▪ When you are using the Zoom tool (magnifying glass), the result depends on the option "Zoom Tool Standard Mode: Horizontal Zooming Only" in the Preferences (Editing–Tools page).
If this is activated and you drag a selection rectangle with the Zoom tool, the window will only be zoomed horizontally (track height will not change). If the option is off, the window will be zoomed both horizontally and vertically.

▪ When using the vertical zoom sliders, the tracks are scaled relatively.
In other words, if you have made any individual track height adjustments (see below), the relative height differences are maintained.

You find the following options are available on the Zoom submenu on the Edit menu:

Option	Description
Zoom In	Zooms in one step, centering on the project cursor.
Zoom Out	Zooms out one step, centering on the project cursor.
Zoom Full	Zooms out so that the whole project is visible. "The whole project" means the timeline from the project start to the length set in the Project Setup dialog (see above).
Zoom to Selection	Zooms in horizontally and vertically so that the current selection fills the screen.

Option	Description
Zoom to Selection (Horiz)	Zooms in horizontally so that the current selection fills the screen.
Zoom to Event	This option is available only in the Sample Editor (see "Zooming" on page 142).
Zoom In Vertically	Zooms in one step vertically.
Zoom Out Vertically	Zooms out one step vertically.
Zoom In Tracks	Zooms in on the selected track(s) one step vertically.
Zoom Out Tracks	Zooms out the selected track(s) one step vertically.
Zoom Selected Tracks	This zooms in vertically on the selected track(s) and minimizes the height of all other tracks.

• If the option "Zoom while Locating in Time Scale" is activated in the Preferences (Transport page), you can also zoom by clicking in the main ruler and dragging up or down with the mouse button pressed.
Drag up to zoom out; drag down to zoom in.

• You can zoom the contents of parts and events vertically, using the waveform zoom slider in the top right corner of the event display.
This is useful when viewing quiet audio passages.

⚠ To get an approximate reading on the level of the audio events by viewing the waveforms, make sure this slider is all the way down. Otherwise, zoomed waveforms may be mistaken for clipped audio.

• If you activate the option Quick Zoom in the Preferences (Editing page), the contents of parts and events will not be continuously redrawn when you zoom manually.
Instead, the contents are redrawn once you have stopped changing the zoom – activate this if screen redraws are slow on your system.

Resizing tracks in the Track list

• You can change the height of an individual track by clicking on its lower border in the Track list and dragging up or down.
To change the height of all tracks simultaneously, hold down [Ctrl]/[Command] and resize one of the tracks in this way. If "Snap Track Heights" is activated on the Track scale pop-up (see below), the track height will change in fixed increments when you resize it.

⚠ This behavior is different when "Enlarge Selected Track" is activated on the Edit menu (see below).

• You can also change the width of the Track list area, by dragging the border between the Track list and the event display.

• By default, the controls shown for tracks in the Track list will adapt to the track size. This means that when resizing a track's height or width the controls will be placed where they best "fit in".
If you prefer to have the controls in fixed positions, you can deactivate the option "Wrap Controls" in the Track Controls settings dialog (see "Customizing track controls" on page 299).

• You can decide for each track type which controls should be shown in the Track list – see "Customizing track controls" on page 299.

• You can use the Track scale pop-up (opened by clicking the arrow button above the vertical zoom control) to set the number of tracks to view in the current Project window.
The track height will be adjusted to show only the number of tracks specified on the pop-up menu. By selecting "Zoom N Tracks" from the pop-up you can manually set the number of tracks to fit in the current Project window.
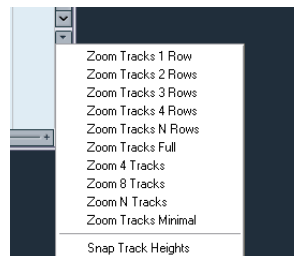
The Enlarge Selected Track option

When this option is activated on the Edit menu (or in the Preferences, Editing–Project & Mixer page), the selected track is enlarged automatically. This is useful if you are stepping through the tracks in the Track list, to check or edit the settings. The tracks will revert to the size they had before when they are deselected. You can adjust the size directly in the Track list if the default enlargement factor does not suit you.

While this is the program behavior you will want in most cases, it may be a disadvantage when changing the track height you started out with for one or more tracks (i.e. their "original" height, before "Enlarge Selected Track" was activated). As soon as you try to resize a track, it is selected and automatically enlarged. Instead of turning off "Enlarge Selected Track", resizing the desired track(s) and the activating "Enlarge Selected Track" again, you can resize a track in the Track list without selecting it.

Proceed as follows:

1. Move the mouse pointer over the lower border of the (unselected) track you want to resize.
The mouse pointer turns into a divider symbol.

2. Hold down [Alt]/[Option] and drag the lower border of the track until it reaches the desired height.
Now, when you select this track, (and "Enlarge Selected Track" is activated), it will be enlarged. It will revert to the changed size, when you select a different track.

Zoom presets and Cycle markers

The pop-up menu to the left of the horizontal zoom control allows you to select, create and organize zoom presets. These are useful if you want to toggle between different zoom settings (e.g. one where the whole project is displayed in the project window and another with a high zoom factor for detailed editing). With this pop-up menu, you can also zoom in on the area between cycle markers in the project.

Click here…

…to open the context menu.
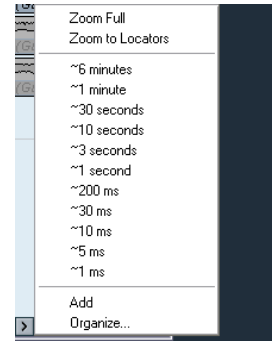
The upper part of the menu lists the zoom presets:

▪ To store the current zoom setting as a preset, select Add from the pop-up menu.
A dialog appears, allowing you to type in a name for the preset.

▪ To select and apply a preset, select it from the pop-up menu.

▪ The "Zoom Full" preset is always available. Selecting this option zooms out so that the whole project is visible. "The whole project" means the timeline from the project start to the length set in the Project Setup dialog (see "The Project Setup dialog" on page 22).

▪ If you want to delete a preset, select "Organize…" from the pop-up menu.
In the dialog that appears, select the preset in the list and click the Delete button. The preset is removed from the list.

▪ If you want to rename a preset, select "Organize…" from the pop-up menu.
In the dialog that appears, select the desired preset in the list and click the Rename button. A second dialog opens, allowing you to type in a new name for the preset. Click OK to close the dialogs.

⚠ Zoom presets are global for all projects, i.e. they are available in all projects you open or create.

The middle part of the pop-up lists any cycle markers you have added in the project:

▪ If you select a cycle marker from this menu, the event display is zoomed in to encompass the marker area (see "Markers" on page 38).

▪ You cannot edit the cycle markers in this pop-up menu. For information on editing markers, see .

⚠ Only the cycle markers you create in the current project are available on the menu.

Adjusting how parts and events are shown

The Preferences on the File menu (the Cubase Essential menu, under Mac OS X) contains several settings for customizing the display in the Project window.

The Event Display page contains common settings for all track types:

Option	Description
Colorize Event Background	Determines whether the backgrounds or "contents" (waveforms, etc.) of parts and events will be colorized, see "Handling tracks" on page 26.
Show Event Names	Determines whether the names of parts and events should be shown in the Project window.
Transparent Events	When this is activated, events and parts will be transparent, showing the waveforms and MIDI events only.
Show Data on Small Track Heights	If this is activated, the contents of events and parts will be shown, even if the height of a track is very small.

The Event Display–Audio page contains settings for audio events:

Option	Description
Interpolate Audio Images	If the option is deactivated, single sample values are drawn as "steps". If the option is activated they are interpolated to form "curves".
Wave Image Style	Determines whether audio waveforms should be displayed as solid images, frames or "inverted" images (solid + frame). This selection affects all waveform images in the Project window, Sample Editor and Audio Part Editor. Note that the "Framed" and "Solid and Framed" styles are more demanding for the computer. If the system feels slower in these modes, please switch back to "Solid" wave image style.
Show Event Volume Curves Always	If this is activated the "volume curves" created with the volume and fade handles are always shown – if not, the curves are only shown for selected events.
Fade Handles always on top	When this option is activated, the fade handles stay at the top of the event, and vertical help lines indicate the exact end or start points of fades.
Thick Fade Lines	If this option is activated, the fade lines and volume curves are thicker, increasing their visibility.

Option	Description
Show Waveforms	Determines whether audio waveforms should be shown at all.
Background Color Modulation	When this is activated, the backgrounds of audio waveforms are displayed in a different way, reflecting the waveform dynamics. This is especially useful to get an overview when working with small track heights.

The Event Display–MIDI page contains settings for MIDI parts:

Option	Description
Default Edit Action	Determines which editor should be opened when you double-click a MIDI part or select it and press [Ctrl]/[Command]-[E]: the Key, List, Drum or Score Editor. Note that this setting is overridden for tracks with drum maps if the option "Edit as Drums when Drum Map is assigned" (see below) is activated.
Part Data Mode	Determines if and how events in MIDI parts should be shown in the Project window: as score notes, as drum notes or as lines. If "No Data" is selected, events will not be shown at all. Note that this setting is overridden for tracks with drum maps if the option "Edit as Drums when Drum Map is assigned" (see below) is activated.
Show Controllers	Governs whether non-note events (controllers, etc.) should be shown in MIDI parts in the Project window.
Edit as Drums when Drum Map is assigned	If this is activated, parts on MIDI tracks with drum maps assigned will be shown with drum note symbols in the Project window. Also, the parts will automatically open in the Drum Editor when double-clicked (overriding the Default Edit Action setting above).
Note Name Style	Determines how MIDI note names (pitches) should be displayed in editors, etc.

The Event Display–Video page contains settings for video events:

| Option	Description
Show Video Thumbnails	When this is activated, thumbnail frames of the video contents are shown on the Video track.
Video Cache Size	This determines how much memory is available for video thumbnails. If you have long video clips and/or work with a large zoom factor (so that a lot of frames are shown in the thumbnails), you may have to raise this value.

Handling tracks

To add a track to the project, select "Add Track" from the Project menu and select a track type from the submenu that appears. The new track is added below the currently selected track in the Track list.

▪ The items on the "Add Track" submenu are also available on the context menu.
This is accessed by right-clicking in the Track list.
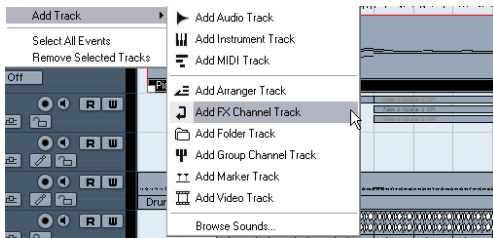
▪ If you select Audio, MIDI, Group Channel or Instrument from the Add Track submenu, a dialog opens, allowing you to insert several tracks in one go.
Just enter the desired number of tracks in the value field.

▪ For audio and group channel tracks, the channel configuration – mono or stereo – can be set in the Configuration pop-up.

▪ The Browse Sounds option in the Add Track dialog is described in the chapter "Working with track presets" on page 180.

▪ In the Preferences (Editing–Project & Mixer page), you can find the option "Auto Track Color Mode".
This offers you several options for automatically assigning colors to tracks that are added to the project.

Once you have created tracks, you can manipulate and re-arrange them in various ways:

▪ To rename a track, double-click in the name field and type in a new name.
If you hold down any modifier key when pressing [Return] to close the name field, all events on the track will get the name you entered.

▪ To select a track, click on it in the Track list.
A selected track is indicated by a light gray color in the Track list.

This track is selected.
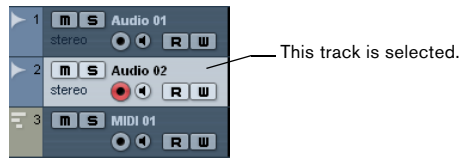
It is possible to select several tracks by pressing [Ctrl]/[Command] and clicking on them. [Shift]-click to select a continuous range of tracks.

▪ To move a track, click and drag it up or down in the list.

▪ To duplicate a track, complete with all contents and channel settings, right-click in the Track list and select "Duplicate tracks" from the context menu, or select "Duplicate tracks" from the Project menu.
The duplicated track will appear below the original track.

▪ You can select a default color for a track by activating "Show Track Colors" above the Track list and selecting a color from the Color pop-up menu on the toolbar. This color will be used for all events on the track and will also be shown in the Mixer. You can override the default track color for individual events and parts by using the Color tool or the Color Selector pop-up menu. For more information, see "Applying track and event colors" on page 301.
The option "Colorize Event Background" in the Preferences dialog (Event Display page) determines whether the backgrounds or waveforms of events will be colorized.

▪ To remove a track, right-click on it in the Track list and select "Remove Selected Tracks" from the context menu.
You can also remove multiple selected tracks, by selecting "Remove Selected Tracks" either from the context menu or from the Project menu.

▪ To change the track height of an individual track, click on its lower border in the Track list and drag up or down, see "Resizing tracks in the Track list" on page 23.

⇨ Note that you can also automatically enlarge the selected track, see "The Enlarge Selected Track option" on page 24.

Disabling audio tracks

Audio tracks can be disabled by selecting "Disable Track" from the Track list context menu. Disabling a track is similar to muting it (see "Muting events" on page 34), since a disabled track will not be played back. However, disabling a track not only "zeroes" the output volume from the track, but actually shuts down all disk activity for it. See "About track disable/enable" on page 47 for more information.

Adding events to a track

There are a number of ways to add events to a track:

• By recording (see "Basic recording methods" on page 51).

• By dragging files and dropping them on the track at the desired position.

You can create events by dragging and dropping from the following locations:

• The desktop
• The MediaBay and its related windows (see the chapter "The MediaBay" on page 169)
• The Pool
• The "Find media" dialog
• The Project window of another open project
• The Audio Part Editor of any open project
• The Sample Editor – press [Ctrl]/[Command] and drag to create an event of the current selection.
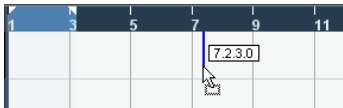
While you drag the clip in the Project window, its position will be indicated by a marker line and a numerical position box (see also "Using drag and drop" on page 161).

• By selecting "Audio File…" or "Video File…" from the Import submenu on the File menu.
This opens a file dialog, allowing you to locate the file you wish to import. When you import a file this way, a clip is created for the file and an event that plays the whole clip is inserted on the selected track, at the position of the project cursor.
You can also import MIDI files by using the Import submenu, but this works in a slightly different way (see "Exporting and importing standard MIDI files" on page 294).

• By grabbing audio CD tracks and converting them to audio files (see "Importing audio CD tracks" on page 291).

• By using Copy and Paste on the Edit menu.
This allows you to copy all kinds of events between projects. You can also copy events within the project, e.g. from the Sample Editor.

• By drawing.
Some types of events (markers and automation events) can be drawn directly into the Project window. For audio and MIDI tracks, you can draw parts (see "Creating parts" on page 28).

Audio file import options

When you are importing audio files there are a number of options concerning how the files should be treated by Cubase Essential:

• You can choose to copy the file into the audio folder of the project and have the project make reference to the copied file rather than the original file. This helps you keep your project "self-contained".
• Furthermore, you may want all files in the project to have the same sample rate and sample size (resolution).

The Preferences dialog (Editing–Audio page) contains a setting that lets you decide which options to use. Select one of the following options on the "On Import Audio Files" pop-up menu:
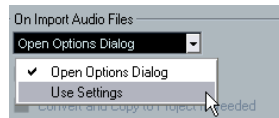
• Open Options Dialog
An Options dialog appears when you import, allowing you to select whether you want to copy the files to the Audio folder and/or convert them to the project settings. Please note the following:
– When importing a single file of a format other than the project settings, you can specify which properties (sample rate and/or resolution) should be changed.
– When importing multiple files at the same time, you can select to convert the imported files automatically if necessary, i.e. if the sample rate is different than the project's or the resolution is lower than the project setting.

▪ Use Settings

No Options dialog will appear when you import. Instead, you can choose to make any of the options below the pop-up the standard action(s). Activate any number of the following options to have them performed automatically each time you import audio files:

| Option	Description
Copy Files to Working Directory	If files are not already in the project's audio folder they are copied there before being imported.
Convert and Copy to Project If Needed	If files are not already in the project's audio folder they are copied there before being imported. Furthermore, if the files have a different sample rate or a lower resolution than the project settings, they are automatically converted.

Creating parts

Parts are containers for MIDI or audio events. If you record MIDI, a MIDI part is automatically created, containing the recorded events. You can also create empty audio or MIDI parts and later add events to them.

There are two ways to do this:

▪ Draw a part on a MIDI or audio track with the Pencil tool.
You can also draw parts by pressing [Alt]/[Option] and using the Arrow tool.

▪ Double-click with the Arrow tool on a MIDI or audio track, between the left and right locator.
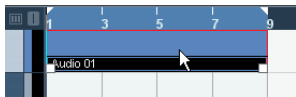
To add events to a MIDI part, you use the tools and functions in a MIDI editor (see "The Key Editor – Overview" on page 213). Adding events to audio parts is done in the Audio Part Editor (see "Window overview" on page 153) by pasting or by using drag and drop.

▪ You can also gather existing audio events into a part, by using the "Events to Part" function on the Audio menu.
This creates an audio part containing all selected audio events on the same track. To remove the part and make the events appear as independent objects on the track again, select the part and use the "Dissolve Part" function on the Audio menu.

Auditioning audio parts and events

Audio parts and events can be auditioned in the Project window with the Play tool:

⚠ When auditioning, the Main Mix bus is used.

1. Select the Play tool.
Note that the Play tool and the Scrub tool share the same tool button. If the tool icon on the toolbar doesn't show a speaker symbol, first click on the icon to select it, then click again and select "Play" from the pop-up menu.
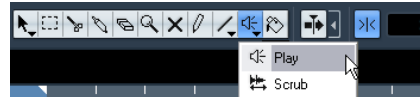
2. Click where you want playback to start, and keep the mouse button pressed.
Only the track on which you click is played back, starting at the click position.

3. Release the mouse button to stop playback.

Scrubbing

The Scrub tool allows you to locate positions in the audio by playing back, forwards or backwards, at any speed:

1. Select the Scrub tool.
Note that the Play tool and the Scrub tool share the same tool button. If the tool icon on the toolbar doesn't show a "scrub symbol", first click on the icon to select it, then click again and select "Scrub" from the pop-up menu.

2. Click at the desired position and keep the mouse button pressed.
The project cursor is moved to the position at which you click.

3. Drag to the left or right.
The project cursor follows the mouse pointer and the audio is played back. The speed and pitch of the playback depend on how fast you move the pointer.

You can adjust the responsiveness of the Scrub function in the Preferences (Transport–Scrub page).

▪ Note that scrubbing can be quite a burden on your system. To avoid playback problems, you will find the "CPU Saving Scrub Mode" option in the Preferences (Transport–Scrub page).
When you activate this option, scrubbing will be less demanding on the processor. This can be very useful when scrubbing in a large project, where the "normal" scrub behavior leads to processing overloads. When "CPU Saving Scrub Mode" is activated, the effects are disabled for scrubbing and the resampling quality is lower.

Editing parts and events

This section describes techniques for editing in the Project window. If not explicitly stated, all descriptions apply to both events and parts, even though we use the term "event" for convenience.

⇨ When you are using the tools for editing, you can in many cases get additional functions by pressing modifier keys (e.g. pressing [Alt]/[Option] and dragging with the Arrow tool creates a copy of the dragged event).

On the following pages, the default modifier keys are described – you can customize these in the Preferences (Editing–Tool Modifiers page), see "Setting up tool modifier keys" on page 308.

Selecting events

Selecting events is done using any of the following methods:

▪ Use the Arrow tool.
The standard selection techniques apply.

▪ Use the Select submenu on the Edit menu.
The options are:

Option	Description
All	Selects all events in the Project window.
None	Deselects all events.
In Loop	Selects all events that are partly or wholly between the left and right locator.
From Start to Cursor	Selects all events that begin to the left of the project cursor.
From Cursor to End	Selects all events that end to the right of the project cursor.
All on Selected Tracks	Selects all events on the selected track.
Select Event	This is available in the Sample Editor (see "Window overview" on page 140).
Left/Right Selection Side to Cursor	These two functions are only used for range selection editing (see "Creating a selection range" on page 35).

⚠ Note that these functions work differently when the Range Selection tool is selected (see "Creating a selection range" on page 35).

▪ Select all events on a track by right-clicking on it in the Track list and selecting "Select All Events" from the context menu.

▪ You can also use the arrow keys on the computer keyboard to select the closest event to the left, right, above or below.
If you press [Shift] and use the arrow keys, the current selection will be kept, allowing you to select several events.

▪ If the option "Auto Select Events under Cursor" is activated in the Preferences (Editing page), all events on the selected track(s) that are "touched" by the project cursor are automatically selected.
This can be helpful when rearranging your project, since it allows you to select whole sections (on all tracks) by selecting all tracks and moving the project cursor.

▪ It is also possible to select ranges, regardless of the event and track boundaries.
This is done using the Range Selection tool (see "Range editing" on page 35).

▪ Note that in the Preferences (Editing page), you can find the option "Use Up/Down Navigation Commands for selecting Tracks only".
By default, tracks are selected with the up/down arrow keys on the computer keyboard. However, these are also used for selecting events (see above) which can lead to confusing results in some cases. Since track selection is a most vital operation in both editing and mixing, you have the option to use the navigation controls for track selection only. The following applies:

▪ When this option is deactivated and no event/part is selected in the Project window, the up/down arrow keys on the computer keyboard are used to step through the tracks in the Track list – just as you would expect this to work.

▪ When this option is deactivated and an event/part is selected in the Project window, the up/down arrow keys still step through the tracks in the Track list – but on the currently selected track, the first event/part will automatically be selected as well. If this is not the desired behavior, you have to activate "Use Up/Down Navigation Commands for selecting Tracks only".

▪ When this option is activated, the up/down arrow keys are only used to change the track selection – the current event/part selection in the Project window will not be altered.

▪ Also in the Preferences (Editing–Tools page), you can find the Cross Hair Cursor options section.
This allows you to display a cross hair cursor when working in the Project window and editors, facilitating navigation and editing, especially when arranging in large projects. You can set up the colors for the line and the mask of the cross hair cursor, and define its width. The cross hair cursor works as follows:

▪ When the Selection tool (or one of its subtools) is selected, the cross hair cursor appears when you start moving/copying a part/event, or when using the event trim handles.
▪ When the Pencil tool, the Scissors tool or any other tool that makes use of this function is selected, the cross hair cursor appears as soon as you move the mouse over the event display.
▪ The cross hair cursor is only available for tools where such a function is of any use. The Mute tool for example does not use a cross hair cursor, as you have to click directly on an event to mute it.

Moving events

To move events in the Project window, use the following methods:

▪ Click and drag to a new position.
All selected events will be moved, maintaining their relative positions. You can only drag events to tracks of the same type. If Snap is activated, this determines to which positions you can move the events (see "The Snap function" on page 40).
Note also that you can restrict movement to be either horizontal or vertical only, by holding down [Ctrl]/[Command] while dragging.

⚠ You will note that there is a slightly delayed response when you move an event by dragging. This helps you avoid accidentally moving events when you click on them in the Project window. You can adjust this delay with the Drag Delay setting in the Preferences (Editing page).

▪ Select the event and edit the Start position in the info line.

▪ Use the "Move to" options on the Edit menu.
The following options are available:

Option	Description
Cursor	Moves the selected event to the project cursor position. If there are several selected events on the same track, the first event will start at the cursor, and the following will be lined up end-to-start after the first one.

Option	Description
Origin	Moves the selected events to their original positions, i.e. the positions at which they were originally recorded.
Front/Back	This function doesn't actually change the position of the events, but moves the selected events to the front or back, respectively. This is useful if you have overlapping events, and want to see one that is partially obscured. For audio events, this is an extra important feature, since only the visible sections of events will be played back. Moving an obscured audio event to front (or moving the obscuring event to back) will allow you to hear the whole event on playback (see also "Overlapping events" on page 154). Note that it is also possible to use the "To Front" function on the event context menu for this.

▪ Use the Nudge buttons in the toolbar.
These move the selected events to the left or right. The amount of movement depends on the selected display format (see "The Project Setup dialog" on page 22) and the value set on the Grid pop-up menu.
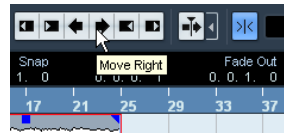
⚠ When the Range Selection tool is used, the Nudge buttons move the selection range (see "Moving and duplicating" on page 36).

⇨ The Nudge buttons are not visible in the toolbar by default.
You can decide which items should be visible by right-clicking in the toolbar and activating the corresponding option on the context menu. See "The setup context menus" on page 298 for more information.

Duplicating events

Events can be duplicated in the following ways:

▪ Hold down [Alt]/[Option] and drag the event to a new position.
If Snap is activated, this determines to which positions you can copy the events (see "The Snap function" on page 40).

⚠ If you hold down [Ctrl]/[Command] as well, movement direction is restricted to either horizontal or vertical. That means if you drag an event vertically it cannot be moved horizontally at the same time.

• Audio and MIDI parts can also be duplicated by pressing [Alt]/[Option]-[Shift] and dragging.
This creates a shared copy of the part. If you edit the contents of a shared copy, all other shared copies of the same part are automatically edited in the same way.

Shared copies are indicated by showing the name in italic text and an icon in the right corner of the part.

Note:

• When you duplicate audio events, the copies are always shared. This means that shared copies of audio events always refer to the same audio clip (see "Audio processing" on page 131).

• You can convert a shared copy to a real copy by selecting "Convert to Real Copy" from the Edit menu. This creates a new version of the clip (that can be edited independently) and adds this to the Pool. Note that no new files are created by this operation – for that you need to use the "Bounce Selection" function from the Audio menu.

• Selecting "Duplicate" from the Edit menu creates a copy of the selected event and places it directly after the original.
If several events are selected, all of these are copied "as one unit", maintaining the relative distance between the events.

• Selecting "Repeat…" from the Edit menu opens a dialog, allowing you to create a number of copies (regular or shared) of the selected event(s).
This works just like the Duplicate function, but you can specify the number of copies.

• You can also perform the Repeat function by dragging: Select the event(s) to repeat, press [Alt]/[Option], click the handle in the lower right corner of the last selected event and drag to the right.
The longer to the right you drag, the more copies are created (as shown by the tooltip).
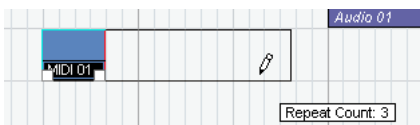
• Selecting "Fill Loop" from the Edit menu creates a number of copies starting at the left locator and ending at the right locator.
The last copy is automatically shortened to end at the right locator position.
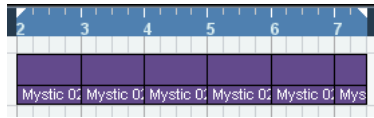
Using Cut, Copy and Paste

You can cut or copy selected events, and paste them in again, using the functions on the Edit menu.

• When you paste an audio event, it is inserted on the selected track, positioned so that its snap point is aligned with the cursor position.
If the selected track is of the wrong type, the event will be inserted on its original track. See "The Snap function" on page 40 for information about the snap point.

• If you use the "Paste at Origin" function, the event is pasted at its original position (the position from which you cut or copied it).

Renaming events

By default, audio events show the name of their clip, but you can enter a separate descriptive name for separate events if you like. This is done by selecting the event and typing in a new name in the "Description" field in the info line.

• You can also give all events on a track the same name as the track by changing the track name, holding down a modifier key and pressing [Return].
See "Handling tracks" on page 26.

Splitting events

You can split events in the Project window in the following ways:

• Click with the Scissors tool on the event you want to split.
If Snap is activated, this determines the exact split position (see "The Snap function" on page 40). You can also split events by pressing [Alt]/[Option] and clicking with the Arrow tool.

▪ Select "Split at Cursor" from the Edit menu.

This splits the selected events at the position of the project cursor. If no events are selected, all events (on all tracks) that are intersected by the project cursor will be split.

▪ Select "Split Loop" from the Edit menu.

This splits events on all tracks at the left and right locator positions.

⇨ If you split a MIDI part so that the split position intersects one or several MIDI notes, the result depends on the option "Split MIDI Events" in the Preferences (Editing–MIDI page).

If the option is activated, the intersected notes will be split (creating new notes at the beginning of the second part). If it is deactivated, the notes will remain in the first part, but "stick out" after the end of the part.

Gluing events together

You can glue events together using the Glue Tube tool. There are three possibilities:

▪ Clicking on an event with the Glue Tube tool glues it together with the next event on the track. The events do not have to touch one another.

The result is a part containing the two events, with one exception: If you first split an event and then glue the two sections together again (without moving or editing them first), they become a single event again.

▪ You can select several events on the same track and click on one of them with the Glue Tube tool.

A single part is created.

▪ When you hold down [Alt]/[Option] while clicking on an event with the Glue Tube tool, this event will be glued together with all following events on this track.

You can change the default key command for this in the Preferences (Editing–Tool Modifiers page).

Resizing events

Resizing events means to move their start or end positions individually. In Cubase Essential, there are three types of resizing:

Resizing type	Description
Normal Sizing	The contents of the event stay fixed, and the start or end point of the event is moved to "reveal" more or less of the contents.
Sizing Moves Contents	The contents follow the moved start or end of the event (see the figure below).
Sizing Applies Time Stretch	The contents will be time stretched to fit the new event length (see the separate section "Resizing events using time stretch" on page 33).

To select one of the resizing modes, select the Arrow tool and then click again on the Arrow tool icon on the toolbar. This opens a pop-up menu from which you can select one of the resizing mode options.
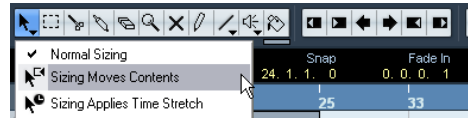
The icon on the toolbar will change, indicating the selected resizing mode.

The actual resizing is done by clicking and dragging the lower left or right corner of the event. If Snap is activated, the Snap value determines the resulting length (see "The Snap function" on page 40).
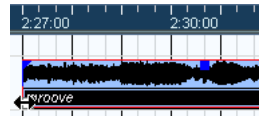
Normal sizing
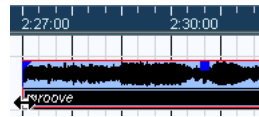
Sizing moves contents.

▪ If several events are selected, all will be resized in the same way.

▪ You can also resize events with the Scrub tool.

This works just the same as when resizing with the Arrow tool, but the audio under the pointer is played back (scrubbed) while you drag.

▪ It is also possible to resize events by using the Trim buttons (located in the Nudge palette) on the toolbar.
This will move the start or end position of the selected Event(s) by the amount set on the Grid pop-up menu. The sizing type currently selected applies to this method too, with the exception of "Sizing Applies Time Stretch" which is not possible with this method. You can also use key commands for this (by default, press [Ctrl]/[Command] and use the left and right arrow key).

⇨ Note that the Nudge palette is not visible in the toolbar by default. See "The setup context menus" on page 298 for instructions on how to show and hide items in the toolbar.

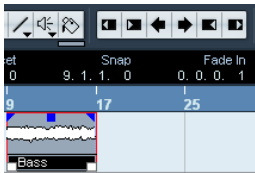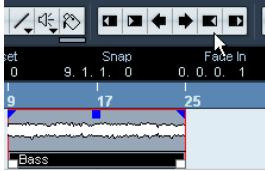⇨ When resizing events, any automation data will not be taken into account.

Resizing events using time stretch

If you want to resize a part and make its contents "fit" the new size, you should use this option. Proceed as follows:

1. Click the Arrow icon on the toolbar and select the "Sizing Applies Time Stretch" option from the pop-up menu.

2. Point close to the end point of the part you want to stretch.

3. Click and drag left or right.
When you move the mouse, a tooltip shows the current mouse position and length of the part. Note that the snap value applies, as with any part operation.
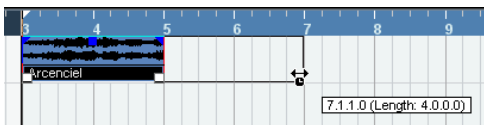
4. Release the mouse button.
The part is "stretched" or "compressed" to fit the new length.
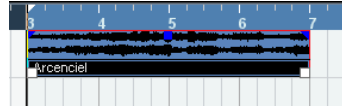
▪ For MIDI parts, this means that the note events are stretched (moved and resized).
Controller data will be moved.

▪ For audio parts, this means that the events are moved, and that the referenced audio files are time stretched to fit the new length.
A dialog shows the progress of the time stretch operation.

Sliding the contents of an event or part

You can move the contents of an event or part without changing its position in the Project window. By default, this is done by pressing [Alt]/[Option]-[Shift], clicking in the event or part and dragging to the left or right.

⚠ When sliding the contents of an audio event, you cannot slide past the start or end of the actual audio clip. If the event plays the whole clip, you cannot slide the audio at all.

Grouping Events

Sometimes it is useful to treat several events as one unit. This can be done by grouping them: Select the events (on the same or different Tracks) and select "Group" from the Edit menu.
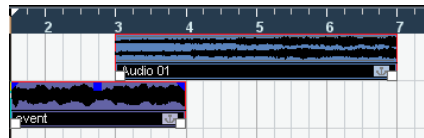
Grouped events are indicated by a group icon in the right corner.

If you edit one of the grouped events in the Project window, all other events in the same group are affected too (if applicable).

Group editing operations include:

▪ Selecting events.
▪ Moving and duplicating events.
▪ Resizing events.

- Adjusting fade-in and fade-out (audio events only, see "Creating fades" on page 66).
- Splitting events (splitting one event will automatically split any other grouped events that are intersected by the split position).
- Locking events.
- Muting events (see below).
- Deleting events.

Locking events

If you want to make sure you don't edit or move an event by accident, you can lock it. Locking can affect one (or any combination) of the following properties:

Lock Options	Description
Position	If this is locked, the event cannot be moved.
Size	If this is locked, the event cannot be resized.
Other	If this is locked, all other editing of the event is disabled. This includes adjusting the fades and event volume, processing, etc.

- To specify which of these properties should be affected by the Lock function, use the "Lock Event Attributes" pop-up menu in the Preferences (Editing page).
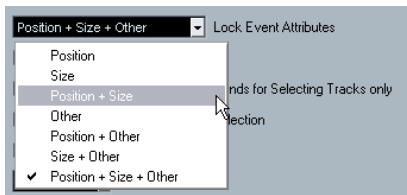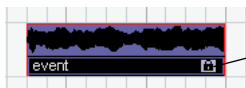

- To lock events, select them and select "Lock…" from the Edit menu.
The events will be locked according to the options specified in the Preferences.

The padlock symbol indicates that one or more of the lock options are activated for the event.

- You can adjust the lock options for a locked event by selecting it and selecting "Lock…" from the Edit menu again.
This opens a dialog in which you can activate or deactivate the desired lock options.

- To unlock an event (turn off all lock options), select it and select "Unlock" from the Edit menu.

- It is also possible to lock a whole track, by clicking the padlock symbol in the Track list or in the Inspector.
This disables all editing of all events on the track.

Muting events

To mute individual events in the Project window, proceed as follows:

- To mute or unmute a single event, click on it with the Mute tool.

- To mute or unmute several events, select them – either by using the standard selection techniques, or by using one of the options on the Select submenu on the Edit menu – and click on one of the selected events with the Mute tool.
All selected events will be muted.

- You can also click in an empty area with the Mute tool and drag a selection rectangle around several events you want to mute or unmute, and then click on one of them with the Mute tool.

- You can mute events by selecting them and selecting "Mute" from the Edit menu.
Similarly, you can unmute the selected events by selecting "Unmute" from the Edit menu.

- You can also change the mute status of selected events on the info line.

Muted events can be edited as usual (with the exception of adjusting fades), but are not played back.
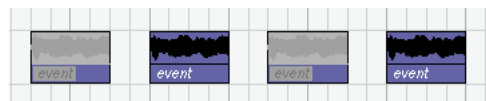
Muted events are "grayed out".

- You can also mute whole tracks by clicking the Mute ("M") button in the Track list, the Inspector or the Mixer.
Clicking the Solo ("S") button for a track mutes all other tracks. Note that there are two modes for the track solo function:
If the option "Enable Solo on Selected Track" is activated in the Preferences (Editing–Project & Mixer page) and you have soloed a track, select-

ing another track in the Track list will automatically solo that track instead – the solo state "moves" with the track selection.

If the option isn't activated, the track you solo stays soloed, regardless of the selection.

Removing events

To remove an event from the Project window, use any of the following methods:

▪ Click on the event with the Erase tool.

Note that if you press [Alt]/[Option] while you click, all following events on the same track will be deleted, but not the event you clicked and all events before it.

▪ Select the event(s) and press [Backspace], or select "Delete" from the Edit menu.

Creating new files from events

An audio event plays a section of an audio clip, which in turn refers to one or more audio files on the hard disk. However, in some situations you may want to create a new file that consists only of the section played by the event. This is done with the function "Bounce Selection" on the Audio menu:

1. Select one or several audio events.

2. Set up fade in, fade out and event volume (on the info line or using the volume handle) as desired.

These settings will be applied to the new file. For details on fades and event volume, see "Creating fades" on page 66.

3. Select "Bounce Selection" from the Audio menu.

You are asked whether you want to replace the selected event or not.

▪ If you click "Replace", a new file is created, containing only the audio in the original event. A clip for the new file is added to the Pool, and the original event is replaced by a new event playing the new clip.

▪ If you click "No", a new file is created and a clip for the new file is added to the Pool.

The original event is not replaced.

You can also apply the Bounce Selection function to an audio part. In that case, the audio from all events in the part will be combined into a single audio file. If you choose "Replace" when asked, the part will be replaced with a single audio event playing a clip of the new file.

Range editing

Editing in the Project window isn't necessarily restricted to handling whole events and parts. You can also work with selection ranges, which are independent from the event/part and track boundaries.

Creating a selection range

To make a selection range, drag with the Range Selection tool.

When the Range Selection tool is selected, the Select submenu on the Edit menu has the following items for making selection ranges:

Option	Description
All	Makes a selection that covers all tracks, from the start of the project to the end (as defined by the Length setting in the Project Setup dialog).
None	Removes the current selection range.
In Loop	Makes a selection between the left and right locator, on all tracks.
From Start to Cursor	Makes a selection on all tracks, from the start of the project to the project cursor.
From Cursor to End	Makes a selection on all tracks, from the project cursor to the end of the project.
All on Selected Tracks	Only used for event selection (see "Selecting events" on page 29).
Select Event	This is available in the Sample Editor (see "Using the Select menu" on page 144).
Left Selection Side to Cursor	Moves the left side of the current selection range to the project cursor position.
Right Selection Side to Cursor	Moves the right side of the current selection range to the project cursor position.

▪ Double-clicking on an event with the Range Selection tool creates a selection range encompassing the event.

If you hold down [Shift] you can double-click several events in a row, and the selection range will expand to encompass them all. Double-clicking a second time on an event opens it for editing in the Sample Editor.

Adjusting the size of the selection range

You can adjust the size of a selection range in the following ways:

▪ By dragging its edges.
The pointer takes the shape of a double arrow when you move it over an edge of the selection range.

▪ By holding down [Shift] and clicking.
The closest selection range edge will be moved to the position at which you clicked.

▪ By adjusting the selection range start or end position on the info line.

▪ By using the Trim buttons on the toolbar.
The left Trim buttons will move the start of the selection range and the right buttons will move the end. The edges will be moved by the amount specified on the Grid pop-up.
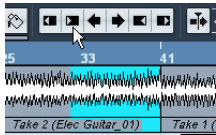
Clicking this Trim button…
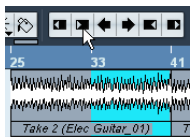
…will move the start of the selection range to the right by 1beat.

▪ By using the Nudge buttons on the toolbar.
These will move the whole selection range to the left or the right. The amount of movement depends on the selected display format (see "The Project Setup dialog" on page 22) and the value specified on the Grid pop-up menu.

⚠ Note that the contents of the selection are not moved – using the Nudge buttons is the same as adjusting the start and end of the selection range at the same time, by the same amount.

⇨ The Trim buttons and the Nudge buttons are located in the Nudge palette, which is not visible in the toolbar by default.
See "The setup context menus" on page 298 for instructions on how to show and hide items in the toolbar.

Making selection ranges for several non-contiguous tracks

You can create selection ranges that cover several tracks by pressing [Alt]/[Option]-[Shift]. However, it is also possible to exclude tracks from a selection range:

1. Create a selection range from the first to the last desired track.

2. Press [Alt]/[Option] and click in the selection range on the tracks you want to exclude from the selection.
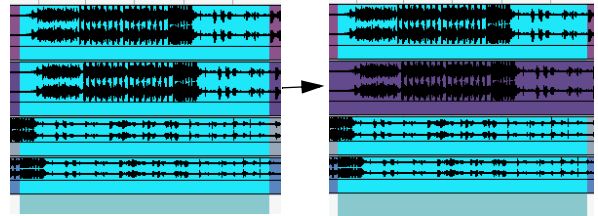
3. In the same manner, you can add a track to the selection range by [Alt]/[Option]-clicking in the selection range area on the track.

Moving and duplicating

▪ To move a selection range, click and drag it to a new position.
This will move the contents of the selection range to the new position. If the range intersected events or parts, these will be split before moving, so that only the sections within the selection range are affected.

▪ To duplicate a selection range, hold down [Alt]/[Option] and drag.
You can also use the Duplicate, Repeat and Fill Loop functions, just as when duplicating events (see "Duplicating events" on page 30).

Using Cut, Copy and Paste

When working with selection ranges, you can either use Cut, Copy and Paste on the Edit menu, or use the functions "Cut Time" and "Paste Time" on the Range submenu on the Edit menu. These work differently to their related functions on the Edit menu:

Function	Description
Cut	Cuts out the data in the selection range and moves it to the clipboard. The selection range is replaced by empty track space in the Project window, meaning that events to the right of the range keep their positions.
Copy	Copies the data in the selection range to the clipboard.

Function	Description
Paste	Pastes the clipboard data at the start position and track of the current selection. Existing events are not moved to make room for the pasted data.
Paste at Origin	Pastes the clipboard data back at its original position. Existing events are not moved to make room for the pasted data.
Cut Time	Cuts out the selection range and moves it to the clipboard. Events to the right of the removed range are moved to the left to fill out the gap.
Paste Time	Pastes the clipboard data at the start position and track of the current selection. Existing events are moved to make room for the pasted data.
Paste Time at Origin	Pastes the clipboard data back at its original position. Existing events are moved to make room for the pasted data.

Deleting selection ranges

Again, you can either use "regular" Delete or "Delete Time":

▪ If you use the Delete function on the Edit menu (or press [Backspace]), the data within the selection range is replaced by empty track space.
Events to the right of the range keep their position.

▪ If you use "Delete Time" on the Edit menu's Range submenu, the selection range is removed and events to the right are moved to the left to close up the gap.

Other functions

On the Range submenu on the Edit menu, you will find three more range editing functions:

Function	Description
Split	Splits any events or parts that are intersected by the selection range, at the positions of the selection range edges.
Crop	All events or parts that are partially within the selection range are cropped, that is, sections outside the selection range are removed. Events that are fully inside or outside the selection range are not affected.
Insert Silence	Inserts empty track space from the start of the selection range. The length of the silence equals the length of the selection range. Events to the right of the selection range start are moved to the right to "make room". Events that are intersected by the selection range start are split, and the right section is moved to the right.

The Preferences dialog
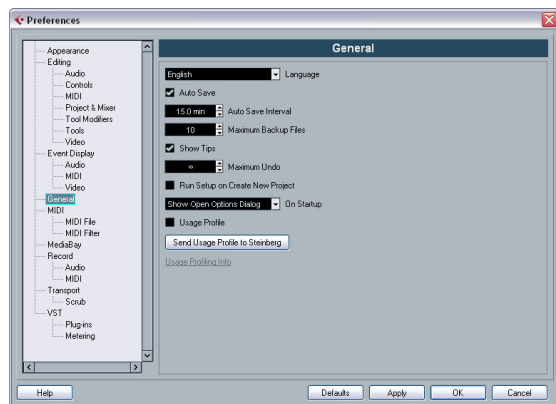
When you open the File menu (the Cubase Essential menu on a Mac) and select "Preferences…", the Preferences dialog is opened. This dialog provides a large number of options and settings that control the global behavior of Cubase Essential.

The dialog has a number of pages, each containing options and settings belonging to a particular topic.

▪ In the list on the left, click on one of the entries to open the corresponding page.

▪ You can find detailed descriptions of all Preferences options in the dialog help, opened by clicking the Help button at the bottom left of the dialog.

Folder tracks

Moving tracks into a folder is a way to structure and organize tracks in the Project window. By grouping tracks in folder tracks, you can solo and mute them in a quicker and easier way and perform editing on several tracks as one entity. Folder tracks can contain any type of track including other folder tracks.
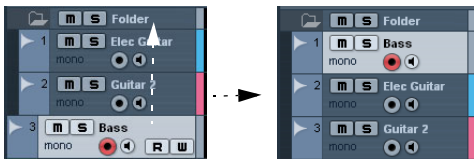
A folder track ——————

Tracks in the folder ——————

Handling folder tracks

▪ Creating a folder track

Select "Add Track" from the Project menu and select "Folder" from the submenu that appears, or right-click in the Track list and select "Add Folder Track" from the context menu to create a folder track.

▪ Moving tracks into a folder

In the Track list, click on a track that you want to move into a folder and drag it onto a folder track. A green arrow pointing to a folder appears when you drag the track onto the folder track in the list. The track is placed in the folder track, and all parts and events on the track will be represented by a corresponding folder part (see below). You can also create sub-folders by moving one folder track into another. For example, you could have a folder containing all the vocals in a project, and each vocal part could have a folder containing all the takes for easier handling etc.

▪ Removing tracks from a folder

Drag a track out of the folder and release it in the Track list to remove it from the folder.

▪ Hiding/showing tracks in a folder

Click on the "Expand/Collapse Folder" button (the folder icon) to hide or show the tracks located in a folder. Hidden tracks are played back as usual.

▪ Muting and soloing folder tracks

Click the Mute or Solo button on the folder track to mute or solo all tracks in the folder as one unit.

Working with folder parts

A folder part is a graphic representation of events and parts on the tracks in the folder. Folder parts indicate the position and length of the events and parts, as well as on which track they are (their vertical position). If part colors are used, these are also shown in the folder part.

Any Project window editing you perform to a folder part affects all the events and parts it contains. You can select several folder parts if you like – this allows you to handle and edit them together. The editing you can perform includes:

▪ Moving a folder part. This will move its contained events and parts (possibly resulting in other folder parts, depending on how the parts overlap).

▪ Using cut, copy and paste.
▪ Deleting a folder part. This will delete its contained events and parts.
▪ Splitting a folder part with the Scissors tool.
▪ Gluing folder parts together with the Glue tube tool. This will only work if the adjacent folder parts contain events or parts on the same track.
▪ Resizing a folder part resizes the contained events and parts according to the selected resizing method, see "Resizing events" on page 32.
▪ Muting a folder part. This will mute its contained events and parts.

Tracks inside a folder can be edited as one entity by performing the editing directly on the folder part containing the tracks. You can also edit individual tracks within the folder by showing the contained tracks, selecting parts and opening editors as usual.

Double-clicking a folder part opens the editors for the corresponding track classes present in the folder. The following applies:

▪ All MIDI parts located on the tracks within the folder are displayed as if they were on the same track, just like when opening the Key Editor with several MIDI parts selected.
To be able to easily discern the different tracks in the editor, give each track a different color in the Project window and use the "Part Colors" option in the editor (see "Coloring notes and events" on page 217).

▪ If the folder contains tracks with audio events and/or audio parts, the Sample and/or Audio Part Editors are opened with each audio event and audio part in a separate window.

Markers

Markers are used to locate certain positions quickly. If you often find yourself jumping to a specific position within a project, you should insert a marker at this position. There are two types of markers:

▪ Cycle markers allow you to store the start and end positions of a range.
On the Marker track they are shown as two markers bridged by a horizontal line. They are ideal for setting sections of a song, for example "Intro", "Verse", and "Chorus", this enables you to quickly navigate to the song sections, and also to optionally repeat the section (by activating Cycle on the Transport panel). Cycle markers can freely overlap.

▪ Standard markers store a specific position.

⇨ The left and right locators are handled separately – see .

Editing markers in the Marker window
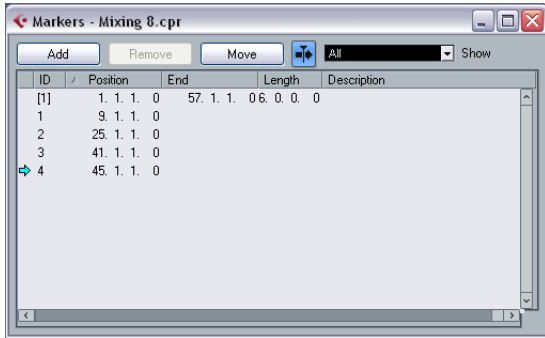
The Marker window lists the markers in the order in which they occur in the project. To open the Marker window, select "Markers" from the Project menu, click the "Show" button in the Marker section on the Transport panel or use the key command (by default [Ctrl]/[Command]-[M]).

The Marker window is divided into six columns:

| Column	Description
Locate (left-most column)	If you click in this column the project cursor will be moved to the corresponding marker position. A blue arrow indicates the marker at the project cursor position (or the closest marker before the project cursor).
ID	In this column you can edit marker ID numbers. Each time you add a marker, it is automatically and sequentially assigned an ID number, starting from ID 1. IDs for cycle markers are shown in brackets and start from [1]. The nine first markers (1 to 9) can be recalled by using key commands (by default [Shift]-[1] to [9] on the typewriter part of the keyboard).
Position	In this column you can view and edit the markers' time positions (or start positions for cycle markers).
End	In this column you can view and edit the end positions of cycle markers.
Length	In this column you can view and edit the length of cycle markers.
Description	Here you can enter names or descriptions for markers.

Click on a column heading to sort the marker list by that column. The Marker columns can also be reordered by dragging and dropping the column headers.

The following actions can be performed in the Marker window:

▪ **Adding markers**
Click the Add button or press [Ins] (Windows only) on the computer keyboard to add position markers at the current project cursor position. Select "Cycle Markers" from the Show pop-up menu and click the Add button to add a cycle marker between the left and right locator.

▪ **Removing markers**
Select a marker and click the Remove button to remove it.

▪ **Moving marker positions**
Set the project cursor to the position to which you want to move (or re-program) a marker, select the marker that you want to change in the Marker window and click the Move button. If a cycle marker is selected, the Move operation affects the cycle marker start position, the length of the range is not affected. You can also move markers by editing their position numerically in the Position column.

Editing markers on the Marker track
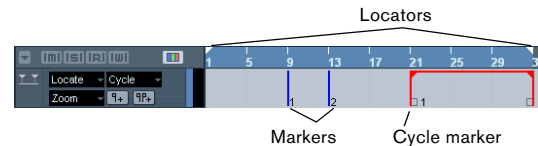
The Marker track is used for viewing and editing markers. Any changes made on the Marker track are reflected in the Marker window and vice versa. Standard position markers are shown as vertical lines with the marker name (if assigned) and number beside it. If you select the Marker track, all markers are shown in the Inspector.

To add the Marker track to the Project, select "Marker" from the Add Track submenu of the Project menu (or right-click in the Track list and select "Add Marker Track"). You can only have one Marker track in a project.

The following editing functions can be performed directly on the Marker track:

▪ **Adding markers**
Press the [Insert] key (Win) or the "Add Marker" button in the Track list, to add a position marker at the current cursor position during playback. Click the "Add Cycle Marker" button in the Track list, to add a cycle marker at the left and right locator positions.

Add Marker/Add Cycle Marker buttons

▪ **Selecting markers**

Use the standard techniques.

▪ **Drawing markers**

Use the Pencil tool (or press [Alt]/[Option] and use the Arrow tool) to draw position markers. Snap is taken into account.
Hold down [Ctrl]/[Command] while using the Pencil or the Arrow tool to draw cycle markers. Snap is taken into account.

▪ **Resizing**

Select and drag a cycle marker by the handles that appear at the bottom of the start and end events to resize it. This can also be done numerically on the info line.

▪ **Moving**

Click and drag, or edit the positions on the info line to move a marker. Snap is taken into account if activated.

▪ **Removing**

Select a position marker and press [Delete] or use the Erase tool to remove it.
Click with the Erase tool to delete a cycle marker. If you hold down [Alt]/[Option] when you click, all consecutive markers will also be deleted.

▪ **Naming**

Select a marker and enter a name on the info line.

▪ **Moving the left and right locators**

Double-click on a cycle marker or select it from the Cycle pop-up menu in the Track list, to move the left and right locators to encompass the cycle marker.
Use the numeric pad keys [1] and [2] to move the project cursor position to the start or the end of the cycle marker. You can also use key commands for this – see "Editing markers using key commands" on page 40.

▪ **Zooming**

Select a cycle marker on the Zoom pop-up menu, to zoom in the event display to encompass the selected range only (see the section "Zoom presets and Cycle markers" on page 24).
You can also do this by pressing [Alt]/[Option] and double-clicking on the cycle marker in the event display.

▪ **Making range selections in the Project window**

Double-click with the Range Selection tool between any two markers to create a selection range between the markers, spanning all tracks in the project. This is a quick way to move or copy (hold down [Alt]/[Option]) complete sections of the project (on all tracks).

Editing markers using key commands

You can use key commands for marker operations, see "Transport category" on page 311.

Options

The Snap function

The Snap function helps you to find exact positions when editing in the Project window. It does this by restricting horizontal movement and positioning to certain positions. Operations affected by Snap include moving, copying, drawing, sizing, splitting, range selection, etc.

▪ You turn Snap on or off by clicking the Snap icon in the toolbar.

Snap activated.

When you are moving audio events with Snap activated, it isn't necessarily the beginning of the event that is used as Snap position reference. Instead, each audio event has a snap point, which you can set to a relevant position in the audio (such as a downbeat, etc.).

The snap point is preferably set in the Sample Editor since it allows for a higher degree of precision (see "Adjusting the snap point" on page 143). You can however also set the snap point directly in the Project window, in the following way:

1. Select an event.

2. Place the project cursor at the desired position within the selected audio event.

3. Pull down the Audio menu and select "Snap Point To Cursor".
The snap point is set at the cursor position.
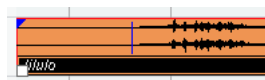
The snap point for an event is displayed as a blue line in the Project window.

Exactly how Snap works depends on which mode is selected on the Snap mode pop-up menu.

The following sections describe the different Snap modes:

Grid

In this mode, the Snap positions are set with the Grid Type pop-up menu to the right. The options depend on the display format selected for the ruler. For example, if the ruler is set to 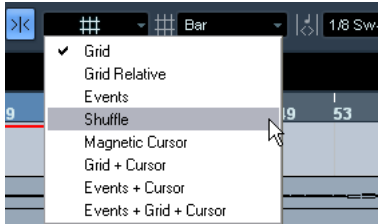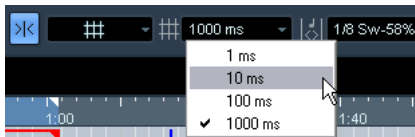show bars and beats, the grid can be set to bars, beats or the quantize value set with the next pop-up menu to the right. If a time or frame-based ruler format is selected, the Grid Type pop-up menu contains time or frame-based grid options, etc.

When Seconds is selected as ruler format, the Grid Type pop-up menu contains time-based grid options.

Grid Relative

When you move events and parts in this mode they will not be "magnetic" to the grid. Rather, the grid determines the step size for moving the events. This means that a moved event will keep its original position relative to the grid.

For example, if an event starts at the position 3.04.01 (one beat before bar 4), Snap is set to Grid Relative and the Grid Type pop-up menu is set to "Bar", you can move the event in steps of one bar – to the positions 4.04.01, 5.04.01 and so on. The event will keep its relative position to the grid, i.e. stay one beat before the bar lines.

▪ This only applies when dragging existing events or parts – when you create new events or parts this mode works like the Grid mode.

Events

In this mode, the start and end positions of other events and parts become "magnetic". This means that if you drag an event to a position near the start or end of another event, it is automatically aligned with the start or end of the other event. For audio events, the position of the snap point is also magnetic (see "Adjusting the snap point" on page 143).

▪ Note that this includes marker events on the marker track.
This allows you to snap events to marker positions, and vice versa.

Shuffle

Shuffle mode is useful when you want to change the order of adjacent events. If you have two adjacent events and drag the first one to the right, past the second event, the two events will change places.
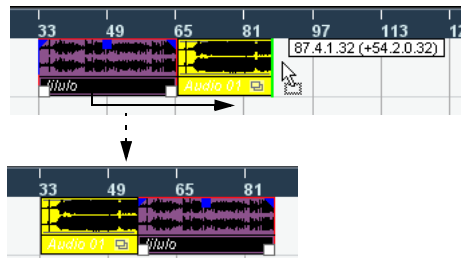
The same principle works when changing the order of more than two events:

Dragging event 2 past event 4…

…changes the order of events 2, 3 and 4.
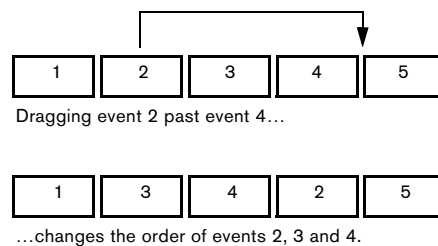
Magnetic Cursor

When this mode is selected, the project cursor becomes "magnetic". Dragging an event near the cursor causes the event to be aligned with the cursor position.

Grid + Cursor

This is a combination of the "Grid" and "Magnetic Cursor" modes.

Events + Cursor

This is a combination of the "Events" and "Magnetic Cursor" modes.

Events + Grid + Cursor

This is a combination of the "Events", "Grid" and "Magnetic Cursor" modes.

Snap to Zero Crossing

When this option is activated on the toolbar or in the Preferences (Editing–Audio page), splitting and sizing of audio events is done at zero crossings (positions in the audio where the amplitude is zero). This helps you avoid pops and clicks which might otherwise be caused by sudden amplitude changes.

Autoscroll

"Autoscroll" and "Suspend Autoscroll when Editing" are activated

When the Autoscroll option is activated, the waveform display will scroll during playback, keeping the project cursor visible in the window. You can find the Autoscroll button in the toolbars of the Project window and all editors.
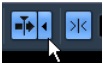
▪ If the option "Stationary Cursors" is activated in the Preferences (Transport page), the project cursor will be positioned in the middle of the screen (if possible).

Suspending autoscroll

When editing parts or events during playback with Autoscroll enabled, you may suddenly "loose sight" of the edited material as the display follows the project cursor.

If you don't want the Project window display to change when editing during playback, you can activate the "Suspend Autoscroll when Editing" button. You will find this button right next to the Autoscroll button. When this option is enabled, autoscrolling is suspended as soon as you click anywhere in the event display during playback.

Proceed as follows:

1. Open a project that contains audio or MIDI parts/events.

2. Enable both the "Autoscroll" and the "Suspend Autoscroll when Editing" buttons (both buttons turn blue).

3. Start playback.

4. Edit an audio or MIDI part/event of your project (e.g. click and drag it to a different location on its track).
The Autoscroll button will turn orange.

Autoscrolling is now suspended, i.e. when the project cursor moves to the right edge of the Project window, the display will not follow to keep the cursor visible.

As soon as playback stops, or when you click the Autoscroll button again (so it turns blue), Cubase Essential will return to the normal Autoscroll behavior.
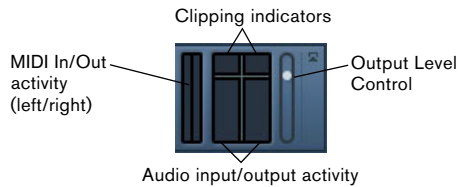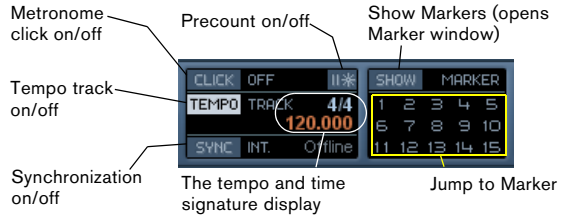
4
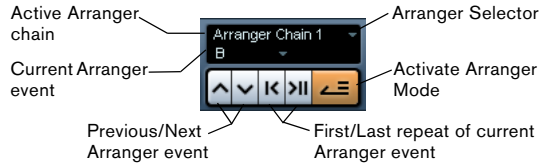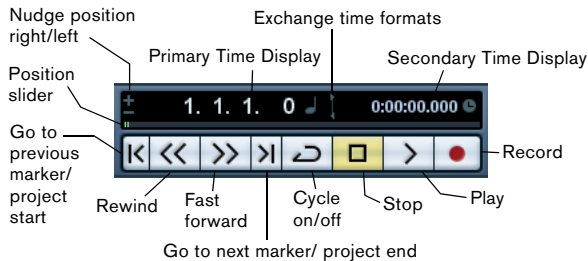
Playback and the Transport panel

Background

This chapter describes the various methods available for controlling Playback and Transport functions in Cubase Essential.

The Transport panel

Below you can find a brief description of each item on the Transport panel.

The pictures below show the Transport panel with all controls visible. The Transport panel is divided into the following sections, from left to right.

Note Velocity Level

Octave Offset

Change Virtual Keyboard Display Type

CPU load and Disk Cache meters

Activates Auto Quantize

Record mode pop-up menu

Cycle Record mode pop-up menu

Left locator

Punch In

Punch Out

Right locator

Preroll: value and on/off

Postroll: value and on/off

Nudge position right/left

Position slider

Go to previous marker/ project start

Exchange time formats

Primary Time Display

Secondary Time Display

Rewind

Fast forward

Cycle on/off

Stop

Play

Record

Go to next marker/ project end

Active Arranger chain

Current Arranger event

Arranger Selector

Activate Arranger Mode

Previous/Next Arranger event

First/Last repeat of current Arranger event

Metronome click on/off

Tempo track on/off

Synchronization on/off

Precount on/off

Show Markers (opens Marker window)

The tempo and time signature display

Jump to Marker

Clipping indicators

MIDI In/Out activity (left/right)

Output Level Control

Audio input/output activity

⇨ Note that the Output Activity and Clipping indicator as well as the Output Level Control refer to the Main Mix Output bus as defined on the Outputs tab in the VST Connections window.

▪ The main Transport functions (Cycle/Stop/Play/Record) can also be shown on the toolbar.

In addition, various play options are available on the Transport menu.

Hiding and showing the Transport Panel

The Transport panel is shown automatically when you launch a new project. To hide or show it, select "Transport Panel" on the Transport menu (or use a key command – by default [F2]).

About Pre-roll and Post-roll

These items are described in the chapter "Recording", see "About Pre-roll and Post-roll" on page 62.

Changing the Transport panel setup

You can customize the appearance of the Transport panel by right-clicking anywhere on the panel and selecting/de-selecting the corresponding options on the context menu.

This is described in detail in the section "The setup context menus" on page 298.

The numeric keypad

In the default Key Command settings, various Transport panel operations are assigned to the numeric keypad on the computer keyboard. The keypads are slightly different on PC and Macintosh computers:

Numeric Key	Function
[Enter]	Play
[+]	Fast Forward
[-]	Rewind
[*]	Record
[÷] (Win)/[/] (Mac)	Cycle On/Off
[,]	Return to Zero
[0]	Stop
[1]	Go to Left Locator
[2]	Go to Right Locator
[3-9]	Go to marker 3 to 9

Operations

Setting the project cursor position

There are several ways to move the project cursor position:

• By using Fast Forward and Rewind.

• By dragging the project cursor in the lower part of the ruler.

• By clicking in the ruler.
Double-clicking in the ruler moves the cursor and starts/stops playback.

• If the option "Locate when Clicked in Empty Space" is activated in the Preferences (Transport page) you can click anywhere in an empty section of the Project window to move the cursor position.

• By changing the value in any of the position displays.

• By using the position slider above the transport buttons in the Transport panel.
The range of the slider relates to the Length setting in the Project Setup dialog. Hence, moving the slider all the way to the right will take you to the end of the project.

• By using markers (see "Markers" on page 38).

• By using playback options (see "Playback functions" on page 47).

• By using the Arranger function (see "The Arranger track" on page 72).

• By using functions on the Transport menu.

The following functions are available:

Function	Description
Locate Selection/Locate Selection End	Moves the project cursor to the beginning or end of the current selection. For this to be available, you must have selected one or more events or parts, or made a selection range.
Locate Next/Previous Marker	This moves the project cursor to the closest marker to the right or left (see "Marker tracks" on page 20).
Locate Next/Previous Event	This moves the project cursor forwards or backwards respectively, to the closest beginning or end of any event on the selected track(s).

⇨ If Snap is activated when dragging the project cursor, the Snap value is taken into account. This is helpful for finding exact positions quickly.

⇨ There are also numerous key commands available for moving the project cursor (in the Transport category in the Key Commands dialog).
For example, you can assign key commands to the "Step Bar" and "Step Back Bar" functions, allowing you to move the project cursor in steps of one bar, backwards and forwards.

About the Transport panel display format
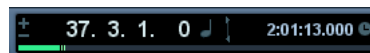
Primary time display (left) and secondary time display (right)

The time unit shown in the ruler can be independent from the time unit shown in the main time display on the Transport panel. This means that you can display timecode in the transport position display and bars and beats in the ruler, for example. In addition, there is a secondary time display to the right of the primary time display which is also independent, giving you three different time units shown at the same time.

The following rules apply:

▪ If you change the time format of the primary time display on the Transport panel, the time format of the ruler will be changed as well.
This is the same as changing the display format in the Project Setup. Therefore, to have different display formats in the ruler and the time display you should change the format in the ruler.

▪ The primary time display format is set on the pop-up menu to the right in the main position display.

▪ This setting also determines the time format displayed for the left and right locators on the Transport panel.

▪ The secondary time display is completely independent, and the display format is set on the pop-up menu to the right in the secondary time display.

▪ You can swap time formats between the primary and secondary time displays by clicking the double arrow symbol between them.

The left and right locators

The left and right locators are a pair of position markers used for specifying punch-in and punch-out positions during recording, and as boundaries for cycle playback and recording.

⇨ When cycle mode is activated on the Transport panel, the area between the left and right locator will be repeated (cycled) on playback.
However, if the right locator is positioned before the left, this will work as a "jump" or "skip mode" – when the project cursor reaches the right locator it will immediately jump to the left locator position and continue playback from there.

There are several ways to set locator positions:

▪ To set the left locator, press [Ctrl]/[Command] and click at the desired position in the ruler.
Similarly, pressing [Alt]/[Option] and clicking in the ruler sets the right locator. You can also drag the locator "handles" directly in the ruler.
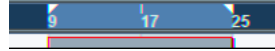
The locators are indicated by the "flags" in the ruler. The area between the locators is highlighted in the ruler and in the Project window (see "Appearance" on page 301). Note that if the right locator is before the left locator, the color of the ruler between the locators will change (from blue to red).

▪ Click and drag in the upper half of the ruler to "draw" a locator range.
If you click on an existing locator range, you can drag to move it.

▪ Pressing [Ctrl]/[Command] and pressing [1] or [2] on the numeric keypad sets the left or right locator to the project cursor position.
Similarly, you can press [1] or [2] on the numeric keypad (without [Ctrl]/[Command]) to set the project cursor position to the left or right locator position. Note that these are default key commands – you can change these if you like.

▪ By creating cycle markers you can store any number of left and right locator positions, which can be recalled by simply double-clicking on the corresponding marker (see "Editing markers on the Marker track" on page 39).

▪ The "Locators to Selection" item on the Transport menu (default key command [P]) sets the locators to encompass the current selection.
This is available if you have selected one or several events or made a selection range.

▪ You can also adjust the locators numerically on the Transport panel.
Clicking the L/R buttons in the locator section on the Transport panel will move the project cursor to the respective locator. If you press [Alt]/[Option] and click the L or R button, the corresponding locator will be set to the current project cursor position.

Options and Settings

The "Return to Start Position on Stop" preference

This setting is found on the Transport page in the Preferences (found on the File menu under Windows, or on the Cubase Essential menu under Mac OS X).

▪ If "Return to Start Position on Stop" is activated when you stop playback, the project cursor will automatically return to the position where recording or playback last started.

▪ If "Return to Start Position on Stop" is deactivated, the project cursor will remain at the position where you stop playback.

Pressing Stop again will return the project cursor to the position where recording or playback last started.

About track disable/enable

For audio tracks, the track context menu contains an item named "Disable Track". This shuts down all disk activity for the track, as opposed to using Mute, which merely turns down the output volume for a track. For example, if you often record "alternative takes" you can easily build up a large number of takes on different tracks. Even though these tracks are muted, they are actually still "playing back" from the hard disk during playback. This puts an unnecessary load on your disk system, so using "Disable Track" is recommended for such situations.

▪ Select "Disable Track" for tracks that you want to keep in the project for later use but do not want to play back now.

The track color changes to indicate that the track is disabled.

▪ Select "Enable Track" from the track context menu to re-enable disabled tracks.

Playback functions

Apart from the standard transport controls on the Transport panel, you can also find a number of functions on the Transport menu that can be used to control playback. The items have the following functionality:

Option	Description
Play from Selection Start/End	Activates playback from the beginning or end of the current selection.
Play until Selection Start/End	Activates playback two seconds before the start or end of the current selection and stops at the selection start or end, respectively.
Play until Next Marker	This activates playback from the project cursor and stops at the next marker.
Play Selection Range	This activates playback from the start of the current selection and stops at the selection end.
Loop Selection	This activates playback from the start of the current selection and keeps starting over again when reaching the selection end.

⚠ The functions listed above (except "Play until Next Marker") are only available if you have selected one or more events or made a selection range.

⇨ In the Preferences dialog (Editing–Audio page) you will find the option "Treat Muted Audio Events like Deleted". When you activate this option, any events overlapped by a muted event will become audible.

About Chase

Chase is a function that makes sure your MIDI instruments sound as they should when you locate to a new position and start playback. This is accomplished by the program transmitting a number of MIDI messages to your instruments each time you move to a new position in the project, making sure all MIDI devices are set up correctly with regard to program change, controller messages (such as MIDI Volume), etc.

For example, let's say you have a MIDI track with a program change event inserted at the beginning. This event makes a synth switch to a piano sound.

At the beginning of the first chorus you have another program change event which makes the same synth switch to a string sound.

You now play back the song. It begins with the piano sound and then switches to the string sound. In the middle of the chorus you stop and rewind to some point between the beginning and the second program change. The synth will now still play the string sound although in this section it really should be a piano!

The Chase function takes care of that. If program change events are set to be chased, Cubase Essential will track the music back to the beginning, find the first program change and transmit it to your synth, setting it to the correct sound.

The same thing can apply to other event types as well. The Chase Events settings in the Preferences dialog (MIDI page) determine which event types will be chased when you locate to a new position and start playback.
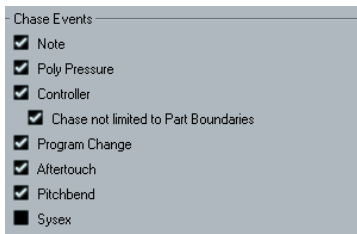
⇨ Event types for which the checkbox is activated here will be chased.

▪ In this section of the Preferences dialog, you will also find the option "Chase not limited to Part Boundaries". When you activate this option, MIDI controllers are also chased outside the part boundaries, i.e. the Chase will be performed on the part touched by the cursor as well as on all the parts to the left of it. Please note that this option should be deactivated for very large projects, as it considerably slows down operations such as positioning and soloing. When you deactivate this option, the MIDI controllers are only chased within the parts under the position cursor.

The Virtual Keyboard

The Virtual Keyboard can be displayed in the Transport panel. It allows you to play and record MIDI notes by using your computer keyboard or mouse. This is useful if you have no external MIDI instrument at hand and you do not want to draw in notes with the Pencil tool. The Virtual Keyboard can perform all functions that can be controlled by external MIDI keyboards, e.g. playing and recording MIDI notes.

⚠ When the Virtual Keyboard is displayed, the usual key commands are blocked because they are reserved for the Virtual Keyboard. The only exceptions are: [Ctrl]/ [Command]-[S] (Save), Num [*] (Start/Stop Record), [Space] (Start/Stop Playback), Num [1] (Jump to left locator), [Delete] or [Backspace] (Delete), Num [/] (Cycle on/off), [F2] (Show/Hide Transport panel), and [Alt]/[Option]-[K] (Show/Hide Virtual Keyboard).

▪ You can choose between two different keyboard display modes: computer keyboard and piano keyboard. To switch between these two modes, click the "Change Virtual Keyboard Display Type" button or use the [Tab] key.

The Virtual Keyboard in computer keyboard display mode

The Virtual Keyboard in piano keyboard display mode

To record MIDI using the Virtual Keyboard, proceed as follows:

1. Create or choose a MIDI or an instrument track and activate the "Record Enable" button for it.

2. Open the Virtual Keyboard by selecting "Virtual Keyboard" on the Devices menu or by pressing [Alt]/[Option]-[K]. You can also open the Virtual Keyboard by right-clicking on the Transport panel and selecting "Virtual Keyboard" on the context menu.
The Virtual Keyboard is displayed in the Transport panel.

3. Activate the Record button and press a key on your computer keyboard to enter a note.
You can also click on the keys of the Virtual Keyboard to enter notes.

▪ You can also press several keys simultaneously to enter polyphonic parts. The maximum number of notes that can be played at one time varies between the different operating systems and hardware configurations.

4. Use the fader "Note velocity level" to the right of the virtual keyboard to adjust the volume.
You can also use the up and down arrow keys for this.

5. Enter the desired notes this way.

6. When you are done, hit the Stop button and close the Virtual Keyboard.
When the Virtual Keyboard is hidden, all key commands are available again.

Options and settings

▪ In piano keyboard mode, you have a wider range of keys at your disposal, allowing you to enter two voices simultaneously, for example bass and lead voice or bass drums and HiHats.
In computer keyboard mode, you can use the two rows of keys that are displayed on the Virtual Keyboard to enter notes. In piano keyboard mode, you can also use the two rows of keys below these.

▪ You have seven full octaves at your disposal. Use the "Octave Offset" buttons at the bottom of the virtual keyboard to offset the octave range of the keyboard.
You can also use the left and right arrow keys to switch the keyboard range to a lower or higher octave, respectively.

▪ In piano keyboard mode, you can use the two sliders to the left of the keyboard to introduce pitchbend (left slider) or modulation (right slider).
You can also click on a key, hold the mouse button pressed until the mouse pointer becomes a crosshair tool and drag upwards/downward to introduce modulation or left/right to create pitchbend.

5

Recording

Background

This chapter describes the various recording methods that you can use in Cubase Essential. As it is possible to record both audio and MIDI tracks, both recording methods are covered in this chapter.

Before you start

This chapter assumes that you are reasonably familiar with certain basic recording concepts, and that the following initial preparations have been made:

▪ You have properly set up, connected and calibrated your audio hardware.

▪ You have opened a project and set the project setup parameters to your specifications.
Project setup parameters determine the record format, sample rate, project length etc. that affect the audio recordings you make during the course of the project, see "The Project Setup dialog" on page 22.

▪ If you plan to record MIDI, your MIDI equipment should be set up and connected correctly.

Basic recording methods

This section describes the general methods used for recording. However, there are additional preparations and procedures that are specific to audio and MIDI recording respectively. Make sure to read these sections before you start recording (see "Audio recording specifics" on page 53 and "MIDI recording specifics" on page 57).

Record-enabling tracks

Cubase Essential can record on a single track or on several tracks (audio and/or MIDI) simultaneously. To make a track ready for recording, click the Record Enable button for the track in the Track list, in the Inspector or in the Mixer. When activated, the buttons turn red, indicating record ready mode.
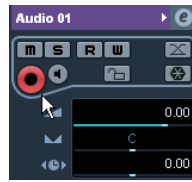
Record Enable in the Inspector, Track list and Mixer

⇨ If the option "Enable Record on Selected Track" is activated in the Preferences (Editing–Project & Mixer page), tracks are automatically record-enabled when you select them in the Track list.

⇨ You can set up key commands to record-enable all audio tracks simultaneously and to deactivate Record Enable for all audio tracks (Arm/Disarm all Audio Tracks). You will find these commands in the Key Commands dialog, in the Mixer category (see "Setting up key commands" on page 305).

⇨ The exact number of audio tracks you can record simultaneously depends on your computer CPU and hard disk performance.
In the Preferences (VST page), you can find the option "Warn on Processing Overloads". When this is activated, a warning message will be displayed as soon as the CPU clip indicator (on the Transport panel) lights up during recording.

Manually activating recording

You activate recording by clicking the Record button on the Transport panel or toolbar or by using the corresponding key command (by default [*] on the numeric keypad).

Recording can be activated in Stop mode (from the current cursor position or from the left locator) or during playback:

▪ If you activate recording in Stop mode, and the option "Start Record at Left Locator" is activated on the Transport menu, recording will start from the left locator.
The pre-roll setting or the metronome count-in will be applied (see "About Pre-roll and Post-roll" on page 62).

▪ If you activate recording in Stop mode, and "Start Record at Left Locator" is deactivated, recording will start from the current project cursor position.

• If you activate recording during playback, Cubase Essential will immediately enter Record mode and start recording from the current project cursor position.
This is known as "manual punch in".

Activating recording in Sync mode

If you are synchronizing the Cubase Essential transport to external equipment (Sync is activated on the Transport panel) and you activate recording, the program will go into "record ready" mode (the record button on the Transport panel will light up). In this case, recording will start when a valid timecode signal is received (or when you click the Play button). See the chapter "Synchronization" on page 262 for more information.

Automatically activating recording

Cubase Essential can automatically switch from playback to recording at a given position. This is known as "automatic punch in". A typical use for this would be if you need to replace a section of a recording, and want to listen to what is already recorded, up to the recording start position.

1. Set the left locator to the position where you want recording to start.

2. Activate the Punch In button on the Transport panel.

Punch In activated

3. Activate playback from some position before the left locator.
When the project cursor reaches the left locator, recording is automatically activated.

Stopping recording

Again, this can be done automatically or manually:

• If you click the Stop button on the Transport panel (or use the corresponding key command, by default [0] on the numeric keypad), recording is deactivated and Cubase Essential goes into Stop mode.

• If you click the Record button (or use the key command for recording, by default [*]), recording is deactivated but playback continues.
This is known as "manual punch out".

• If the Punch Out button is activated on the Transport panel, recording will be deactivated when the project cursor reaches the right locator.
This is known as "automatic punch out". By combining this with automatic punch in, you can set up a specific section to record – again very useful if you want to replace a certain part of a recording (see also "Stop after Automatic Punch Out" on page 62).

Punch In and Out activated

Cycle recording

Cubase Essential can record and play back in a cycle – a loop. You specify where the cycle starts and ends by setting the left and right locators. When the cycle is active, the selected section is seamlessly repeated until you hit Stop or deactivate cycle mode.

• To activate cycle mode, click the cycle button on the Transport panel.

Cycle activated

• To record in cycle mode, you can start recording from the left locator, from before the locators or from within the cycle, in Stop mode or during playback.
As soon as the project cursor reaches the right locator, it will jump back to the left locator and continue recording a new lap.

• The results of cycle recording depend on the selected cycle record mode and are different for audio (see "Recording audio in cycle mode" on page 57) and MIDI (see "Recording MIDI in cycle mode" on page 59).

Audio pre-record

This feature allows you to capture up to 1 minute of any incoming audio you play in Stop mode or during playback, "after the fact". This is possible because Cubase Essential can capture audio input in buffer memory, even when not recording.

Proceed as follows:

1. Open the Preferences (Record–Audio page).

2. Specify a time (up to 60 seconds) in the "Audio Pre-Record Seconds" field.
This activates the buffering of audio input, making Pre-Record possible.

3. Make sure an audio track is record-enabled and receives audio from the signal source.

4. When you have played some audio material you want to capture (either in Stop mode or during playback), click the Record button.

5. After a few seconds stop the recording.
An audio event is created, starting at where the cursor position was when you activated recording. This means that if you were in stop mode, and the cursor was at the beginning of the project, you may have to move the event to the right in the next step. If you were playing along to a project you should leave the event where it is.

6. Select the Arrow tool and place the cursor on the bottom left edge of the event so that a double arrow appears, then click and drag to the left.
Now the event is extended and the audio you played before activating record is inserted – this means that if you played along during playback, the captured notes will end up exactly where you played them in relation to the project.

The recording was activated at the start of bar 9. This is indicated by a blue line in the audio event.

Audio recording specifics

Selecting a recording file format

The format for recorded files is set in the Project Setup dialog on the Project menu. There are three settings: sample rate, record format (bit depth) and record file type. While the sample rate is set once and for all when you start working on a new project, the bit depth and file type can be changed at any time.

Record file type

The Record File Type setting determines which type of files will be created when you record:

File type	Description
Wave File	Wave files have the extension ".wav" and are a common file format on the PC platform.
AIFF File	Audio Interchange File Format, a standard defined by Apple Inc. AIFF files have the extension ".aif" and are used on most computer platforms. AIFF files can contain embedded text strings (see below).

Record format (bit depth)

The available options are 16 bit and 24 bit. Use the following guidelines:

▪ Normally, select the record format according to the bit depth delivered by your audio hardware.
For example, if your audio hardware has 20 bit A/D converters (inputs), you may want to record at 24 bit resolution to capture the full bit depth. On the other hand, if your hardware has 16 bit inputs, it is pointless to record with a higher bit depth – this will only make the audio files larger, with no difference in audio quality.

▪ The higher the bit depth, the larger the files and the more strain is put on the disk system.
If this is an issue, you may want to lower the record format setting.

⚠ For further information on the options in the Project Setup dialog, see "The Project Setup dialog" on page 22.

Setting up the track

Creating a track and selecting the channel configuration

Audio tracks can be configured as mono or stereo tracks. This allows you to record or import a file containing multiple channels and treat it as one entity, with no need to split it up into several mono files etc. The signal path for an audio track maintains its channel configuration all the way from the input bus, via EQ, level and other mixer settings to the output bus.

You specify the channel configuration for a track when you create it:

1. Select "Add Audio Track" from the Track list context menu or the Project menu (or, if an audio track is already selected, double-click in an empty area of the Track list).
A dialog appears with a channel configuration pop-up menu.

2. Select the desired format from the pop-up menu.
You can choose between mono and stereo.

▪ The Browse item in this dialog allows you to browse your disk(s) for created track presets, which can be used as a basis (or template) for tracks.
This is described in detail in the chapter "Working with track presets" on page 180.

3. Click OK.
A track appears, set to the specified channel configuration. In the Mixer, a corresponding channel strip appears. You cannot change the channel configuration for a track.

Selecting an input bus for a track

Here we assume that you have added and set up the required input busses (see "Setting up busses" on page 10). Before you record, you need to specify from which input bus the track should record. You can do this in the Inspector.

▪ Select an input bus on the Input Routing pop-up menu in the top section.
As described in the section "The Inspector" on page 18, the Inspector shows the settings for the selected track. You show or hide the Inspector by clicking the "Show/Hide Inspector" button on the Project window toolbar.
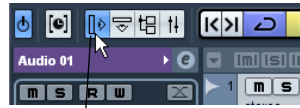
Click here to show/hide the Inspector.

Click here to select an input bus for the track.
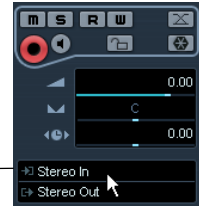
Setting input levels

When recording digital sound, it is important to set the input levels correctly – loud enough to ensure low noise and high audio quality, but not so loud that clipping (digital distortion) occurs.

Clipping typically occurs in the audio hardware when a too loud analog signal is converted to digital in the hardware's A/D converters.

You need to check the level at the channel strip for the track on which you are recording:

1. Locate the channel strip for the track you're about to record on.

2. Activate monitoring for the channel by clicking the speaker button next to the fader.
When monitoring is activated, the meter shows the level of the incoming audio signal.

3. Play the audio source that you want to record and check the level meter for the channel.

4. Adjust the output level of your audio source so that the meters go reasonably high without reaching 0.0 dB.
Check the numerical peak level indicator below the meter in the bus channel strip. To reset the peak level indicator, click on it.

⇨ You must adjust the output level of the audio source – you cannot use the faders in Cubase Essential to adjust the input level!

⇨ An alternative way of checking the input levels would be to use the control panel for your audio hardware (if it features input level meters). It may also be possible to adjust the input level in the control panel.
See the documentation of your audio hardware for details.

Monitoring

In this context, "monitoring" means listening to the input signal during recording. There are three fundamentally different ways to do this: via Cubase Essential, externally (by listening to the signal before it reaches Cubase Essential), or by using ASIO Direct Monitoring (which is a combination of both other methods – see below).

Monitoring via Cubase Essential

If you monitor via Cubase Essential, the input signal is mixed in with the audio playback. The advantage of this is that you can adjust the monitoring level and panning in the Mixer, and add effects and EQ to the monitor signal just as during playback (using the track's channel strip – not the input bus!).

The disadvantage of monitoring via Cubase Essential is that the monitored signal will be delayed according to the latency value (which depends on your audio hardware and drivers). Therefore, monitoring via Cubase Essential requires an audio hardware configuration with a low latency value. You can check the latency of your hardware in the Device Setup dialog (VST Audio System page).

⇨ If you are using plug-in effects with large inherent delays, the automatic delay compensation function in Cubase Essential will increase the latency.
If this is a problem, you can use the Constrain Delay Compensation function while recording, see "Constrain Delay Compensation" on page 120.

When monitoring via Cubase Essential, you can select one of four Auto Monitoring modes in the Preferences (VST page):
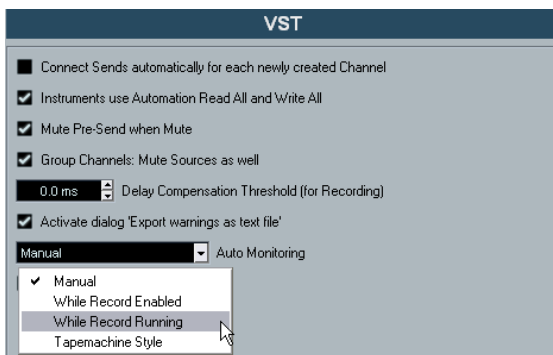
- Manual
This option allows you to turn input monitoring on or off by clicking the Monitor button in the Inspector, the Track list or in the Mixer.

- While Record Enabled
With this option, you will hear the audio source connected to the channel input whenever the track is record enabled.

- While Record Running
This option switches to input monitoring only during recording.

- Tapemachine Style
This option emulates standard tapemachine behavior: input monitoring in Stop mode and during recording, but not during playback.

External monitoring

External monitoring (listening to the input signal before it goes into Cubase Essential) requires some sort of external mixer for mixing the audio playback with the input signal. This can be a stand-alone physical mixer or a mixer application for your audio hardware, if this has a mode in which the input audio is sent back out again (usually called "Thru", "Direct Thru" or similar).

When using external monitoring, you cannot control the level of the monitor signal from within Cubase Essential or add VST effects or EQ to the monitor signal. The latency value of the audio hardware configuration does not affect the monitor signal in this mode.

⇨ If you want to use external monitoring, you need to make sure that monitoring via Cubase Essential is not activated as well.
Select the "Manual" monitoring mode in the Preferences (VST page) and do not activate the Monitor buttons.

ASIO Direct Monitoring

If your audio hardware is ASIO 2.0 compatible, it may support ASIO Direct Monitoring (this feature may also be available for audio hardware with Mac OS X drivers). In this mode, the actual monitoring is done in the audio hardware, by sending the input signal back out again. However, monitoring is controlled from Cubase Essential. This means that the audio hardware's direct monitoring feature can be turned on or off automatically by Cubase Essential, just as when using internal monitoring.

• To activate ASIO Direct Monitoring, open the Device Setup dialog on the Devices menu and activate the Direct Monitoring checkbox on the page for your audio hardware. If the checkbox is grayed out, your audio hardware (or its driver) does not support ASIO Direct Monitoring. Consult the audio hardware manufacturer for details.

• When ASIO Direct Monitoring is activated, you can select a monitoring mode in the Preferences (VST page), as when monitoring via Cubase Essential (see "Monitoring via Cubase Essential" on page 55).

• Depending on the audio hardware, it may also be possible to adjust the monitoring level and panning from the Mixer by adjusting the volume faders, and the input gain controls. Consult the documentation of the audio hardware if in doubt.

• VST effects and EQ cannot be applied to the monitor signal in this mode, since the monitor signal does not pass through Cubase Essential.

• Depending on the audio hardware, there may be special restrictions as to which audio outputs can be used for direct monitoring. For details on the routing of the audio hardware, see its documentation.

The latency value of the audio hardware configuration does not affect the monitor signal when using ASIO Direct Monitoring.

When using Steinberg hardware (MR816 series) in combination with ASIO Direct Monitoring, monitoring will be virtually latency-free.

⇨ If you are using RME Audio Hammerfall DSP audio hardware, make sure that the pan law is set to -3dB in the card's preferences.

Recording

Recording is done using any of the general recording methods (see "Basic recording methods" on page 51). When you finish recording, an audio file is created in the Audio folder within the project folder. In the Pool, an audio clip is created for the audio file, and an audio event that plays the whole clip appears on the recording track. Finally, a waveform image is calculated for the audio event. If the recording was very long, this may take a while.

⇨ If the option "Create Audio Images During Record" is activated in the Preferences (Record–Audio page), the waveform image will be calculated and displayed during the actual recording process. This realtime calculation uses some processing power – if your processor is slow or you are working on a CPU-intensive project, you should consider turning this option off.

Undoing recording

If you decide that you do not like what you just recorded, you can delete it by selecting Undo from the Edit menu. The following will happen:

• The event(s) you just created will be removed from the Project window.
• The audio clip(s) in the Pool will be moved to the Trash folder.
• The recorded audio file(s) will not be removed from the hard disk.

However, since their corresponding clips are moved to the Trash folder, you can delete the files by opening the Pool and selecting "Empty Trash" from the Media menu, see "Deleting from the hard disk" on page 161.

Recording overlapping events

The basic rule for audio tracks is that each track can play back a single audio event at a time. This means that if two or more events are overlapping, only one of them will be heard at any given time.

What happens when you record overlapping events (record in an area where there are already events on the track) depends on the Linear Record Mode setting on the Transport panel:
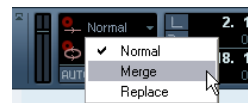
• In "Normal" or "Merge" mode, recording where something has already been recorded creates a new audio event that overlaps the previous one(s). When you record audio, there is no difference between "Normal" and "Merge" mode – the difference only applies to MIDI recording (see "About overlap and the Record Mode setting" on page 59).

▪ In "Replace" mode, existing events (or portions of events) that are overlapped by the new recording will be removed. This means that if you record a section in the middle of a longer existing recording, the original event will be cut into two events with a gap for the new event.
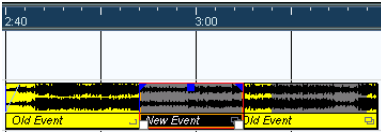
Which event will be heard?

If two or more events are overlapping, you will only hear the events (or portions of events) that are actually visible. Overlapped (hidden) events or sections are not played back.

▪ The functions "Move to Front" and "Move to Back" on the Edit menu (Move submenu, see "Moving events" on page 30) are useful for managing overlapping events, as is the "To Front" function (see below).

Recording audio in cycle mode

If you are recording audio in cycle mode, the last complete "take" (the last completely recorded lap) is kept as an audio event.

MIDI recording specifics

Activating MIDI Thru

Normally, when working with MIDI, you will have MIDI Thru activated in Cubase Essential, and Local Off selected in your MIDI instrument(s). In this mode, everything you play during recording will be "echoed" back out again on the MIDI output and channel selected for the recording track.

1. Make sure the option "MIDI Thru Active" is activated in the Preferences (MIDI page).

2. Record enable the track(s) on which you want to record.
Now, incoming MIDI is "echoed" back out again for all record-enabled MIDI tracks.

⇨ If you just want to use the Thru function for a MIDI track without recording, activate the monitor button for the track instead.
This is useful, for instance, if you want to try out different sounds or play a VST instrument in realtime without recording your playing.

Setting MIDI channel, input and output

Setting the MIDI channel in the instrument

Most MIDI synthesizers can play several sounds at the same time, each on a different MIDI channel. This is the key to playing back several sounds (bass, piano etc.) from the same instrument. Some devices (such as General MIDI compatible sound modules) always receive on all 16 MIDI channels. If you have such an instrument, there is no specific setting you need to make in the instrument. On other instruments, you will have to use the front panel controls to set up a number of "Parts", "Timbres" or similar so that they receive on one MIDI channel each. See the manual that came with your instrument for more information.

Naming MIDI ports in Cubase Essential

MIDI inputs and outputs are often displayed with unnecessarily long and complicated names. However, you can rename your MIDI ports to more descriptive names:

1. Open the Device Setup dialog from the Devices menu.

2. Select the MIDI Port Setup item in the Device list.
The available MIDI inputs and outputs are listed. Under Windows, which device to choose depends on your system.

3. To change the name of a MIDI port, click in the "Show As" column and type in a new name.
After closing the dialog, the new name will appear on the MIDI Input and Output Routing pop-up menus.

Setting the MIDI input in the Inspector

You select MIDI inputs for tracks in the Inspector (the area to the left of the Track list in the Project window):

1. If the Inspector is hidden, click the Show Inspector button on the toolbar.

2. Select the track(s) by clicking in the Track list.
To select multiple tracks, press [Shift] or [Ctrl]/[Command] and click. The Inspector shows the settings for the first selected track (for details, see "The Inspector" on page 18).

3. Click the track name in the Inspector to make sure the topmost section is shown.

4. Pull down the Input Routing pop-up menu and select an input.

The available MIDI inputs are shown. The items on the menu depend on the type of MIDI interface you are using, etc.
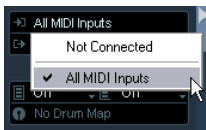
• If you select the "All MIDI Inputs" option, the track will receive MIDI data from all available MIDI inputs.

• If you hold down [Shift]-[Alt]/[Option] and select a MIDI input, this will be used for all selected MIDI tracks.

Setting the MIDI channel and output

The MIDI channel and output settings determine where the recorded MIDI is routed during playback, but are also relevant for MIDI Thru in Cubase Essential. Channel and output can be selected in the Track list or in the Inspector. The procedure below describes how to make the settings in the Inspector, but it can be done in largely the same manner in the Track list as well.

1. To select the track(s) and show the settings in the Inspector, proceed as when selecting a MIDI input (see above).

2. Pull down the Output Routing pop-up menu and select an output.

The available MIDI outputs are shown. The items on the menu depend on what type of MIDI interface you are using etc.

• If you hold down [Shift]-[Alt]/[Option] and select a MIDI output, this is selected for all selected MIDI tracks.

3. Use the Channel pop-up menu to select a MIDI channel for the track.
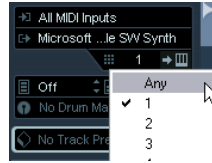
• If you set the track to MIDI channel "Any", each MIDI event on the track will be sent out on the channel stored in the event itself.

In other words, the MIDI material will be played back on the channel(s) used by the MIDI input device (the MIDI instrument you play during recording).

Selecting a sound

You can select sounds from within Cubase Essential by instructing the program to send Program Change and Bank Select messages to your MIDI device. This is done using the "Patch Selector" and "Bank Selector" fields in the Inspector or Track list.

Program Change messages give access to 128 different program locations. If your MIDI instruments have more than 128 programs, Bank Select messages (set in the "Bank Selector" field) allow you to select different banks, each containing 128 programs.

⇨ Bank Select messages are recognized differently by different MIDI instruments. The structure and numbering of banks and programs may also vary. Consult the documentation of your MIDI instruments for details.

Recording

Recording MIDI is done according to the basic recording methods (see "Basic recording methods" on page 51). When you finish recording, a part containing MIDI events is created in the Project window.

About overlap and the Record Mode setting

MIDI tracks are different from audio tracks when it comes to overlapping parts:

⇨ All events in overlapping parts are always played back.
If you record several parts at the same locations (or move parts so that they overlap), you will hear the events in all parts on playback, even though some of the parts are obscured in the Project window.

When recording overlapping parts, the result depends on the Linear Record Mode setting on the Transport panel:

- If the record mode is set to "Normal", overdub recording works as with audio tracks, i.e. if you record again where something has already been recorded, you get a new part that overlaps the previous one(s).
- If the record mode is set to "Merge", the overdubbed events are added to the existing part.
- If the record mode is set to "Replace", the new recording replaces any existing events in the area on that track.

About punch in and out on MIDI tracks

Performing and setting up manual and automatic punch in/out recording for MIDI tracks is done in exactly the same way as for audio tracks. There is one thing to note, however:

- Punching in and out on recordings with Pitchbend or controller data (modulation wheel, sustain pedal, volume etc.) may lead to strange effects (apparently hanging notes, constant vibrato etc.).
If this happens, you may need to use the Reset item on the MIDI menu (see "The Reset function" on page 60).

About the Automatic MIDI Record Quantize function

If Auto Quantize is activated on the Transport panel (the "Auto Q" button), the notes you record are automatically quantized according to the current Quantize settings. For more information about quantizing, see "The Quantizing functions" on page 201.

Recording MIDI in cycle mode

When you record MIDI in cycle mode, the result depends on which Cycle Record mode is selected on the Transport panel:

Cycle Record mode: Mix (MIDI)

For each completed lap, everything you record is added to what was previously recorded in the same part. This is useful for building up rhythm patterns, for example. Record a hi-hat part on the first lap, the bass drum part on the second lap etc.

Cycle Record mode: Overwrite (MIDI)

As soon as you play a MIDI note (or send any MIDI message), all MIDI you have recorded on previous laps is overwritten from that point on in the part. An example:

1. You start recording in an eight bar cycle.

2. The first take was not good enough – you start directly with a new take on the next cycle lap and overwrite the first take.

3. After recording the second take you let the recording roll on and listen, without playing anything.
You find that the take was good up until bar seven, for example.

4. On the next lap, you wait until bar seven and start playing.
This way you will overwrite the last two bars only.

5. Make sure you stop playing before the next lap begins – otherwise you will overwrite the entire take.

Cycle Record mode: Keep Last

Each completed lap replaces the previously recorded lap. Note the following:

- The cycle lap must be completed – if you deactivate recording or press Stop before the cursor reaches the right locator, the previous take will be kept.

- If you do not play or input any MIDI during a lap, nothing happens (the previous take will be kept).

Recording different types of MIDI messages

⚠ You can decide exactly which event types should be recorded by using the MIDI filters – see "Filtering MIDI" on page 61.

Notes

When you press and release a key on your synth or other MIDI keyboard, a Note On (key down) and a Note Off (key up) message are sent out. The MIDI note message also contains the information which MIDI channel was used. Normally, this information is overridden by the MIDI channel setting for the track, but if you set the track to MIDI channel "Any", the notes will be played back on their original channels.

Continuous messages

Pitchbend, aftertouch and controllers (like modulation wheel, sustain pedal, volume etc.) are considered as MIDI continuous events (as opposed to the momentary key down and key up messages). If you move the Pitchbend wheel on your synthesizer while recording, this movement is recorded together with the key (Note On and Note Off messages), just as you'd expect. But the continuous messages can also be recorded after the notes have been recorded (or even before). They can also be recorded on their own tracks, separately from the notes to which they belong.

Say, for instance, that you record one or several bass parts on track 2. If you now set another track, like track 55, to the same output and MIDI channel as track 2, you can make a separate recording of just pitchbends for the bass parts on track 55. This means that you activate recording as usual and only move the pitchbend wheel during the take. As long as the two tracks are set to the same output and MIDI channel, it will appear to the MIDI instrument as if the two recordings were made at the same time.

Program Change messages

Normally, when you switch from one program to another on your keyboard (or whatever you use to record), a number corresponding to that program is sent out via MIDI as a Program Change message. These can be recorded on the fly with the music, recorded afterwards on a separate track, or manually entered in the Key or List Editors.

System Exclusive messages

System Exclusive (SysEx) is a special type of MIDI message used to send data that only makes sense to a unit of a certain make and type. SysEx can be used to transmit a list of the numbers that make up the settings of one or more sounds in a synth. For details about viewing and editing SysEx messages, see the section "Working with System Exclusive messages" on page 239.

The Reset function

The Reset function on the MIDI menu sends out note-off messages and resets controllers on all MIDI channels. This is sometimes necessary if you experience hanging notes, constant vibrato, etc.

There are two other options to perform a reset:

▪ Cubase Essential can automatically perform a MIDI reset on stop.
You can turn this function on or off in the Preferences (MIDI page).

▪ Cubase Essential can automatically insert a reset event at the end of a recorded part.
Open the Preferences (MIDI page) and activate the option "Insert Reset Events after Record". The inserted Reset event will reset controller data such as Sustain, Aftertouch, Pitchbend, Modulation, Breath Control, etc. This is useful if a MIDI part is recorded and the Sustain pedal is still held after stopping recording. Usually, this would cause all following parts to be played with Sustain, as the Pedal Off command was not recorded. This can be prevented by activating "Insert Reset Events after Record".

Retrospective Record

This feature allows you to capture any MIDI notes you play in Stop mode or during playback and turn them into a MIDI part "after the fact". This is possible due to the fact that Cubase Essential can capture MIDI input in buffer memory, even when not recording.

Proceed as follows:

1. Enable the Retrospective Record option in the Preferences (Record–MIDI page).
This activates the buffering of MIDI input, making Retrospective Record possible.

2. Make sure a MIDI track is record-enabled.

3. When you have played some MIDI material you want to capture (either in Stop mode or during playback), select Retrospective Record from the Transport menu (or use the key command, by default [Shift]-Num[*]).

The content of the MIDI buffer (i.e. what you just played) is turned into a MIDI part on the record enabled track. The part will appear where the project cursor was when you started playing – this means that if you played along during playback, the captured notes will end up exactly where you played them in relation to the project.

• The Retrospective Record Buffer Size setting in the Preferences (Record–MIDI page) determines how much data can be captured.

MIDI Preferences

There are several other options and settings in the Preferences that affect MIDI recording and playback:

MIDI page

• Length Adjustment
Adjusts the length of notes so that there is always a short time between the end of one note and the start of another (of the same pitch and on the same MIDI channel). The time is set in ticks. By default there are 120 ticks per 1/16 note.

Record–MIDI page

• Snap MIDI Parts to Bars
When this is activated, recorded MIDI parts will automatically be lengthened to start and end at whole bar positions. If you are working in a Bars+Beats-based context, this can make editing (moving, duplicating, repeating, etc.) easier.

• Solo Record in MIDI Editors
If this is activated and you open a part for editing in a MIDI editor, its track is automatically record-enabled. Furthermore, Record Enable is deactivated for all other MIDI tracks until you close the editor again.
This makes it easier to record MIDI data when you're editing a part – you will always be sure the recorded data ends up in the edited part and not on any other track.

• MIDI Record Catch Range in ms
When you record starting at the left locator, this setting helps you make sure the very start of the recording is included. A very annoying scenario is when you have recorded a perfect MIDI take, only to find out that the very first note was not included – because you started playing a little bit too early! If you raise the Record Catch Range, Cubase Essential will catch the events played just before the recording start point, eliminating this problem.

For a description of the other options, click the Help button in the Preferences.

Filtering MIDI
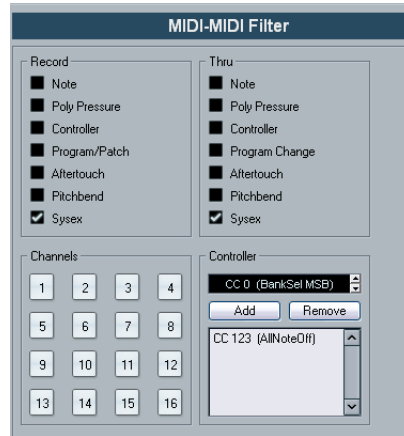
The MIDI–MIDI Filter page in the Preferences allows you to prevent certain MIDI messages from being recorded and/or "thruput" (echoed by the MIDI Thru function).

The dialog is divided into four sections:

Section	Description
Record	Activating any of these options prevents that type of MIDI message from being recorded. It can, however, be thruput, and if already recorded, it will play back normally.
Thru	Activating any of these options prevents that type of MIDI message from being thruput. It can, however, be recorded and played back normally.
Channels	If you activate a channel button, no MIDI messages on that MIDI channel will be recorded or thruput. Already recorded messages will, however, be played back normally.
Controller	Allows you to prevent certain MIDI controller types from being recorded or thruput. To filter out a controller type, select it from the list at the top of the Controller section and click "Add". It will appear on the list below. To remove a controller type from the list (allow it to be recorded and thruput), select it in the lower list and click "Remove".

Options and Settings

Recording-related Transport Preferences

A couple of settings in the Preferences (Transport page) are relevant for recording. Set these according to your preferred method of work:

Deactivate Punch In on Stop

If this is activated, punch in on the Transport panel is automatically deactivated whenever you enter Stop mode.

Stop after Automatic Punch Out

If this is activated, playback will automatically stop after automatic punch out (when the project cursor reaches the right locator and punch out is activated on the Transport panel). If the post-roll value on the Transport panel is set to a value other than zero, playback will continue for the set time before stopping (see below).

About Pre-roll and Post-roll
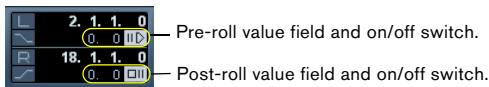
Pre-roll value field and on/off switch.
Post-roll value field and on/off switch.

The pre-roll and post-roll value fields (below the left/right locator fields) on the Transport panel have the following functionality:

▪ By setting a pre-roll value, you instruct Cubase Essential to "roll back" a short section whenever playback is activated.
This applies whenever you start playback, but is perhaps most relevant when recording from the left locator (punch in activated on the Transport panel) as described below.

▪ By setting a post-roll value, you instruct Cubase Essential to play back a short section after automatic punch out before stopping.
This is only relevant when punch out is activated on the Transport panel and "Stop after Automatic Punch Out" is activated in the Preferences (Transport page).

▪ To turn pre-roll or post-roll on or off, click the corresponding button on the Transport panel (next to the pre/post-roll value) or use the "Use Pre-roll" and "Use Post-roll" options on the Transport menu.

An example:

1. Set the locators to where you want to start and end recording.

2. Activate Punch in and Punch out on the Transport panel.

3. Activate the option "Stop after Automatic Punch Out" in the Preferences (Transport page).

4. Set suitable pre-roll and post-roll times by clicking in the corresponding fields on the Transport panel and typing in time values.

5. Activate pre-roll and post-roll by clicking the buttons next to the pre-roll and post-roll times so that they light up.

6. Activate recording.
The project cursor "rolls back" by the time specified in the pre-roll field and playback starts. When the cursor reaches the left locator, recording is automatically activated. When the cursor reaches the right locator, recording is deactivated, but playback continues for the time set in the post-roll field before stopping.

Using the metronome

The metronome can output a click that can be used as a timing reference. The two parameters that govern the timing of the metronome are tempo and time signature, as set in the Tempo Track Editor (see "Editing the tempo curve" on page 252).

You can use the metronome for a click during recording and/or playback or for a precount (count-in) that will be heard when you start recording from Stop mode. Click and precount are activated separately:

▪ To activate the metronome, click the Click button on the Transport panel.
You can also activate the "Metronome On" option on the Transport menu or use the corresponding key command (by default [C]).
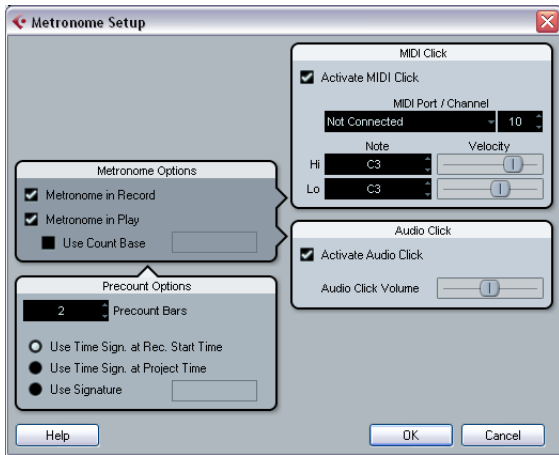
▪ To activate the precount, click the Precount button on the Transport panel.
You can also activate the "Precount On" option on the Transport menu or set up a key command for this.

Click on/off — Precount on/off
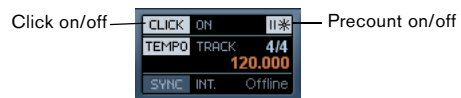
Metronome settings

You make settings for the metronome in the Metronome Setup dialog, opened from the Transport menu.

The metronome can use either an audio click played back via the audio hardware, send MIDI data to a connected device which will play back the click or do both.

The following metronome settings can be made in the dialog:

Metronome Options	Description
Metronome in Record / Play	Allows you to specify whether the metronome should be heard during playback, recording or both (when Click is activated on the Transport panel).
Use Count Base	If this option is activated, a field appears to the right where you specify the "rhythm" of the metronome. Normally, the metronome plays one click per beat, but setting this to e.g. "1/8" gives you eighth notes – two clicks per beat. It is also possible to create unusual metronome rhythms such as triplets etc.

Precount Options	Description
Precount Bars	Sets the number of bars the metronome will count in before it starts recording if precount is activated on the Transport panel.
Use Time Signature at Record Start Time	When this is activated, the precount will automatically use the time signature and tempo set at the position where you start recording.

Precount Options	Description
Use Time Signature at Project Time	When this is activated, the precount will be in the time signature set on the tempo track. Furthermore, any tempo changes on the tempo track during the precount will be applied.
Use Signature	This lets you set a time signature for the precount. In this mode, tempo changes on the tempo track will not affect the precount.

MIDI Click	Description
Activate MIDI Click	Selects whether or not the metronome will sound via MIDI.
MIDI Port/ Channel	This is where you select a MIDI output and channel for the metronome click. Note that you can select a VST instrument previously set up in the VST Instruments window from this menu, allowing you to use a VST Instrument sound for the Metronome click.
Hi Note/ Velocity	Sets the MIDI note number and velocity value for the "high note" (the first beat in a bar).
Lo Note/ Velocity	Sets the MIDI note number and velocity for the "low notes" (the other beats).

Audio Click	Description
Activate Audio Click	Selects whether or not the metronome will sound via the audio hardware. You can set the level of the click with the slider.

Lock and Unlock Record

During recording it can happen that you accidentally deactivate the record mode, e.g. by pressing [Space]. In order to prevent this, you can set up a key command for this in the Key Commands dialog. If you use the Lock Record key command, the Record button will turn gray and the record mode is locked until you use the Unlock Record key command or enter Stop mode.

▪ If Lock Record is activated and you want to enter Stop mode (by clicking Stop or pressing [Space]), you will see a dialog in which you need to confirm that you want to stop recording. You can also use the Unlock Record key command first and then enter Stop mode as usual.

▪ By default, no key commands are assigned to these functions. In the Key Commands dialog, you will find the corresponding key command entries in the Transport category (see the chapter "Key commands" on page 304 for more information on how to set up key commands).

⇨ These key commands are especially useful when combined with other commands (e.g. with Record/Stop) using the macro functions. That way you will receive powerful macros that can greatly enhance your workflow.

⇨ Note that an automatic punch-out at the right locator position that you may have set on the transport panel, will be ignored in Lock Record mode.

Remaining Record Time Display

The Remaining Record Time Display lets you see how much time you have left for recording. The available time depends on the current setup, for example, on the amount of tracks that are record-enabled, your project setup (e.g. the sample rate), and the amount of hard disk space available.

You can show and hide the display by using the Remaining Record Time Display option on the Devices menu.

⇨ The remaining record time is also shown in the status bar below the Track list.

Recovery of audio recordings after system failure

Normally, when a computer crashes, all changes made to your current project since you last saved it will be lost. Usually, there is no quick and easy way to recover your work.

With Cubase Essential, when your system crashes while you are recording (because of a power cut or other mishap), you will find that your recording is still available, from the moment when you started recording to the time when your computer crashed.

When you experience a computer crash during a recording, simply relaunch the system and check the project record folder (by default this is the Audio subfolder inside the project folder). It should contain the audio file you were recording at the time of the crash.

⚠ This feature does not constitute an "overall" guarantee by Steinberg. While the program itself was improved in such a way that audio recordings can be recovered after a system failure, it is always possible that a computer crash, power cut, etc. might have damaged another component of the computer, making it impossible to save or recover any of the data.

⚠ Please do not try to actively bring about this kind of situation to test this feature. Although the internal program processes have been improved to cope with such situations, Steinberg cannot guarantee that other parts of the computer are not damaged as a consequence.

6

Fades, crossfades and envelopes

Creating fades

There are two main types of fade-ins and fade-outs in audio events in Cubase Essential: fades created by using the fade handles (see below) and fades created by processing (see "Fades created by processing" on page 67).

Fades created by using the fade handles

Selected audio events have blue handles in the upper left and right corners. These can be dragged to create a fade-in or fade-out respectively.
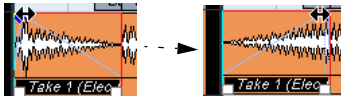
Creating a fade-in. The fade is automatically reflected in the shape of the event's waveform, giving you a visual feedback of the result when you drag the fade handle.

Fades created with the handles are not applied to the audio clip as such but calculated in realtime during playback. This means that several events referring to the same audio clip can have different fade curves. It also means that having a huge number of fades may demand a lot of processor power.

▪ If you select multiple events and drag the fade handles on one of them, the same fade will be applied to all selected events.

▪ A fade can be edited in the Fade dialog, as described on the following pages.
You open the dialog by double-clicking in the area above the fade curve, or by selecting the event and selecting "Open Fade Editor(s)" from the Audio menu (note that this will open two dialogs if the event has both fade-in and fade-out curves).
If you adjust the shape of the fade curve in the Fade dialog, this shape will be maintained when you later adjust the length of a fade.

▪ You can make the fade longer or shorter at any time, by dragging the handle.
You can actually do this even without selecting the event first, i.e. without visible handles. Just move the mouse pointer along the fade curve until the cursor turns into a bidirectional arrow, then click and drag.

▪ If the option "Fade Handles always on Top" is activated in the Preferences dialog (Event Display–Audio page), the fade handles stay at the top of the event, and vertical help lines indicate the exact end or start points of fades.
This is useful in situations where you want the event volume to be very low, as this option allows you to still see the fade handles.

▪ If the option "Show Event Volume Curves Always" is activated in the Preferences (Event Display–Audio page), the fade curves will be shown in all events, regardless of whether they are selected or not.
If the option is deactivated, the fade curves are shown in selected events only.

▪ If the option "Thick Fade Lines" is activated in the Preferences dialog (Event Display–Audio page), the fade lines and volume curve are thicker, increasing their visibility.
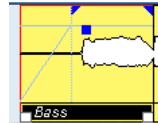
Fade handles on top of the event and thicker fade and volume lines allow you to edit and view fades even in situations where event volume is very low.

▪ When the option "Use Mouse Wheel for Event volume and Fades" is activated in the Preferences dialog (Editing–Audio page), you can use the mouse wheel to move the volume curve up or down. When you hold down [Shift] while moving the mouse wheel, this will change the fade curves. This is useful in situations where the fade handles are not visible (e.g. because of a very high zoom factor).
When you position the mouse pointer somewhere in the left half of the event, the fade in end point is moved. When the mouse pointer is in the right half of the event, the fade out start point will move.

⇨ You can set up key commands for changing the event volume curve and any fade curves, if you do not want to use the mouse for this.
You will find these commands in the Key Commands dialog, in the Audio category, see "Key commands" on page 304.

Creating and adjusting fades with the Range Selection tool

"Handle-type" fades can also be created and adjusted with the Range Selection tool, in the following way:

1. Select a section of the audio event with the Range Selection tool.
The result depends on your selection:

• If you select a range from the beginning of the event, a fade-in will be created within the range.
• If you select a range that reaches the end of an event, a fade-out will be created in the range.
• If you select a range encompassing a middle section of the event, but not reaching neither the start nor the end, both a fade-in and a fade-out will be created outside of the selected range. In other words, the fade-in will cover the area from the beginning of the event to the beginning of the selected range, and the fade-out will cover the area from the end of the selected range to the end of the event.

2. Pull down the Audio menu and select "Adjust Fades to Range".
The fade areas are adjusted according to the selection range.

⚠ You can select multiple audio events on separate tracks with the Range Selection tool, and apply the fade to all of them simultaneously.

About the volume handle

A selected audio event also has a blue handle in the top middle. This is the volume handle, and it provides a quick way of changing the volume of an event, directly in the Project window. It is linked directly to the volume setting on the info line, that is, dragging the volume handle also changes the value on the info line.

The volume change is displayed numerically on the info line.
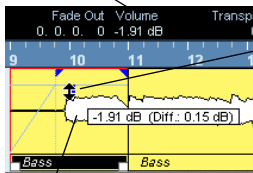
Drag the Volume handle up or down to change the volume of the event.

The event waveform reflects the volume change.

Removing fades

To remove the fades for an event, select the event and select "Remove Fades" from the Audio menu.

You can also use the Range Selection tool to remove fades and crossfades within the selected range this way.

Fades created by processing

If you have selected an audio event or a section of an audio event (using the Range Selection tool), you can apply a fade-in or fade-out to the selection by using the "Fade In" or "Fade Out" functions on the Process submenu on the Audio menu. These functions open the corresponding Fade dialog, allowing you to specify a fade curve.

⚠ Note that the length of the fade area is determined by your selection. In other words, you specify the length of the fade before you enter the Fade dialog.

⚠ Also note that you can select multiple events and apply the same processing to all of them simultaneously.

Fades created this way are applied to the audio clip rather than to the event. Please note the following:

• If you later create new events that refer to the same clip, these will have the same fades.
• You can remove or modify the fades at any time using the Offline Process History (see "The Offline Process History dialog" on page 136).

If other events refer to the same audio clip, you will be asked whether you want the processing to be applied to these events or not.

• Continue will apply the processing to all events that refer to the audio clip.
• New Version will create a separate, new version of the audio clip for the selected event.

• You can also activate the option "Do not show this message again". Regardless of whether you then choose "Continue" or "New Version", any further processing will conform to the option you select.
You can change this setting at any time in the Preferences (Editing–Audio page), under "On Processing Shared Clips".

The Fade dialogs

The Fade dialogs appear when you edit an existing fade or use the Fade In/Fade Out functions on the Process sub-menu on the Audio menu. The picture below shows the Fade In dialog; the Fade Out dialog has identical settings and features.
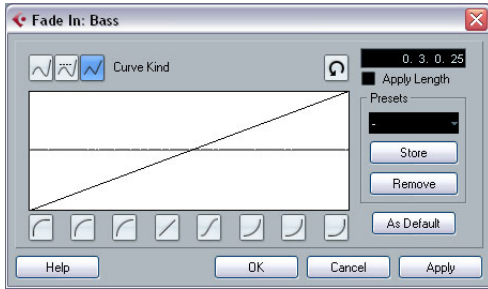
▪ If you open the Fade dialog(s) with several events selected, you can adjust the fade curves for all these events at the same time.

This is useful if you want to apply the same type of fade-in to more than one event, etc.

Curve Kind

These buttons determine whether the fade curve should consist of spline curve segments (left button), damped spline segments (middle button) or linear segments (right button).

Fade display

The Fade display shows the shape of the fade curve. The resulting waveform shape is shown in dark gray, with the current waveform shape in light gray.

You can click on the curve to add points, and click and drag existing points to change the shape. To remove a point from the curve, drag it outside the display.

Curve shape buttons

These buttons give you quick access to some common curve shapes.

Restore button

The Restore button (to the right above the fade display) is only available when editing fades made by dragging the fade handles. Click this to cancel any changes you have made since opening the dialog.

As Default button

The "As Default" button is only available when editing fades made by dragging the fade handles. Click this to store the current settings as the default fade. This shape will be used whenever you create new fades.

Fade Length Value

The Fade Length Value is only available when editing fades made by dragging the fade handles. It can be used to enter fade lengths numerically. The format of values displayed here are determined by the primary Time Display in the Transport Panel.

When you activate the "Apply Length" option, the value entered in the Fade Length value field will be used when clicking "Apply" or "OK". This setting is deactivated by default.

When you set the current Fade as the Default fade, the length value is included as part of the default settings.

Presets

If you have set up a fade in or fade out curve that you may want to apply to other events or clips, you can store it as a preset by clicking the Store button.

▪ To apply a stored preset, select it from the pop-up menu.

▪ To rename the selected preset, double-click on the name and type a new one.

▪ To remove a stored preset, select it from the pop-up menu and click Remove.

⚠ Stored fade in presets will only appear in the Fade In dialog, and fade out presets will only appear in the Fade Out dialog.

Preview, Apply and Process

The buttons in the bottom row are different depending on whether you are editing a fade made with the fade handles or applying a fade using processing:

| OK | Cancel | Apply | | Preview | Process | Cancel |
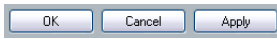
The Edit Fade dialog   The Process Fade dialog

The Edit Fade dialogs have the following buttons:

Button	Function
OK	Applies the set fade curve to the event, and closes the dialog.
Cancel	Closes the dialog.
Apply	Applies the set fade curve to the event, without closing the dialog.

The Process Fade dialogs have the following buttons:

Button	Function
Preview	Plays back the fade area. Playback will repeat until you click the button again (the button is labeled "Stop" during playback).
Process	Applies the set fade curve to the clip, and closes the dialog.
Cancel	Closes the dialog without applying any fade.

Creating crossfades

Overlapping audio material on the same track can be crossfaded, for smooth transitions or special effects. You create a crossfade by selecting two consecutive audio events and selecting the Crossfade command on the Audio menu (or by using the corresponding key command, by default [X]). The result depends on whether the two events overlap or not:

▪ If the events overlap, a crossfade is created in the overlapping area.
The crossfade will be of the default shape – initially a linear, symmetric crossfade, but you can change this as described below.

Overlapping section
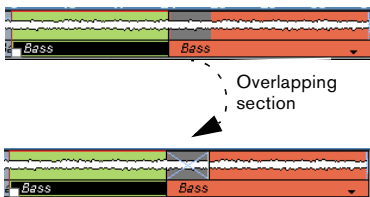
▪ If the events do not overlap but are directly consecutive (lined up end-to-start, with no gap) it is still possible to crossfade them – provided that their respective audio clips overlap! In this case, the two events are resized so that they overlap, and a crossfade of the default length and shape is applied.
The default crossfade length and shape are set in the Crossfade dialog (see).

An example:

Audio events

Audio clips
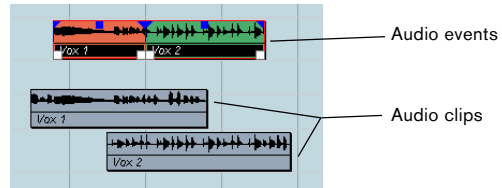
The events themselves do not overlap, but their clips do. Therefore, the events can be resized so that they overlap, which is required for a crossfade to be created.

When you select the Crossfade function, the two events are resized so that they overlap, and a default crossfade is created in the overlapping section.

▪ If the events do not overlap, and cannot be resized enough to overlap, a crossfade cannot be created.

▪ Once you have created a crossfade, you can edit it by selecting one or both crossfaded events, and selecting "Crossfade" from the Audio menu again (or by double-clicking in the crossfade zone).
This opens the Crossfade dialog, see below.

Removing crossfades

To remove a crossfade, proceed as follows:

▪ Select the events and select "Remove Fades" from the Audio menu.
You can also use the Range Selection tool: drag the Range Selection tool so that the selection encloses all the fades and crossfades you wish to remove, and select "Remove Fades" from the Audio menu.

▪ You can also remove a crossfade by clicking and dragging it outside the track.

The Crossfade dialog
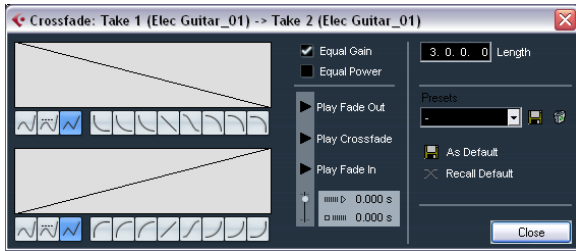
The Crossfade dialog contains separate, but identical, sections for the fade-in and fade-out curve settings in the crossfade on the left, and common settings on the right.

Fade Displays

Shows the shape of the fade-out and fade-in curve, respectively. You can click on the curve to add points, and click and drag existing points to change the shape. To remove a point from the curve, drag it outside the display.

Curve kind buttons

These buttons determine whether the corresponding fade curve should consist of spline curve segments (left button), damped spline segments (middle button) or linear segments (right button).

Curve shape buttons

These buttons give you quick access to some common curve shapes.

Equal Power and Gain

▪ If you activate the "Equal Gain" checkbox, the fade curves are adjusted so that the summed fade-in and fade-out amplitudes will be the same all along the crossfade region. This is often suitable for short crossfades.

▪ If you activate the "Equal Power" checkbox, the fade curves are adjusted, so that the energy (power) of the crossfade will be constant all along the crossfade region.

⚠ Equal Power curves have only one editable curve point. You cannot use the Curve kind buttons or the presets when this mode is selected.

Play buttons

▪ The "Play Fade Out" and "Play Fade In" buttons allow you to audition the fade-out or fade-in part only, without the crossfade.

▪ The "Play Crossfade" button plays back the whole crossfade.

You can also use the Transport panel controls to play back the crossfaded audio events. However, that method will play back all unmuted audio events on other tracks as well.

Pre-roll and Post-roll

When auditioning with the Play buttons, you can choose to activate pre-roll and/or post-roll. Pre-roll lets you start playback before the fade area, and post-roll lets you stop playback after the fade area. This can be useful for auditioning the fade in a context.

▪ To specify how long the pre-roll and post-roll should be, click in the time fields and enter the desired time (in seconds and milliseconds).

▪ To activate pre-roll and post-roll, click the respective button. To deactivate it, click the button again.

Length settings

You can adjust the length of the crossfade area numerically in the "Length" field. If possible, the length change will be applied equally to "both sides" of the crossfade (i.e. Cubase Essential tries to "center" the crossfade).

⚠ To be able to resize a crossfade this way, it must be possible to resize the corresponding event. For example, if the left crossfaded event already plays its audio clip to the end, its endpoint cannot be moved any further to the right.

Presets

If you have set up a crossfade shape that you may want to apply to other events, you can store it as a preset by clicking the Store button.

▪ To apply a stored preset, select it from the pop-up menu.

▪ To rename the selected preset, double-click on the name and type in a new one.

▪ To remove a stored preset, select it from the pop-up menu and click Remove.

Fades, crossfades and envelopes

Default buttons

▪ Clicking the "As Default" button stores all of the current settings as the default crossfade. These settings will then be used whenever you create new crossfades.

▪ The Crossfade Length setting is included in the Default settings. However, it is only applied if the events to be crossfaded do not overlap, otherwise the crossfade will be in the overlap area (see "Creating crossfades" on page 69).

▪ Clicking the "Recall Default" button copies the curves and settings of the Default crossfade to the Crossfade dialog.

Auto Fades and Crossfades

Cubase Essential features an Auto Fade function that can be set both globally, i.e. for the entire project, and separately for each audio track. The idea behind the Auto Fade function is to create smoother transitions between events by applying short (1–500ms) fade-ins and fade-outs.

⚠ As mentioned earlier, fades are calculated in realtime during playback. This means that the larger the number of audio tracks with Auto Fades activated in a project, the higher the demands on the processor.

⚠ Note that auto fades are not indicated by the fade lines!

Making global Auto Fade settings

1. To make Auto Fades settings globally for the project, select "Auto Fades Settings…" from the Project menu.
This opens the Auto Fades dialog for the project.
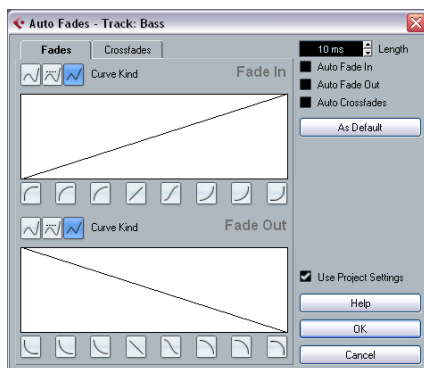
2. Use the checkboxes in the upper right corner to activate or deactivate Auto Fade In, Auto Fade Out and Auto Crossfades, respectively.

3. Use the Length value field to specify the length of the Auto Fade or Crossfade (1–500ms).

4. To adjust the shapes of Auto Fade In and Auto Fade Out, select the "Fades" tab and make settings as in the regular Fade dialogs.

5. To adjust the shape of the Auto Crossfade, select the "Crossfades" tab and make settings as in the regular Crossfade dialog.

6. If you want to use the settings you have made in future projects, click the "As Default" button.
The next time you create a new project, it will use these settings by default.

7. Click OK to close the dialog.

Making Auto Fade settings for a separate track

By default, all audio tracks will use the settings you have made in the project's Auto Fades dialog. However, since Auto Fades use computing power, a better approach may be to turn Auto Fades off globally and activate them for individual tracks, as needed:

1. Right-click the track in the Track list and select "Auto Fades Settings…" from the context menu (or select the track and click the "Auto Fades Settings" button in the Inspector).
The Auto Fades dialog for the track opens. This is identical to the project's Auto Fades dialog, with the addition of a "Use Project Settings" option.

2. Deactivate the "Use Project Settings" option.
Now, any settings you make will be applied to the track only.

3. Set up the Auto Fades as desired and close the dialog.

Reverting to project settings

If you want a track to use the global Auto Fade settings, open the Auto Fades dialog for the track and activate the "Use Project Settings" checkbox.

Fades, crossfades and envelopes

7

The Arranger track

Introduction

The Arranger track allows you to work with sections of your project in a non-linear fashion, to simplify arranging to the maximum extent. Instead of moving, copying and pasting events in the Project window to create a linear project, you can define how different sections are to be played back, like a playlist.

For this, you can define Arranger events, order them in a list, and add repeats as desired. This offers a different and more pattern-oriented way of working, which complements the usual linear editing methods in the Project window.

You can create several Arranger chains, making it possible to store different versions of a song within the project without sacrificing the original version. When you have created an Arranger chain that you like, you have the option of "flattening" the list, which creates a normal linear project based on the Arranger chain.

You can also use the Arranger track for live performances on the stage, in clubs or at parties.

Setting up the Arranger track

Let's say you have prepared a number of audio files that form the base of a typical pop song, with introduction, verse, chorus and bridge. Now you want to arrange these files.

The first step is to create an Arranger track. On the Arranger track, you define specific sections of the project by creating Arranger events. These can be of any length, may overlap and are not bound to the start or end of existing events and parts. Proceed as follows:

1. Open the project for which you want to create Arranger events.

2. Open the Project menu and select Arranger from the Add Track submenu (or right-click in the Track list and select Add Arranger Track).
An Arranger track is added. There can be only one Arranger track in a project, but you can set up more than one Arranger chain for this track, see .

3. On the Project window toolbar, make sure that Snap is activated, and that the Snap Type is set to a mode that allows your Arranger events to snap to appropriate positions in the project.

Snap to events is activated, i.e. when drawing in the Project window, new events will snap to existing events.

4. On the Arranger track, use the Pencil tool to draw an event of the desired length.
An Arranger event is added, called "A" by default. Any following events will be named in alphabetical order.

▪ You can rename an Arranger event by selecting it and changing its name in the Project window info line or by holding down [Alt]/[Option], double-clicking on the name in the Arranger chain (see below) and entering a new name.
You may want to name your Arranger events according to the structure of your project, e.g. Verse, Chorus etc.

5. Create as many events as you need for your project.

In this example, Arranger events have been created that correspond to a classic pop song structure. Note how there is no real time line in the project: the music sequence is determined by the Arranger events.

Events can be moved, resized and deleted using the standard techniques. Please note:

▪ If you want to change the length of an event, select the Arrow tool and click and drag the lower corners of the event in the desired direction.

▪ If you copy an Arranger event (by [Alt]/[Option]-dragging or by using copy/paste), a new event will be created with the same name as the original.
However, this new event will be totally independent from the original event.

▪ Double-clicking on an Arranger event adds it to the current Arranger chain.

Working with Arranger events

You now have a number of Arranger events that form the basic building blocks for your arrangement. The next step is to arrange these events using the functions of the Arranger Editor.
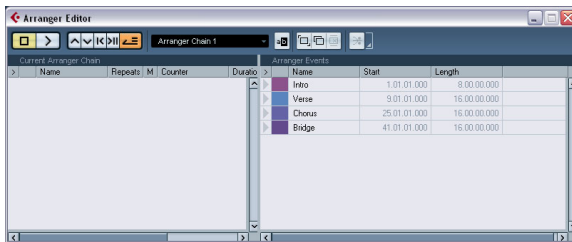
Creating an Arranger chain

You can set up an Arranger chain in the Arranger Editor or in the Inspector for the Arranger track. The Arranger Editor is opened by clicking the "e" button in the Inspector or in the Track list.
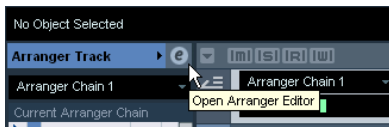
Click the "e" button…

…to open the Arranger Editor.

On the right in the Arranger Editor, the available Arranger events are listed, in the order they appear on the time line. To the left you find the actual Arranger chain, which shows in which order the events will be played back, from top to bottom, and how many times they should be repeated.

Initially the Arranger chain is empty – you set it up by adding events from the list to the chain. There are several ways to add events to the Arranger chain:

• By double-clicking on the name of an event in the window section on the right (or in the Project window).
When an event is selected in the Arranger chain on the left, this will add the event above the selected event. When no events are selected in the Arranger chain, the event will be added at the end of the list.

• By selecting one or more events in the list, right-clicking and selecting "Append Selected In Arranger Chain".
This will add the selected events at the end of the list.

• By dragging and dropping Arranger events from the list on the right to the Arranger chain on the left.
A blue insertion line shows you where the dragged event will end up.
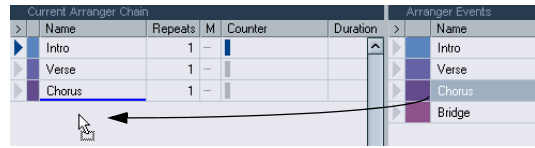
An event is dragged into the Arranger chain.

• By dragging Arranger events from the Project window into the Arranger chain.

If you followed our example, you should now have Arranger events arranged in a very basic pop song pattern. However, we have used audio files that are only a few bars long – to turn our pattern into a "song" (or at least into a basic sketch of the song structure), these files must be looped. This is where the Repeats function comes in.

If you want an event to repeat several times, proceed as follows:

• Click in the Repeats field for an event, type in the desired number of repeats and press [Enter].
When playing back the Arranger chain, the Counter column indicates which repeat of this event is currently playing.
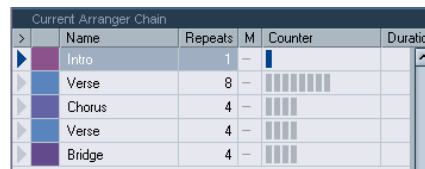
• Click in the Mode field for an event and select the desired repeat mode.

Option	Button	Description
Normal	–	In this mode, the Arranger chain will be played back as you set it up.
Repeat forever	⇄	In this mode, the current Arranger event will be repeated in a loop until you either click on another event in the Arranger Editor or press play once again.
Pause after Repeats	II	In this mode, the playback of the Arranger chain will be stopped after having played back all repeats of the current Arranger event.

When you now play back the Arranger chain, you will hear the complete arrangement. Proceed as follows:

1. Make sure that Arranger mode is activated.

In Arranger mode the project will be played back using the Arranger settings.
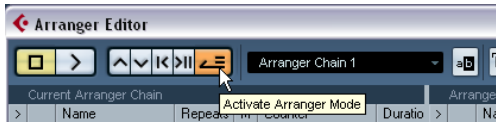
2. Position the Arranger Editor window so that you can see the Arranger track in the Project window, and click in the arrow column for the event at the top of the list so that the arrow becomes blue.

You should see the project cursor jump to the beginning of the first event specified in the Arranger chain.

3. Activate playback, either from the Arranger Editor or on the Transport panel.

The events are played back in the specified order.

Editing the Arranger chain

In the Arranger chain on the left, you can do the following:

▪ Select multiple events by [Ctrl]/[Command]-clicking or [Shift]-clicking as usual.

▪ Drag events to move them in the list.

▪ Drag events holding [Alt]/[Option] to create copies of the selected items.

The insert location for both move and copy operations is indicated by a blue or red line in the list. A blue line indicates that the move or copy is possible; a red line indicates that moving or copying events to the current position is not allowed.

▪ Use the Repeats column to specify how many times each event should be repeated.

▪ Click the arrow to the left of an event in the Arranger chain to move the playback position to the start of that event.

▪ To remove an event from the list, right-click on it and select "Remove Touched" from the context menu. To remove several events, select them, right-click and select "Remove Selected".

Navigating

To navigate between Arranger events, you use the Arranger transport buttons:
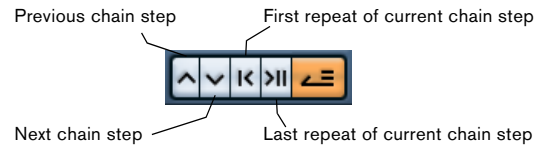
These controls are available in the Arranger Editor, on the Project window toolbar, and on the Transport panel.

In the Arranger Editor, the event that is currently played back is indicated by an arrow in the leftmost column, and the indicators in the Counter column.

Managing Arranger chains

You can create several Arranger chains. This way, you can create alternative versions for playback. In the Arranger Editor, the toolbar buttons on the right are used for this:

Button	Description
	Click this to rename the current Arranger chain.
	Creates a new, empty Arranger chain.
	Creates a duplicate of the current Arranger chain, containing the same events.
	Removes the currently selected Arranger chain. Only available if you have created more than one Arranger chain.

▪ In the Inspector, these functions are accessed from the Arranger pop-up menu (opened by clicking on the Arranger name field).

The Arranger chains you create will be listed on the Name pop-up menu, found in the Arranger Editor to the left of the buttons, at the top of the Arranger track Inspector, and in the Track list. Please note that to be able to select another Arranger chain from the pop-up menu, the Arranger mode must be activated.

Flattening the Arranger chain

When you have found an Arranger chain that suits your purposes, you can "flatten" it, i.e. convert the list into a linear project. Proceed as follows:

1. Click the Flatten button (or select Flatten Chain from the pop-up menu in the Inspector for the Arranger track).
The events and parts in the project are reordered, repeated, resized, moved and/or deleted (if these are not within the boundaries of any used Arranger event), so that they correspond exactly to the Arranger chain.

The Flatten button

2. Activate Playback.
The project will now play back exactly as in Arranger mode, but you can view it and work with it as usual.

⚠ Flattening the Arranger chain may remove events and parts from the project. Only use the Flatten function when you know you do not want to edit the Arranger track/chain any more. If in doubt, save a copy of the project before flattening the Arranger chain.

Flattening options

Sometimes it might be useful to keep the original Arranger events even after flattening the Arranger track. By using flattening options you can define which chain is flattened, where it is stored and how it is named together with other options.

1. Click the Flattening options button.

2. In the window that appears, select the desired options.
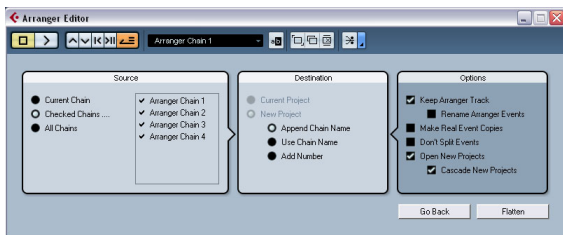
In the Source section you can specify which Arranger chains are flattened. The available options are:

Option	Description
Current Chain	If you activate this option, only the current chain will be flattened.
Checked Chains…	If you activate this option, you can select the Arranger chains you want to flatten in the list to the left.
All Chains	If you activate this option, all Arranger chains of the current project will be flattened.

The Destination section allows you to choose where the result of the flattening is saved. The available options are:

Option	Description
Current Project	This is only available if you have selected "Current Chain" as Source. If you activate this option, the result of the flattening of the current chain will be saved in the current project.
New Project	If you activate this option, you can flatten one or several chains in a new project. In this case it might be useful to use naming options. If you activate "Append Chain Name", the Chain Names will be appended in brackets to the project name. If you activate "Use Chain Name", the new projects will have the name of the current Arranger chains. If you activate "Add Number", the new projects will be named like the old ones and a number will be appended in brackets.

In the Options section you can make further settings. The available options are:

Option	Description
Keep Arranger Track	If you activate this option, the Arranger track will be kept when flattening the Arranger chain. Activate "Rename Arranger Events" to append a number to the events, according to their use. For example, if you use Arranger event "A" two times, the first occurrence will be renamed "A 1" and the second "A 2".
Make Real Event Copies	Normally, you will get shared copies when flattening the Arranger track. If you activate this option, real copies will be created instead.
Don't Split Events	If this option is activated, MIDI notes that start before or are longer than the Arranger event will not be included. Only MIDI notes that begin and end inside the Arranger event boundaries will be taken into account.
Open New Projects	If you activate this option, a new project will be created for every flattened Arranger chain. If you activate the option "Cascade New Projects" the opened projects will be cascaded.

3. You can now flatten the Arranger track by clicking the Flatten button.
If you realize that you want to do further arrangements, you can click the "Go Back" button and make your adjustments. Your Flattening settings will be kept.

4. Click the "Go Back" button to go back to the Arranger Editor or close the window by clicking its Close button.

Live mode

If you have set up an Arranger track and play it back, you have also the possibility to influence the playback order "live". Note that the Arranger mode has to be activated to be able to use the Live mode.

1. Add an Arranger track by selecting "Arranger" from the Add Track submenu of the Project menu.

2. Create the desired Arranger events by drawing with the Pencil tool on the Arranger track.

3. Set up an Arranger chain in the Inspector for the Arranger track or in the Arranger Editor, activate the Arranger mode and play back your project.

Now you can use your Arranger events listed in the lower section of the Inspector to play back your project in Live mode:

4. Switch into Live mode by clicking on the little arrow in the lower list of the Inspector to the left of the Arranger event you want to trigger.

The Arranger event will be looped endlessly, until you click on another Arranger event. This might be useful, for example, if you want to loop a guitar solo with a flexible length.

▪ You can stop Live mode by clicking the Stop button or go back to "normal" playback in Arranger mode by clicking on any Arranger event in the upper list.

In the latter case, playback will be continued from the Arranger event where you clicked. The Jump Mode pop-up menu will always be taken into account. If the grid is set to "1 Bar", for example, and you click the Stop button, playback will be stopped after the next bar.
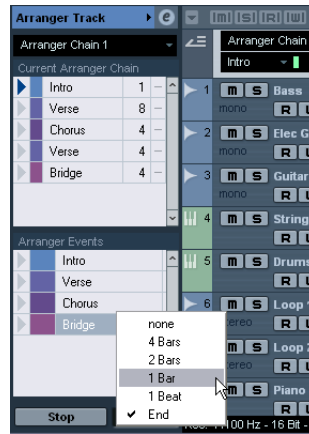
The active Arranger event will be played back as long as defined before jumping to the next.

Option	Description
None	Jumps to the next section immediately.
4 bars, 2 bars	When one of these modes is selected, a grid of 4 or 2 bars (depending on the setting) will be placed on the active Arranger event. Whenever the respective grid line is reached, playback will jump to the next Arranger event. An example: Let's say you have an Arranger event which is 8 bars long and the grid is set to 4 bars. When the cursor is anywhere within the first 4 bars of the Arranger event when you hit the next Arranger event, playback will jump to the next event when the end of the fourth bar of the Arranger event is reached. When the cursor is anywhere within the last 4 bars of the Arranger event, playback will jump to the next event at the end of the event. When an event is shorter than 4 (or 2) bars and this mode is selected, playback will jump to the next section at the event end.
1 bar	Jumps to the next section at the next bar line.
1 beat	Jumps to the next section at the next beat.
End	Plays the current section to the end, then jumps to the next section.

Arranging your music to video

The relative time of your Arranger track can be taken as a reference instead of the project time. This is useful, if you want to use the Arranger track to compose music for video and fill e.g. a specific video section with music, by repeating the corresponding number of Arranger events.

If you position your external sync master device to a position that does not match the Project Start time, Cubase Essential will jump automatically to the right position in the Arranger track and will start playback from there, i.e. the correct relative position and not the absolute project time will be found. The reference for the external timecode can be MIDI or any other timecode that can be interpreted/read by Cubase Essential.

An example:

1. Set up a project with a MIDI track and three MIDI parts. The first should start at position 00:00:00:00 and end at position 00:01:00:00, the second should start at position 00:01:00:00 and end at position 00:02:00:00 and the third should start at position 00:02:00:00 and end at position 00:03:00:00.

2. Activate the Sync button on the Transport panel.

3. Add an Arranger track and create Arranger events that match the MIDI parts.

4. Set up the Arranger chain "A-A-B-B-C-C", activate the Arranger mode and play back your project.

5. Start external timecode at position 00:00:10:00 (within the range of "A").
In your project, the position 00:00:10:00 will be located and you will hear "A" playing. Nothing special!

Now, let's see what happens if your external sync master device starts at a position that does not match the Project Start time:

6. Start at 00:01:10:00 (within the range of what originally was "B").
In your project, the position 00:01:10:00 will be located and you will hear "A" playing, because it plays twice in the Arranger track.

7. Start external timecode at position 00:02:10:00 (within the range of what originally was "C").
In your project, the position 00:02:10:00 will be located and you will hear "B" playing, because it plays "later" in the Arranger track.

⇨ If the Arranger mode is not activated or no Arranger track exists, Cubase Essential will work as usual.

8

The Mixer

About this chapter

This chapter contains detailed information about the elements used when mixing audio and MIDI, and the various ways you can configure the Mixer.

Some mixer-related features are not described in this chapter. These are the following:

▪ Setting up and using audio effects.
See the chapter "Audio effects" on page 95.

▪ Setting up and using MIDI effects.
See the chapter "MIDI realtime parameters and effects" on page 192.

▪ Automation of all mixer parameters.
See the chapter "Automation" on page 121.

▪ How to mix down several audio tracks (complete with automation and effects if you wish) to a single audio file.
See the chapter "Export Audio Mixdown" on page 255.

Overview

The Mixer offers a common environment for controlling levels, pan, solo/mute status etc. for both audio and MIDI channels.

Opening the Mixer

The Mixer can be opened in several ways:

▪ By selecting Mixer from the Devices menu.

▪ By clicking the Mixer icon on the toolbar.

▪ By using a key command (by default [F3]).

▪ By clicking the Mixer button in the Devices panel.
You open the Devices panel by selecting Show Panel from the Devices menu.

What channel types can be shown in the Mixer?

The following track-based channel types are shown in the Mixer:

▪ Audio
▪ MIDI
▪ Effect return channels (referred to as FX channels in the Project window)
▪ Group channels
▪ Instrument track channels

The order of audio, MIDI, instrument, group and effect return channel strips (from left to right) in the Mixer corresponds to the Project window Track list (from the top down). If you reorder tracks of these types in the Track list, this will be mirrored in the Mixer.

In addition to the above, the following channel types are also shown in the Mixer:

▪ Activated ReWire channels (see the chapter "ReWire" on page 283).
▪ VST instrument channels (see the chapter "VST instruments and instrument tracks" on page 110).

ReWire channels cannot be reordered and always appear to the right of other channels in the main Mixer pane (see below). VST instrument (VSTi) channels can be reordered in the Track list which will in turn be mirrored in the Mixer.

The other track types are not shown in the Mixer.

Output busses in the Mixer

Output busses are represented by output channels in the Mixer. They appear in a separate "pane" separated by a movable divider and with its own horizontal scrollbar, see "The output channels" on page 84.

Configuring the Mixer

The Mixer window can be configured in various ways to suit your needs and to save screen space. Here follows a run through of the various view options (the following descriptions assume that you have an active project containing some tracks).

The Mixer shows the channel faders for the various tracks of your project. On the right of the fader panel you find the output channel fader. On the left is the common panel which allows for global settings affecting all channels.

The common panel

The common panel appears to the left in the Mixer window and contains settings for changing the look and behavior of the Mixer, as well as global settings for all channels.

Global Mute and Solo buttons

Global automation Read/ Write buttons

Reset Mixer/ Reset Channels

Channel settings copy/ paste, see "Copying settings between audio channels" on page 89.

Opens the VST Connections window, see "The VST Connections window" on page 11.

Toggle channel strips in the Mixer between "All Targets Wide" and "All Targets Narrow".

With these indicator buttons you can select which channel types are shown in the Mixer (see "Selecting what channel types to show/hide" on page 81) and/or will be affected by commands (see "About the Command Target" on page 82).

Store/Remove View set buttons (+/-) and Select View set pop-up, see "Channel view sets" on page 82.

Selecting what channel types to show/hide

You can specify what channel types to show or hide in the Mixer. In the lower part of the common panel you find a vertical strip with different indicator buttons. Each indicator represents a channel type to show or hide in the Mixer:

"Can Hide" options – see below

"Command Target" options – see "About the Command Target" on page 82.

Audio Channels

ReWire Channels

VST Instrument Channels

Output Channels

Group Channels

MIDI Channels

FX Channels

Reveal all channels
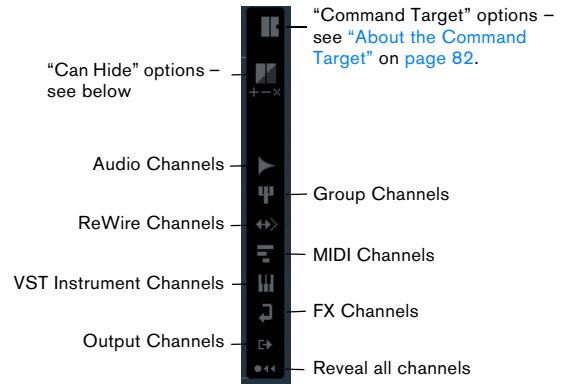
▪ To hide or show a channel type, click the corresponding indicator.

If an indicator is dark, the corresponding channel type will be shown in the Mixer. If it is orange, the corresponding channel type will be hidden.

Showing/hiding individual channels (the "Can Hide" setting)

You can also show/hide individual channels of any type in the Mixer. For this, you can assign channels a "Can Hide" status, which allows you to hide these channels collectively. Proceed as follows:

1. [Alt]/[Option]-click in the top middle section of the channel strip activate the "Can Hide" option.
The "/" icon is shown if "Can Hide" is activated for a channel strip.

2. Repeat this for all channels you want to hide.

3. Click the button "Hide Channels set to 'Can Hide'" on the common panel.
This hides all channels set to "Can Hide". To show them again, click the button again or click the "Reveal All Channels" button at the bottom of the common panel.

Below the "Hide Channels set to 'Can Hide'" button, there are three additional buttons.

These have the following functionality:

Option	Description
Set Target Channels to 'Can Hide'	This activates "Can Hide" for all Channels you specified as "Command Targets", see below.
Remove 'Can Hide' from Target Channels	This deactivates "Can Hide" for all Channels you specified as "Command Targets", see below.
Remove 'Can Hide' from All Channels	This deactivates "Can Hide" for all Channels in the Mixer.

About the Command Target

Command targets let you specify which channels should be affected by the "commands" (basically all the functions that can be assigned key commands) when working with the Mixer, e.g. the width setting of the channel strips. You can set command targets using the Mixer common panel or the context menu.

The Command Target Controls on the common panel

The following options are available:

- All Channels – Select this if you want your commands to affect all channels.
- Selected Only – Select this if you want your commands to affect the selected channels only.
- Exclude Outputs – Select this if you do not want your commands to affect the output channels.

Channel view sets

Channel view sets are saved configurations of the Mixer window, allowing you to quickly switch between different layouts for the Mixer. Proceed as follows:

1. Set up the Mixer the way you wish to store it as a view set.
The following settings will be stored:

- Settings for individual channel strips (e.g. narrow or wide mode and whether the channel strip is (or can be) hidden or not).
- The hide/show status for channel types.

2. Click the "Store View Set" button (the plus sign) at the bottom of the common panel.

3. A dialog appears, allowing you to enter a name for the view set.

4. Click OK to store the current Mixer view set.

- You can now return to this stored configuration at any time, by clicking the "Select Channel View Set" button (the down arrow to the left of the "Store View Set" button) and selecting it from the pop-up menu.

- To remove a stored channel view set, select it and click the "Remove View Set" button (the minus sign).

⚠ Some remote control devices (such as Steinberg's Houston) feature this function, which means that you can use the remote device to switch between the channel view sets.

Setting the width of channel strips

Each channel strip can be set to either "Wide" or "Narrow" mode by using the Channel Narrow/Wide button on the left above the fader strip.
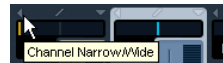
The Channel Narrow/Wide button

- Narrow channel strips contain a narrow fader, miniature buttons, and the View options pop-up.
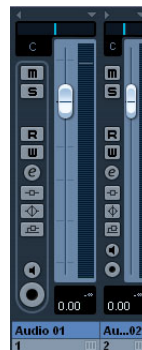
Wide and narrow channel strips

- When selecting "All targets narrow" or "All targets wide" on the common panel, all channel strips selected as command targets (see) are affected.

The audio-related channel strips

The common panel (see "The common panel" on page 81)

Record Enable and Monitor buttons

Channel automation controls

Opens the control panel for the VST instrument

Narrow/Wide button

Pan control

The Can Hide State for the channel

Level fader

Level meter

Edit button (opens the Channel Settings window)

Channel name

Insert/EQ/Send indicators and bypass buttons (see below)

All audio-related channel types (audio, instrument track, output channels, group, effect return, VST instrument and ReWire) basically have the same channel strip layout, with the following differences:

▪ Only audio and instrument track channels have a Monitor and Record Enable button.
▪ Output channels do not have sends.
▪ Instrument track and VST instrument channels have an additional button for opening the instrument's control panel.
▪ Output channels have clipping indicators.

About the Insert/EQ/Send indicators and bypass buttons

The three indicator buttons in each audio channel strip have the following functionality:

▪ If an Insert or Send effect or an EQ module is activated for a channel, the corresponding button is lit.
The effect indicators will be blue, the EQ indicator will be green.

The MIDI channel strips allow you to control volume and pan in your MIDI instrument (provided that they are set up to

▪ If you click these buttons when lit, the corresponding EQ or effects section will be bypassed.
Bypass is indicated by yellow buttons. Clicking the button again deactivates bypass.

The MIDI channel strips

Channel Narrow/Wide button

Mute and Solo

Channel automation controls

Insert/Send indicators and Bypass buttons

Monitor and Record Enable buttons

Can Hide State

Pan control

Level (velocity) meter

Edit button

Level fader (MIDI volume)
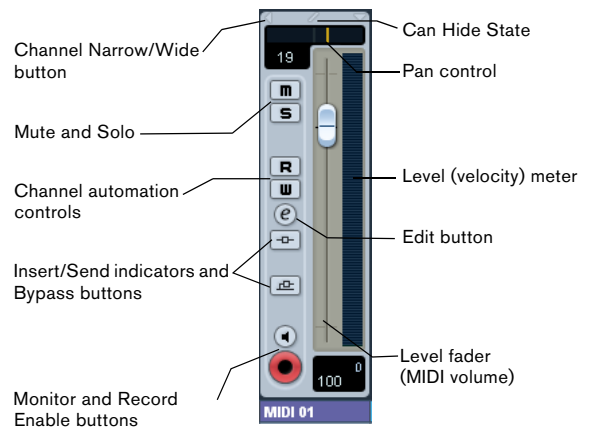
receive the corresponding MIDI messages). The settings here are also available in the Inspector for MIDI tracks.

The output channels

The output busses you set up in the VST Connections window are represented by output channels in the Mixer. They are shown in a separate "pane" (to the right of the regular channel strips), with its own divider and horizontal scrollbar. The output channel strip is very similar to other audio channels.

Pan control

Mute and Solo buttons

Bus volume fader

Read/Write Automation

Bus level meter

Inserts and EQ indicators and Bypass buttons

Edit button

Clipping indicator, see "Setting input levels" on page 54.

Stereo Out
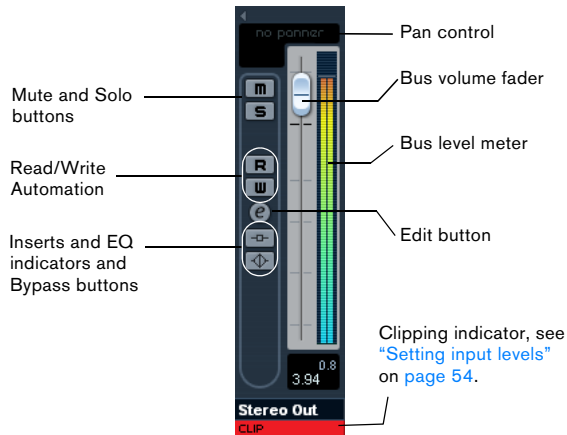
▪ For information on how to set up input and output busses, see the chapter "VST Connections: Setting up input and output busses" on page 9.

▪ How to route audio channels to busses is described in the section "The output channels" on page 84.

▪ The Main Mix (the default output) bus is used for monitoring. For information about Monitoring, see "About monitoring" on page 13.

Basic mixing procedures

Setting volume in the Mixer

In the Mixer, each channel strip has a volume fader.

▪ For audio channels, the faders control the volume of the channels before they are routed (directly or via a group) channel to an output bus.

▪ An output channel fader determines the master output level of all audio channels routed to that output bus.

▪ MIDI channels handle fader volume changes in the Mixer by sending out MIDI volume messages to the connected instrument(s).
Connected instruments must be set to respond to MIDI messages (such as MIDI volume in this case) for this to function properly.

▪ The fader settings are displayed numerically below the faders, in dB for audio channels and in the MIDI volume 0 to 127 value range for MIDI channels.
You can click in the fader value fields and enter a volume setting by typing.

▪ To make fine volume adjustments, hold down [Shift] when you move the faders.

▪ If you hold down [Ctrl]/[Command] and click on a fader, it will be reset to its default value, i.e. 0.0 dB for audio channels, or MIDI volume 100 for MIDI channels.
This reset to default values works for most mixer parameters.

You can use the faders to set up a volume balance between the audio and MIDI channels and perform a manual mix by moving the faders and other controls while playing back. By using the Write function (see "Enabling and disabling the writing of automation data" on page 122), you can automate the levels and most Mixer actions.

⚠ It is also possible to make static volume settings for an event on the info line or with the volume handle (see "About the volume handle" on page 67).

About the level meters for audio channels

When playing back audio in Cubase Essential, the level meters in the Mixer show the level of each audio channel.

▪ Directly below the level meter is a small level readout – this shows the highest registered level in the signal.
Click this to reset the peak levels.

If the peak level of the audio goes above 0 dB, the numerical level indicator will show a positive value (i.e. a value above 0 dB).

⇨ Cubase Essential uses 32 bit floating point processing internally, so there is virtually limitless headroom – signals can go way beyond 0 dB without clipping. Having higher levels than 0 dB for individual audio channels is therefore not a problem in itself. The audio quality will not be degraded by this.
However, when many high level signals are mixed in an output bus, this may require that you lower the output channel level a lot (see below). Therefore it is good practice to keep the maximum levels for individual audio channels roughly around 0 dB.

About the level meters for output channels

For the output channels, things are different. These channels have clipping indicators.

▪ When you are recording, clipping can occur when the analog signal is converted to digital in the audio hardware.
It is also possible to get clipping in the signal being recorded to disk. For more information, see .

▪ In the output busses, the floating point audio is converted to the resolution of the audio hardware. In the integer audio domain, the maximum level is 0 dB – higher levels will cause the clipping indicator for each bus to light up.
If the clipping indicators light up for a bus, this indicates actual clipping – digital distortion which should always be avoided.

⚠ If the clipping indicator lights up for an output channel, reset the indicator by clicking on it, and lower the level until the indicator does not light up.

Level meters for MIDI channels

The level meters for MIDI channels do not show actual volume levels. Instead, they indicate the velocity values of the notes played back on MIDI tracks.

MIDI tracks set to the same MIDI channel and output

If you have several MIDI tracks set to the same MIDI channel (and routed to the same MIDI output), making volume and pan settings for one of these MIDI tracks/mixer channels will also affect all other mixer channels set to the same MIDI channel/output combination.

Using Solo and Mute

The Mute and Solo buttons

You can use the Mute and Solo buttons to silence one or several channels. The following applies:

▪ The Mute button silences the selected channel.
Clicking the Mute button again unmutes the channel. Several channels can be muted simultaneously. Muting Group channels can have two different results depending on how the Preferences are set (see). A muted channel is indicated by a lit Mute button and also by the lit Global Mute indicator on the common panel.

 A muted channel in the Mixer.

 A lit Global Mute indicator on the common panel shows that one or more channels are muted.

▪ Clicking the Solo button for a channel mutes all other channels.
A soloed channel is indicated by a lit Solo button, and also by the lit Global Solo indicator on the common panel. Click the Solo button again to turn off Solo.

▪ Several channels can be soloed at the same time.
However, if you press [Ctrl]/[Command] and click the Solo button for a channel, any other soloed channels will automatically be un-soloed (i.e. this Solo mode is exclusive).

▪ [Alt]/[Option]-clicking a Solo button activates "Solo Defeat" for that channel.
In this mode the channel will not be muted if you solo another channel. To turn off Solo Defeat, [Alt]/[Option]-click the Solo button again.

[Alt]/[Option]-click a Solo button…

Solo State (Solo Defeat with ALT click)

 …to activate Solo Defeat for that channel.

▪ You can un-mute or un-solo all channels by clicking the Mute or Solo indicator on the common panel.

Setting pan in the Mixer

The pan control

The pan controls in the Mixer are used to position a channel between the left and right side of the stereo spectrum. By default for stereo audio channels, pan controls the balance between the left and right channels. You can change this in the Preferences. By selecting one of the other pan modes (see below), you can set pan independently for the left and right channel.

• To make fine pan adjustments, hold down [Shift] when you move the pan control.

• To select the (default) center pan position, hold down [Ctrl]/[Command] and click on the pan control.

• For MIDI channels, the pan control sends out MIDI pan messages.
The result depends on how your MIDI instrument is set to respond to pan – check your documentation for details.

About the "Stereo Pan Law" setting (audio channels only)

In the Project Setup dialog there is a pop-up menu named "Stereo Pan Law", on which you can select one of several pan modes. This is related to the fact that without power compensation, the power of the sum of the left and right side will be higher (louder) if a channel is panned center than if it is panned left or right.

To remedy this, the Stereo Pan Law setting allows you to attenuate signals panned center, by -6, -4.5 or -3 dB (default). Selecting the 0 dB option effectively turns off constant-power panning. Experiment with the modes to see which fits best in a given situation. You can also select "Equal Power" on this pop-up menu, which means that the power of the signal will remain the same regardless of the pan setting.

Audio-specific procedures

This section describes the options and basic procedures regarding audio channels in the Mixer.

Using Channel Settings

For each audio channel strip in the Mixer and in the Inspector and Track list for each audio track, there is an Edit button ("e").

Clicking this opens the VST Audio Channel Settings window. By default, this window contains:

• A section with eight insert effect slots (see "Audio effects" on page 95).
• Four EQ modules and an associated EQ curve display (see "Making EQ settings" on page 87).
• A section with eight sends (see "Audio effects" on page 95).
• A duplicate of the Mixer channel strip

You can customize the Channel Settings window, by showing/hiding the different panels and/or by changing their order:

• To specify which panels should be shown/hidden, right-click in the Channel settings window, and activate/deactivate the respective options on the Customize View submenu on the context menu.
• To change the order of the panels, select "Setup…" on the Customize View pop-up menu and use the "Move up" and "Move Down" buttons.

⇨ For further information, see the chapter "Customizing" on page 297.

Every channel has its own channel settings window (although you can view each in the same window if you like – see below).

Click the Edit button to open the Channel Settings window.

The Channel Settings window is used for the following operations:

- Apply equalization, see "Making EQ settings" on page 87.
- Apply send effects, see "Audio effects" on page 95.
- Apply insert effects, see "Audio effects" on page 95.
- Copy channel settings and apply them to another channel, see "Copying settings between audio channels" on page 89.

⚠ All channel settings are applied to both sides of a stereo channel.

Changing channels in the Channel Settings window

You can view any channel's settings from a single window.

If the option "Sync Project and Mixer Selection" is activated in the Preferences (Editing–Project & Mixer page), this can be done "automatically":

- Open the Channel Settings window for a track and position it so that you can see both the Project window and the Channel Settings window.

Selecting a track in the Project window automatically selects the corresponding channel in the Mixer (and vice versa). If a Channel Settings window is open, this will immediately switch to show the settings for the selected channel. This allows you to have a single Channel Settings window open in a convenient position on the screen, and use it for all your EQ and channel effect settings.

You can also select a channel manually (thereby changing what is shown in the open Channel Settings window). Proceed as follows:

1. Open the Channel Settings window for any channel.

2. Open the Choose Edit Channel pop-up menu by clicking the arrow button to the left of the channel number at the top of the Fader view.
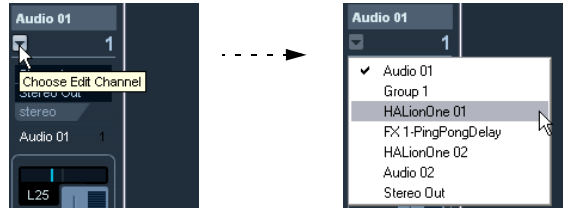
3. Select a channel from the pop-up to show the settings for that channel in the open Channel Settings window.

- Alternatively, you can select a channel in the Mixer by clicking its channel strip (make sure not to click on a control as this will change the respective parameter setting instead).
This selects the channel, and the Channel Settings window is updated.

- To open several Channel Settings windows at the same time, press [Alt]/[Option] and click the Edit buttons for the respective channels.

Making EQ settings

Each audio channel in Cubase Essential has a built-in parametric equalizer with up to four bands. There are several ways to view and adjust the EQs:

- By selecting the "Equalizers" or "Equalizer Curve" tab in the Inspector.
The "Equalizers" section is similar to the "Equalizers" section in the Channel Settings window, while the "Equalizer Curve" section shows a display in which you can "draw" an EQ curve. Setting EQ in the Inspector is only possible for track-based audio channels.

⇨ Note that by default, only the Equalizers tab is shown. To display the Equalizer Curve tab, right-click on an Inspector tab (not in the empty area below the Inspector) and activate the "Equalizer Curve" option.

- By using the Channel Settings window.
This offers both parameter sliders and a clickable curve display (the Equalizer + Curve pane) and also lets you store and recall EQ presets.

Below we describe how to set up EQ in the Channel Settings window, but the parameters are the same in the Mixer.

The Equalizers + Curve pane in the Channel Settings window consists of four EQ modules with parameter sliders, an EQ curve display and some additional functions at the top.

Using the parameter controls

1. Activate an EQ module by clicking its on/off button.
Although the modules have different default frequency values and different Q names, they all have the same frequency range (20 Hz to 20 kHz). The only difference between the modules is that you can specify different filter types for each individual module (see below).

2. Set the amount of cut or boost with the gain control – the upper slider.
The range is ± 24 dB.

3. Set the desired frequency with the frequency slider.
This is the center frequency of the frequency range (20 Hz to 20 kHz) to be cut or boosted.

4. Click on the lower slider (to the left) to open the filter type pop-up menu and select the desired filter type.
The "eq1" and "eq4" bands can act as parametric, shelving or high/low-pass filters, while "eq2" and "eq3" will always be parametric filters.

5. Set the Q value with the lower slider (to the right).
This determines the width of the affected frequency range. Higher values give narrower frequency ranges.

6. If needed, you can activate and make settings for up to four modules.

• Note that you can edit the values numerically as well, by clicking in a value field and entering the desired gain, frequency or Q value.

Using the curve display

When you activate EQ modules and make settings, you will see that your settings are automatically reflected in the curve display above. You can also make settings directly in the curve (or combine the two methods any way you like):

1. To activate an EQ module, click in the curve display.
This adds a curve point and one of the modules below are activated.

2. Make EQ settings by dragging the curve point in the display.
This allows you to adjust gain (drag up or down) and frequency (drag left or right).

3. To set the Q parameter, press [Shift] and drag the curve point up or down.
You will see the EQ curve become wider or narrower as you drag.

• You can also restrict the editing by pressing [Ctrl]/ [Command] (sets gain only) or [Alt]/[Option] (sets frequency only) while you drag the curve point.

4. To activate another EQ module, click somewhere else in the display and proceed as above.

5. To turn off an EQ module, double-click its curve point or drag it outside the display.

6. To mirror ("inverse") the eq curve on the x axis, click the button to the right of the curve display.

The Inverse Equalizers button

EQ bypass

Whenever one or several EQ modules are activated for a channel, the EQ button will light up in green in the Mixer channel strip, Inspector (Equalizer and Channel sections), Track list and Channel Settings window (top right corner of the EQ section).

You can also bypass all EQ modules. This is useful, as it allows you to compare the sound with and without EQ. Proceed as follows:

▪ In the Mixer, the Track list and in the Channel section in the Inspector, click the EQs state button so that it turns yellow.
To deactivate EQ Bypass, click the button again, so that it turns green again.

▪ In the Inspector (Equalizers tab) and in the Channel Settings window, click the Bypass button (next to the EQ button) so that it turns yellow.
Click again to deactivate EQ Bypass mode.

EQ bypass in the Mixer, the Channel Settings window and the Inspector

EQ reset

On the Presets pop-up menu in the Channel Settings window and in the Inspector, you will find the Reset command. Select this to turn off all EQ modules and reset all EQ parameters to their default values.

Using EQ presets

Some useful basic presets are included with the program. You can use them as they are, or as a starting point for further "tweaking".

▪ To call up a preset, pull down the presets pop-up menu in the Channel Settings window or in the Inspector and select one of the available presets.

▪ To store the current EQ settings as a preset, select "Store Preset" on the presets pop-up menu and enter the desired name for the preset in the dialog that appears.

▪ To rename the selected preset, select "Rename Preset" on the pop-up menu and enter a new name.

▪ To delete the selected preset, select "Remove Preset" on the pop-up menu.

⇨ You can also apply EQ (and Inserts) settings from track presets, see "Applying Inserts and EQ settings from track presets" on page 183.

EQ in the channel overview

If the "Channel" section is selected in the Inspector, you will get an overview of which EQ modules, insert effects and sends are activated for the channel.

By clicking the respective indicator (1 to 4), you can turn the corresponding EQ module on or off.
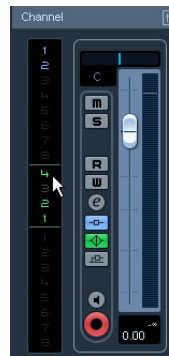
The channel overview in the Inspector

Copying settings between audio channels

It is possible to copy all channel settings for an audio channel and paste them to one or several other channels. This applies to all audio-based channel types. For example, you can copy EQ settings from an audio track and apply these to a group or VST instrument channel, if you want them to have the same sound.

Proceed as follows:

1. In the Mixer, select the channel you want to copy settings from.

2. Click the "Copy First Selected Channel's Settings" button on the common panel.
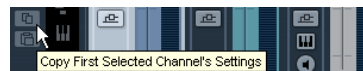
3. Select the channel(s) you want to copy the settings to and click the "Paste Settings to Selected Channels" button (below the "Copy First Selected Channel Settings" button).
The settings are applied to the selected channel(s).

You can copy channel settings between different types of channels, but only those channels will be used for which corresponding settings are available in the target channel:

- For example, since output channels do not have send effects, copying from them will leave the Sends settings in the target channel unaffected.

Initialize Channel and Reset Mixer

The Initialize Channel button can be found in the lower part of the Control Strip section in the Channel Settings window (if this section is not shown in the Channel Settings window, open the context menu and select "Control Strip" on the Customize View submenu). Initialize Channel resets the selected channel to the default settings.

Similarly, the Mixer common panel holds a Reset Mixer/ Reset Channels button – when you click this, you will be asked whether you want to reset all channels or just the selected channels.

The default settings are:

- All EQ, Insert and Send effect settings are deactivated and re-set.
- Solo/Mute is deactivated.
- The fader is set to 0dB.
- Pan is set to center position.

Using group channels

You can route the outputs from multiple audio channels to a group. This enables you to control the channel levels using one fader, apply the same effects and equalization to all of them etc. To create a group channel, proceed as follows:

1. Select Add Track from the Project menu and select "Group Channel" from the submenu that appears.

2. Select the desired channel configuration and click OK.
A group channel track is added to the Track list and a corresponding group channel strip is added to the Mixer. By default the first group channel strip is labeled "Group 1", but you can rename it just like any channel in the Mixer.

3. Pull down the Output Routing pop-up for a channel you want to route to the group channel, and select the group channel.
The output of the audio channel is now redirected to the selected group.

4. Do the same for the other channels you wish to route to the group.

Settings for group channels

The group channel strips are (almost) identical to audio channel strips in the Mixer. The descriptions of the Mixer features earlier in this chapter apply to group channels as well. Some things to note:

- You can route the output of a group to an output bus or to another group.
You cannot route a group to itself. Routing is done with the Output Routing pop-up menu in the Inspector (select the subtrack for the Group in the Track list).

- There are no Input Routing pop-ups, Monitor buttons or Record Enable buttons for group channels.
This is because inputs are never connected directly to a group.

- Solo functionality is automatically linked for channels routed to a group and the group channel itself.
This means that if you solo a group channel, all channels routed to the group are automatically soloed as well. Similarly, soloing a channel routed to a group will automatically solo the group channel.

- Mute functionality depends on the setting "Group Channels: Mute Sources as well" in the Preferences (VST page).
By default, when you mute a group channel no audio will pass through the group. However, other channels that are routed directly to that group channel will remain unmuted. If any of those channels have aux sends routed to other group channels, FX channels or output busses, those will still be heard.
If the option "Group Channels: Mute Sources as well" is activated in the Preferences (VST page), muting a group channel will cause all other channels directly routed to it to be muted as well. Pressing mute again will un-mute the group channel and all other channels directly routed to it.
Channels that were muted prior to the group channel being muted will not remember their mute status and will be unmuted when the group channel is unmuted.

⚠ The option "Group Channels: Mute Sources as well" does not affect how mute automation is written. Writing mute automation on a group channel only affects the group channel and not channels routed to it. When writing the automation, you will see the other channels being muted when this option is activated. However, upon playback, only the group channel will respond to the automation.

One application of group channels is to use them as "effect racks" – see the chapter "Audio effects" on page 95.

About output busses

Cubase Essential uses a system of input and output busses which are set up using the VST Connections dialog. This is described in the chapter "VST Connections: Setting up input and output busses" on page 9.

Output busses let you route audio from the program to the outputs on your audio hardware.

Viewing the output busses in the Mixer

Output busses are shown as output channels in a separate pane to the right in the Mixer. You show or hide this pane by clicking the Hide Output Channels button in the Mixer's common panel.

Each output channel resembles a regular audio channel strip. Here you can do the following:

▪ Adjust master levels for all configured output busses using the level faders.
▪ Add effects or EQ to the output channels (see the chapter "Audio effects" on page 95).

MIDI-specific procedures

This section describes basic procedures for MIDI channels in the Mixer.

Using Channel Settings

For each MIDI channel strip in the Mixer (and MIDI track in the Track list or the Inspector), there is an Edit ("e") button.

Clicking this opens the MIDI Channel Settings window. By default, this window contains a duplicate of the Mixer channel strip, a section with four MIDI inserts and a section with four MIDI send effects.

You can customize the Channel Settings window, by showing/hiding the different panels and/or by changing their order:

▪ To specify, which panels should be shown/hidden, right-click in the Channel settings window, and activate/deactivate the respective options on the Customize View submenu on the context menu.
▪ To change the order of the panels, select "Setup" on the Customize View pop-up menu and use the "Move up" and "Move Down" buttons in the dialog that opens.

Every MIDI channel has its own channel settings window.

The MIDI Channel Settings window

Utilities

Link/Unlink channels

This function is used to "link" selected channels in the Mixer so that any change applied to one channel will be mirrored by all channels in that group. You can link as many channels as you like, and you can also create as many groups of linked channels as you like. To link channels in the Mixer, proceed as follows:

1. Press [Ctrl]/[Command] and click on all the channels you want to link.
[Shift]-clicking allows you to select a continuous range of channels.

2. Right-click somewhere on the gray Mixer panel.
The Mixer context menu appears.

3. Select "Link Channels" from the context menu.

▪ To unlink channels, select one of the linked channels and select "Unlink Channels" from the Mixer context menu.
The channels are unlinked. Note that you do not have to select all the channels that are linked, only one of them.

⇨ It is not possible to remove individual channels from Link status.
To make individual settings to a linked channel, press [Alt]/[Option] when changing the setting.

What will be linked?

The following rules apply for linked channels:

▪ Only level, mute, solo, select, monitor and record enable will be linked between channels.
Effect/EQ/pan/input and output routing settings are not linked.

▪ Any individual channel settings you have made before linking will remain until you alter the same setting for any of the linked channels.
For example, if you link three channels, and one of them was muted at the time you applied the Link Channel function, this channel will remain muted after linking. However, if you mute another channel all linked channels will be muted. Thus, the individual setting for one channel is lost as soon as you change the same parameter setting for any of the linked channels.

▪ Fader levels will be "ganged".
The relative level offset between channels will be kept if you move a linked channel fader.
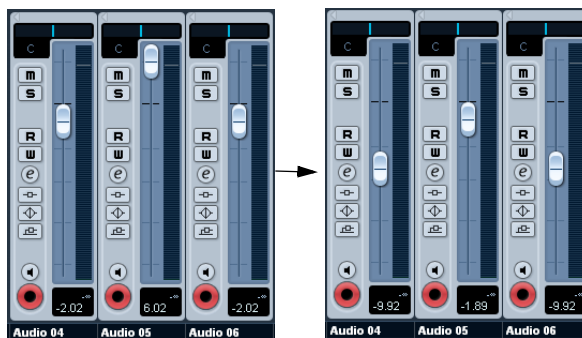
The three channels shown are linked. Pulling down one fader changes the levels for all three channels, but keeps the relative level mix.

▪ By pressing [Alt]/[Option], you can make individual settings and changes for channels that are linked.

⇨ Linked channels have individual automation tracks. These are completely independent, and are not affected by the Link function.

Saving mixer settings

It is possible to save complete mixer settings for all or all selected audio-related channels in the Mixer. These can later be loaded into any project. Channel settings are saved as mixer settings files. These have the file extension ".vmx".

Right-clicking somewhere in the Mixer panel or in the Channel Settings window brings up the context menu where the following Save options can be found:

▪ "Save Selected Channels" will save all channel settings for the selected channels.

▪ "Save All Mixer Settings" saves all channel settings for all channels.

When you select any of the above options, a standard file dialog opens where you can select a name and storage location on your disk for the file.

⚠ Saving mixer settings does not apply to MIDI channels in the Mixer – only audio-related channels (group, audio, instrument, effect return, VSTi and ReWire) are saved with this function!

Loading mixer settings

Loading Selected Channels

To load mixer settings saved for selected channels, proceed as follows:

1. Select the same number of channels in the new project to match the number of channels you saved settings for in the previous project.
For example, if you saved settings for six channels, select six channels in the Mixer.

▪ Mixer settings will be applied in the same order as they were in the Mixer.
Thus, if you save settings from channels 4, 6 and 8 and apply these settings to channels 1, 2 and 3, the settings saved for channel 4 would be applied to channel 1, the settings saved for channel 6 to channel 2 and so on.

2. Right-click the Mixer panel to open the context menu, and select "Load Selected Channels".
A standard file dialog appears, where you can locate the saved file.

3. Select the file and click "Open".
The channel settings are applied to the selected channels.

⚠ Loading mixer settings does not apply to MIDI channels in the Mixer – only audio-related channels (group, audio, instrument, effect return, VSTi and ReWire) are saved and can be loaded with this function!

⚠ If you choose to apply mixer settings to fewer channels than you saved, the order of the saved channels in the Mixer applies – i.e. the saved channels that are "left over" and not applied will be the channels with the highest channel numbers (or furthest to the right in the Mixer).

Loading All Mixer Settings

Selecting "Load All Mixer Settings" from the context menu allows you to open a saved mixer settings file, and have the stored settings applied to all channels for which there is information included in the file. All channels, output settings, VST instruments, sends and "master" effects will be affected.

⇨ Please note that if the saved mixer settings were for 24 channels, for example, and the Mixer you apply it to currently contains 16 channels, only the settings for channels 1 to 16 will be applied – this function will not automatically add channels.

About the VST Performance window
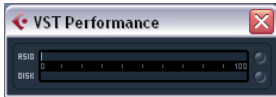
The VST Performance window is opened from the De-vices menu. The window shows two meter displays: The ASIO meter, which indicates CPU load, and the Disk meter, which shows the hard disk transfer rate. It is rec-ommended that you check this from time to time, or keep it always open. Even if you have been able to activate a number of audio channels in the project without getting any warning, you may run into performance problems when adding EQ or effects.

▪ The ASIO meter (at the top) shows the ASIO time usage, i.e. the time required to complete the current processing tasks. The more tracks, effects, EQ etc. you use in your project, the longer processing will take, and the longer the ASIO meter will show activity.
If the red Overload indicator lights up, you need to decrease the number of EQ modules, active effects and/or audio channels playing back simul-taneously.

▪ The lower bar graph shows the hard disk transfer load.
If the red overload indicator lights up, the hard disk is not supplying data fast enough to the computer. You may need to reduce the number of tracks playing back by using the Disable Track function (see "About track disable/ enable" on page 47). If this does not help, you need a faster hard disk. Note that the overload indicator may occasionally blink, e.g. when you lo-cate during playback. This does not indicate a problem, but happens be-cause the program needs a moment for all channels to load data for the new playback position.

⇨ The ASIO and Disk load meters can also be shown on the Transport panel (as "Performance") and on the Project window toolbar (as "Performance Meter").
There they are shown as two miniature vertical meters (by default at the left side of the panel/toolbar).

9

Audio effects

About this chapter

Cubase Essential comes with a number of effect plug-ins included. This chapter contains general details about how to assign, use and organize effect plug-ins. The effects and their parameters are described in the separate manual "Plug-in Reference".

⚠ This chapter describes audio effects, i.e. effects that are used to process audio, group, VST instrument and ReWire channels.

Overview

There are two ways to use audio effects in Cubase Essential:

▪ As insert effects.
An insert effect is inserted into the signal chain of an audio channel, which means that the whole channel signal passes through the effect. This makes inserts suitable for effects for which you do not need to mix dry and wet sound, e.g. distortion, filters or other effects that change the tonal or dynamic characteristics of the sound. You can have up to eight different insert effects per channel (and the same is true for output busses – for recording with "master effects").

▪ As send effects.
Each audio channel has eight sends, each of which can be freely routed to an effect (or to a chain of effects). Send effects are practical for two reasons: you can control the balance between the dry (direct) and wet (processed) sound individually for each channel using the sends, and several different audio channels can use the same send effect. In Cubase Essential, send effects are handled by means of FX channel tracks.

About VST 3

The new VST 3 plug-in standard offers many improvements over the previous VST 2 standard, yet retains full backwards compatibility, i.e. you will still be able to use your previous VST effects and presets.

In the program, effects compatible with previous VST versions will be easily recognized:

An effect compatible with a previous VST version — A VST 3 effect
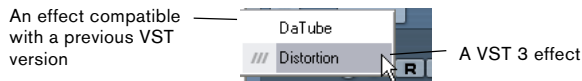
VST preset management

From a user perspective, the main difference between VST 2 and VST 3 is in the effect preset management. The ".fxp/.fxb" files used in VST 2 have been replaced by VST 3 Presets (extension ".vstpreset"). Using the preset management features, you can assign various attributes to your effect presets to help you quickly find the right patch. You can also preview effect presets before you load them. A large number of presets for effects are included with the program. If you have any previous VST plug-ins installed on your computer, you can still use them, and you can also convert their programs to VST 3 presets, see .

Smart plug-in processing

Another feature of the VST3 standard is "smart" plug-in processing. Previously, any loaded plug-in was processing continuously, regardless of whether a signal was present or not. In VST3, processing by a plug-in can be disengaged if there is no signal present. This can greatly reduce the CPU load, thus allowing for more effects to be used.

This is achieved by activating the option "Suspend VST3 plug-in processing when no audio signals are received" in the Preferences dialog (VST–Plug-ins page).

When this is activated, VST 3 plug-ins will not consume CPU power on silent passages, i.e. when no audio data runs through them.

Be aware, however, that this can lead to a situation where you added more plug-ins on "transport stop" than the system can handle on playback. Therefore, you should always find the passage with the largest number of events playing simultaneously to make sure that your system offers the required performance.

⇨ Activating this option can increase your system performance a lot in certain projects, but it also makes it more unpredictable whether the project can play back fine on any timecode position of the project.

About plug-in delay compensation

A plug-in effect may have some inherent delay or latency. This means that it takes a brief time for the plug-in to process the audio fed into it – as a result, the output audio will be slightly delayed. This especially applies to dynamics processors featuring "look-ahead" functionality.

Cubase Essential provides full plug-in delay compensation throughout the entire audio path. All plug-in delays are compensated for, maintaining the sync and timing of all audio channels.

Normally, you do not have to make any settings for this. However, VST3 dynamics plug-ins with look-ahead functionality have a "Live" button, allowing you to disengage the look-ahead to minimize latency, if they are to be used during realtime recording (see the separate manual "Plug-in Reference").

You can also constrain the delay compensation, which is useful to avoid latency when recording audio or playing a VST instrument in real time, see "Constrain Delay Compensation" on page 120.

About tempo sync

Plug-ins can receive timing and tempo information from the host application (in this case, Cubase Essential). Typically, this is used to synchronize certain plug-in parameters (such as modulation rates or delay times) to the project tempo.

▪ This information is automatically provided to any VST plug-in (2.0 or later) that "requests it".
You do not have to make any special settings for this.

▪ You set up tempo sync by specifying a base note value.
You can use straight, triplet or dotted note values (1/1 to 1/32).

Please refer to the separate manual "Plug-in Reference" for details about the included effects.

Insert effects

Background

As the name implies, insert effects are inserted into the audio signal path – this means that the audio channel data will be routed through the effect. You can add up to eight different insert effects independently for each audio-related channel (audio track, group channel track, FX channel track, VST instrument channel or ReWire channel) or output bus. The signal passes through the effects in series from the top downwards, with the signal path shown below:
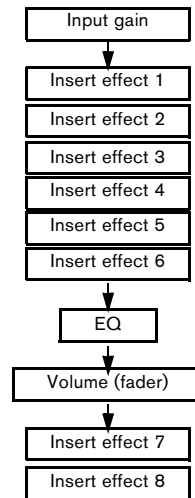
As you can see, the last two insert slots (for any channel) are post-EQ and post-fader. Post-fader slots are best suited for insert effects where you do not want the level to be changed after the effect, such as dithering (see "Dithering" on page 99) and maximizers – both typically used as insert effects for output busses.

⇨ Applying several effects on several channels may be too much for your CPU to handle!
If you want to use the same effect with the same settings on several channels, it may be more efficient to set up a group channel and to apply your effect only once, as a single insert for this group. You can use the VST Performance window to keep an eye on the CPU load.

Routing an audio channel or bus through insert effects

Insert effect settings are available in the Channel Settings window and the Inspector. The examples below show the Channel Settings window, but the procedures are the same for all the inserts sections:

1. Bring up the Channel Settings window.
By default, the inserts are located to the far left.

2. Pull down the effect type pop-up for one of the insert slots, and select an effect.
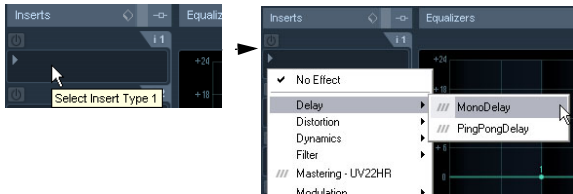
The effect is loaded and automatically activated and its control panel opens. You can open or close the control panel for an effect by clicking the "e" button for the insert slot.

▪ If the effect has a dry/wet Mix parameter, you can use this to adjust the balance between the dry signal and the effect signal.
See "Editing effects" on page 104 for details about editing effects.

▪ To remove an effect, pull down the effect type pop-up menu and select "No Effect".
You should do this for all effects that you do not intend to use, to reduce the CPU load.

▪ You can add up to 8 insert effects per channel this way.

▪ You can reorder the effects by clicking in the area above the name field and dragging the effect onto another slot.

▪ You can copy an effect into another effect slot (for the same channel or between channels) by holding down [Ctrl]/[Command] and dragging it onto another effect slot.

Deactivating vs. bypassing

If you want to listen to the track without having it processed by a particular effect, but do not want to remove this effect completely from the insert slot, you can either deactivate or bypass it.

Deactivating means to terminate all processing, whereas bypassing means to play back only the unprocessed original signal – a bypassed effect is still processing in the background. Bypassing allows for crackle-free comparison of the original ("dry") and the processed ("wet") signal.

▪ To deactivate an effect, click the blue button on the left above the insert slot.

▪ To bypass an effect, click its Bypass button (the middle button above the insert slot).
When an effect is bypassed, this button is yellow.

This effect is activated, and its control panel is open.

This insert effect is bypassed.

▪ To bypass all inserts for a track, click the global bypass button.
This button can be found at the top of the Inserts section in the Inspector or the Channel Settings window. It lights up in yellow to indicate that the inserts of this track are bypassed. In the Track list and the channel strip in the Mixer, the Inserts State button will also light up in yellow.
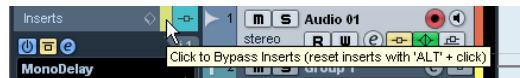
Insert effects in the channel overview

If the "Channel" section is selected in the Inspector, you will get an overview of which insert effects, EQ modules and effect sends are activated for the channel.

You can activate or deactivate individual insert effect slots by clicking the corresponding number (in the top part of the overview).

The blue color of inserts 1 and 2 and the blue Inserts State button in the channel strip indicate that this track has active inserts.

The channel overview in the Inspector

Adding insert effects to output busses

All output busses have eight insert slots, just like regular audio channels. The procedures for adding insert effects are the same.

▪ Insert effects added to an output bus will affect all audio routed to that bus, like a "master insert effect".
Typically you would add compressors, limiters, EQ or other plug-ins to tailor the dynamics and sound of the final mix. Dithering is a special case, as described below.

⇨ Please note that the output busses only appear as tracks in the Track list, when their automation W(rite) buttons have been activated once. Therefore you can only use the Inspector section to make Inserts settings for the busses if you have activated Write automation for the respective bus beforehand.
However, you can always make Inserts settings in the Channel Settings window.

Dithering

Dithering is a method for controlling the noise produced by quantization errors in digital recordings. 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.

For example, when "truncating bits", as a result of moving from 24 to 16 bit resolution, quantization errors are added to an otherwise immaculate recording. By adding a special kind of noise at an extremely low level, the effect of these errors is minimized. The added noise could be perceived as a very low-level hiss under exacting listening conditions. However, this is hardly noticeable and much preferred to the distortion that otherwise occurs.

When should I use dithering?

▪ Consider dithering when you mix down to a lower resolution, either in realtime (during playback) or with the Export Audio Mixdown function.
A typical example is when you mix down a project to a 16-bit stereo audio file for audio CD burning.

What is a "lower resolution" then? Well, Cubase Essential uses 32-bit float resolution internally, which means that all integer resolutions (16 bit, 24 bit, etc.) are lower. The negative effects of truncation (no dithering) are most noticeable when mixing down to 8 bit, 16 bit and 20 bit format; whether to dither when mixing down to 24 bits is a matter of taste.

Applying dithering

1. Open the VST Output Channel Settings window by clicking the "e" button for the Output channel in the Mixer.

2. Open the Inserts pop-up menu for slot 7 or 8.
The two last Insert effect slots (for all channels) are post-fader, which is crucial for a dithering plug-in. The reason is that any master gain change applied after dithering would bring the signal back to the internal 32 bit float domain, rendering the dithering settings useless.

3. Select the included UV22HR dithering plug-in from the pop-up menu.

The included dithering plug-ins and their parameters are described in the separate manual "Plug-in Reference". If you have installed another dithering plug-in that you prefer, you can of course select this instead.

4. Make sure the plug-in is set to dither to the correct resolution.
This would be the resolution of your audio hardware (on playback) or the desired resolution for the mixdown file you want to create (as set in the Export Audio Mixdown dialog, see the chapter "Export Audio Mixdown" on page 255).

5. Use the other parameters in the control panel to set up the dithering to your liking.

Using group channels for insert effects

Like all other channels, group channels can have up to eight insert effects. This is useful if you have several audio tracks that you want to process through the same effect (e.g. different vocal tracks that all should be processed by the same compressor).

Another special use for group channels and effects is the following:

If you have a mono audio track and want to process this through a stereo insert effect (e.g. a stereo chorus or an auto panner device), you cannot just insert the effect as usual. This is because the audio track is in mono – the output of the insert effect will be in mono as well, and the stereo information from the effect will be lost.

One solution would be to route a send from the mono track to a stereo FX channel track, set the send to pre-fader mode and lower the fader completely for the mono audio track. However, this makes mixing the track cumbersome, since you cannot use the fader.

Here's another solution:

1. Create a group channel track in stereo and route it to the desired output bus.

2. Add the desired effect to the group channel as an insert effect.

3. Route the mono audio track to the group channel.

Now the signal from the mono audio track is sent directly to the group, where it passes through the insert effect, in stereo.

Freezing (rendering) insert effects for a track

Effect plug-ins can sometimes require a lot of processor power. If you are using a large number of insert effects for a track, you may reach a point where the computer cannot play back the track properly (the CPU overload indicator in the VST Performance window lights up, you get crackling sounds, etc.).

To remedy this, you can freeze the track, by clicking the Freeze button in the Inspector.

▪ The Freeze Channel Options dialog is opened, allowing you to set a "Tail" time in seconds.
This adds time at the end of the rendered file to allow reverb and delay tails to fully fade out.

▪ The program now renders the output of the track, including all pre-fader insert effects, to an audio file.
This file is placed in the "Freeze" folder within the Project folder (Windows). On the Mac, the Freeze folder is stored under "User/Documents".

▪ The frozen audio track is locked for editing in the Project window.
The frozen insert effects cannot be edited or removed and you cannot add new insert effects for the track (except post-fader effects).

▪ On playback, the rendered audio file is played back.
You can still adjust the level and panning in the Mixer, make EQ settings and adjust the effect sends.
In the Mixer, the channel strip for a frozen track is indicated by a "snow flake" symbol on the volume fader handle.

After freezing the Inserts for a track, you hear the track play back as before but the insert effects do not have to be calculated in real time, easing the load on the computer processor. Typically, you would freeze a track when it is finished and you do not need to edit it anymore.

▪ You can only freeze audio tracks this way, not group channel tracks or FX channel tracks.

▪ The last two insert effects will not be frozen. This is because these are post-fader insert slots.

▪ You can also freeze VST instruments and their insert effects – see the chapter "VST instruments and instrument tracks" on page 110.

Unfreezing

If you need to edit the events on a frozen track or make settings for the insert effects, you can unfreeze the track:

1. Click the Freeze button in the Inspector for the track.
You will be asked whether you really want to unfreeze the channel and if you wish to keep or delete the freeze files.

2. Click "Unfreeze" or "Keep Freeze files".
This reactivates the frozen insert effects. Clicking "Keep Freeze Files" will unfreeze the channel but not delete the freeze files. After editing, you can freeze the track again.

Send effects

Background

As their name implies, send effects are outside of an audio channel's signal path, i.e. the audio data to be processed must be sent to the effect (as opposed to insert effects, which are inserted into the channel's signal path).

To this end, Cubase Essential provides FX channel tracks. When you have created such a track, it is added to the Track list and can be selected as a routing target in the Send slots of audio channels.

▪ When selecting an FX channel track in one of the send slots of an audio channel, the audio is sent to the FX channel and through any insert effects set up for it.
Each audio channel has eight sends, which can be routed to different FX channels, and thus different FX channel insert effect configurations. You control the amount of signal sent to the FX channel by adjusting the effect send level.

▪ If you have added several effects to the FX channel, the signal passes through the effects in series, from the top (the first slot) downward.
This allows for "custom" send effect configurations – e.g. a chorus followed by a reverb followed by an EQ and so on.

▪ The FX channel track has its own channel strip in the Mixer, the effect return channel.
Here you can adjust the effect return level and balance, add EQ and route the effect return to any output bus.

▪ Each FX channel track can have an automation track, for automating various effect parameters.
See the chapter "Automation" on page 121 for more information.

Setting up send effects

Adding an FX channel track

1. Pull down the Project menu and select "FX Channel" from the "Add Track" submenu.
A dialog appears.
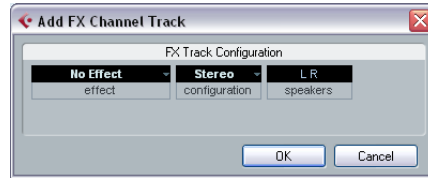
2. Select a channel configuration for the FX channel track.
Normally, stereo is a good choice since most effect plug-ins have stereo outputs.

3. Select an effect for the FX channel track.
This is not strictly necessary at this point – you can also leave the plug-in pop-up menu set to "No Effect" and add effects to the FX channel later.

4. Click OK.
An FX channel track is added to the Track list, and the selected effect, if any, is loaded into the first insert effect slot for the FX channel (in that case, the lit Inserts tab for the FX channel track in the Inspector indicates that an effect has been assigned and automatically activated).

▪ All FX channel tracks you create will appear in a dedicated "folder" track in the Track list.
This makes it easy to manage and keep track of all your FX channel tracks, and also allows you to save screen space by folding in the FX Channel folder.
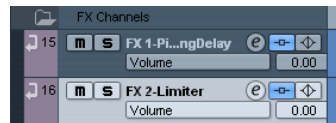
FX channel tracks are automatically named "FX 1", "FX 2" etc., but you can rename them if you wish. Just double-click the name of an FX channel track in either the Track list or the Inspector and type in a new name.

Adding and setting up effects

As mentioned above, you can add a single insert effect when you create the FX channel track. To add and set up effects after the FX channel track is created, you can either use the Inspector for the track (click the Inserts tab) or the VST FX Channel Settings window:

1. Click the Edit ("e") button for the FX channel track (in the Track list, Mixer or Inspector).
The VST FX Channel Settings window appears, similar to a regular Channel Settings window.

On the left in the window you can find the Inserts section with eight effect slots.

2. Make sure the FX channel is routed to the correct output bus.
This is done with the Output Routing pop-up menu at the top of the fader section (also available in the Inspector).

3. To add an insert effect in an empty slot (or to replace the current effect in a slot), click in the slot and select an effect from the pop-up menu.
This works just like when selecting insert effects for a regular audio channel.

4. When you add an effect, its control panel will automatically appear. When you set up send effects, you would normally set the wet/dry Mix control to all "wet".
This is because you control the balance between the wet and the dry signal with the effect sends. For more information, see "Editing effects" on page 104.

▪ You can add up to eight effects for an FX channel.
The signal will pass through all the effects in series. It is not possible to adjust the send and return levels separately for the effects – this is done for the FX channel as a whole. If what you want is several separate send effects (where you can control the send and return levels independently), you should instead add more FX channel tracks – one for each effect.

▪ You can reorder the effects by clicking in the area above the name field and dragging the effect onto another slot.

▪ You can copy an effect into another effect slot (for the same channel or between channels) by holding down [Ctrl]/[Command] and dragging it onto another effect slot.

▪ To remove an insert effect from a slot, click in the slot and select "No Effect" from the pop-up menu.
You should do this for all effects that you do not intend to use, to reduce the CPU load.

▪ You can bypass individual effects (or all effects) by clicking the corresponding Bypass button(s) for the FX channel track.
See "Routing an audio channel or bus through insert effects" on page 98.

▪ You can also adjust level, pan and EQ for the effect return in the FX Channel Settings window.
This can also be done in the Mixer or in the Inspector.

⇨ Remember that the more effect units you use, the higher the CPU load.

Making settings for the sends

The next step is to set up a send for an audio channel and route it to the FX channel. This can be done in the Channel Settings window or in the Inspector for the audio track. The example below shows the Channel Settings window, but the procedure is similar for all the sections:

1. Click the "e" button for an audio channel to bring up its Channel Settings window.

By default, the send section is located to the left of the channel strip. Each of the eight sends has the following controls:

▪ An On/Off button for activating/deactivating the effect
▪ A send level slider
▪ A pre/post-fader switch
▪ An "e" (edit) button

Note that the last three items are not shown until the send is activated and an effect has been loaded.

2. Pull down the Routing pop-up menu for a send by clicking in the empty slot, and select the desired routing destination.
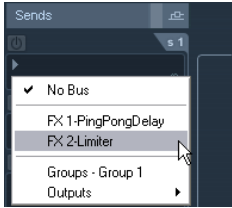
- If the first item on this menu ("No Bus") is selected, the send is not routed anywhere.
- Items called "FX 1", "FX 2" etc. correspond to existing FX tracks. If you renamed an FX track (see "Adding an FX channel track" on page 101), that name will appear on this menu instead of the default.
- The menu also allows for routing a send directly to output busses, separate output bus channels or Group channels.

3. Select an FX channel track from the pop-up menu.
Now the send is routed to the FX channel.

4. Click the power button for the effect send so that it lights up in blue.
This activates the send.
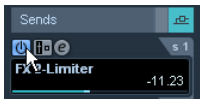
5. Click and drag the send level slider to a moderate value.
The send level determines how much of the signal from the audio channel is routed to the FX channel via the send.
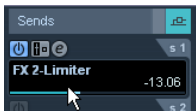
Setting the Send level.

- In the Mixer, you can use the level fader for the FX channel to set the effect return level.
By adjusting the return level, you control the amount of the signal sent from the FX channel to the output bus.

Setting the effect return level.

6. If you want the signal to be sent to the FX channel before the audio channel's volume fader in the Mixer, click on the Pre-Fader button for the send so that it lights up.
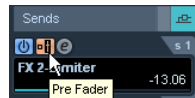
A send set to pre-fader mode.

Normally you want the effect send to be proportional to the channel volume (post-fader send). The picture below shows where the sends are "tapped" from the signal in pre and post-fader mode:
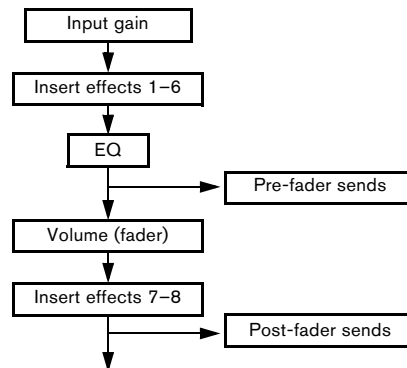
⇨ You can choose whether a send in pre-fader mode should be affected by the channel's Mute button or not.
This is done with the option "Mute Pre-Send when Mute" in the Preferences dialog (VST page).

• When one or several sends are activated for a channel, the Send Effects buttons light up in blue.

Bypassing the sends

• In the Mixer, you can click on the lit (blue) Sends State button for a channel to bypass (disable) all its sends.
When the sends are bypassed, the button is yellow. Click the button again to enable the sends.

• In the Inspector and the Channel Settings window, click the button to the left of the Sends button (so that it lights up yellow) to bypass the sends.

• You can also bypass individual sends in the channel overview.
See "Insert effects in the channel overview" on page 99.

• You can also bypass the send effects by clicking the "Bypass Inserts" button for the FX channel.
This bypasses the actual effects which may be used by several different channels. Bypassing a send affects that send and that channel only. If you bypass the insert effects, the original sound will be passed through. This may lead to unwanted side effects (higher volume). To deactivate all effects, use the mute button in the FX channel.

Editing effects

All inserts and sends have an Edit ("e") button. Clicking this opens the control panel for the effect, in which you can make parameter settings.

The contents, design and layout of the control panel depends on the selected effect. However, all effect control panels have an On/Off button, a Bypass button, Read/Write automation buttons (for automating effect parameter changes, see the chapter "Automation" on page 121), a preset pop-up menu and a Preset Management pop-up menu for saving and loading effect presets.

The Rotary effect control panel

• Please note that all effects can be edited using a simplified control panel (horizontal sliders only, no graphics). This panel is opened by pressing [Ctrl]/[Command]-[Alt]/[Option]-[Shift] and clicking on the Edit button for the effect send or slot.

Effect control panels may have any combination of knobs, sliders, buttons and graphic curves.

⇨ The included effects and their parameters are described in detail in the separate manual "Plug-in Reference".

• If you edit the parameters for an effect, these settings are saved automatically with the project.

• You can also save the current settings as a preset, see below.

• Effects parameters can be automated – see the chapter "Automation" on page 121.

Effect presets

Effect preset management in Cubase Essential is very versatile. In the MediaBay – or with certain limits in the Save Preset dialog – you can assign attributes to presets which allow you to organize and browse them according to various criteria. Cubase Essential comes with categorized track and VST presets that you can use straight out of the box. You can also preview effect presets before loading them which considerably speeds up the process of finding the right effect preset.

Effect presets can be divided into the following main categories:

▪ VST presets for a plug-in
These are stored parameter settings for a specific effect.

▪ Inserts presets that contain insert effect combinations
These can contain the whole insert effects rack, complete with settings for each effect, see "Saving insert effect combinations" on page 107.

Selecting effect presets

Most VST effect plug-ins come with a number of useful presets for instant selection.

To select an effect preset in the Presets browser, proceed as follows:

1. Load an effect, either as a channel insert or into an FX channel.
The control panel for the effect is displayed.

2. Click in the preset field at the top of the control panel.
This opens the Presets browser.
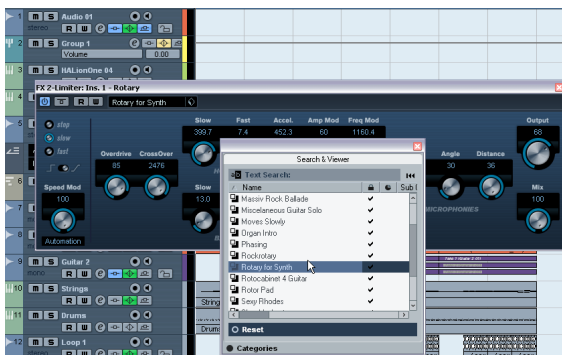
▪ You can also open the Presets browser from the Inspector (Inserts tab) or the Channel Settings window.

3. Select the desired preset in the list.

4. Activate playback to audition the selected preset.
Simply step through the presets until you found the right sound. It may be helpful to set up cycle playback of a section to make comparisons between different preset settings easier.

5. Double-click on the desired preset (or click outside the Presets browser) to apply the preset.

▪ To return to the preset that was selected when you opened the Presets browser, click the Reset button.

▪ You can also open the Presets browser by clicking the button to the right of the preset field an selecting "Load Preset" from the Preset Management pop-up menu.

▪ The preset handling for VST 2 plug-ins is slightly different, see "About earlier VST effect presets" on page 106.

The Browser sections

The Presets browser contains the following sections:

▪ The "Search & Viewer" section (displayed by default) lists the available presets for the selected effect.

▪ The Filter section (displayed when you click the Categories button) shows the available preset attributes for the selected effect.
If no attributes have been specified for the effect presets, the columns will be empty. If attributes have been assigned to a preset for this effect, you can click on the attribute in the respective column (Category, Style etc.), to filter out all presets that do not match the selected attribute(s).

▪ If you also activate the "Show Location" button, the Browser & Filter section is displayed, allowing you to specify the Presets folder that should be searched for preset files.

Saving effect presets

You can save your edited effect settings as presets for further use (e.g. in other projects):

1. Open the Preset Management pop-up menu.
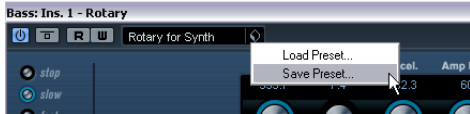
2. Select "Save Preset…" from the pop-up menu.
This opens a dialog where you can save the current settings as a preset.
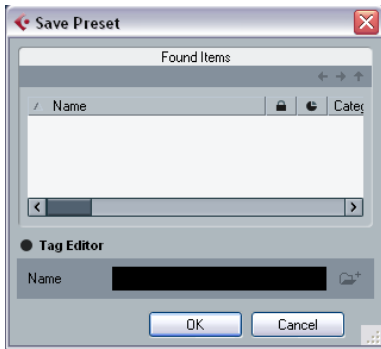
3. In the File name field in the lower part of the Save Preset dialog, enter a name for the new preset.

▪ If you wish to assign attributes to the preset, click the Tag Editor button.
Click in the Value column to select an appropriate "tag" for one or several of the available categories in the Attributes column. For further information on preset handling, see the chapter "The MediaBay" on page 169.

4. Click OK to store the preset and exit the dialog.

User-defined presets are saved in the following location:

▪ Windows XP: \Documents and Settings\<user name>\Application data\VST3 presets\<company>\<plug-in name>
▪ Windows Vista: \Users\<user name>\AppData\Roaming\ VST3 presets\<company>\<plug-in name>
▪ Mac: /Users/<user name>/Library/Audio/Presets/<company>/<plug-in name>

You cannot change the default folder, but you can add further subfolders inside the individual effect preset folders.

About earlier VST effect presets

As stated previously, you can use any VST 2.x plug-ins in Cubase Essential. For a description of how to add VST plug-ins, see "Installing and managing effect plug-ins" on page 107.

When you add a VST 2 plug-in, any previously stored presets for it will be in the old FX program/bank format (.fxp/.fxb). You can import such files, but the preset handling will be slightly different. You will not be able to use the new features until you have converted the old ".fxp/.fxb" presets to VST 3 presets. If you save new presets for the included VST 2 plug-ins, these will automatically be saved in the new ".vstpreset" format.

⚠ All VST 2 presets can be converted to VST 3 presets.

Importing and converting FXB/FXP files

To import .fxp/.fxb files, proceed as follows:

1. Load any VST 2 effect you may have installed, and open the Preset Management pop-up menu.
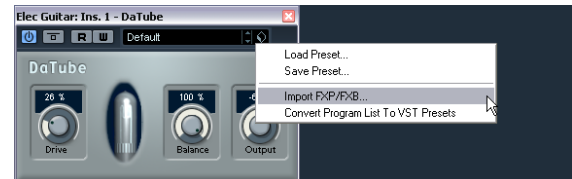
2. Select "Import FXB/FXP…" from the pop-up.
This menu item is only available for VST 2 plug-ins.

3. In the file dialog that opens, locate the .fxp file and click Open.
If you load a bank (.fxb), it will replace the current set of all effect programs. If you load a single program, it will replace the currently selected effect program only. Note that such files exist only if you created your own .fxp/.fxb presets with a previous version of Cubase Essential (or any other VST 2 application).

4. After importing, you can convert the current program list to VST presets by selecting "Convert Program List to VST Presets" from the Preset Management pop-up.
After converting, the presets will be available in the Presets browser. The new converted presets will be stored in the VST3 Preset folder.

Saving insert effect combinations

You can save the complete insert effect rack for a channel together with all parameter settings as an inserts preset. Inserts presets can be applied to audio, instruments, FX channel or group tracks.

This works as follows:

1. Select the desired track in the Track list and open the Inserts Inspector section.

2. Load a combination of insert effects and adjust the parameters (or select effect presets) for each effect.

3. At the top of the Inserts tab, click the VST Sound button to open the Preset Management pop-up menu for the inserts and select "Store Preset".
This can also be done from the Channel Settings window using the VST Sound button at the top of the Inserts section.
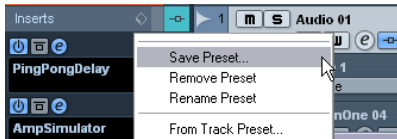
4. Type in a name for the preset in the dialog that appears.

5. Select the track (audio/group/instrument/fx channel) you wish to apply the new preset to, and open the Preset Management pop-up menu.
As you can see, the new preset is available at the top of the pop-up menu.
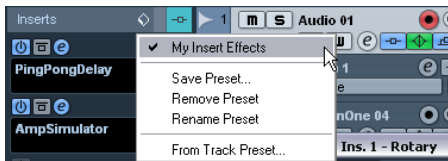
6. Select the preset you created from the pop-up menu.
The effects are loaded into the Insert slots of the new track, and the control panels for all effects are opened.

▪ Note that when loading insert combination presets, any plug-ins that were previously loaded for the track will be removed, regardless of whether these slots are used in the preset.
In other words, saving an inserts preset means saving the states of all insert slots.

▪ You can use the Preset Management pop-up to save your settings as preset, or to rename or remove the current preset.

Extracting insert effect settings from track presets

You can extract the effects used in a track preset and load them into your inserts "rack":

▪ Select "From Track Preset…" on the Preset Management pop-up menu to open a dialog where all track presets are shown.

▪ Select an item in the list to load the effects used in the track preset.

Track presets are described in the chapter "Working with track presets" on page 180.

Installing and managing effect plug-ins

Cubase Essential supports two plug-in formats; the VST 2 format (with the file name extensions ".dll" on the PC and ".VST" on the Mac) and the VST 3 format (extension ".vst3" on both platforms). The formats are handled differently when it comes to installation and organizing.

Installing additional VST plug-ins

Installing VST 3 plug-ins under Mac OS X

To install a VST 3.x plug-in under Mac OS X, quit Cubase Essential and drag the plug-in file into one of the following folders:

▪ /Library/Audio/Plug-Ins/VST3/
This is only possible if you are the system administrator. Plug-ins installed in this folder will be available to all users, for all programs that support them.

▪ /Users/<user name>/Library/Audio/Plug-Ins/VST3/
"<user name>" is the name you use to log on to the computer (the easiest way to open this folder is to go to your "Home" folder and use the path /Library/Audio/Plug-Ins/VST3/ from there). Plug-ins installed in this folder are only available to you.

When you launch Cubase Essential again, the new effects will appear on the effect pop-up menus. In the VST 3 protocol, the effect category, sub-folder structure etc. are built-in and cannot be changed. The effect(s) will simply show up in the assigned category folder(s) on the Effect pop-up menu.

Installing VST 2.x plug-ins under Mac OS X

To install a VST 2.x plug-in under Mac OS X, quit Cubase Essential and drag the plug-in file to one of the following folders:

▪ /Library/Audio/Plug-Ins/VST/
This is only possible if you are the system administrator. Plug-ins installed in this folder will be available to all users, for all programs that support them.

▪ <user name>/Library/Audio/Plug-Ins/VST/
"<user name>" is the name you use to log on to the computer (the easiest way to open this folder is to go to your "Home" folder and use the path /Library/Audio/Plug-Ins/VST/ from there). Plug-ins installed in this folder are only available to you.

When you launch Cubase Essential again, the new effects will appear on the effect pop-up menus.

⇨ If an effect plug-in comes with its own installation application, you should use this.
As a general rule, always read the documentation or readme files before installing new plug-ins.

Installing VST 3 plug-ins under Windows

Under Windows, VST 3 plug-ins are installed by dragging the files (with the extension ".vst3") into the vst3 folder in the Cubase Essential application folder. When you launch Cubase Essential again, the new effects will appear on the Effect pop-up menus. In the VST 3 protocol, the effect category, sub-folder structure etc. are built-in and cannot be changed. The installed new effect(s) will simply show up in the assigned category folder(s) on the effect pop-up menu.

Installing VST 2 plug-ins under Windows

Under Windows, VST 2.x plug-ins are installed by dragging the files (with the extension ".dll") into the Vstplugins folder in the Cubase Essential application folder, or into the Shared VST Plug-in folder – see below. When you launch Cubase Essential again, the new effects will appear on the effect pop-up menus.

⇨ If an effect plug-in comes with its own installation application, you should use this.
As a general rule, always read the documentation before installing new plug-ins.

Organizing VST 2 plug-ins

If you have a large number of VST 2 plug-ins, having them all on a single pop-up menu in the program may become unmanageable. For this reason, the VST 2 plug-ins installed with Cubase Essential are placed in appropriate subfolders according to the effect type.

▪ Under Windows, you can organize VST plug-ins by moving, adding or renaming subfolders within the Vstplugins folder.
When you launch the program and pull down an effects pop-up menu, the subfolders will be represented by hierarchical submenus, each listing the plug-ins in the corresponding subfolder.

▪ Under Mac OS X, you cannot change the hierarchic arrangement of the "built-in" VST plug-ins.
However, you can arrange any additional plug-ins you have installed (in the /Library/Audio/Plug-Ins/VST/ folders, see above) by placing them in subfolders. In the program, the subfolders will be represented by hierarchical submenus, each listing the plug-ins in the corresponding subfolder.

The Plug-in Information window

On the Devices menu, you will find an item called "Plug-in Information". Selecting this opens a dialog listing all the available VST compatible plug-ins in your system (including VST instruments), along with all MIDI plug-ins.
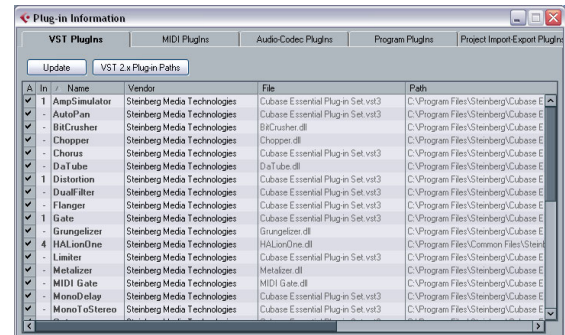
Managing and selecting VST plug-ins

To display all available VST plug-ins, open the "VST PlugIns" tab.

▪ To enable a plug-in (make it available for selection), put a check mark in the left column.
Only the enabled plug-ins will appear on the effect menus.

▪ The Instances column indicates how many instances of the plug-in are currently used in Cubase Essential.
Clicking in this column for a plug-in which is already in use produces a pop-up showing exactly where each use occurs.

⇨ A plug-in may be in use even if it is not enabled in the left column.
You might for example have opened a project containing effects that are currently disabled on the menu. The left column only determines whether or not the plug-in will be visible on the effect menus.

▪ All columns can be resized by dragging the divider in the column header.

The other columns show the following information about each plug-in:

Column	Description
Name	The name of the plug-in.
Vendor	The manufacturer of the plug-in.
File	This shows the complete name of the plug-in (with extension).
Category	This indicates the category of each plug-in (such as VST instruments, etc.).
Version	Shows the version of the plug-in.
SDK	Shows with which version of the VST protocol a plug-in is compatible.
Latency	This shows the delay (in samples) that will be introduced if the effect is used as an Insert. This is automatically compensated for by Cubase Essential.
I/O	This column shows the number of inputs and outputs for each plug-in.
Path	The path and name of the folder in which the plug-in file is located.

Update button

Clicking this button will make Cubase Essential re-scan the designated VST folders for updated plug-in information.

VST 2.x Plug-in Paths button

This opens a dialog where you can see the current paths to where VST 2.x plug-ins are located. You can add/remove folder locations by using the corresponding buttons. If you click "Add", a file dialog is opened, where you can select a folder location.

About the "shared" plug-ins folder (Windows and VST 2.x only)

You can designate a "shared" VST 2.x plug-ins folder. This will allow VST 2.x plug-ins to be used by other programs that support this standard.

You designate a shared folder by selecting a folder in the list and clicking the "Set As Shared Folder" button in the VST 2.x Plug-in Paths dialog.

Exporting plug-in information files

You can also save plug-in information as an .xml file, e.g. for archiving purposes or troubleshooting. The Export function is available for VST, MIDI and Audio Codec plug-ins. Proceed as follows:

1. Right-click on the desired tab in the Plug-in Information window to open the context menu and select "Export".
A file dialog opens.

2. In the dialog, specify a name and location for the Plug-in Information export file and click OK to export the file.

▪ The Plug-in Information file contains information on the installed/available plug-ins, their version, vendor, etc.

▪ The .xml file can then be opened in any editor application supporting the xml format.

10

VST instruments and instrument tracks

Introduction

VST instruments are software synthesizers (or other sound sources) that are contained within Cubase Essential. They are played internally via MIDI. You can add effects or EQ to VST instruments, just as with audio tracks.

Some VST instruments are included with Cubase, others can be purchased separately from Steinberg and other manufacturers.

⇨ This chapter describes the general procedures for setting up and using VST instruments.
The included VST instruments and their parameters are described in the separate PDF document "Plug-in Reference".

⇨ Depending on the VST version the instrument is compatible with, an icon may be displayed in front of the instrument name, see "About VST 3" on page 96.

VST instrument channels vs. instrument tracks

Cubase Essential allows you to make use of VST instruments in two different ways:

• By activating instruments in the VST Instruments window.
This creates a VST instrument channel, which can be played by one (or several) MIDI track(s) routed to it.

• By creating instrument tracks.
Instrument tracks are a combination of a VST instrument, an instrument channel and a MIDI track. You play and record MIDI note data directly for this track.

Both methods have their advantages, and should be selected according to what best suits your needs. The following sections describe the two approaches.

VST instrument channels

You can access a VST instrument from within Cubase Essential by creating a VST instrument channel and associating this channel with a MIDI track. Proceed as follows:

1. On the Devices menu, select "VST Instruments".
The VST Instruments window opens.
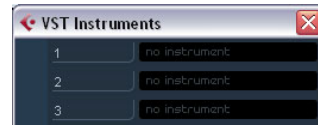
2. Click in one of the empty slots to open the instrument pop-up menu and select the desired instrument.

3. You will be asked if you want to create an associated MIDI track connected to the VST instrument. Do so.
The instrument is loaded and activated, and its control panel is opened. A MIDI track with the name of the instrument is added to the Track list. The output of this track is routed to the instrument.

In the Preferences dialog (VST–Plug-ins page), you can specify what should happen when loading a VST instrument in an instrument slot. Open the pop-up menu "Create MIDI track when loading VSTi" and select one of the available options:

• When you select "Always", a corresponding MIDI track will always be created.
• When you select "Do not", no track will be created and only the instrument will be loaded.
• Select "Always ask to" if you want to decide whether a MIDI track should be created whenever you load an instrument.

You can also use modifiers to specify what should happen when you load a VST instrument (overriding the Preference setting):

• When you hold down [Ctrl]/[Command] while selecting a VST instrument for an instrument slot, a corresponding MIDI track with the name of the instrument is automatically created.
• When you hold down [Alt]/[Option] while selecting a VST instrument for an instrument slot, no MIDI track will be created for the instrument.

▪ If you do not want the plug-in control panels to open every time you load a plug-in, open the Preferences dialog (VST–Plug-ins page) and deactivate "Open Effect Editor After Loading it".

You can open a plug-in panel at any time by clicking the "e" button of the corresponding plug-in slot.

4. If you now look in the Project window Track list, you will find that a dedicated folder for the chosen instrument has been added, within a "VST Instruments" folder (where all your VST instrument channels will be listed).

The separate folder for the added VST instrument contains two types of automation tracks: one for automating the plug-in parameters and one for each mixer channel used by the VST instrument. For example, if you add a VST instrument with four separate outputs (four separate mixer channels), the folder will contain five automation tracks. To keep the screen less cluttered, you may want to close the folder for the VST instrument until you need to view or edit any of the automation tracks. For details about automation, see the chapter "Automation" on page 121.

▪ When you select the MIDI track routed to the VST instrument, you will see that the Inspector contains a separate section for the instrument.

This section contains the audio channel settings for the VST instrument (inserts, EQs, Sends and fader settings). The tab has two buttons for opening the Channel Settings window (for the VST instrument channel) and the Edit Instrument button which opens the control panel for the VST instrument.

Opens the control panel for the VST instrument.

Opens the Channel Settings window.

5. Depending on the selected VST instrument, you may also need to select a MIDI channel for the track.

For example, a multitimbral VST instrument can play back different sounds on different MIDI channels – check the documentation for the VST instrument for MIDI implementation details.

6. Make sure the option "MIDI Thru Active" is activated in the Preferences dialog (MIDI page).

7. Activate the Monitor button for the MIDI track (in the Track list, Inspector or Mixer).

When this is activated (or when the track is record enabled), incoming MIDI is passed on to the selected MIDI output (in this case the VST instrument), see the chapter "Recording" on page 50.

8. Open the Mixer.

You will find one or more channel strips for the audio outputs of the VST instrument. VST instrument channel strips have the same features and functionality as group channel strips, with the addition of an Edit button at the bottom of the strip for opening the VST instrument control panel. In the Inspector you will also find an Output Routing pop-up menu for routing the VST instrument, e.g. to an output channel or group. Routing is described in detail in the chapter "VST Connections: Setting up input and output busses" on page 9.

9. Play the VST instrument from your MIDI keyboard.

You can use the mixer settings to adjust the sound, add EQ or effects, etc., just as with regular audio channels. Of course, you can also record or manually create MIDI parts that play back sounds from the VST instrument.

⚠ You can have up to 16 VST instruments activated at the same time, either different instruments or two instances of the same instrument (see also "Instrument Freeze" on page 115).

▪ VST instrument channels give you full access to multitimbral instruments.

You can have several MIDI tracks routed to the VST instrument, each playing a different part.

▪ Similarly, you can route channels to any available output provided by the VST instrument.

The VST Instruments window

When a VST instrument is loaded, six controls are displayed for this slot in the VST Instruments window.

Instrument on/off

Bypass instrument

Activate outputs

Instrument Freeze

Event received

Open instrument panel
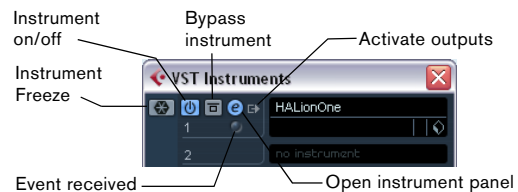
▪ The button on the far left is used for the Freeze function, see "Instrument Freeze" on page 115.

▪ The second button is used to activate or deactivate the VST instrument.

When an instrument is selected from the instrument pop-up menu, it is activated automatically, i.e. the on/off control lights up in blue.

For some instruments you may also bypass the instrument by clicking the Bypass button to the right of the on/off button.

▪ Click the Edit ("e") button to open the control panel for the VST instrument.

▪ Below the Edit button is a small LED that will light up when MIDI data is received by the instrument.

▪ The rightmost button allows you to activate the desired output for the instrument.
This is useful when you are using VST instruments that have a large number of audio busses, which may be confusing. Click one of the entries in the pop-up list to activate/deactivate output busses for this instrument.

Instrument tracks

An instrument track is a combination of a VST instrument, a MIDI track, and a VST instrument channel, in other words: it is a track coupled with a sound – it allows you to think in terms of sounds rather than in terms of track and instrument settings.

Adding instrument tracks

To open and use an instrument track, proceed as follows:

1. Open the Project menu and select Instrument from the Add Track submenu.
You can also right-click in the Track list and select "Add Instrument Track" on the context menu.

2. The Add Instrument Track dialog is opened.
You can select an instrument for the track from the pop-up (but you can also leave this until later if you wish). Specify the number of instrument tracks you wish to create in the "count" field. If you click the "Browse Presets" button, the dialog expands to show the Presets browser, where you can browse for sounds.

3. Click OK to add the instrument track.
When you select an instrument in the Add Track dialog, the new track will get the name of the instrument. When no instrument is selected, the track is named "Instrument track".

An instrument track in the Track list

Properties

▪ Each instrument track has a corresponding channel strip in the Mixer.

▪ In the Inspector, you can select a VST instrument from the Instrument pop-up menu.
When you select an instrument from this pop-up, its control panel will open automatically.

▪ You can also exchange the "sound" of an instrument track (i.e. the VST instrument and its settings) by extracting these data from another instrument track or a VST preset, see "Extracting sound from an instrument track or VST preset" on page 183.

▪ On the Input Routing pop-up menu, you can select a MIDI input.
Instrument tracks have only one MIDI input.

▪ To open the control panel for the VST instrument, click the "Edit Instrument" button in the Inspector.

▪ As with MIDI tracks, you can perform the usual MIDI editing procedures on the instrument track, like duplicate, split, or repeat the track, drag and drop the MIDI parts of an instrument track etc. For more information, see the chapter "MIDI realtime parameters and effects" on page 192.

▪ As with the MIDI track inspector and track controls, you can adjust track delay, choose MIDI input, work with VST instrument panels, choose drum maps etc. For more information, see the chapter "MIDI realtime parameters and effects" on page 192.

▪ Instrument tracks have all options that VST instrument channels have, i.e. inserts, sends, EQ, etc.

⇨ VST instruments used in instrument tracks do not appear in the VST Instruments window.
For an overview of all used VST instruments, open the Plug-in Information window via the Devices menu. For further information, see the section "The Plug-in Information window" on page 108.

Restrictions

▪ Instrument tracks have no MIDI Sends.

▪ MIDI volume and pan cannot be controlled (there is no "MIDI fader" tab in the Inspector); instead, the VST instrument volume and pan are used (via the "Channel" tab in the Inspector). This applies also to the respective automation parameters.

⇨ Due to there being only one volume and pan control for the instrument track, the Mute button will mute the complete track including the VST instrument. (As opposed to a MIDI track with an assigned VST instrument, for which muting the MIDI track still allows you to monitor and record the VST instrument.)

▪ Instrument tracks always have one stereo output channel only. This means that VST instruments that do not provide a stereo output as their first output channel cannot be used with instrument tracks, and must be loaded via the VST Instruments window.

▪ Due to the limitation to one output channel, instrument tracks play only the first voice of a multi-timbral VST instrument. If you want to use all voices, you have to load the instrument via the VST Instruments window and set up a MIDI channel to play it.

Import and export options

Importing MIDI loops

You can import "MIDI loops" (file extension "*.midiloop") in Cubase Essential. These files contain MIDI Part information (MIDI notes, controllers, etc.) as well as all the settings that are saved in instrument track presets (see "About track presets and VST presets" on page 116). This way, you can easily reuse instrument patterns you really like in other projects or applications for example.

Proceed as follows:

1. Open the MediaBay window via the Media menu.

2. In the Filter section, activate the "Show MIDI Loops" button.
This is not necessary, but will help you locate your MIDI loops more quickly.

3. In the Viewer section, select the desired MIDI loop and drag it in an empty section in the Project window.
An instrument track is created and the instrument part is inserted at the position where you dragged the file. The Inspector will reflect all settings saved in the MIDI loop, e.g. the VST instrument that was used, applied Insert effects, Track parameters, etc.

⇨ You can also drag MIDI loops onto existing instrument or MIDI tracks. However, this will only import the part information.
This means this part will only contain the MIDI data (notes, controllers) saved in the MIDI loop, but no inspector settings or instrument parameters.

Exporting MIDI loops

Exporting MIDI loops is a great way of saving a MIDI part together with its instrument and e.g. effect settings. This allows you to easily reproduce patterns you once created without having to search for the correct sound, style or effect.

Proceed as follows:

1. Select the desired instrument part.

2. On the File menu–Export submenu, select "MIDI Loop…".
A file dialog opens.

3. Enter the desired name for the MIDI loop in the Name field in the lower section of the dialog.

▪ If you want to save attributes for the MIDI loop, click the Tag Editor button.
This lets you specify e.g. a category and a sub category for your MIDI loop.

4. Click OK to close the dialog and save the MIDI loop.

MIDI Loop files are saved in the following folder:

▪ Windows XP: \Documents and Settings\<user name> \Application Data\Steinberg\MIDI Loops
▪ Windows Vista: \Users\<user name>\AppData\Roaming\ Steinberg\MIDI Loops
▪ Mac: /Users/<user name>/Library/Application Support/ Steinberg/MIDI Loops/

This default folder cannot be changed, you can however create subfolders within this folder to organize your MIDI loops. Simply click the "Create New Folder" button in the Save MIDI Loop dialog.

Exporting instrument tracks as MIDI file

You can also export instrument tracks as standard MIDI files, see "Exporting MIDI files" on page 294.

Please note:

▪ As there is no MIDI patch information in an instrument track, this information is missing in the resulting MIDI file.

▪ If you activate "Export Inspector Volume/Pan", volume and pan information of the VST instrument will be converted and written into the MIDI file as controller data.

What do I need? Instrument channel or instrument track?

• If you need a particular sound without knowing which VST instrument to use, create an instrument track and use the preview features to find the sound you want.

• Do likewise if the instrument track restrictions described above do not matter.

• If you are planning to create an instrument track preset, complete with inserts and EQ settings, you have to use an instrument track.

• If you need to use multitimbral parts and/or multiple outputs, set up a VST instrument channel.

Instrument Freeze

Like all plug-ins, VST instruments may require a lot of processor power. If you are using a moderately powerful computer or if you are using a large number of VST instruments, you may come to a point where your computer cannot handle all VST instruments playing back in realtime (the CPU overload indicator in the VST Performance window lights up, you get crackling sounds, etc.).

Enter the Instrument Freeze function! This is how it works:

• When you freeze a VST instrument, the program renders an audio file of the instrument output (taking into account all unmuted MIDI parts routed to that VST instrument). This file is placed in the "Freeze" folder within the Project folder.

• All MIDI tracks routed to the VST instrument, or the instrument track associated with the VST instrument, are muted and locked (the controls for these tracks will appear "grayed-out" in the Track list and Inspector).

• When you start playback, the rendered audio file is played back from an "invisible" audio track, routed to the VST instrument's mixer channel. Thus, any effects, EQ or mixing automation will still be applied.

• You can also freeze the mixer channel of the VST instrument. This freezes any pre-fader insert effects for the channels, just as when freezing audio tracks (see "Freezing (rendering) insert effects for a track" on page 100).

The result of the Freeze is that you get exactly the same sound as before, but the computer processor does not have to calculate the sound of the VST instrument in real-time.

Performing the freeze

The instrument freeze function is available in the VST Instruments window, and in the Track list and the Inspector for instrument tracks.

1. Set up the project so that the VST instrument plays back the way you want it to.
This includes editing the MIDI tracks routed to the VST instrument, or editing the instrument track, and making parameter settings for the VST instrument itself. If you have automated parameter changes for the VST instrument, make sure the Read (R) button is activated.

2. Open the VST Instruments window from the Devices menu, or, if you are using an instrument track, select the track and open the top Inspector tab.

3. Click the Freeze button for the VST instrument (the button to the left of the VST instrument slot), or the Freeze button in the Inspector for the instrument track.

The Freeze button in the VST Instruments window…   …and in the Inspector.

The Freeze Instrument Options dialog appears with the following options for the Freeze operation:

• Select "Freeze Instrument Only" if you do not want to freeze any insert effects for the VST instrument channels.
If you are using insert effects on the VST instrument channel(s) and want to be able to edit, replace or remove these after freezing the VST instrument, you should select this option.

▪ Select "Freeze Instrument and Channels" if you want to freeze all pre-fader insert effects for the VST instrument channels.

If your VST instrument channels are set up with the desired insert effects and you do not need to edit these, select this option.

▪ You can set a Tail Size time to let sounds complete their normal release cycle.

Otherwise, the sound might be cut off at the very end of the freeze file.

▪ When you activate "Unload Instrument when Frozen", the frozen VST instrument will be removed.

This is useful if you are freezing an instrument that uses a lot of RAM, e.g. for pre-loading samples. By unloading the instrument, the RAM becomes available for other plug-ins, etc.

4. Click OK.

A progress dialog is shown while the program renders the VST instrument audio to a file on your hard disk.

The Freeze button lights up. If you check the Project window at this point, you will find that the relevant MIDI/instrument tracks have grayed out controls in the Track list and Inspector. Furthermore, the MIDI parts are locked and cannot be moved.

5. Play back the project.

You will hear exactly the same sound as before freezing the VST instrument – but the CPU load will be considerably less!

▪ If you selected "Freeze Instrument and Channels", any insert effects used by the VST instrument are also frozen. However, you can always adjust level, pan, sends and EQ for frozen VST instruments.

Unfreezing

If you need to make adjustments (either to the MIDI tracks, to the VST instrument parameters or to the VST instrument channels if these were frozen) you need to unfreeze the VST instrument:

1. Click the Freeze button for the VST instrument again (either in the VST Instruments window or in the Inspector).

You will be asked to confirm this operation.

2. Click "Unfreeze".

The tracks and VST instrument are restored and the rendered "freeze file" is deleted.

VST instruments and processor load

If you are working with VST 3 instruments, another way to relieve processor load is the option "Suspend VST3 plug-in processing when no audio signals are received" in the Preferences dialog (VST–Plug-ins page). This is described in the section "Smart plug-in processing" on page 96.

Using presets for VSTi configuration

About track presets and VST presets

Track presets and VST presets allow you to quickly set up tracks or instruments with all the settings required for the sound you want. Cubase Essential provides various types of presets for various purposes. Two of these are of relevance for VST instruments:

▪ Track presets for instrument tracks store the parameter settings of a VST instrument together with all track/channel settings (applied audio and MIDI insert effects, etc.).

Instrument track presets can only be applied to instrument tracks, not to instrument channels activated in the VST Instruments window.

▪ VST presets store all panel settings for a plug-in (VST instruments and VST effects), but no track/channel settings.

Note that you can create instrument tracks from VST 3 presets, i.e. selecting a VST 3 preset will create an instrument track with all settings stored in the VST preset plus an "empty" track.

As described in the chapter "Audio effects" on page 95, there are two types of VST presets that can be used: the VST 2 standard ".fxb/.fxp" files and the VST 3 preset standard with the extension ".vstpreset". Some of the included VST instruments use the VST 2 preset standard, and others use the VST 3 standard.

All VST 2 instruments can import ".fxb/.fxp" files and also convert them to the VST 3 standard. Once converted, you can use all VST 3 features, see "About earlier VST instrument presets" on page 119.

⇨ For further information on track presets and VST presets, see the chapter "Working with track presets" on page 180.

Browsing for sounds

One important and often time-consuming aspect of music creation is the search for the right sounds. You might spend a huge amount of time trying out the presets for a particular instrument only to find out later that the preset for another instrument contains the sound you were looking for.

This is why Cubase Essential features extensive browsing possibilities, allowing you to preview all available presets without having to load them first!

In addition, you can filter your search by specifying category, style, etc.

For example, if you are looking for a bass sound, simply select the Bass category and you can browse and preview all bass sounds for all instruments. If you know you want a synth bass sound, select Synth Bass as sub-category and all synth bass sounds will be shown, etc.

You can also browse and preview track presets for instrument tracks, i.e. instrument sounds plus all track settings and all channel insert effect settings for this track.

These features combined speed up the process of finding the right sound immensely.

▪ When creating your own presets, it is always a good idea to set up attributes for them, as it allows you to fully use the browsing features for your files, too.
This is described in the chapter "The MediaBay" on page 169.

There are two ways of browsing for sounds:

▪ Using the Presets browser.
This will apply preset settings to an existing track.

▪ Using the Browse Sounds dialog.
Use this dialog if you have not set up a track yet.

Using the Presets browser

1. Create an instrument track and select it in the Track list.
You do not have to assign an instrument to the track, but make sure to specify a MIDI input.

2. Make sure that the track settings are shown in the Inspector.

3. Click in the Track Preset field in the Inspector (the text field currently reads "No Track Preset").

Click here…
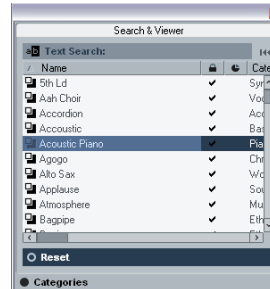
…to open the Presets browser.

4. The Presets browser is opened. It contains three sections (Browser, Search & Viewer and Filter). By default, only the Search & Viewer section is shown. Note that it may take a moment before all available sounds appear in the Viewer.

▪ The Viewer section to the right displays all track presets for instrument tracks and all VST 3 presets.
Track presets for audio tracks, MIDI tracks or "multi" track setups are not displayed. The preset icon to the left of the file name indicates the type of preset.

5. Select a preset in the list.

6. Play a few notes on your MIDI keyboard to hear the preset sound. You can switch between presets and hear the sound when you play. You can also play back/loop a MIDI part on a track. Each time you select a preset, all associated track and/or instrument settings are automatically loaded.

7. Use the Filter section to search for specific attributes if you wish.
You can click on the attributes in the respective column (Category, Style etc.), to filter out all presets that do not match the selected attribute(s).

8. Double-click the desired preset to select it and close the dialog.

Using the "Browse Sounds" dialog

1. Open the Project menu–Add Track submenu and select "Browse Sounds…".
The Browse Sounds dialog is opened. It contains the same sections as the Apply Track Presets dialog (Browser, Viewer and Filter).
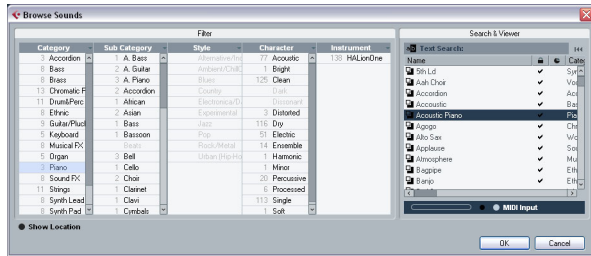
The Viewer section of the Browse Sounds dialog displays all preset sounds for all track types and all VST instruments. To preview the presets, you have play MIDI notes on your MIDI keyboard because at this stage there is no track connected.

2. When you have found the right sound, click OK to close the dialog.
An instrument track is created with all track and/or instrument settings that were saved in the preset.

Selecting VST instrument presets

The previous sections focussed on selecting presets for the creation of new instrument tracks, or for changing the setup of an existing track. However, you can also use presets to change the settings of a VST instrument.

⚠ Note that the following refers to the selection of VST 3 presets (.vstpreset). If you want to apply .fxp/.fxb presets to your VST 2 instruments in this way, see "About earlier VST instrument presets" on page 119.

To select a VST instrument preset, proceed as follows:

1. Load a VST instrument (either in the VST Instruments window or via an instrument track).

2. If you use the VST Instruments window, select a MIDI track routed to the instrument. If you use an instrument track, select this.

3. If necessary, click on the track name at the top of the Inspector to open the basic track settings.

4. Click in the Programs field in the Inspector.
The Presets browser is opened.
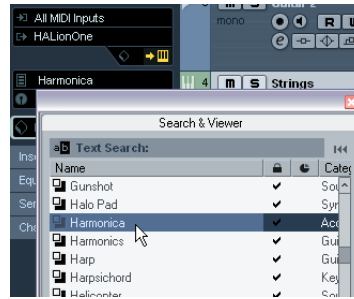
5. Step through the presets during playback to find the sound you are looking for.

6. Double-click the desired preset to load it and close the Presets browser.

▪ You can also open the Presets browser by clicking in the preset name field in the control panel of a VST instrument or by clicking the button next to the Preset name in the control panel and selecting "Load Preset…" from the pop-up menu.

▪ Selecting another preset in the Presets browser will load it directly, replacing the previous preset.

▪ When the Presets browser is open, you can still use Project window key commands, allowing you to start/stop playback or locate to different positions in the project.

▪ Clicking the Reset button below the Viewer will reload the last loaded preset.

Saving VST instrument presets

You can save your settings as presets for further use (e.g. in other projects):

1. In the VST instrument panel, click the button to the right of the preset name and select "Save Preset…" from the pop-up menu.
This opens a dialog where you can save the current settings as a preset.

Presets are saved into a default folder named VST3 Presets. Within this folder, there is a folder called "Steinberg Media Technologies" where the included presets are arranged in subfolders named after each instrument.

You cannot change the default folder, but you can add further subfolders inside the instrument's preset folder.

▪ Under Windows XP, the default preset folder is in the following location: \Documents and Settings\<user name>\Application data\VST3 Presets.

▪ Under Windows Vista, the default preset folder is in the following location: \Users\<user name>\AppData\Roaming\VST3 Presets.

▪ Under Mac OS, the default preset folder is in the following location: /Users/<user name>/Library/Audio/Presets/<company>/<plug-in name>.

2. Enter a name for the new preset in the File name field in the lower part of the dialog.

▪ If you wish to assign attributes to the preset, click the Tag Editor button.
Click in the Value column to select an appropriate "tag" for one or several of the available categories in the Attributes column.

3. Click OK to store the preset and exit the dialog.

Extracting sounds from track presets

You can extract a sound from a track preset (disregarding any track/channel settings) and save it as a VST preset. Proceed as follows:

1. Click the button "Extract sound from Track Preset" below the Output Routing pop-up menu in the Inspector.
This opens a dialog where all track presets are shown.

2. Select an instrument track preset or VST preset by double-clicking it.
The VST instrument and the settings (but no inserts, EQs or modifiers) of the existing track are overwritten using the data of the track preset. The previous VST instrument for this instrument track is removed and the new VST instrument with its settings is set up for the instrument track.

Track presets are described in detail in the chapter

About earlier VST instrument presets

You can use any VST 2.x instrument plug-ins in Cubase Essential. Installing VST instrument plug-ins works the same way as for audio effects – see

When you install a VST 2 instrument, any previously stored presets for it will be of the old FX program/bank (.fxp/.fxb) standard. You can import such files, but the preset handling will be slightly different. You will not be able to use the new features like the Preview function until you have converted the old ".fxp/.fxb" presets to VST 3 presets. If you save new presets for a VST 2 plug-in these will automatically be saved in the new ".vstpreset" format in the default location.

Importing and converting FXB/FXP files

To import .fxp/.fxb files, proceed as follows:

1. Load any VST 2 instrument you may have installed, and click on the VST Sound button to open the Preset Management pop-up menu.

2. Select "Import FXB/FXP" from the pop-up menu.
This menu item is only available for VST 2 instrument plug-ins.

3. In the file dialog that opens, locate the .fxp file and click "Open".
If you load a bank (.fxb), it will replace the current set of all effect programs. If you load a single program, it will replace the currently selected effect program only. Note that such files exist only if you created your own .fxp/fxb presets with a previous program version (or any other VST 2 application).

▪ After importing, you can convert the current program list to VST presets by selecting "Convert Program List to VST Presets" from the Preset Management pop-up.
When the presets are converted, they will be available in the Presets browser. The presets will be stored in the VST3 Preset folder.

About latency

Depending on your audio hardware and its ASIO driver, the latency (the time it takes for the instrument to produce a sound when you press a key on your MIDI controller) may simply be too high to allow comfortable realtime VST instrument playback from a keyboard.

If this is the case, a workaround is to play and record your parts with another MIDI sound source selected, and then switch to the VST instrument for playback.

⇨ You can check the latency for your audio hardware in the Device Setup dialog (VST Audio System page).
The input and output latency values are shown below the ASIO Driver pop-up menu. For live VST instrument playing, these values should ideally be a few milliseconds (although the limit for "comfortable" live playing is a matter of personal taste).

Constrain Delay Compensation

Cubase Essential features full delay compensation throughout the entire audio path. This means that any delay inherent in the VST plug-ins you use will automatically be compensated for during playback, so that all channels are kept in perfect sync (see "About plug-in delay compensation" on page 97).

However, when you play a VST instrument in realtime or record live audio (with monitoring through Cubase Essential activated), this delay compensation may sometimes result in added latency. To avoid this, you can activate the Constrain Delay Compensation button on the Project window toolbar. This function tries to minimize the latency effects of the delay compensation, while maintaining the sound of the mix as far as possible.

• In the Preferences dialog (VST page) you will find a setting called Delay Compensation Threshold. Only plug-ins with a delay higher than this setting will be affected by the Constrain Delay Compensation function.

• VST plug-ins (with higher delay than the threshold value) which are activated for VST instrument channels, audio track channels that are record enabled, group channels and output channels will be turned off when you activate Constrain Delay Compensation.

• VST plug-ins activated for FX channels are not turned off but their delay is disregarded by the program (delay compensation is turned off).

After recording or using a VST instrument with Constrain Delay Compensation, you should turn off the function to restore full delay compensation.

11

Automation

Introduction

In essence, automation means finding and recording, for each and every moment of your project, the right values for a particular mixer parameter. When you create your final mix, you will not have to worry about having to adjust this particular parameter control yourself – Cubase Essential will do it for you.

Cubase Essential provides very powerful and yet intuitive automation of virtually every Mixer and effect parameter.

The following sections provide detailed descriptions of the Cubase Essential automation features.

Enabling and disabling the writing of automation data

Tracks and mixer channels in Cubase Essential can be "automation enabled" by activating their automation Write (W) buttons.

The following track types feature Write (W) and Read (R) buttons in the Mixer, in the Track list and in the Channel Settings window: Audio, MIDI, Instrument, FX Channel and Group Channel tracks. Furthermore, the control panels for all plug-in effects and VST instruments also feature Write and Read buttons.

The Write and Read buttons for a channel in the Mixer and for an automation track in the Track list
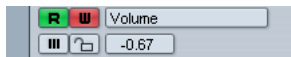
• If you activate Write for a channel, virtually all mixer parameters you adjust during playback for that specific channel will be recorded as automation events.

• If Read is activated for a channel, all your recorded Mixer actions for that channel will be performed during playback, just like you performed them in Write mode.

• The W and R buttons for a track in the Track list are mirrors of the W and R buttons in the corresponding channel strip in the Mixer.

⇨ Note that the Read button is automatically enabled when you enable the Write button. This allows Cubase Essential to read existing automation data at any time. You can separately deactivate Write, if you want to only read existing data. There is no status Write on/Read off.

There are also global Read and Write indicator buttons ("All Automation to Read/Write Status") in the common panel of the Mixer and at the top of the Track list:

The "All Automation to Read/Write Status" buttons in the Mixer, and in the Track list

These buttons light up as soon as there is a single enabled Read or Write button on any channel/track within your project.

• When "All Automation to Read/Write Status" is disabled and you click on one of these buttons, all Read/Write buttons on all tracks/channels are enabled. When "All Automation to Read/Write Status" is enabled, this means that at least one of the Read/Write buttons on one of the channels of your project is enabled.

• When "All Automation to Read/Write Status" is enabled and you click on one of these buttons, any enabled Read/Write buttons on the tracks/channels of your project are disabled.

Creating automation data

Within a Cubase Essential project, the changes in a parameter value over time are reflected as curves on so-called automation tracks. The curves are drawn in realtime while you write the automation data. Most of the tracks in your project have automation tracks, one for each automated parameter.

⇨ Automation tracks are hidden by default. For information on automation track handling, see the sections "Automation track operations" on page 124 and "Working with automation curves" on page 127.

There are two approaches you can use to create automation curves:

▪ "Offline", by manually drawing the curves on automation tracks in the Project window.
See

▪ "Online", by enabling the Write button and adjusting parameters in the Mixer or Channel Settings window while rolling through the project in realtime. The value settings are recorded and displayed as a curve on the automation track.
In the following sections, this online writing of automation data is also referred to as an "automation pass".

The methods are not different in terms of how the automation data is applied. They only differ in the way the automation events are created – manually drawing them or recording them during automation passes. Any applied automation data will be reflected in both the Mixer (a fader will move for example) and in a corresponding automation track curve.

There are no hard and fast rules regarding which method you should use. For example, you can create your automation data online without ever even opening an automation track. Or you can stick to drawing automation curves offline. Every method has its advantages, but of course it is up to you to decide what to use and when.

▪ Editing curves on automation tracks offers a graphical overview in relation to the track contents and the time position.
This makes it easy to quickly change parameter values at specific points, without having to activate playback. For example, this method gives you a good overview if you have a voice-over or a dialog on one track and a music bed on another track, the level of which needs to be lowered by a specific amount every time the dialog occurs.

▪ By using write automation in the Mixer you do not have to manually select parameters from the Add Parameter list.
You can work much like you would using a "real" physical mixer. Every action you perform is automatically recorded on automation tracks which you can later open for viewing and editing.

The automation tracks themselves indicate the writing of automation data:

▪ While writing automation data, the color of the automation track in the Track list changes to red.

▪ The delta indicator in the automation track shows the relative amount by which the new parameter setting deviates from any previously automated value.
This is an additional visual aid when writing new automation data.
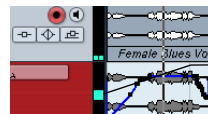
The delta indicator

What can be automated?

You can automate virtually every parameter in the Cubase Essential Mixer.

▪ To find out which parameters can be automated for a particular track, click in the Parameter display of the automation track to open a pop-up menu. Select "More…" to open the Add Parameter dialog.
This dialog lists all automatable parameters for a particular track type. It is described in detail in the section

Options and Settings

About the Automation Reduction Level preference

This item can be found on the Editing page in the Preferences dialog. The automation reduction function automatically reduces the number of automation events. During an automation pass (or when drawing automation with the Pencil tool), these are added as a continuous stream of densely packed break-points. This is necessary because the program cannot "guess" what you will be doing next.

However, when punching out, the reduction function will remove all break-points that are not needed. The automation curve will contain only the break-points necessary to reproduce your actions.

For example, all break-points that lie between two other points, but do not deviate from the curve, will be automatically removed by reduction.
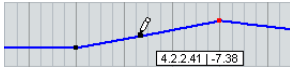
If you try to add a break-point that does not deviate from the existing curve between two existing points…
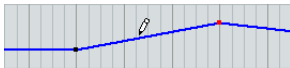
…it will be removed when the mouse is released. If you move the selected break-point by any amount so that the resulting curve is not a straight line, a new event will be added.

• If you are unhappy with the default setting (a reduction of roughly 50%), you can change it, but normally the default setting works well.

⚠ The higher the number of automation events, the higher the CPU load. If performance is an issue in your workflow, you should consider raising the reduction level, to remove more events.

Hints and further options

Automation key commands

In the Key Commands dialog (opened from the File menu in Cubase Essential), in the Commands section on the left, you will find an Automation category which lists all automation commands to which you can assign key commands.

How to assign key commands is described in detail in the chapter "Key commands" on page 304.

About linking and automation

• Cubase Essential allows you to link, in the Mixer window, various parameters between different channels (see "Link/Unlink channels" on page 92).
When automating the settings of a channel that is linked to another channel in the Mixer, the parameters of the linked channel will NOT be automated.

About automation undo

Every automation write operation you perform creates its own event in the undo history, so you can undo or redo any of your automation moves at any time.

Automation track operations

About automation tracks

Audio tracks, group channel tracks and FX channel tracks all have automation tracks. These allow you to view and edit the automation of all mixer settings for the track, including settings for the track's insert effects. There is one automation track for each parameter, and automation tracks can be shown or hidden in any combination.

Similarly, MIDI tracks have automation tracks for mixer settings, track parameters and (if used) for send and insert effect settings.

VST instruments have special automation tracks that appear in the Project window when you load a VST instrument via the VST Instruments window. There is one automation track for the plug-in parameters, and one track for each mixer channel used by the instrument. These tracks have automation subtracks, giving you access to all parameters and mixer settings.

Instrument tracks, as a combination of a MIDI track and a VST instrument, have automation tracks that provide automation parameters for the VST instrument itself, for the VST instrument channel and the respective MIDI automation parameters.

Finally, for ReWire channels and output channels, automation tracks are automatically added as soon as you activate automation (with the Write button) in the corresponding mixer channel strip or in the Channel Settings window or globally ("All Automation to Write Status") in the Mixer common panel or above the track list. These tracks also have automation tracks for all parameters.

Opening automation tracks

Every track has one automation track, showing one automation parameter.

For audio, instrument, group channel, MIDI and FX channel tracks, there are two ways you can open an automation track for the channel:

▪ By right-clicking the track in the Track list and selecting "Show Automation" from the context menu.

▪ By clicking along the left edge of the track in the Track list. (Also, when you position the mouse pointer over the lower left corner of the track, a corresponding arrow icon ("Show/Hide Automation") appears.)

An automation track opens in the Track list. When you open an automation track for the first time, the Volume parameter is selected by default.

Click here to open an automation track.

Assigning a parameter to an automation track

Default parameters are already assigned to automation tracks when you open them, according to their order in the Add Parameter list (see below).

To select which parameter an open automation track should display, proceed as follows:

1. If none exists, open an automation track using one of the methods described above.

2. Click in the parameter display for the automation track.

A pop-up list is shown, containing some of the automation parameters plus the item "More…" at the bottom of the list. The contents of the list depend on the track type.
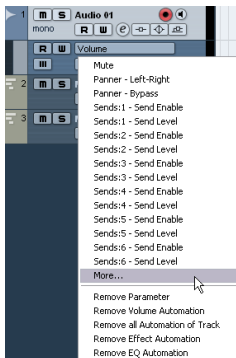
▪ If the parameter you wish to automate is on the pop-up menu, you can select it directly.

The parameter will then replace the current parameter in the automation track.

▪ If you wish to add a parameter not available on the pop-up menu or want to view all parameters that can be automated, go on to the next step.

3. Select "More…".

The Add Parameter dialog appears. This dialog shows a list with all parameters that can be automated for the selected channel (sorted into different categories), including the parameters for any assigned insert effects. To view the parameters in each category, click the "+" sign for the category folder.
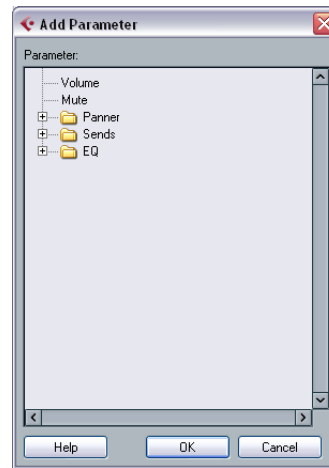
The Add Parameter dialog for an audio track

4. Select a parameter from the list and click OK.

The parameter will then replace the current parameter in the automation track.

⇨ Note that the "replacing" of the parameter displayed in the automation track is completely non-destructive.

If the automation track contained any automation data for the parameter you just replaced, this data will still be there, although it will not be visible after you replaced the parameter. If you click in the parameter display you can switch back to the replaced parameter. On the pop-up menu, all automated parameters are indicated by an asterisk (*) after the parameter name.
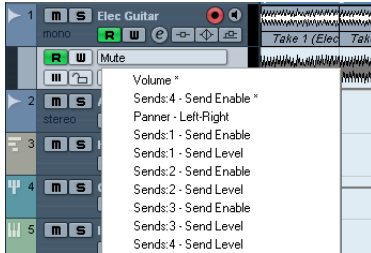
The first two parameters are automated.

Removing automation tracks

To remove all automation for the selected parameter, click the parameter name and select "Remove Parameter" from the pop-up menu. This will delete any automation events on the automation track, and the track will be closed.

Hiding automation tracks

▪ To hide a single automation track, position the pointer over the top left border of the automation track in the Track list and click the "Hide Automation Track" button (the minus sign).

▪ To hide all automation tracks for all tracks in the Track list, right-click any track and select "Hide All Automation" from the context menu.

Muting automation tracks

You can mute individual automation tracks by clicking their Mute buttons in the Track list. Unlike the Read (R) button, which will activate or deactivate Read mode for all automation tracks of a track, the Mute button allows you to turn off automation for a single parameter.

The "Automation follows Events" setting

If you activate "Automation follows Events" on the Edit menu (or in the Preferences–Editing page), automation events will automatically follow when you move an event or part on the track.

This makes it easy to set up automation related to a specific event or part, rather than to a specific position in the project. For example, you can automate the panning of a sound effect event (having the sound pan from left to right, etc.) – if you need to move the event, the automation will automatically follow! The rules are:

▪ All automation events for the track between the start and end of the event or part will be moved.

If there are automation events in the new position (to which you move the part or event), these will be overwritten.

▪ If you copy an event or part, the automation events will be duplicated as well.

Recording your actions – an example

If the settings in your current project are crucial, you may not want to "experiment" with automation until you know more about how it all fits together. If so, you can create a new project for the following example. It does not even have to contain any audio events, just a few audio tracks. Proceed as follows:

1. Open the Mixer window.

2. Click the global Write button ("All Automation to Write Status") in the Mixer common panel.

Cubase Essential is now in global Write mode.

3. Start playback and adjust some volume faders and/or other parameter settings in the Mixer or perhaps in a Channel Settings window.
Stop playback when you are done, and return to the position where you started playback.

4. Deactivate Write mode and click the global Read button ("All Automation to Read Status") in the Mixer common panel.
Cubase Essential is now in global Read mode.

5. Start playback, and watch the Mixer window.
All your actions performed during the previous playback will be reproduced exactly.

6. If you wish to redo anything that was recorded, activate Write mode again and start playback from the same position.

▪ You can have Write and Read activated simultaneously, if you want to watch and listen to your recorded Mixer actions while you're recording fader movements for another mixer channel, etc.

Recording plug-in automation

Every parameter for every assigned effect or VST instrument can be automated in much the same manner as described above.

The following example assumes that you have assigned an insert effect to an FX channel track (see the chapter "Audio effects" on page 95), and describes how to record automation for the effect:

1. Select the FX channel track in the Track list and open its Inserts section in the Inspector.

2. Open the control panel for the effect by clicking the Edit button ("e") above the insert effect slot in the Inspector.

3. Click the Write button in the control panel to enable Write mode.
The Read button is enabled as well. All effects and VST instruments have Write/Read buttons on their control panels. These work exactly like the corresponding buttons in the Mixer or in the Track list.

4. Start playback and adjust some effect parameters in the control panel.
When you are finished, stop playback and return to the position where you started playback.

5. Disable Write.
The Read button remains enabled.

6. Start playback and watch the control panel.
All actions you performed during the previous playback will be reproduced exactly.

Dragging and dropping of insert plug-ins

You can drag an insert plug-in from one insert slot to another, either on the same channel or on a different channel.

▪ When dragging a plug-in to a different insert slot on the same channel, any existing automation data will move with the plug-in.

▪ When dragging a plug-in to a different insert slot on a different channel, any existing automation data will not be transferred to the new channel.

Where did the automation data I recorded end up?

When using global Write automation, you can write automation data on the automation tracks of all channels. In the previous write operations, you probably added automation events for many different channels and parameters.

▪ To view all the automation events you recorded during the operations, select "Show All Used Automation" from the Project menu or from the Track list context menu.
For each of the channels one subtrack with automation data is now shown in the Project window. The automation events recorded are shown as points in the automation curves.

Working with automation curves

About automation curves

There are two kinds of automation curves, "ramp" and "jump":

▪ Jump curves are created for any parameter that only has on/off values, like a Mute button, for example.

▪ Ramp curves are created for any parameter that generates continuous multiple values, such as fader or encoder movements, etc.
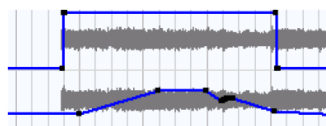
Examples of jump and ramp automation curves

About the static value line

When you open an automation track for a parameter for the first time, it does not contain any automation events (unless you have previously adjusted that parameter with write automation activated), and this is reflected in the event display as a straight horizontal black line, the "static value" line. This line represents the current parameter setting.

▪ If you have manually added any automation events or used write automation for the corresponding parameter, and then disable the reading of automation data, the automation curve will be grayed-out in the automation track event display and the static value will be used instead.
As soon as Read mode is enabled, the automation curve will become available.

Editing automation events

Drawing automation events

By using write automation in the Mixer, you generate automation events by moving parameter encoders and faders in the Mixer. You can also add them manually by drawing automation curves on an automation track. Proceed as follows:

1. Open an automation track for the track you want to make settings for.
The static value line is shown in the event display for the automation track and the Volume parameter is selected.

2. Select the Pencil tool.
You can also use the various modes of the Line tool for drawing curves, see below.

3. Click on the static value line. An automation event is added, read automation mode is automatically activated, and the static value line changes to a blue automation curve.
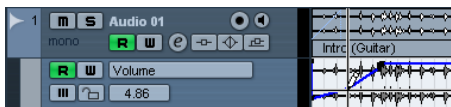
4. If you click and hold, you can draw a curve by adding a multitude of single automation events.
Note that the track color in the Track list changes to red to indicate that automation data is being written.
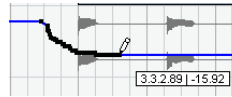
5. When you release the mouse button, the number of automation events is reduced to a few events, but the basic shape of the curve still remains the same.
This "thinning out" of events is governed by the Reduction Level setting in the Preferences dialog, see "About the Automation Reduction Level preference" on page 123.
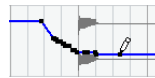
6. If you now activate playback, the volume will change with the automation curve.
In the Mixer, the corresponding fader moves accordingly.

7. Simply redo the operation if you are not happy with the result.
If you draw over existing events, a new curve is created.

▪ If the automation track is in Read mode already, you can also add automation events by clicking with the Arrow tool.
If you are trying to add a break-point between two existing points and the new point does not deviate from the existing curve, it will be removed by reduction as soon as you release the mouse button (see "About the Automation Reduction Level preference" on page 123).

Using the various modes of the Line tool to draw automation curves

The Line tool can be very useful for drawing automation events. The various modes are accessed by selecting the Line tool on the toolbar, clicking on it a second time and selecting from the pop-up menu that appears.

▪ Clicking and dragging with the Line tool in Line mode shows a line in the automation track and creates automation events aligned with this line.
This is a quick way to create linear fades, etc.
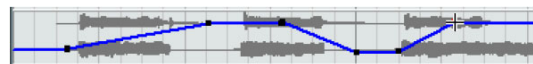
▪ The Line tool in Parabola mode works in the same way, but aligns the automation events with a parabolic curve instead, resulting in more "natural" curves and fades.
Note that the result depends on the direction from which you draw the parabolic curve.

▪ The Sine, Triangle and Square Line tool modes create automation events aligned with continuous curves.
If snap is activated and set to Grid, the period of the curve (the length of one curve "cycle") is determined by the grid setting. If you press [Shift] and drag, you can set the period length manually, in multiples of the grid value.

Selecting automation events

▪ To select a single automation break-point, click on it with the Arrow tool.
The break-point turns red, and you can drag it in any horizontal or vertical direction between two points.

▪ To select multiple break-points, you can either [Shift]-click or drag a selection rectangle with the Arrow tool.
All break-points inside the selection rectangle will be selected.

Drawing a selection rectangle around break-points to select them.

▪ To select all automation events on an automation track, right-click the automation track in the Track list and choose "Select All Events" from the context menu.

Removing automation events

There are several ways to remove break-points:

▪ By selecting points and pressing [Backspace] or [Delete] or selecting Delete from the Edit menu, or by clicking on a break-point with the Erase tool.
This will remove the break-points. The curve is redrawn to connect the break-points immediately to the left and right of the removed points.

▪ By selecting a range (with the Range Selection tool), and pressing [Backspace] or [Delete] or selecting Delete from the Edit menu.

▪ By clicking in the parameter display on an automation track and selecting "Remove Parameter" from the pop-up.
This will remove all automation events from the automation track, and the automation track will be closed.

Editing automation events

Automation events can be edited much like other events. You can use cut, copy and paste, and nudge events, etc.

MIDI part data vs. track automation

In Cubase Essential, you can enter (or record) MIDI Controller data in two ways: as automation data on an automation track or as part data in the MIDI part. The following applies:

▪ When the Automation Read button for a track is enabled, controller data will be written as automation data on an automation track in the Project window.

▪ When the Read button is disabled, the controller data will be written in the MIDI part and can be viewed and edited for example in the Key Editor.

Nevertheless, you can end up with both kinds of controller data for a MIDI part if you recorded controller part data in one pass and automation data during another. In this case, these "conflicting" data types will be combined during playback as follows:

▪ Part automation only begins when the first controller event within the part is reached. At the end of the part, the last controller value will be kept until an automation break-point is reached on the automation track.

12

Audio processing and functions

Background

Audio processing in Cubase Essential can be called "non-destructive", in the sense that you can always undo changes or revert to the original versions. This is possible because processing affects audio clips rather than the actual audio files, and because audio clips can refer to more than one audio file. This is how it works:

1. If you process an event or a selection range, a new audio file is created in the Edits folder, within your project folder.
This new file contains the processed audio, while the original file is unaffected.

2. The processed section of the audio clip (the section corresponding to the event or selection range) then refers to the new, processed audio file.
The other sections of the clip will still refer to the original file.

▪ Since all edits are available as separate files, it is possible to undo any processing, at any point and in any order!
This is done in the Offline Process History dialog, see "The Offline Process History dialog" on page 136.

▪ Furthermore, the original, unprocessed audio file can still be used by other clips in the project, by other projects or by other applications.

Audio processing

Basically, you apply processing by making a selection and selecting a function from the Process submenu on the Audio menu. Processing is applied according to the following rules:

▪ When events are selected in the Project window or the Audio Part Editor, the processing will be applied to these events only.
Processing will only affect the clip sections that are referenced by the events.

▪ When an audio clip is selected in the Pool, the processing will be applied to the whole clip.

▪ When you have made a selection range, the processing will be applied to this range only.
Other sections of the clip are not affected.

If you attempt to process an event that is a shared copy (i.e. the event refers to a clip that is used by other events in the project), you are asked whether you want to create a new version of the clip or not.
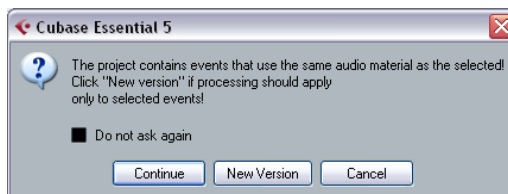
Select "New Version" if you want the processing to affect the selected event only. Select "Continue" if you want the processing to affect all shared copies.

⇨ If you activate "Do not show this message again", any further processing you do will conform to the selected method ("Continue" or "New Version").
You can change this setting at any time by using the "On Processing Shared Clips" pop-up in the Preferences (Editing–Audio page). Also, "Create New Version" will now be displayed as an option in the dialog for the processing function.

Common settings and features

If there are any settings for the selected Audio processing function, these will appear when you select the function from the Process submenu. While most settings are specific for the function, some features and settings work in the same way for several functions.

The "More…" button

If the dialog has a lot of settings, some options may be hidden when the dialog appears. To reveal these, click the "More…" button.
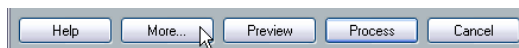
To hide the settings, click the button again (now labeled "Less…").

The Preview, Process and Cancel buttons

These buttons have the following functionality:

Button	Description
Preview	Allows you to listen to the result of the processing with the current settings. Playback will continue repeatedly until you click the button again (the button is labeled "Stop" during Preview playback). You can make adjustments during Preview playback, but the changes are not applied until the start of the next "lap". Some changes may automatically restart the Preview playback from the beginning.
Process	Performs the processing and closes the dialog.
Cancel	Closes the dialog without processing.

Pre/Post-Crossfade

Some processing functions allow you to gradually mix the effect in or out. This is done with the Pre/Post-Crossfade parameters. If you activate Pre-Crossfade and specify a value of e.g. 1000 ms, the processing will be applied gradually from the start of selection, reaching full effect 1000 ms after the start. Similarly, if you activate Post-Crossfade, the processing will gradually be removed, starting at the specified interval before the end of the selection.

⚠️ The sum of the Pre- and Post-Crossfade times cannot be larger than the length of the selection.

Envelope
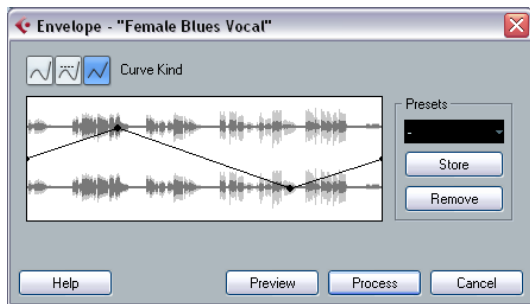
The Envelope function allows you to apply a volume envelope to the selected audio. The dialog contains the following settings:

Curve Kind buttons

These determine whether the envelope curve should consist of spline curve segments (left button), damped spline segments (middle button) or linear segments (right button).

Envelope display

Shows the shape of the envelope curve. The resulting waveform shape is shown in dark gray, with the current waveform shape in light gray. You can click on the curve to add points, and click and drag existing points to change the shape. To remove a point from the curve, drag it outside the display.

Presets

If you have set up an envelope curve that you may want to apply to other events or clips, you can store it as a preset by clicking the Store button.

▪ To apply a stored preset, select it from the pop-up menu.

▪ To rename the selected preset, double-click on the name and enter a new one in the dialog that appears.

▪ To remove a stored preset, select it from the pop-up menu and click Remove.

Fade In and Fade Out

For a description of these functions, see the chapter "Fades, crossfades and envelopes" on page 65.

Gain
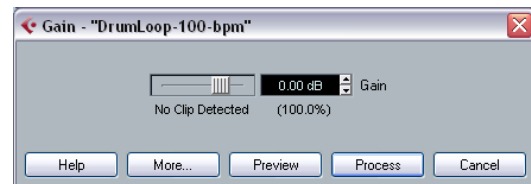
Allows you to change the gain (level) of the selected audio. The dialog contains the following settings:

Gain

This is where you set the desired gain, between -50 and +20 dB. The setting is also indicated below the Gain display as a percentage.

Clipping detection text

If you use the Preview function before applying the processing, the text below the slider indicates whether the current settings result in clipping (audio levels above 0 dB). If that is the case, lower the Gain value and use the Preview function again.

▪ If you want to increase the level of the audio as much as possible without causing clipping, you should use the Normalize function instead (see "Normalize" on page 134).

Pre- and Post-Crossfade

See "Pre/Post-Crossfade" on page 132.

Merge Clipboard

This function mixes the audio from the clipboard into the audio selected for processing, starting at the beginning of the selection.

⚠️ For this function to be available, you need to have cut or copied a range of audio in the Sample Editor first.

The dialog contains the following settings:

Sources mix

Allows you to specify a mix ratio between the original (the audio selected for processing) and the copy (the audio on the clipboard).

Pre- and Post-Crossfade

See "Pre/Post-Crossfade" on page 132.

Noise Gate
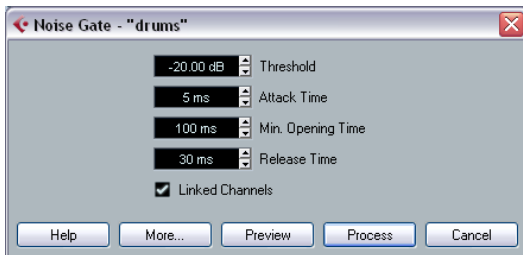
Scans the audio for sections weaker than a specified threshold level and replaces them with silence. The dialog contains the following settings:

Threshold

The level below which you want audio to be silenced. Levels below this value will close the gate.

Attack Time

The time it takes for the gate to open fully after the audio level has exceeded the threshold level.

Min. Opening Time

This is the shortest time the gate will remain open. If you find that the gate opens and closes too often when processing material that varies rapidly in level, you should try raising this value.

Release Time

The time it takes for the gate to close fully after the audio level has dropped below the threshold level.

Linked Channels

This is available for stereo audio only. When it is activated, the Noise Gate is opened for both channels as soon as one or both channels exceed the Threshold level. When Linked Channels is deactivated, the Noise Gate works independently for the left and right channel.

Dry/Wet mix

Allows you to specify a mix ratio between "dry" and processed sound.

Pre- and Post-Crossfade

See "Pre/Post-Crossfade" on page 132.

Normalize

The Normalize function allows you to specify the desired maximum level of the audio. It then analyzes the selected audio and finds the current maximum level. Finally it subtracts the current maximum level from the specified level and raises the gain of the audio by the resulting amount (if the specified maximum level is lower than the current maximum, the gain will be lowered instead). A common use for Normalizing is to raise the level of audio that was recorded at too low an input level. The dialog contains the following settings:

Maximum

The desired maximum level for the audio, between -50 and 0dB. The setting is also indicated below the Gain display as a percentage.

Pre- and Post-Crossfade

See "Pre/Post-Crossfade" on page 132.

Phase Reverse

Reverses the phase of the selected audio, turning the waveform "upside down".

The dialog contains the following settings:

Phase Reverse on

When processing stereo audio, this pop-up menu allows you to specify which channel(s) should be phase-reversed.

Pre- and Post-Crossfade

See "Pre/Post-Crossfade" on page 132.

Remove DC Offset

This function will remove any DC offset in the audio selection. A DC offset is when there is too large a DC (direct current) component in the signal, sometimes visible as the signal not being visually centered around the "zero level axis". DC offsets do not affect what you actually hear, but they affect zero crossing detection and certain processing, and it is recommended that you remove them.

⚠ It is recommended that this function is applied to complete audio clips, since the DC offset (if any) is normally present throughout the entire recording.

Reverse

Reverses the audio selection, as when playing a tape backwards. There are no parameters for this function.

Silence

Replaces the selection with silence. There are no parameters for this function.

Stereo Flip

This function works with stereo audio selections only. It allows you to manipulate the left and right channel in various ways.

The dialog contains the following parameters:

Mode
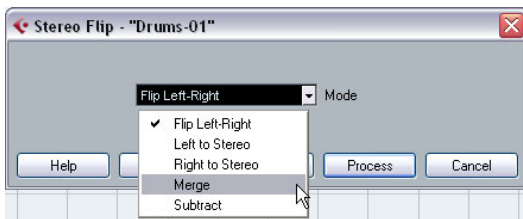
This pop-up menu determines what the function does:

Option	Description
Flip Left-Right	Swaps the left and right channel.
Left to Stereo	Copies the left channel sound to the right channel.
Right to Stereo	Copies the right channel sound to the left channel.
Merge	Merges both channels on each side for mono sound.
Subtract	Subtracts the left channel information from the right and vice versa. This is typically used as a "Karaoke effect", for removing centered mono material from a stereo signal.

Time Stretch
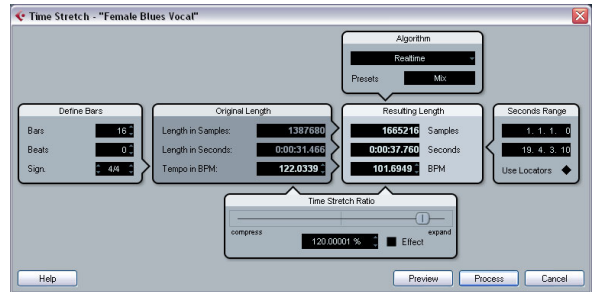
This function allows you to change the length and "tempo" of the selected audio without affecting the pitch. The dialog contains the following parameters:

Define Bars section

In this section, you set the length of the selected audio and the time signature:

Option	Description
Bars	If you use the tempo setting (see below), you can specify the length of the selected audio here, in bars.
Beats	If you use the tempo setting, you can specify the length of the selected audio here, in beats.
Sign.	If you use the tempo setting, you can specify the time signature here.

Original Length section

This section contains information and settings regarding the audio selected for processing:

Option	Description
Length in Samples	The length of the selected audio, in samples.
Length in Seconds	The length of the selected audio, in seconds.
Tempo in BPM	If you are processing music, and know the actual tempo of the audio, you can enter it here as beats per minute. This makes it possible to time-stretch the audio to another tempo, without having to compute the actual time stretch amount.

Resulting Length section

These settings are used if you want to stretch the audio to fit within a specific time span or tempo. The values will change automatically if you adjust the Time Stretch Ratio (see below).

Option	Description
Samples	The desired length in samples.
Seconds	The desired length in seconds.
BPM	The desired tempo (beats per minute). For this to work, you have to know the actual tempo of the audio, and specify this (along with time signature and length in bars) in the Original Length section to the left.

Seconds Range section

These settings allow you to set the desired range for the time stretch.

Option	Description
Range	Allows you to specify the desired length as a range between two time positions.
Use Locators	Clicking the diamond-shaped button below the Range fields sets the Range values to the left and right Locator positions, respectively.

Time Stretch Ratio section

The Time Stretch Ratio determines the amount of time stretch as a percentage of the original length. If you use the settings in the Resulting Length section to specify the amount of time stretch, this value will change automatically. The possible range depends on the "Effect" option:

• If the "Effect" checkbox is deactivated, the range is 75–125%.
This is the preferred mode if you want to preserve the character of the sound.

• If the "Effect" checkbox is activated, you can specify values between 10 and 1000%.
This mode is mainly useful for special effects, etc.

Algorithm section

Here you can choose a preset for the Realtime algorithm. This is the algorithm used for the realtime time stretching features in Cubase Essential. The Presets pop-up contains the same presets as found in the Algorithm pop-up in the Sample Editor.

The Offline Process History dialog

If you want to remove or modify some or all processing from a clip, this can be done in the Offline Process History dialog. Processing that can be modified in the Offline Process History dialog includes the functions on the Process menu, and Sample Editor operations such as Cut, Paste, Delete and drawing with the Pencil tool.

⇨ Due to the clip-file relationship (see "Background" on page 131), it is even possible to modify or remove some processing "in the middle" of the Process History, while keeping later processing! This feature depends on the type of processing performed (see "Restrictions" on page 137).

Proceed as follows:

1. Select the clip in the Pool or one of its events in the Project window.
You can see which clips have been processed by checking the Status column in the Pool – the waveform symbol indicates that processing or effects have been applied to the clip (see "About the Status column symbols" on page 159).

2. Select "Offline Process History…" from the Audio menu.
The Offline Process History dialog appears.
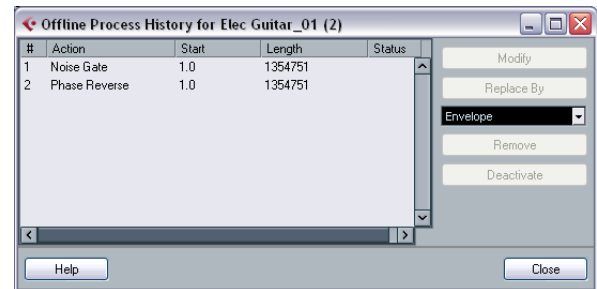
The left part of the dialog contains a list of all processing you have added to the clip, with the most recent operations at the bottom of the list. The "Start" and "Length" columns indicate which section of the clip was affected by each operation. The "Status" column indicates if the operation can be modified or undone.

3. Locate the operation you want to edit and select it by clicking on it in the list.

• To modify the settings of the selected processing, click the "Modify" button.

This opens the dialog for the processing function or applied effect, allowing you to change the settings. This works just as when you applied the processing or effect the first time.

• To replace the selected operation with another processing function or effect, select the desired function from the pop-up menu and click the "Replace By" button.

If the selected function has settings, a dialog will appear as usual. The original operation will then be removed and the new processing will be inserted in the Offline Process History.

• To remove the selected operation, click the "Remove" button.

The processing is removed from the clip.

• To undo the selected operation and remove the processing from the clip click the "Deactivate" button.

The processing is removed from the clip, but the operation remains in the list. To redo the operation and apply the processing again, click the button, now renamed to "Activate", again.

4. Click "Close" to close the dialog.

Restrictions

• If there are no settings for the processing function, you cannot modify it.

• If you have applied processing that changes the length of the clip (such as Cut, Insert or Time Stretch), you can only remove this if it is the most recent processing in the Offline Process History (at the bottom of the list in the dialog). If an operation cannot be removed or modified, this is indicated by an icon in the "Status" column. Also, the corresponding buttons will be grayed out.

Freeze Edits

The Freeze Edits function on the Audio menu allows you to make all processing and applied effects permanent for a clip:

1. Select the clip in the Pool or one of its events in the Project window.

2. Select "Freeze Edits…" from the Audio menu.

• If there is only one edit version of the clip (no other clips refer to the same audio file), the following dialog will appear:
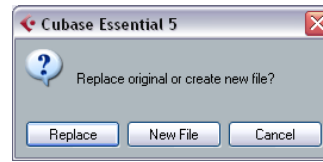
If you select "Replace", all edits will be applied to the original audio file (the one listed in the clip's Path column in the Pool). If you select "New File", the Freeze Edits operation will create a new file in the Audio folder within the project folder (leaving the original audio file unaffected).

• If the selected clip (or the clip played by the selected event) has several edit versions (i.e. there are other clips referring to the same audio file), the following alert will appear:
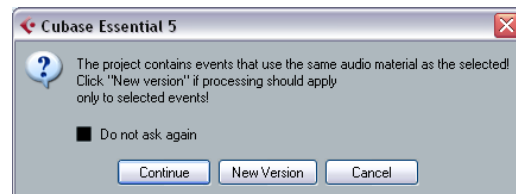
As you can see, you do not have the option to Replace the original audio file in this case. This is because that audio file is used by other clips. Select "New File" to have a new file created in the Audio folder within the project folder.

⚠ After a Freeze Edits, the clip refers to a new, single audio file. If you open the Offline Process History dialog for the clip, the list will be empty.

13

The Sample Editor

Background

The Sample Editor allows you to view and manipulate audio by cutting and pasting, removing or drawing audio data or processing audio (see "Audio processing and functions" on page 130). This editing can be called "non-destructive": The actual file (if created or imported from outside the project) will remain untouched and using the Offline Process History you can undo modifications or revert to the original settings at any time (see "The Offline Process History dialog" on page 136).

The Sample Editor also contains most of the AudioWarp related functions, i.e. the realtime time stretching functions in Cubase Essential. These can be used to match the tempo of audio loops to the project tempo (see "AudioWarp: Tempo matching audio" on page 147).

Another special feature of the Sample Editor is hitpoint detection. Hitpoints allow you to create "slices", which are useful, for example, if you want to change the tempo without affecting the pitch (see "Working with hitpoints and slices" on page 148).

Opening the Sample Editor

You open the Sample Editor by double-clicking an audio event in the Project window or the Audio Part Editor, or by double-clicking an audio clip in the Pool. You can have more than one Sample Editor window open at the same time.

▪ Note that double-clicking an audio part in the Project window will open the Audio Part Editor, even if the part only contains a single audio event.
This is described in a separate chapter, see "The Audio Part Editor" on page 152.

Window overview
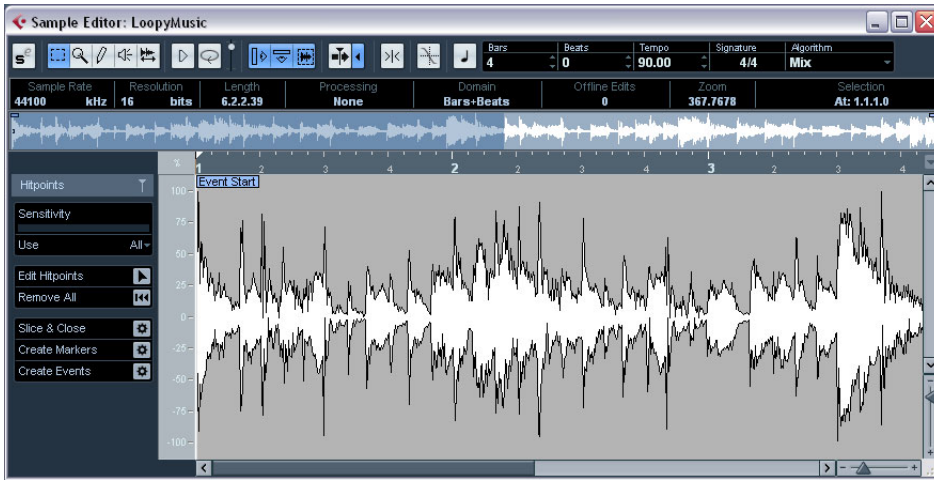
The Elements menu
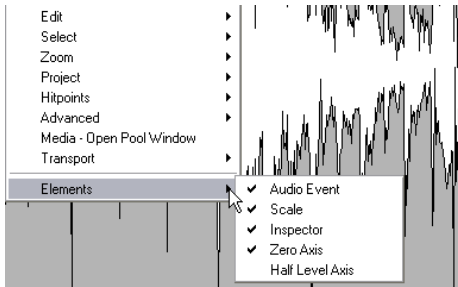
If you hold [Alt]/[Option] and right-click in the Sample Editor to bring up the context menu, you will find a submenu called "Elements". By activating or deactivating options on this submenu, you specify what is shown in the editor window. Some of these options are also available as icons on the toolbar.

⇨ Provided that the "Popup Toolbox on Right Click" option in the Preferences dialog (Editing–Tools page) is activated, a right-click holding a modifier key brings up the context menu.

The toolbar

The toolbar contains the following tools:
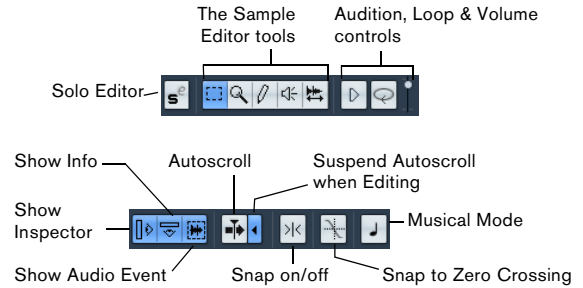
To the right of the tools the estimated length of your audio file is displayed in bars and beats (PPQ) together with the estimated tempo and the time signature. If you want to use Musical mode, you should always verify if the length in bars corresponds to the audio file you imported. If necessary, listen to your audio and enter the correct bar length. The Algorithm pop-up allows you to select an algorithm for the realtime time stretching.
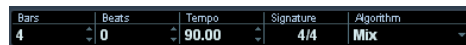
▪ You can customize the toolbar by right-clicking it and using the context menu to hide or show items.

▪ Selecting "Setup…" from the context menu allows you to rearrange sections on the toolbar, store toolbar presets, etc., see "Using the Setup options" on page 298.

The info line

If you activate the Show Info button on the toolbar, the info line will show information about the edited audio clip:

Audio format and length

Sample Rate	Resolution	Length
44100 kHz	16 bits	6.2.2.39

Realtime status   Number of edits made to the clip

Processing	Domain	Offline Edits	Zoom
None	Bars+Beats	0	367.7678

Selected display format   Zoom factor
(for info line and ruler)

Current selection range

Selection
1.1.1.9 [1.2.3.5 - 1.2.3.13]
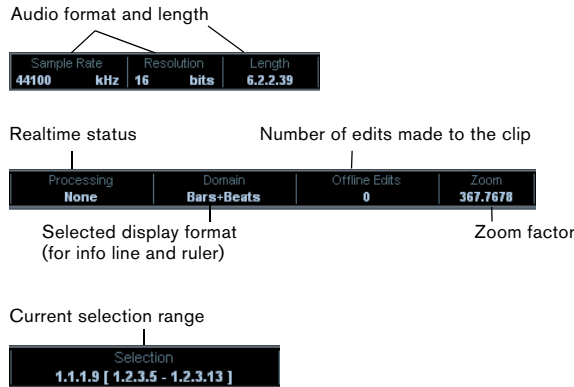
Initially, length and position values are displayed in the format specified in the Project Setup dialog. The info line can be customized, see "The Setup dialogs" on page 298.

The Sample Editor Inspector

To the left in the Sample Editor, you will find the Sample Editor Inspector. It contains tools and functions for working in the Sample Editor.

The Hitpoints tab

On this tab, the transients or hitpoints of the audio can be marked and edited (see "Working with hitpoints and slices" on page 148). Hitpoints allow you to slice your audio, and to create markers and events.

The thumbnail display

Event Start   Event End

Snap Point   Blue rectangle
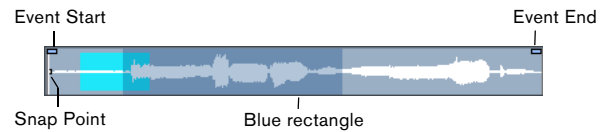
The thumbnail display provides an overview of the whole clip. The section currently shown in the main waveform display of the Sample Editor is indicated by a blue rectangle in the thumbnail, while the current selection range is shown in light blue. If the "Show Audio Event" button is activated in the toolbar, event start/end and snap point will also be shown in the thumbnail display.

▪ You can move the blue rectangle in the thumbnail to view other sections of the clip.
Click in the lower half of the rectangle and drag to the left or right to move it.

▪ You can resize the blue rectangle (by dragging its left or right edge) to zoom in or out, horizontally.

▪ You can define a new viewing area by clicking in the upper half of the overview and dragging a rectangle.

The ruler

The Sample Editor ruler is located between the thumbnail and the waveform displays. The ruler is explained in detail in the section "The ruler" on page 21.

The waveform display and the level scale
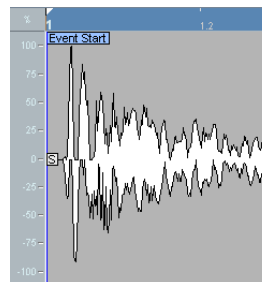
The waveform display shows the waveform image of the edited audio clip according to the wave image style set in the Preferences (Event Display–Audio page), see "Adjusting how parts and events are shown" on page 25. To the left of the waveform display a level scale can be shown, indicating the amplitude of the audio.

▪ When the level scale is shown, you can select whether the level should be shown as a percentage or in dB.
This is done by right-clicking the level scale and selecting an option from the context menu. This also allows you to hide the level scale.
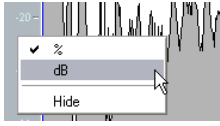
▪ To display the level scale after hiding it, bring up the Sample Editor context menu and activate Scale on the Elements submenu.

▪ The Elements submenu also allows you to select whether you want the zero axis and/or the half level axis indicated in the waveform display.

Zero axis — Half level axis
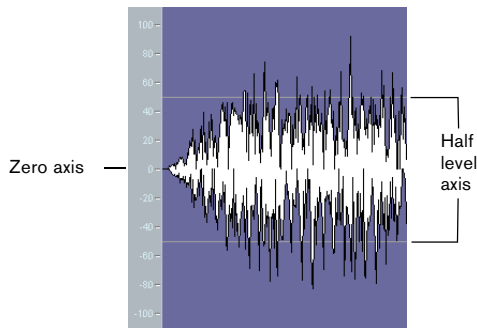
General Operations

Zooming

Zooming in the Sample Editor is done according to the standard zoom procedures, with the following special notes:

▪ The vertical zoom slider changes the vertical scale relative to the height of the editor window, in a way similar to the waveform zooming in the Project window (see "Zoom and view options" on page 22).
The vertical zoom will also be affected if the Preference "Zoom Tool Standard Mode: Horizontal Zooming only" (Editing–Tools page) is deactivated and you drag a rectangle with the Zoom tool.

▪ The following options relevant to the Sample Editor are available on the Zoom submenu of the Edit menu or the context menu:

Option	Description
Zoom In	Zooms in one step, centering on the position cursor.
Zoom Out	Zooms out one step, centering on the position cursor.
Zoom Full	Zooms out so that the whole clip is visible in the editor.
Zoom to Selection	Zooms in so that the current selection fills the editor display.
Zoom to Selection (Horiz.)	Zooms in horizontally so that the current selection fills the editor display.
Zoom to Event	Zooms in so that the editor shows the section of the clip corresponding to the edited audio event. This is not available if you opened the Sample Editor from the Pool (in which case the whole clip is opened for editing, not an event).
Zoom In/Out Vertical	This is the same as using the vertical zoom slider (see above).

▪ You can also zoom by resizing the rectangle in the thumbnail display.
See "The thumbnail display" on page 141.

▪ The current zoom setting is shown in the info line, as a "samples per screen pixel" value.

▪ Note that you can zoom in horizontally to a scale of less than one sample per pixel!
This is required for drawing with the Pencil tool (see "Drawing in the Sample Editor" on page 145).

▪ If you have zoomed in to one sample per pixel or less, the appearance of the samples depends on the option "Interpolate Audio Images" in the Preferences (Event Display–Audio page).
If the option is deactivated, single sample values are drawn as "steps". If the option is activated, they are interpolated to a "curve" form.

Auditioning

While you can use the regular play commands to play back audio when the Sample Editor is open, it is often useful to listen to the edited material only.

⇨ You can adjust the auditioning level with the miniature level fader on the toolbar.

Using key commands

If you activate the "Playback Toggle triggers Local Preview" option in the Preferences (Transport page), you can start/stop auditioning by pressing [Space]. This is the same as clicking the Audition icon on the toolbar.

Using the Audition Loop icon

Clicking the Audition icon on the toolbar plays back the edited audio, according to the following rules:

▪ If you have made a selection, this selection will be played back.
▪ If there is no selection, but the option "Show Event" is activated (see "Show Audio Event" on page 146), the section of the clip corresponding to the event will be played back.
▪ If there is no selection, and "Show Event" is deactivated, playback will start at the cursor position (if the cursor is outside the display, the whole clip will be played back).
▪ If the Audition Loop icon is activated, playback will continue repeatedly until you deactivate the Audition Loop icon. Otherwise, the section will be played back once.

Using the Speaker tool

If you click somewhere in the waveform display with the Speaker ("Play") tool and keep the mouse button pressed, the clip will be played back from the position at which you clicked. Playback will continue until you release the mouse button.

Scrubbing
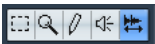
The Scrub tool allows you to locate positions in the audio by playing back, forwards or backwards, at any speed:

1. Select the Scrub tool.

2. Click in the waveform display and keep the mouse button pressed.
The project cursor is moved to the position at which you click.

3. Drag to the left or right.
The project cursor follows the mouse pointer and the audio is played back. The speed and pitch of the playback depends on how fast you move the pointer.

▪ You can adjust the response of the Scrub tool with the Scrub Response (Speed) setting in the Preferences (Transport–Scrub page).
You will also find a separate Scrub Volume setting on this page.

Adjusting the snap point

The snap point is a marker within an audio event (or clip, see below). This is used as a reference position when you are moving events with snap activated, so that the snap point is "magnetic" to whatever snap positions you have selected.

By default, the snap point is set at the beginning of the audio event, but often it is useful to move the snap point to a "relevant" position in the event, such as a downbeat, etc.

1. Activate the "Show Audio Event" option on the toolbar, so that the event is displayed in the editor.

2. Scroll so that the event is visible, and locate the "S" flag in the event.
If you haven't adjusted this previously, it will be located at the beginning of the event.
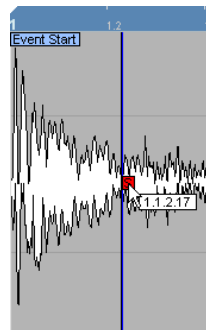
3. Click on the "S" flag and drag it to the desired position.
When you drag the snap point, a tooltip shows its current position (in the format selected on the Sample Editor ruler).

▪ If the Scrub tool is selected when you move the snap point, you will hear the audio while dragging (just like when scrubbing).
This makes it easier to find the correct position.

You can also adjust the snap point by setting the project cursor:

1. Place the cursor at the desired position (intersecting the event).
You may want to do this by scrubbing, to spot the right position exactly.

2. Holding [Alt]/[Option], right-click to open the context menu and select "Snap Point To Cursor" from the Audio submenu.
Provided that the "Popup Toolbox on Right Click" option in the Preferences dialog (Editing–Tools page) is activated, a right-click holding a modifier key brings up the context menu.

The snap point will be set to the position of the cursor. This method can also be used in the Project window and the Audio Part Editor.

▪ It is also possible to define a snap point for a clip (for which there is no event yet).
To open a clip in the Sample Editor, double-click it in the Pool. After having set the snap point using the procedure described above, you can insert the clip into the project from the Pool or the Sample Editor, taking the snap point position into account.

⚠ Events and clips can have different snap points. If you open a clip from the Pool you can edit the clip snap point. If you open a clip from within the project window, you can edit the event snap point. The clip snap serves as a template for the event snap point and does not affect snapping.

Making selections

To select an audio section in the Sample Editor, you click and drag with the Range Selection tool.

A selected range
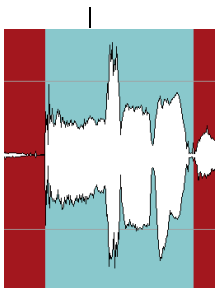
▪ If Snap to Zero Crossing is activated on the toolbar, the start and end of the selection will always be at zero crossings (see "Snap" on page 146).

▪ You can resize the selection by dragging its left and right edge or by [Shift]-clicking.

Using the Select menu

In the Select submenu of the Edit menu you can find the following options:

Function	Description
All	Selects the whole clip.
None	Selects no audio (the selection length is set to "0").
In Loop	Selects all audio between the left and right locator.
Select Event	Selects the audio that is included in the edited event only. This is not available if you opened the Sample Editor from the Pool (in which case the whole clip is opened for editing, not an event).
From Start to Cursor	Selects all audio between the clip start and the project cursor.
From Cursor to End	Selects all audio between the project cursor and the end of the clip. For this to work, the project cursor must be within the clip boundaries.
Left Selection Side to Cursor	Moves the left side of the current selection range to the project cursor position. For this to work, the cursor must be within the clip boundaries.
Right Selection Side to Cursor	Moves the right side of the current selection range to the project cursor position (or the end of the clip, if the cursor is to the right of the clip).

Editing selection ranges

Selections in the Sample Editor can be processed in several ways. Please note the following:

▪ If you attempt to edit an event that is a shared copy (i.e. the event refers to a clip that is used by other events in the project), you are asked whether you want to create a new version of the clip.
Select "New Version" if you want the editing to affect the selected event only. Select "Continue" if you want the editing to affect all shared copies. Note: If you activate the option "Do not show this message again" in the dialog, any further editing you do will conform to the selected method ("Continue" or "New Version"). You can change this setting at any time with the "On Processing Shared Clips" pop-up menu in the Preferences (Editing–Audio page).

▪ Any changes to the clip will appear in the Offline Process History, making it possible to undo them at a later point (see "The Offline Process History dialog" on page 136).

Cut, Copy and Paste

The Cut, Copy and Paste commands (on the Edit menu in the Sample Editor context menu or in the main Edit menu) work according to the following rules:

▪ Selecting Copy copies the selection to the clipboard.

▪ Selecting Cut removes the selection from the clip and moves it to the clipboard.
The section to the right of the selection is moved to the left to fill the gap.

▪ Selecting Paste copies the data on the clipboard into the clip.
If there is a selection in the editor, this will be replaced by the pasted data. If there is no selection, the pasted data will be inserted starting at the selection line. The section to the right of the line will be moved to make room for the pasted material.
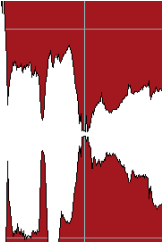
The pasted data will be inserted at the selection line.

Delete

Selecting Delete (on the Edit menu in the Sample Editor context menu or in the main Edit menu or by pressing [Backspace]) removes the selection from the clip. The section to the right of the selection is moved to the left to fill out the gap.

Insert Silence

Selecting "Insert Silence" (in the Range submenu of the main Edit menu) will insert a silent section with the same length as the current selection, at the selection start.

▪ The selection will not be replaced, but moved to the right to make room.
If you want to replace the selection, use the "Silence" function instead (see "Silence" on page 134).

Processing

The Processing features (in the Process submenu on the Audio menu) can be applied to selections in the Sample Editor. See the chapter "Audio processing and functions" on page 130.

Creating a new event from the selection using drag&drop

You can create a new event that plays only the selected range, using the following method:

1. Make a selection range.

2. Press [Ctrl]/[Command] and drag the selection range to the desired audio track in the Project window.

Creating a new clip or audio file from the selection

You can extract a selection from an event and either create a new clip or a new audio file, in the following way:

1. Make a selection range.

2. Holding [Alt]/[Option], right-click to open the context menu and select "Bounce Selection" from the Audio submenu.
Provided that the "Popup Toolbox on Right Click" option in the Preferences dialog (Editing–Tools page) is activated, a right-click holding a modifier key brings up the context menu.

A new clip is created and added to the Pool, and another Sample Editor window opens with the new clip. This clip refers to the same audio file as the original clip, but only contains the audio corresponding to the selection range.

Drawing in the Sample Editor

It is possible to edit the audio clip at sample level by drawing with the Pencil tool. This can be useful if you need to manually edit out a spike or click, etc.

1. Zoom in to a zoom value lower than 1.
This means that there is more than one screen pixel per sample.

2. Select the Pencil tool.

3. Click and draw at the desired position in the waveform display.

When you release the mouse button, the edited section is automatically selected.

⚠ Any modifications created by drawing will appear in the Offline Process History, making it possible to undo them at a later stage (see "The Offline Process History dialog" on page 136).

Options and settings

Show Audio Event

⚠ This is only available if you opened the Sample Editor by double-clicking an audio event in the Project window or the Audio Part Editor and not, if you opened the audio event from within the Pool.

When the Show Audio Event button is activated on the toolbar (or the option "Audio Event" is activated on the Elements submenu of the context menu), the section corresponding to the edited event is highlighted in the waveform and thumbnail displays. The sections of the audio clip not belonging to the event are shown with a dark gray background.
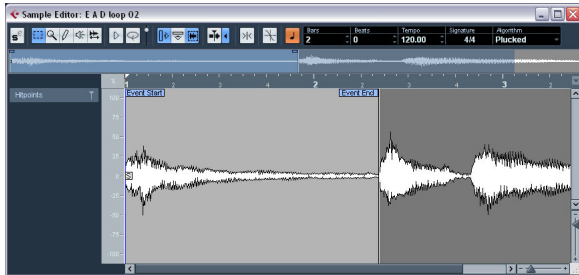
▪ In this mode, you can adjust the start and end of the event in the clip by dragging the event handles in the waveform display.

When you move the pointer over the event handles (no matter what tool may be selected), it takes on the shape of an arrow, to indicate that you can click and drag.

Snap

Snap activated.

The Snap function helps you to find exact positions when editing in the Sample Editor. It does this by restricting horizontal movement and positioning to certain grid positions. You turn Snap on or off by clicking the Snap button in the Sample Editor toolbar.

⇨ The Sample Editor Snap function is independent of the Snap setting in the Project window toolbar or other editors. It has no effect outside the Sample Editor.

Snap to Zero Crossing

Snap to Zero Crossing activated.

This setting is linked to the Snap to Zero Crossing setting in the Project window, see the section "Snap to Zero Crossing" on page 42.

⇨ If hitpoints have been calculated, these will also be taken into account when snapping to zero crossings.

Autoscroll

Autoscroll and Suspend Autoscroll when Editing activated.

When this option is activated on the Sample Editor toolbar, the waveform display will scroll during playback, keeping the project cursor visible in the editor.

This setting is independent of the Autoscroll setting in the Project window toolbar or other editors. For more information on this function, see the section "Autoscroll" on page 42.

AudioWarp: Tempo matching audio

In Cubase Essential you can use the Musical mode to tempo-match audio loops to the project tempo. It allows you to lock audio clips to the project tempo by using real-time time stretching. This is very useful if you want to use loops in your project and do not want to worry too much about timing.

When Musical mode is activated, audio events will adapt to any tempo changes in Cubase Essential, just like MIDI events. However, using this function should not be confused with quantizing: the timing, i.e. the rhythmic feeling will be maintained.

It is also possible to activate/deactivate Musical mode from within the Pool by clicking the corresponding checkbox in the Musical Mode column.

When you have correctly set a tempo or length for an audio clip, this information is saved with the project. This allows you to import files into the project with Musical mode already activated. The tempo (if set) is also saved when exporting files.

⚠ Cubase Essential supports ACID® loops. These loops are standard audio files but with embedded tempo/length information. When ACID® files are imported into Cubase Essential, Musical mode is automatically activated and the loops will adapt to the tempo set in the project.

Proceed as follows to tempo match an audio loop to the project tempo:

1. Import your loop into the project and double-click it to open it in the Sample Editor.
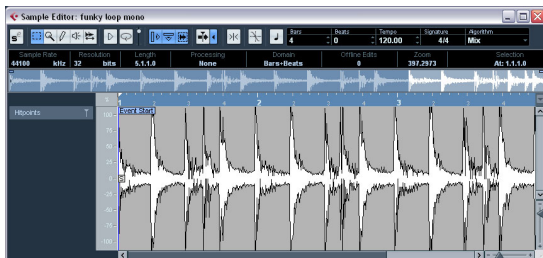
2. From the Algorithm pop-up in the toolbar, select the algorithm to be applied on realtime playback.

In this pop-up you can find various options that govern the audio quality of the realtime time stretching. There are presets for common types of audio material and an Advanced option which allows you to manually set warp parameters:

Option	Description
Drums	This mode is best for percussive sounds, because it will not change the timing of your audio. Using this option for pitched audio will lead to noticeable artifacts. In this case, you can try the Mix mode.
Plucked	This should be used for audio with transients and a relatively stable spectral sound character (e.g. plucked instruments).
Pads	Use this mode for pitched audio with slower rhythm and a stable spectral sound character. This will minimize sound artifacts, but the rhythmic accuracy will not be preserved.
Vocals	This mode was optimized for slower signals with transients and a prominent tonal character (e.g. vocals).
Mix	This mode will preserve the rhythm and minimize the artifacts for pitched material which does not meet the above criteria (i.e. with a less homogenous sound character). This will be selected by default for audio that is not categorized.
Advanced	This allows for a manual tweaking of the time stretching parameters. The settings that are shown when you open the dialog are those of the last used preset. The Advanced settings are described in more detail below this table.
Solo	This mode will preserve the formants of the audio. It should only be used for monophonic material (solo woodwind/brass instruments or solo vocals, monophonic synths or string instruments that do not play harmonies).

If you select the Advanced menu item, a dialog opens where you can manually adjust the three parameters that govern the sound quality of the time stretching:

Parameter	Description
Grainsize	The realtime time stretching algorithm splits the audio into small pieces called "grains". This parameter determines the size of the grains. For material with many transients you should use low Grainsize values for best results.

Parameter	Description
Overlap	Overlap is the percentage of the whole grain that will overlap with other grains. Use higher values for material with a stable sound character.
Variance	Variance is also a percentage of the whole length of the grains and sets a variation in positioning so that the overlapping area will sound smooth. A Variance setting of 0 will produce a sound akin to time stretching used in early samplers, whereas higher settings will produce more (rhythmic) "smearing" effects but less audio artifacts.

3. Activate the Musical Mode button on the toolbar.
Your loop will automatically be adapted to the project tempo.

As you can see, it is very easy to adapt audio loops to the project tempo.

Working with hitpoints and slices

Hitpoint detection is a special feature of the Sample Editor. It detects attack transients in an audio file and then adds a type of marker, i.e. a "hitpoint", at each transient. These hitpoints allow you to create "slices", where each slice ideally represents each individual sound or "beat" in a loop (drum or other rhythmic loops work best with this feature). When you have successfully sliced the audio file, you can do a number of useful things with it:

▪ Change the tempo without affecting the pitch.
▪ Replace individual sounds in a drum loop.
▪ Edit the actual playing in the drum loop without affecting the basic feel.
▪ Extract sounds from loops.

You can further edit these slices in the Audio Part Editor. For example you can:

▪ Remove or mute slices.
▪ Change the loop by reordering or replacing slices.
▪ Apply processing to individual slices.
▪ Create new files from individual slices using the "Bounce Selection" function on the Audio menu.
▪ Edit slice envelopes.

⇨ The term "loop" is used throughout this section. Loop in this context usually means an audio file with a musical time base, i.e. the length of the loop represents a certain number of bars and beats at a certain tempo. Playing the loop back at the right tempo in a cycle set to the correct length will produce a continuous loop without gaps.

⚠ When a selection range is defined, hitpoints will only be detected within this range.

⚠ Hitpoints will only be displayed in the waveform if the Hitpoints tab is open.

Using hitpoints

The main functionality of using hitpoints to slice up a loop is to make a loop fit the tempo of a song, or alternatively to create a situation that allows the song tempo to be changed while retaining the timing of a rhythmic audio loop, just like when using MIDI files.

Which audio files can be used?

Here are some guidelines as to what type of audio files are suited for slicing using hitpoints:

▪ Each individual sound in the loop should have a noticeable attack.
Slow attacks, legato playing, etc. may not produce the desired result.

▪ Poorly recorded audio might be difficult to slice correctly.
In these cases, try to normalize the files or to remove DC Offset.

▪ There may be problems with sounds drowned in smearing effects, like short delays.

Calculating hitpoints and slicing a loop

Before proceeding, find a suitable loop using the criteria above. Proceed as follows:

1. Open the event or clip for editing in the Sample Editor.
You can do this by double-clicking an event on an audio track in the Project window or a clip in the Pool. In this example, we assume you work with an event on a track.

2. Open the Hitpoints tab in the Sample Editor Inspector and select an option from the Use pop-up.

The Use pop-up menu on the Hitpoints tab affects which hitpoints are shown and is a useful tool for removing unwanted hitpoints.

It contains the following options:

Option	Description
All	All hitpoints are shown (taking the Sensitivity slider into account).
1/4, 1/8, 1/16, 1/32	Only hitpoints that are close to the selected note value positions within the loop are shown (e.g. close to exact sixteenth note positions). Again, the Sensitivity slider is taken into account.
Metric Bias	This is like the "All" mode, but all hitpoints that are close to even meter divisions (1/4, 1/8, 1/16, etc.) get a "sensitivity boost" – they are visible at lower sensitivity settings. This is useful if you are working with dense or cluttered material with a lot of hitpoints, but you know that the material is based on a strict meter. By selecting Metric Bias it will be easier to find the hitpoints close to the meter position (although most other hitpoints are also available, at higher sensitivity settings).

3. Move the Sensitivity slider to the right to add hitpoints or to the left to remove unwanted hitpoints until one individual sound is played between each hitpoint.

If your main reason for slicing the loop is to change the tempo, you generally need as many slices as you can get, but never more than one per individual "hit" in the loop.

In the next step, the loop will be adapted to the project tempo set in Cubase Essential.

4. Verify the Tempo and Bars values in the toolbar.

5. On the Hitpoints tab, click on the Slice & Close button or select "Create Audio Slices from Hitpoints" from the Hitpoints submenu on the Audio menu to create audio slices from the hitpoints.

The following happens:

• The Sample Editor closes.

• The audio event is "sliced" so that the sections between the hitpoints become separate events, all referring to the same original file.

• The audio event is replaced by an audio part, containing the slices (double-click the part to view the slices in the Audio Part Editor). If you edited a clip from the Pool, you need to drag it to an audio track to get a part with the slices.

⚠ When you create slices, all events containing the edited clip will also be replaced.

• The loop is automatically adapted to the project tempo. This takes the loop length you specified into account: e.g., if the loop was one bar long, the part is resized to fit exactly one bar in the Cubase Essential tempo, and the slices are moved accordingly, keeping their relative positions within the part.

• In the Pool, the sliced clip is shown with a different icon.

Dragging the sliced clip from the Pool to an audio track will create an audio part with the slices adapted to the project tempo, just as above.

⚠ Only when the audio tempo has been defined and the audio grid matches the project tempo, your slices will be straight (quantized).

6. Activate cycle playback on the Transport panel.

The loop should now play back seamlessly at the tempo set in the project!

• If the project tempo is lower than the original tempo of the loop, there may be audible gaps between each slice event in the part.

This can be remedied by using the Close Gaps function on the Advanced submenu of the Audio menu, see "Close Gaps" on page 151. You should also consider activating auto fades for the corresponding audio track – fade-outs set to about 10 ms will help eliminate any clicks between the slices when you play back the part. See "Fades, crossfades and envelopes" on page 65 for details.

• If the project tempo is higher than the loop's original tempo, you may want to activate auto crossfades for the track.

You can use the Close Gaps functions in this case as well, see "Close Gaps" on page 151.

The slices in the Audio Part Editor. Here, the project tempo was higher than the loop's original tempo – the slice events overlap slightly.

Setting hitpoints manually

If you cannot get the desired result by adjusting the sensitivity, try to set and edit hitpoints manually.

1. Zoom in on the waveform at the point where you wish to add a hitpoint.

2. Select the Edit Hitpoints tool to audition the area and make sure that the start of the sound is in view.

▪ Activate Snap to Zero Crossing on the Sample Editor toolbar.

By finding zero crossings in the waveform (positions where the amplitude is close to zero), manually added slices won't introduce any clicks or pops. All hitpoints calculated by the program are automatically placed at zero crossings.

⚠ "Snap to Zero Crossing" may alter the timing. In some cases it might therefore be better to deactivate it. However, if you create slices afterwards, auto fades will be necessary.

3. Press [Alt]/[Option] so that the mouse pointer changes to a pencil tool and click just before the start of the sound.
A new hitpoint appears. Manually added hitpoints are locked by default.

▪ If you notice that a hitpoint was either placed too far away from the start of the sound or too far into the sound, you can move it by clicking on the hitpoint handle and dragging it to the new position.

4. Audition the slices by pointing and clicking in any slice area.
The pointer changes to a speaker icon and the corresponding slice will be played back from the beginning to the end.

▪ If you hear a single sound split into two slice you can disable an individual slice by pressing [Alt]/[Option] (the pointer turns into a cross) and clicking on the corresponding hitpoint handle.
The hitpoint handle gets smaller and its line disappears to indicate that it is disabled. To reactivate a disabled hitpoint, [Alt]/[Option]-click on the hitpoint handle again.

▪ If you hear "double hits" (e.g. a snare hit being followed by a hi-hat hit within the same slice) you can add further hitpoints manually, or you can move the Sensitivity slider to the right until the hitpoint appears, lock this hitpoint by pointing on the handle until it becomes green and click on it.
Locked hitpoints are displayed in a darker color. After locking the hitpoint you can drag the sensitivity slider to the original setting and the locked hitpoint will remain shown. You can unlock a locked hitpoint by clicking on its handle.

▪ If you want to delete a hitpoint, simply drag it out of the Sample Editor window.
Hitpoints that you have created manually can also be deleted by clicking their handle.

Match-quantizing audio

Hitpoints can have individual Q-points. These are mainly used for audio quantizing. Their function is to define the point to which the quantizing will apply. Sometimes a slice might have a slow attack, and a peak further into the slice which you wish to use as the Q-point. When you apply quantize, the Q-point will define where the warp tab will be added. This also defines the point which will be stretched to a grid position when quantizing.
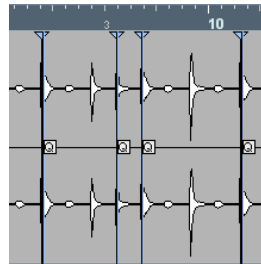
⚠ Sounds with a slow attack have their rhythmic center at some point before the peak.

▪ To activate Q-points, open the Preferences (Editing–Audio page) and activate the option "Hitpoints have Q-Points".
Next time you use the Calculate Hitpoints function, the hitpoints will have Q-points.

▪ To offset the position of a Q-point in relation to the hitpoint, simply click on the "Q" icon and drag it to the right to the desired position.

Other hitpoint functions

On the Hitpoints tab of the Sample Editor Inspector and on the various submenus of the Audio menu, you will also find the following functions:

Create Markers

If an audio event contains calculated hitpoints, you can click on the Create Markers button in the Hitpoints tab to add a marker for each hitpoint (see "Marker tracks" on page 20). This can be useful to snap to hitpoints, e.g. for locating hitpoints.

Create Events

When you wish to create separate events according to the hitpoints for a file, you can click on the Create Events button in the Hitpoints tab. This means that you do not have to make the same considerations as when slicing for tempo changes. You can use any method you like to set hitpoints.

▪ The slices created will appear in the Project window as separate events.

Close Gaps

This function from the Advanced submenu on the Audio menu is useful if you sliced a loop for tempo changes. Lowering the tempo below the loop's original tempo will create gaps between the slices. The lower the tempo is in relation to the original tempo, the wider the gaps will be. Close Gaps can be used to remedy this.

Proceed as follows:

1. Set the desired tempo.

2. Select the part containing the slices in the Project window.

3. Select "Close Gaps" from the Advanced submenu on the Audio menu.
Time stretch is applied to each slice to close the gaps. Depending on the length of the part and the algorithm set in the Preferences (Editing–Audio page), this can take a little while.

4. The waveform is redrawn and the gaps are closed!

▪ Note that this feature creates new clips in the Pool, one for each slice.

▪ Close Gaps can also be used when the project tempo is higher than the original loop tempo.
This will use the time stretch function to compress the slices to fit.

▪ If you decide to change the tempo again after using the Close Gaps function, you should undo the Close Gaps operation or start over again, using the original unstretched file.

▪ You can also use this function on individual events (in the Audio Part Editor or Project window).
The events don't have to be slices – you can use Close Gaps simply to stretch an audio event to the start position of the next event.

⇨ There are some restrictions concerning the highest and lowest possible note pitch. You cannot choose note pitches above C5 and below E0.

14

The Audio Part Editor

Background

The Audio Part Editor allows you to view and edit the events inside audio parts. Essentially, this is the same type of editing that you do in the Project window, which means that this chapter contains a lot of references to the chapter "The Project window" on page 14.

Audio parts are created in the Project window in one of the following ways:

▪ By selecting one or several audio events on the same track, and selecting "Events to Part" from the Audio menu.

▪ By gluing together two or more audio events on the same track with the Glue Tube tool.

▪ By drawing an empty part with the Pencil tool.

▪ By double-clicking between the left and right locator on an audio track.

With the last two methods, an empty part is created. You can then add events to the part by pasting, or by using drag and drop from the Pool.

Opening the Audio Part Editor

You open the Audio Part Editor by selecting one or more audio part(s) in the Project window and double-clicking on any one of them (or using the Edit-Open key command, by default [Ctrl]/[Command]-[E]). The Audio Part Editor can display several parts at once, and you can also have more than one Audio Part Editor open at the same time.

⇨ Double-clicking on an audio event in the Project window will open the Sample Editor (see "Opening the Sample Editor" on page 139).

Window overview
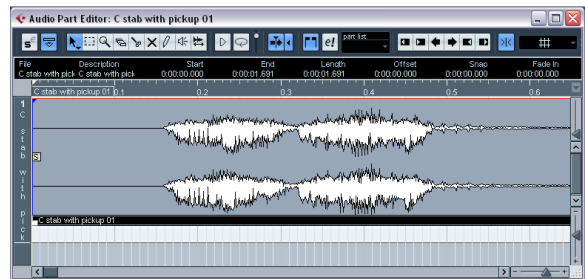
The toolbar

The tools, settings and icons on the toolbar have the same functionality as in the Project window, with the following differences:

▪ A Solo button (see "Auditioning" on page 155).
▪ Separate tools for auditioning (Speaker) and scrubbing (see "Scrubbing" on page 155).
▪ No Line, Glue Tube or Color tools.
▪ Play and Loop icons and an Audition Volume control (see "Auditioning" on page 155).
▪ Part List controls for handling several parts: activating parts for editing, restricting editing to active parts only and showing part borders (see "Handling several parts" on page 155).

⇨ You can customize the toolbar by hiding or reordering its items.
See "Using the Setup options" on page 298.

The ruler and info line

These have the same functionality and appearance as their counterparts in the Project window.

▪ You can select a separate display format for the Audio Part Editor ruler by clicking on the arrow button on the right and selecting an option from the pop-up menu.
For a list of the available formats, see "The ruler" on page 21.

About lanes

If you make the editor window larger, this will reveal additional space below the edited events. This is because an audio part is divided vertically in lanes.
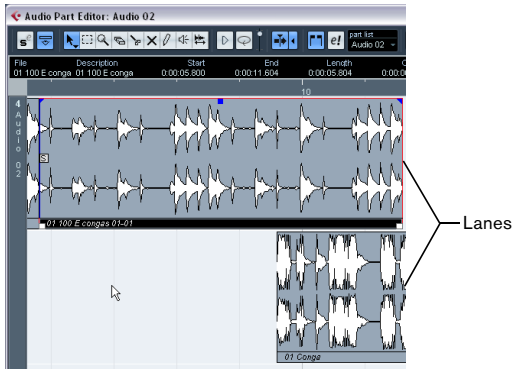
Lanes

Lanes can make it easier to work with several audio events in a part:
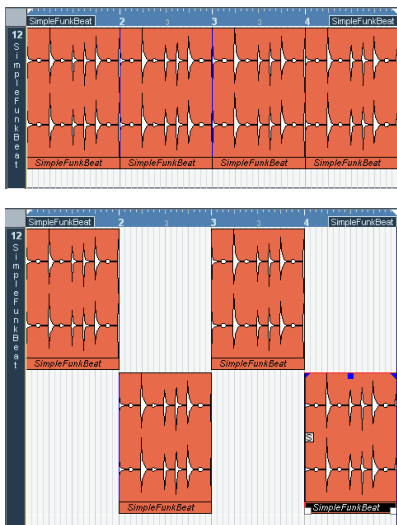
In the upper figure it is unnecessarily hard to discern, select and edit the separate events. In the lower figure, some of the events have been moved to another lower lane, making selection and editing much easier.

• To move an event to another lane without accidentally moving it horizontally, press [Ctrl]/[Command] and drag it up or down.

This is the default modifier key for this – you can adjust this in the Preferences if you like.

Overlapping events

Only one event per track can be played back at the same time! This means that if you have overlapping events (on the same lane or different lanes) these will cut each other off, according to the following rules:

• For events on the same lane, the ones that are on top (visible) will be played.

To move overlapping events to the front or back, use the Move to Front and Move to Back functions on the Edit menu.

• For events on different lanes, the event on the lowest lane gets playback priority.
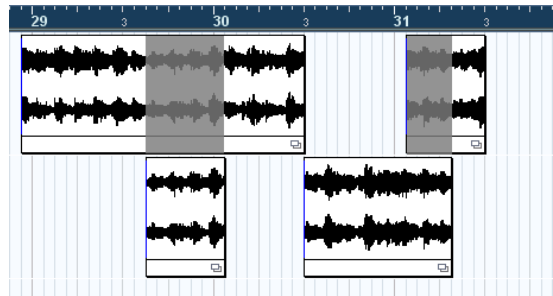
The overlapping sections of the upper event will not be played since the event on the lower lane has playback priority!

Imagine the following situation: You have two overlapping audio events, with the top event audible during playback. What happens when you mute the audible event?

• By default, you will not hear the overlapped event when muting an event that has playback priority over another event.

This default behavior ensures that you do not suddenly hear audio events that previously were not part of your mix.

• In the Preferences dialog (Editing–Audio page) you will find the option "Treat Muted Audio Events like Deleted". When you activate this option, any events overlapped by a muted event will become audible.

Operations

⚠ Zooming, selecting and editing in the Audio Part Editor are done just as in the Project window (see "Operations" on page 21).

▪ Note that if a part is a shared copy (i.e. you have previously copied the part by [Alt]/[Option]-[Shift] and dragging), any editing you perform will affect all shared copies of this part.

To indicate that it is a shared copy, its name is displayed in italics and a symbol is displayed in the lower right corner of the part in the Project window.

Auditioning

There are three ways to listen to the events in the Audio Part Editor:

By using the Speaker tool

If you click somewhere in the editor's event display with the Speaker tool and keep the mouse button pressed, the part will be played back from the position where you clicked. Playback will continue until you release the mouse button.

By using the Audition icon

The Audition and Audition Loop icons.

Clicking the Audition icon on the toolbar plays back the edited audio, according to the following rules:

▪ If you have selected events in the part, only the section between the first and last selected event will be played back.
▪ If you have made a range selection, only this section will be played back.
▪ If there is no selection, the whole part will be played back. If the project cursor is within the part, playback starts from the current cursor position. If the cursor is outside the part, playback starts from the beginning of the part.
▪ If the Audition Loop icon is activated, playback will continue until you deactivate the Audition icon. Otherwise, the section will be played back once.

▪ When auditioning with the Speaker tool or Audition icon, audio will be routed directly to the Main Mix (the default output bus).

By using regular playback

You can of course use the regular playback controls while in the Audio Part Editor. Furthermore, if you activate the Solo Editor button on the toolbar, only the events in the edited part will be played back.

Scrubbing

In the Audio Part Editor, the Scrub tool has a separate icon on the toolbar. Apart from that, scrubbing works exactly as in the Project window (see "Scrubbing" on page 28).

Handling several parts

When you open the Audio Part Editor with several parts selected – all on the same track or on different tracks – they might not all "fit" in the editor window, which can make it hard to get an overview of the different parts when editing.

Therefore, the toolbar features a few functions to make working with multiple parts easier and more comprehensive:

▪ The Part List menu lists all parts that were selected when you opened the editor, and lets you select which part should be active for editing.

When you select a part from the list, it is automatically made active and centered in the display.
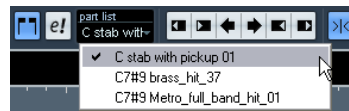
⇨ Note that it is also possible to activate a part by clicking on it with the Arrow tool.

▪ The button "Edit Active Part Only" lets you restrict editing operations to the active part only.

If you for example select "All" from the Select submenu on the Edit menu with this option activated, all events in the active part will be selected but not the events in other parts.

"Edit Active Part Only" activated on the toolbar.

▪ You can zoom in on an active part so that it fills the screen by selecting "Zoom to Event" from the Zoom submenu on the Edit menu.

▪ The button "Show Part Borders" can be used if you want to see clearly defined borders for the active part.
When this is activated, all parts except the active one are grayed out, making the borders easily discernible. There are also two "markers" in the ruler with the name of the active part, marking its beginning and end. These can be moved freely to change the part borders.

"Show Part Borders" activated on the toolbar.

▪ It is possible to cycle between parts, making them active using key commands.
In the Key Commands dialog – Edit category, there are two functions: "Activate Next Part" and "Activate Previous Part". If you assign key commands to these, you can use them to cycle between parts. See "Setting up key commands" on page 305 for instructions on how to set up key commands.

Common methods

Assembling a "perfect take"

When you record audio in Cycle mode, an event is created for each recorded lap (see "Recording audio in cycle mode" on page 57). These events are named "Take X", where "X" is the number of the take. You can create a perfect take by putting together sections of the different takes in the Audio Part Editor.

⇨ The procedure below will not work if you recorded with "Keep Last" mode selected on the Transport panel.
In that case, only the last take will be kept on the track.

First, you have to create an audio part from the takes.

Creating an audio part from events

1. In the Project window, use the Object Selection tool to draw a rectangle around the recorded events.
This is necessary, since clicking on the event may just select the event on top (the last take). If in doubt, check the info line – the info text should be yellow.

2. Pull down the Audio menu and select "Events to Part".
The events are converted to an audio part.

Assembling a take

1. Double-click the part to open the Audio Part Editor.
Now, the different takes will be placed on different lanes, with the last take at the bottom.
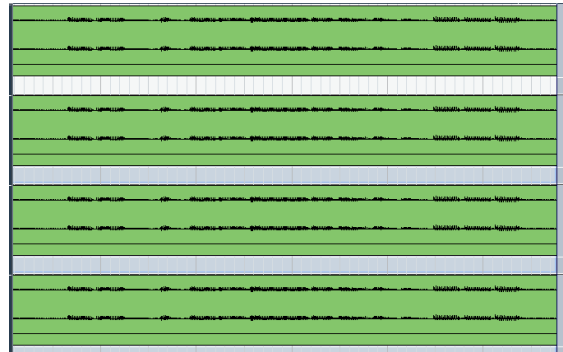
2. Use the tools to cut out pieces of the takes and assemble the final result.
This can include splitting with the Scissors tool, resizing events with the Arrow tool or deleting with the Erase tool.

▪ Remember that the events on the lowest lane have playback priority.
Use the Audition icon to audition the result.

3. Close the Audio Part Editor.
You have now assembled a "perfect take"!

Options and Settings

The following options and settings are available in the Audio Part Editor:

▪ Snap
You can specify an independent Snap mode (and snap value for the Grid mode) in the editor. The functionality is exactly the same as in the Project window.

▪ Autoscroll
When Autoscroll is activated on the toolbar, the window will scroll during playback, keeping the project cursor visible in the editor. This setting can be activated or deactivated individually for each window.

▪ Snap to Zero Crossing
When this option is activated, all audio edits are done at zero crossings (positions in the audio where the amplitude is zero). This helps you avoid pops and clicks which might otherwise be caused by sudden amplitude changes.

15

The Pool

Background

Every time you record on an audio track, a file is created on your hard disk. A reference to this file – a clip – is also added to the Pool. Two general rules apply to the Pool:

• All audio and video clips that belong to a project are listed in the Pool.

• There is a separate Pool for every project.

The way the Pool displays folders and their contents is similar to the way the Mac OS X Finder and the Windows Explorer display folders and lists of files.

In the Pool you can, among other things, perform the following operations:

Operations that affect files on disk

• Importing clips (audio files can automatically be copied and/or converted)
• Converting file formats
• Renaming clips (this will also rename the referenced files on disk)
• Deleting clips
• Preparing file archives for backup
• Minimizing files

Operations that only affect clips

• Copying clips
• Auditioning clips
• Organizing clips
• Applying audio processing to clips

Opening the Pool

You can open the Pool in any of the following ways:

• By clicking the Open Pool button on the Project window toolbar.

• By selecting "Pool" on the Project menu or "Open Pool Window" on the Media menu.

• By using a key command (by default [Ctrl]/[Command]-[P] – note that using this key command a second time will close the Pool again).

The content of the Pool is divided into three main folders:

• The Audio folder
This contains all audio clips currently in the project.

• The Video folder
This contains all video clips currently in the project.

• The Trash folder
Unused clips can be moved into the Trash folder for later permanent removal from the hard disk.

These folders cannot be renamed or deleted from the Pool, but any number of subfolders can be added (see "Organizing clips and folders" on page 166).

Window overview

Audio folder — Audio clip name — Toolbar
Trash folder   Video folder   Waveform image

Toolbar overview

Show Info button   View/Attributes pop-up   Open/Close all folders   Project Folder path
Audition, Audition Loop, and Volume controls   Import and Search buttons   Pool Record Folder path
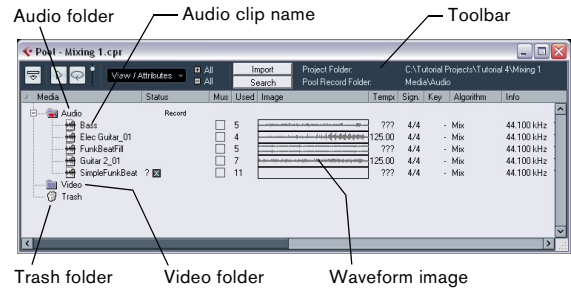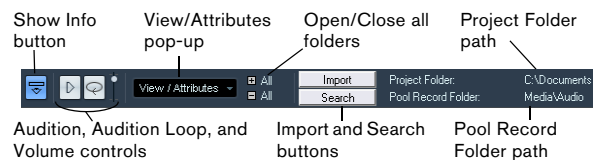
The info line

Click the "Show Info" button on the toolbar to show or hide the info line at the bottom of the Pool window. It shows the following information:

Number of audio files in the Pool   Total size of all audio files in the Pool
Number of audio files in use   Number of files in the Pool that are not in the project folder (e.g. video files)
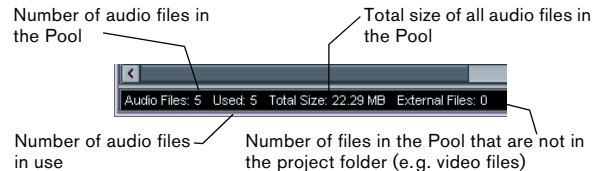
How clips are displayed in the Pool

- Audio clips are represented by a waveform icon followed by the clip name.

- Video clips are represented by a camera icon followed by the clip name.
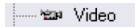
The Pool window columns

Various information about the clips can be viewed in the Pool window columns. The columns contain the following information:

Column	Description
Media	This column contains the Audio, Video and Trash folders. If the folders are opened, the clip names are shown and can be edited. This column is always shown.
Used	This column displays the number of times a clip is used in the project. If there is no entry in this column, the corresponding clip is not used.
Status	This column displays various icons that relate to the current Pool and clip status. See "About the Status column symbols" on page 159 for a description of the icons.
Musical Mode	The checkbox in this column allows you to activate or deactivate Musical Mode. If the Tempo column (see below) displays "???", you have to enter the correct tempo before you can activate Musical Mode.
Tempo	This shows the tempo of audio files, if available. If no tempo has been specified, the column displays "???".
Sign.	This is the time signature, e.g. "4/4".
Key	This is the root key, if one was specified for the file.
Info	This column shows the following information for audio clips: The sample rate, bit resolution, number of channels and the length in seconds. For video clips it displays the frame rate, number of frames, and length in seconds.
Type	This column shows the file format of the clip.
Date	This column shows the date and time when the audio file was last changed.
Origin Time	This column shows the original start position where a clip was recorded in the project. As this value can be used as a basis for the option "Insert into Project" in the Media or context menu (and other functions), you can change it if the Origin Time value is independent. This can either be done by editing the value in the column, or by selecting the corresponding clip in the Pool, moving the project cursor to the new desired position and selecting "Update Origin" from the Audio menu.
Image	This column displays waveform images of audio clips.

Column	Description
Path	This column shows the path to the location of a clip on the hard disk.
Reel Name	Audio files may include this attribute, which is then shown in this column. The Reel Name describes the "physical" reel or tape from which the media was originally captured.

About the Status column symbols

The Status column can display various symbols that relate to the clips status. The following symbols can be shown:

Symbol	Description
Record	This indicates the current Pool Record folder (see "Changing the Pool Record folder" on page 166).
	This symbol is shown if a clip has been processed.
?	The question mark indicates that a clip is referenced in the project but missing from the Pool (see "About missing files" on page 163).
X	This indicates that the clip file is external, i.e. located outside the current Audio folder for the project.
R	This indicates that the clip has been recorded in the currently open version of the project. This is useful for finding recently recorded clips quickly.

Sorting the Pool contents

You can sort the clips in the Pool by name, date etc. This is done by clicking on the corresponding column heading. Clicking again on the same heading switches between ascending and descending sort order.

The arrow indicates the sort column and sort order.
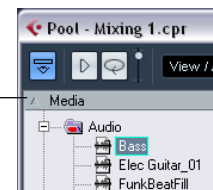
Customizing the view

▪ You can specify which of the columns are shown or hidden by opening the View/Attributes pop-up menu on the toolbar and selecting/deselecting items.
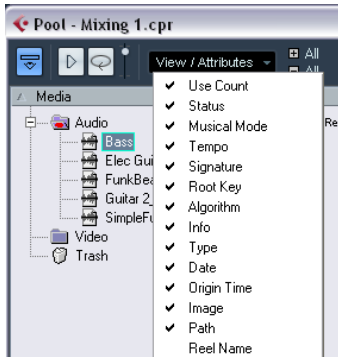
▪ You can rearrange the order of the columns by clicking on a column heading and dragging the column to the left or right.
The mouse pointer changes to a hand when you place it on the column heading.

▪ The width of a column can also be adjusted by placing the pointer between two column headers and dragging left or right.
The pointer changes to a divider when you place it between two column headers.

Operations

⇨ Most of the Pool-related main menu functions are also available on the Pool context menu (opened by right-clicking in the Pool window).

Renaming clips in the Pool

To rename a clip in the Pool, select it and click on the existing name, type in a new name and press [Return].

⇨ This will also rename the referenced files on disk!

⚠ Renaming a clip in the Pool is much preferred to renaming it outside Cubase Essential (for example on the computer desktop). This way, Cubase Essential already "knows" about the change, and will not lose track of the clip the next time you open the project. See "About missing files" on page 163 for details about lost files.

Duplicating clips in the Pool

To duplicate a clip, proceed as follows:

1. Select the clip you wish to copy.

2. Select "New Version" on the Media menu.
A new version of the clip appears in the same Pool folder, with the same name but with a "version number" after it, to indicate that the new clip is a duplicate. The first copy made of a clip will get the version number "2" and so on.

⚠ Duplicating a clip does not create a new file on disk, but a new edit version of the clip (referring to the same audio file).

Inserting clips into a project

To insert a clip into a project, you can either use the Insert commands on the Media menu or use drag and drop.

Using menu commands

Proceed as follows:

1. Select the clip(s) you want to insert into the project.

2. Pull down the Media menu and select an "Insert into Project" option.
"At Cursor" will insert the clip(s) at the current project cursor position. "At Origin" will insert the clip(s) at their Origin Time position(s).

▪ Note that the clip will be positioned so that its snap point is aligned with the selected insert position.
You can also open the Sample Editor for a clip by double-clicking it, and perform the insert operation from there. This way you can set the snap point before inserting a clip.

3. The clip is inserted on the selected track or on a new audio track.
If several tracks are selected, the clip will be inserted on the first selected track.

Using drag and drop

When using drag and drop to insert clips into the Project window, please note the following:

▪ Snap is taken into account if activated.

▪ While you drag the clip in the Project window, its position is indicated by a marker line and a numerical position box. Note that these indicate the position of the snap point in the clip. For example, if you drop the clip at the position 10.00, this will be where the snap point ends up. See "Adjusting the snap point" on page 143 for information on how to set the snap point.

Snap point

▪ If you position the clip in an empty area in the event display (i.e. below existing tracks), a new track is created for the inserted event.

Deleting clips

Removing clips from the Pool

To remove a clip from the Pool without deleting it from the hard disk, proceed as follows:

1. Select the clip(s) and select "Delete" from the Edit menu (or press [Backspace] or [Delete]).
A prompt asks whether you want to move the clip to the Trash or remove it from the Pool.

▪ If you try to delete a clip that is used by one or more events, the program will ask you whether to remove these events from the project.
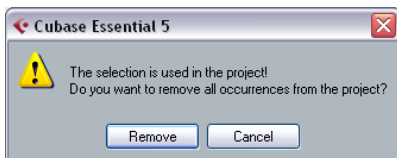
If you cancel, neither the clip nor the associated events are deleted.

2. In the window that appears, select "Remove from Pool".
The clip is no longer associated with the project, but still exists on the hard disk and can be used in other projects, etc. This operation can be undone.

Deleting from the hard disk

To delete a file permanently from the hard disk, it must first be moved to the Trash folder:

1. Follow the instructions for deleting clips above, but click the Trash button instead of the Remove from Pool button.
Alternatively, you can drag and drop clips into the Trash folder.

2. On the Media menu, select "Empty Trash".
A warning message is displayed.

3. Click "Erase" to delete the file on the hard disk permanently.
This operation cannot be undone!

⚠ Before you permanently delete audio files from the hard disk, make sure that they are not used by another project!

⇨ To retrieve a clip from the Trash folder, drag it back into an Audio or Video folder.

Removing unused clips

This function finds all clips in the Pool that are not used in the project. You can then decide whether to move them to the Trash folder (from where they can be permanently deleted) or to remove them from the Pool:

1. Select "Remove Unused Media" on the Media or context menu.
A message appears asking you whether you want to move the file to the Trash or to remove it from the Pool.

2. Make your selection.

Locating events and clips

Locating events via clips in the Pool

If you want to find out which events in the project refer to a particular clip in the Pool, proceed as follows:

1. Select one or more clips in the Pool.

2. Select "Select in Project" on the Media menu.
All events that refer to the selected clip(s) are now selected in the Project window.

Locating clips via events in the Project window

If you want to find out which clip belongs to a particular event in the Project window, proceed as follows:

1. Select one or more events in the Project window.

2. Pull down the Audio menu and select "Find Selected in Pool".
The corresponding clip(s) are located and highlighted in the Pool.

Searching for audio files

The search functions can help you locate audio files in the Pool, on your hard disk or on other media. This works much like the regular file search, but with a couple of extra features:

1. Click the Search button in the toolbar.
A search pane appears at the bottom of the window, displaying the search functions.
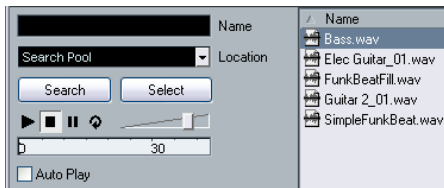
The search pane in the Pool

By default, the search parameters available in the search pane are "Name" and "Location". For using other filter criteria, see "Extended Search functionality" on page 162.

2. Specify the name of the file(s) to search for in the Name field.
You can use partial names or wildcards (*). Note that only audio files of the supported formats will be found.

3. Use the Location pop-up menu to specify where to search.
The pop-up menu will list all your local drives and removable media.

▪ If you want to limit the search to certain folders, choose "Select Search Path" and select the desired folder in the dialog that appears.
The search will include the selected folder and all subfolders. Note also that folders you have recently selected using the "Select Search Path" function will appear on the pop-up menu, allowing you to quickly select them again.

4. Click the Search button.
The search is started and the Search button is labeled Stop – click this to cancel the search if needed.

When the search is finished, the files found are listed to the right.

▪ To audition a file, select it in the list and use the playback controls to the left (Play, Stop, Pause and Loop).
If Auto Play is activated, selected files will automatically be played back.

▪ To import a file into the Pool, double-click on it in the list or select it and click the Import button.

5. To close the search pane, click the Search button in the toolbar again.

Extended Search functionality

Apart from the search criterion Name, additional search filters are available. The Extended Search options allows for a very detailed search, helping you to master even the largest sound database.

To use them, proceed as follows:

1. Click the Search button on the toolbar.
The Search pane is displayed in the lower part of the Pool window.

2. Move the mouse pointer over the "Name" text to the right of the name field and click on the arrow that appears.
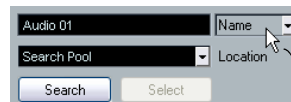
Move the mouse pointer over the "Name" text to the right of the name field and click…
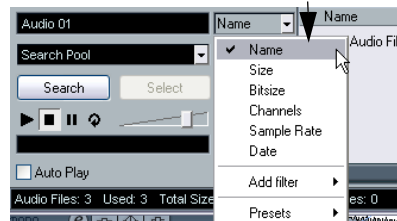
…to show the Extended Search pop-up menu.

3. The Extended Search pop-up menu opens.
It contains six options determining which search criterion is displayed above the Location field (Name, Size, Bitsize, Channels, Sample Rate or Date), as well as the Add Filter and Presets submenus.

The search criteria have the following parameters:

▪ Name: partial names or wildcards (*)
▪ Size: Less than, More than, Equal, Between (two values), in seconds, minutes, hours and bytes

- Bitsize (resolution): 8, 16, 24, 32
- Channels: Mono, Stereo and from 3 to 16
- Sample Rate: various values, choose "Other" for free setting
- Date: various search ranges

4. Select one of the search criteria in the pop-up menu to change the search option above the Location pop-up menu.

5. If you want to display more search options, select the desired element from the "Add filter" submenu.
This allows you, for example, to add the Size or the Sample Rate parameters to the already displayed Name and Location parameters.
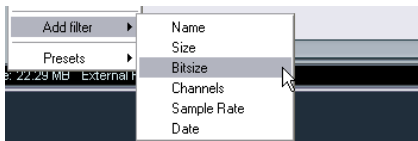
- You can save presets of your search filter settings. To do this, click Save Preset on the Presets submenu and enter a name for the preset.

Existing presets can be found at the bottom of the list. To remove a preset, click on the preset to activate it, then select Remove Preset.

The Find Media window

Alternatively to the search pane in the Pool, you can open a stand-alone Find Media window by selecting the "Search Media…" option from the Media or context menu (also available from the Project window). This offers the same functionality as the search pane.

- To insert a clip directly into the project from the Find Media window, select it in the list and choose one of the "Insert into Project" options from the Media menu.
The options are described in the section "Inserting clips into a project" on page 160.

About missing files

When you open a project, the Resolve Missing Files dialog (see below) may open, warning you that one or more files are "missing". If you click Close, the project will open anyway, without the missing files. In the Pool, you can check which files are considered missing. This is indicated by a question mark in the Status column.

A file is considered missing under one of the following conditions:

- The file has been moved or renamed outside the program since the last time you worked with the project, and you ignored the Resolve Missing Files dialog when you opened the project for the current session.

- You have moved or renamed the file outside the program during the current session.

- You have moved or renamed the folder in which the missing files are located.

Locate missing files

1. Select "Find Missing Files…" from the Media or context menu.
The Resolve Missing Files dialog opens.
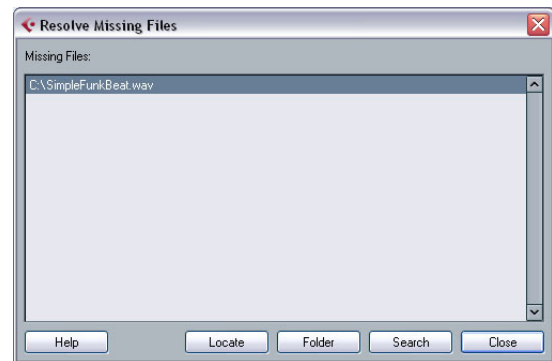
2. Decide if you want the program to try to find the file for you (Search), if you want to do it yourself (Locate) or if you want to specify in which directory the program should search for the file (Folder).

- If you select Locate, a file dialog opens, allowing you to locate the file manually.
Select the file and click "Open".

▪ If you select Folder, a dialog opens to let you specify the directory in which the missing file can be found.
This might be the preferred method if you have renamed or moved the folder containing the missing file, but the file still has the same name. Once you select the correct folder, the program finds the file and you can close the dialog.

▪ If you select Search, a dialog opens to let you specify which folder or disk should be scanned by the program.
Click the Search Folder button, select a directory or a disk and click the Start button. If found, select the file from the list and click "Accept". Afterwards Cubase Essential tries to map all other missing files automatically.

Reconstructing missing edit files

If a missing file cannot be found (e.g. if you have accidentally deleted it from the hard disk), it will normally be indicated with a question mark in the Status column in the Pool. However, if the missing file is an edit file (a file created when you process audio, stored in the Edits folder within the project folder), it may be possible for the program to reconstruct it by recreating the editing to the original audio file.

Proceed as follows:

1. Open the Pool and locate the clip(s) for which files are missing.

2. Check the Status column – if it says "Reconstructible", the file can be reconstructed by Cubase Essential.

3. Select the reconstructible clips and select "Reconstruct" from the Media menu.
The editing is performed and the edit files are recreated.

Removing missing files from the Pool

If the Pool contains audio files that cannot be found or reconstructed, you may want to remove these. For this, select "Remove Missing Files" from the Media or context menu. This will remove all missing files from the Pool as well as the corresponding events from the Project window.

Auditioning clips in the Pool

There are three ways to audition clips in the Pool:

▪ By using key commands.
If you activate the "Playback Toggle triggers Local Preview" option in the Preferences (Transport page), you can use [Space] to audition. This is the same as clicking the Audition icon on the toolbar.

▪ By selecting a clip and activating the Audition button.
The whole clip will play back, unless you stop playback by clicking the Audition button again.

▪ By clicking somewhere in the waveform image for a clip.
The clip will play from the position in the waveform you click until the end of the clip, unless you stop playback by clicking the Audition button, or by clicking anywhere else in the Pool window.
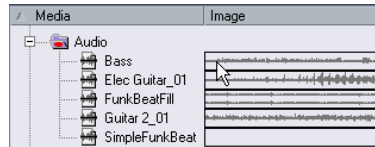
Click in the waveform image to audition a clip.

The audio is routed directly to the Main Mix (the default output) bus, bypassing the audio channel's settings, effects and EQs.

⇨ You can adjust the auditioning level with the miniature level fader on the toolbar. This does not affect the regular playback level.

If you have activated the Audition Loop button before you audition, the following will happen:

▪ When you click the Audition button to audition a clip, the clip is repeated indefinitely until you stop playback by clicking the Audition or Audition Loop button again.

▪ When you click in the waveform image to audition, the section from the point you clicked to the end of the clip is repeated indefinitely until you stop playback.

Opening clips in the Sample Editor

The Sample Editor allows you to perform detailed editing on the clip (see "The Sample Editor" on page 138). You can open clips in the Sample Editor directly from the Pool in the following way:

▪ If you double-click a clip waveform icon or a clip name in the Media column, the clip opens in the Sample Editor.

One practical use for this is to set a snap point for a clip (see "Adjusting the snap point" on page 143). When you later insert the clip from the Pool into the project, you can have it be properly aligned according to the set snap point.

About the Import Medium dialog

The Import Medium dialog lets you import files directly into the Pool. It is opened from the Media or context menu or using the Import button in the Pool window.
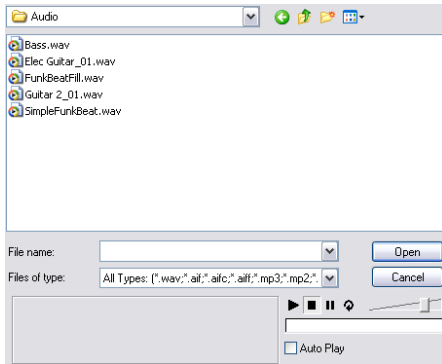
This is a standard file dialog, where you can navigate to other folders, audition files, etc. The following audio file formats can be imported:

- Wave (Normal or Broadcast, see "Broadcast Wave files" on page 259)
- AIFF and AIFC (Compressed AIFF)
- REX or REX 2 (see "Importing ReCycle files" on page 293)
- SD2 (Sound Designer II)
- MPEG Layer 3 (mp3 files – see "Importing compressed audio files" on page 293)
- Ogg Vorbis (ogg files – see "Importing compressed audio files" on page 293)
- Windows Media Audio (Windows – see "Importing compressed audio files" on page 293)

They may have the following characteristics:

- Stereo or mono
- Any sample rate (although files with another sample rate than the one used in the project will play back at the wrong speed and pitch – see below).
- 8, 16, 24 bit or 32 bit float resolution

The following videos formats can also be imported:

- AVI (Audio Video Interleaved)
- MOV and QT (QuickTime)
- DV (Mac OS X only)
- MPEG 1 and 2 video files

⚠ For video files to be played back correctly, the right codecs have to be installed.

⇨ It is also possible to use the commands on the Import submenu on the File menu to import audio or video files into the Pool.

When you select a file in the Import Medium dialog and click Open, the Import Options dialog opens.
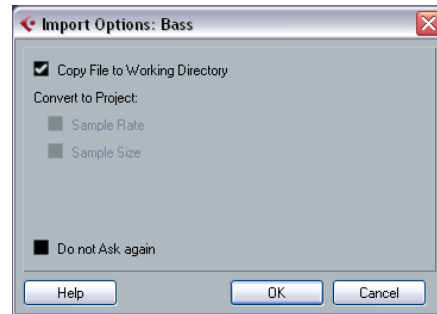
It contains the following options:

- Copy File to Working Directory
Activate this if you want a copy of the file to be made in the Audio folder of the project, and have the clip refer to this copy. If the option is off, the clip will refer to the original file in the original location (and will thus be marked as "external" in the Pool – see "About the Status column symbols" on page 159).

- Convert to Project section
Here you can choose to convert the sample rate (if the sample rate is different than the one set for the project) or the sample size, i.e. resolution (if the sample size is lower than the record format used in the project). The options are only available if necessary. Note that if you are importing several audio files at once, the Import Options dialog will instead contain a "Convert and Copy to Project if needed" checkbox. When this is activated, the imported files will be converted only if the sample rate is different or the sample size is lower than the project's.

- Do not Ask again
If this is activated, files will always be imported according to the settings you have made, without this dialog appearing. This can be reset in the Preferences (Editing–Audio page).

⇨ You can always convert files later by using the Convert Files (see "Convert Files" on page 167) or Conform Files (see "Conform Files" on page 168) options.

About the Import Audio CD dialog

You can import tracks (or sections of tracks) from an audio CD directly into the Pool by using the "Import Audio CD…" function on the Media menu. This opens a dialog in which you can specify which tracks should be copied from the CD, converted to audio files and added to the Pool.

For details about the Import from Audio CD dialog, see "Importing audio CD tracks" on page 291.

Changing the Pool Record folder

The Pool Record folder
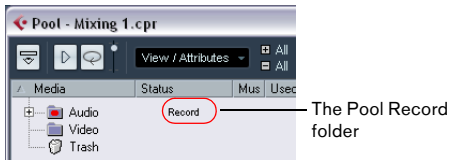
All audio clips that you record in the project will end up in the Pool Record folder. The Pool Record folder is indicated by the text "Record" in the Status column and by a red dot on the folder itself. By default, this is the main Audio folder. You can, however, at any time create a new Audio subfolder and designate this as your Pool Record folder.

To do this, proceed as follows:

1. Select the Audio folder or any audio clip.
You cannot designate the Video folder (or any of its subfolders) as the Pool Record folder.

2. Select "Create Folder" on the Media or context menu.
A new empty subfolder named "New Folder" appears in the Pool.

3. Select the new folder and rename it as desired.

4. Select "Set Pool Record Folder" on the Media or context menu, or click in the Status column of the new folder.
The new folder now becomes the Pool Record folder, and any audio recorded in the project will be saved in this folder.

Organizing clips and folders

If you accumulate a large number of clips in the Pool, it may sometimes be difficult to quickly find specific items. In such cases, organizing clips in new subfolders with suitable names that reflect the content can be a solution. For example, you could put all sound effects in one folder, all lead vocals in another, etc. Proceed as follows:

1. Select the type of folder, audio or video, for which you want to create a subfolder.
You cannot put audio clips in a video folder and vice versa.

2. Select "Create Folder" on the Media or context menu.
A new empty subfolder named "New Folder" appears in the Pool.

3. Rename the folder as desired.

4. Drag and drop the clips you wish to move to the new folder.

5. Repeat steps 1–4 as necessary.

Applying processing to clips in the Pool

You can apply audio processing to clips from within the Pool in the same way as to events in the Project window. Simply select the clip(s) and choose a processing method from the Audio menu. To find out more about audio processing, see the chapter "Audio processing and functions" on page 130.

Undoing processing

If you have applied processing to a clip, in the Project window, the Sample Editor, or in the Pool, this is indicated by the red and gray waveform symbol in the Status column. This processing can always be undone using the Offline Process History, see "The Offline Process History dialog" on page 136.

Freeze Edits

You can use the Freeze Edits function to create a new file with processing applied or to replace the original with a processed version, see "Freeze Edits" on page 137.

Minimize File

The option "Minimize File" on the Media or context menu allows you shrink the audio files according to the size of the audio clips referenced in a project. The files produced using this option only contain the audio file portions actually used in the project. This can significantly reduce the size of the project, if large portions of the audio files are unused. Therefore, the option is useful for archiving purposes after you have completed a project.

⇨ This operation will permanently alter the selected audio files in the Pool. This cannot be undone!
If this is not what you want, you can use the option "Back up Project" on the File menu instead, see "Back up Project" on page 290. This function also has the option of minimizing files, but copies all files into a new folder, leaving the original project untouched.

Proceed as follows:

1. Select the file(s) you wish to minimize.

2. Select "Minimize File" on the Media menu.
An alert appears, informing you that the entire Edit History will be cleared. Click Minimize to proceed or Cancel to stop the process.

3. After the minimizing is finished, another alert appears, because the file references in the stored project have become invalid.
Click Save Now to save the updated project or click Later to proceed with the unsaved project.

Only the audio portions actually used in the project remain in the corresponding audio file(s) in the Pool Record folder.

Prepare Archive

The option "Prepare Archive" on the Media menu is useful if you want to archive a project. It verifies that every clip referenced in the project is located in the same folder, and takes actions if that is not the case:

▪ Any files that are located outside the current project folder will be copied into it.
Please note that audio files residing within the project folder will not be copied to the audio folder. You will therefore have to copy them there manually before backing up the audio folder or save them separately during backup, see below.

▪ If any processing has been applied, you will be asked whether you want to Freeze Edits.
If you do this, you do not have to archive the Edits folder. Everything belonging to the project will be contained in the project file and the Audio folder.

Once you have performed a Prepare Archive, you can copy the project file, the Audio folder and any other audio material you saved in the project folder to a different location, e.g. a backup disk.

It is not necessary to archive the Images folder, since these Images can be recreated by Cubase Essential. You may also find a file with the extension ".csh" in the project folder. This contains image information for edited clips and other data that can be recreated, so it can safely be deleted.

⚠ Video clips are always referenced and not stored in the project folder.

Convert Files
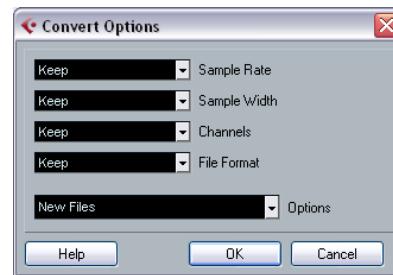
Selecting the option "Convert Files" on the Media or context menu opens the Convert Options dialog which operates on selected files. Use the pop-up menus to specify which audio file attributes you want to keep and which you want to convert. The available settings are:

▪ Sample Rate
Keep as is, or convert to a sample rate between 8.000 and 96.000 kHz.

▪ Sample Width
Keep the sample width (resolution) as is, or convert to 16 Bit, 24 Bit or 32 Bit Float.

▪ Channels
Keep as is, or convert the file to Mono or Stereo Interleaved.

▪ File Format
Keep as is, or convert to Wave or AIFF format.

Options

When you convert a file, you can use the Options pop-up to set one of the following options regarding what to do with the new file:

Option	Description
New Files	Creates a copy of the file in the audio folder and converts this new file according to the chosen attributes. The new file is added to the Pool, but all clip references will still point to the original, unconverted file.
Replace Files	Converts the original file without changing clip references. The references are however saved with the next save action.
New + Replace in Pool	Creates a new copy with the chosen attributes, replaces the original file with the new one in the Pool and redirects the current clip references from the original file to the new file. This is the option to select if you want your audio clips to refer to the converted file, but still want to keep the original file on disk (e.g. if the file is used in other projects).

Conform Files

By using this command, you will change all selected files that have different file attributes than what is specified for the project, to conform to this standard.

Proceed as follows:

1. Select the clips in the Pool.

2. Select "Conform Files…" on the Media menu.
A dialog opens allowing you to choose between keeping or replacing the original unconverted files in the Pool.

The following applies:

- Clip/event references in the Pool are always redirected to the conformed files.
- If any "keep" option is selected, original files remain in the Project's Audio folder and new files are created.
- If you select the "Replace" option, files in the Pool and in the Project's Audio folder are replaced.

16

The MediaBay

Introduction

One of the biggest challenges in typical computer-based music production environments is how to manage the ever-growing number of plug-ins, instruments, presets, etc. from multiple sources. With VST Sound, Cubase Essential offers a comprehensive system to organize sounds and sound-related files, with the powerful MediaBay at its core.

What is VST Sound?

With version 4.5, Steinberg introduced VST Sound, a new version of the Media Management System that is directly integrated into VST3 and that has now replaced the Sound-Frame concept. VST Sound allows direct integration into the MediaBay to third party manufacturers of plug-ins and instruments, and encompasses all formats and file types previously supported by SoundFrame such as audio loops, VSTi presets, video, MIDI files and track presets.

VST Sound in Cubase Essential links the following features:

▪ The MediaBay
The MediaBay is a universal Media Management System providing different views that allow you to find and tag media files, quickly import media files into projects and more.

▪ VST Sound loops
In Cubase Essential, you can add meta data for category, style, character and other information to audio and MIDI loops, thus converting them into VST Sound loops that can easily be managed with the MediaBay.

▪ VST3 presets
Cubase Essential makes use of VST presets as an additional way to apply sounds to instrument tracks and effects to audio tracks (see "Previewing MIDI, instrument and VST presets independently of tracks" on page 185). Plug-in parameters can be saved as VST presets, and you can also generate VST presets (i.e. sounds) from VST2 instruments.

▪ Track presets
Track presets are a combination of track settings, effects and mixer settings that can be applied to new tracks of various types. So right from the start, you can set up your tracks for a specific sound (see the chapter "Working with track presets" on page 180).

▪ VST instruments
The VST instruments included with Cubase Essential are the best way to experience VST Sound out of the box. They provide more than 1000 sounds that can be searched, sorted and previewed conveniently (see the chapter "VST instruments and instrument tracks" on page 110.

The VST Sound features can easily be recognized by the VST Sound symbol.

The VST Sound symbol

What is the MediaBay?

Modern music production involves having to deal with a multitude of media files, such as audio, MIDI and video files.

Cubase Essential features a powerful media file management database that allows you to control all your media files from within your sequencer program, similar to what you can do in the Windows Explorer or Mac OS Finder. This may involve several different tasks:

▪ You can browse the folders of your file system to view folders and files.

▪ You can define searches to find specific files and filter the search results.

▪ You can organize your files in a folder structure.

▪ You can use the tagging features to assign your files to specific categories, and use these categories as the basis for your searches.

Which file formats are supported?

The following media file formats are supported by the Media Management System:

▪ Audio: .wav, .aiff, .aifc, .rex, .rx2, .mp3, .mp2, .ogg, .sd2, .wma (Windows only)

▪ MIDI: .mid and .midiloop

▪ Video: .avi, .mov, .qt, .mpg, .mpeg

▪ Track presets: .trackpreset
These are templates for audio tracks, MIDI tracks and instrument tracks. Track presets are described in detail in the chapter "Working with track presets" on page 180.

▪ VST presets: .vstpreset
VST presets are files containing all parameter settings for a particular VST plug-in. VST preset files are described in detail in the section "Previewing MIDI, instrument and VST presets independently of tracks" on page 185.

- Pattern banks: .patternbank

Pattern banks contain drum patterns created with the MIDI plug-in "Beat Designer", see "Previewing pattern banks" on page 178.

- Cubase project files: .cpr

⇨ When the option "Show file extensions" is activated in the Preferences dialog (MediaBay page), file name extensions (e.g. .wav or .cpr) will be displayed in the MediaBay.

Accessing the Media Management System

The Media Management System in Cubase Essential can be accessed via three different preconfigured views: the MediaBay, the Loop Browser and the Sound Browser.

To access these, pull down the Media menu and select "Open MediaBay", "Open Loop Browser" or "Open Sound Browser" (or use the respective key commands).

Which of these views to use depends entirely on your working environment, and you may find that you want to change the default setup to better meet your requirements.

- By default, the MediaBay is configured to show all window sections and display all file types.

If you want to work on media files of various types, if you have to move files to different locations using the Browser section, or if you want to perform other general file management tasks, the MediaBay is probably the best view configuration.

- The Loop Browser is configured to show audio files and MIDI loops.

Use this if your focus is on working with loops.

- The Sound Browser is focussed on track preset and VST preset files.

Use this if you want to work with the available presets.

Whenever you read about the "MediaBay" in this manual, please remember the following:

⇨ The MediaBay is only one of the three preconfigured views of the Media Management System. Since all controls are visible in the MediaBay window per default, we will refer to this view throughout this manual when describing functions. However, the editing methods performed in the MediaBay can also be applied in the Loop Browser and the Sound Browser.

Key commands

Many of the MediaBay functions can be performed using key commands. These can be found in the Key Commands dialog (Media category). For details on setting up and using key commands, see the chapter "Key commands" on page 304.

Navigation

You can use the [Tab] key on your computer keyboard to move the focus between the different sections of the MediaBay window. Use the arrow keys to navigate to different folders, files or tags.

Note that the field that has the focus in the Filter section of the Viewer is shown in light blue.

Window overview

The Browser section, see "Browsing for media files" on page 172.

The Viewer display, see "Finding files in the Viewer section" on page 175.
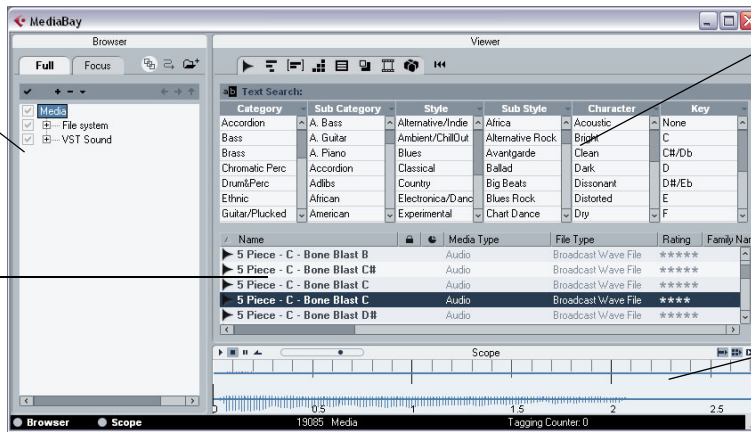
The Filter section, see "Finding files in the Viewer section" on page 175.

The Scope section, see "Previewing files in the Scope section" on page 177.

The info line

The info line is located at the bottom of the window.

The info line shows the number of files displayed in the Viewer section and the path to the folder selected in the Browser section in which these files were found.

MediaBay sections

You can use the buttons below the Browser section to show/hide the respective sections in the MediaBay window. The Viewer section cannot be hidden.
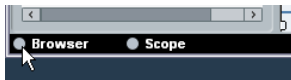
Click this button to hide the Browser section.

▪ You can change the size of the individual sections by dragging the divider line between two sections.

▪ When saving a Cubase Essential project, the current status of the MediaBay is also saved.
This means that if the MediaBay was open when you saved a project, it will be opened again the next time you open this particular project. The last MediaBay window configuration will also be restored.

Browsing for media files

To the left in the default MediaBay window you will find the Browser section.
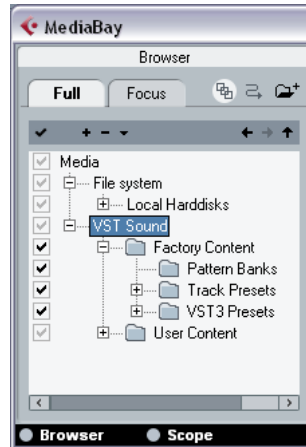
The Browser section of the MediaBay window

⇨ Note that the Browser section can only show folders; any media files contained in a selected folder are displayed in the Viewer section to the right.
This also depends on the "Deep Results" setting, see "Filtering the Viewer display" on page 175.

The VST Sound node

The VST Sound node in the Browser section

The Browser section provides a shortcut to user content and factory content files, including the preset folders. You can find this node at the top of the Browser folder hierarchy, at the same level as the File System node.

▪ The folders below the VST Sound node represent the folders in which content files and newly created track presets, VST presets, etc. are stored by default.
To find out the "true" location of such a file, right-click it in the Viewer section and select "Open in Explorer" (Win)/"Reveal in Finder" (Mac). This will open an Explorer/Finder window in which the corresponding file is highlighted.

Scanning operations

When you open the MediaBay, the Loop Browser or the Sound Browser for the first time, a scan for media files needs to be performed. Specify which folders or directories should be included in the scan by activating the checkboxes to the left of the folder name. Depending on the amount of media files on your computer, the scan may take a while. The scan result is saved in the MediaBay database.

▪ To include a folder, activate its checkbox.

These folders will be scanned for files.

▪ You can restrict the search to individual subfolders.
This will be reflected in the checkbox icon for the folder the subfolder resides in. The checkmark and the box in front of a folder will turn gray if only some of the subfolders are selected.
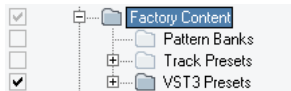
Only the VST3 Presets subfolder of the Factory Content folder will be scanned for files.

The scanning status for the individual folders in the Browser section is indicated by the color of the icons:

▪ A red icon means that this folder is currently being scanned.
▪ A light grey icon means this folder has been scanned.

▪ Orange folder icons are displayed when a scanning process was interrupted.
▪ Yellow icons are displayed for folders that have not been scanned.

▪ If "Stop scanning folders when closing MediaBay" is activated in the Preferences dialog (MediaBay page), Cubase Essential will scan for media files only when the MediaBay window is open. When this is deactivated, the folders will be scanned in background, even when the MediaBay window is closed.
Even if scanning in background is activated, Cubase Essential will not scan folders while playing back or recording.

Scanning indicator

At the top right in the Viewer section you will find an indicator which shows whether the MediaBay is currently searching for files.

When this indicator is shown, a media search is in progress.

⇨ Note that this indicator is only shown when scanning in the foreground (i.e. when you selected a folder to be scanned). It is not displayed for any background scanning operations.

Deep Results

When you activate the "Deep Results" button, the Viewer shows the files contained in the selected folder and in any subfolders (without showing these subfolders). When this button is deactivated, the Viewer shows all folders and files contained in the selected folder.

The Deep Results button

Rescan on Select

When you activate this button, selecting a folder in the Browser section will cause this folder to be rescanned. This ensures that the MediaBay will always display the current content of a folder.

The "Rescan on Select" button

⚠ When a folder contains a large number of media files, the scanning process may take some time – you may want to deactivate "Rescan on Select", if you know that you have not made any changes to the content of your media folders since they were last scanned.

⇨ When "Rescan on Select" is deactivated, you can always right-click in the Browser section and select "Rescan" from the context menu to force a rescan of the currently selected folder.

Refresh

In addition to the Rescan option, the context menu for the selected node or folder in the Browser section (e.g. VST Sound) also contains a Refresh option. This refreshes the display for this location without having to rescan the corresponding media files.

Use the Refresh option when you have modified tag values and want to update the Filter section so that the corresponding files are listed with the modified tag values.

This is also useful if you have mapped a new network drive and want this to appear as a node in the Browser section. Simply select the Refresh option for the parent node (i.e. Network Drives) and the new drive will appear in the list (ready to be scanned for media files).

Folder operations

The Browser section shows the folder structure of your computer's file system in a way very similar to the Windows Explorer or the Mac OS Finder:

▪ Click on a folder name in the Browser display to select the corresponding folder.

▪ Double-click on a folder icon in the Browser display to open the corresponding folder.

▪ You can switch the Browser display between the Full view and the Focus view.

If you select a folder and switch to the Focus tab only this folder and its subfolders are shown. When you switch back to the Full view, the entire file system node can be accessed again.
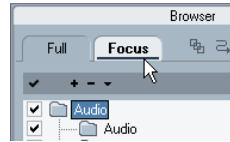
The Focus view for the Audio folder

▪ You can hide all folders that not being scanned for files by clicking the "Show MediaBay Managed Items Only" button.

This will keep the list less cluttered.

▪ Use the navigation buttons to navigate to folders.

Click "Previous Browse Location" or "Next Browse Location" to select the previous or next folder in a sequence of previously selected folders. Clicking the "Browse Containing Folder" button will select the parent folder of the previously selected folder.

The "Create new folder" button

The folder navigation buttons

▪ You can create a new folder inside the folder by clicking the "Create New Folder" button (the folder icon).

A dialog is opened in which you can enter a name for the new folder.

▪ To delete a folder, right-click the folder icon and select "Delete from Disk" from the context menu.

A warning message is displayed, asking you to confirm that you really want to move this folder to the operating system's trash folder.

▪ To rename a folder, select it in the list, click on its name and enter a new name.

▪ You can drag & drop a folder to another location.

You will be asked if you wish to copy or move the folder to the new location.

Browse Selection Presets

If you constantly find yourself returning to specific folders during your work, you can save these browse locations as presets so that selecting such a preset will take you to the folder instantly. Proceed as follows:

1. Select the desired folder in the folder display.

2. Click the Add Browse Location Preset button (the "+" icon).
A naming dialog for the new preset is displayed.

3. Accept the default name (the complete folder path) or enter a new name for the preset.

4. Click OK.
The new preset is added to the Select Browse Location Presets pop-up menu (which can be opened by clicking on the down arrow).
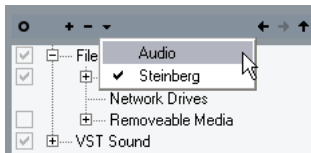
When you now open the Select Browse Location Presets pop-up menu and select the new preset, the respective preset folder will be selected in the Browser display.

▪ To remove a preset from the pop-up menu, select it and click the "Remove Browse Location Preset" button (the "-" icon).

▪ When the Browser section is hidden from view, the Select Browse Location Presets pop-up menu is shown in the Viewer section.
This way you do not always have to open the Browser in order to switch the browse location.
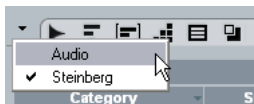
The Select Browse Location Presets pop-up menu in the Viewer

Finding files in the Viewer section

The Viewer section consists of two panes: the Filter section at the top and below it, the Viewer display. In the Filter section, you can set up filters and define searches for specific files. The Viewer display lists any files contained in the folder selected in the Browser, and tags of these files.
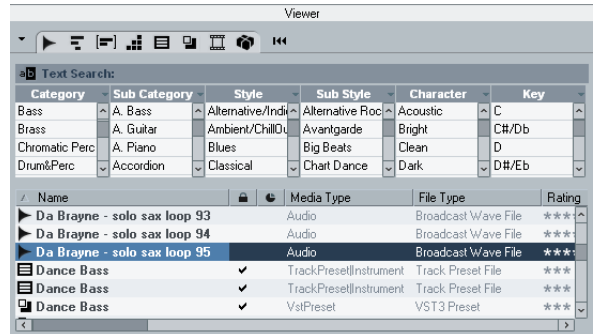
The Viewer section

Depending on your settings, the number of files displayed in the Viewer can be huge (the info line at the bottom of the window shows the number of files found with the current filter settings). Therefore, the MediaBay provides a number of ways to display only specific files and to perform very refined file searches.

⇨ The default number of files displayed in the Viewer section can be set by specifying a new value for "Maximum Number of Results in Viewer" in the Preferences dialog (MediaBay page).

Filtering the Viewer display

The MediaBay provides a number of filter buttons that can be used to limit the number of files displayed in the Viewer section. These buttons are situated at the top of the Viewer section and can be used to show all supported file types or any combination of file types.

For example, when you activate the audio and the MIDI file filter buttons, only audio and MIDI files are displayed. When none (or all) of these buttons are activated, files of all supported types will be displayed.
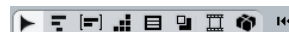
The filter buttons. The display is filtered to show only audio files.

Defining searches for specific files

The filter buttons let you find files according to the folder(s) they might be located in, or according to their file type. However, you can also perform very detailed searches for files that meet certain criteria.

▪ The Filter section displays all values found for a specific tag. Selecting one of these values will result in a list of files all showing this particular tag value.

For example, you could look for sample rates and pick 44.1 kHz to give you a list of all files with that particular sample rate. This becomes really interesting when making extensive use of tagging – see

▪ You can also limit the number of results in the Viewer display by entering text in the Text Search field. This way, you will only see loops or presets with file names corresponding with the entered text.

For example, if you are looking for all audio loops relating to drum sounds, simply enter "drum" in the search field. The search results will contain loops with names such as "Drums 01", "Drumloop", "Snare Drum" and so on (see also).
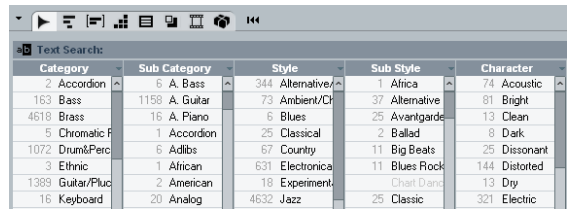
▪ Once a search operation is completed, the very first entry in the Viewer display is selected. When you now press [Tab] once, this selected entry will get the focus and you can use the Up and Down arrow keys to browse the list of files.

Performing a search

The MediaBay allows you not only to view and edit some of the standard file attributes found in all computer files, but it also provides preconfigured tags, or "categories", that you can use to organize your media files.

The advantages of such categorization become obvious when having to find one specific file, e.g. a certain guitar sound, among a large number of media files from various contexts, without knowing the name of that file.

The Filter section always shows the tag columns, each with its own list of tag values. If the columns are wide enough, a number displayed before a filter name indicates how many files match this criteria.
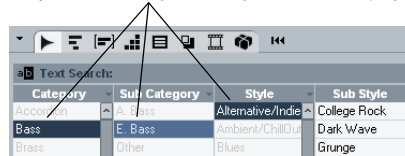
These tag values were found in the currently selected folder.

By clicking on individual tag values in the tag columns, you define the search filter: only the files that match the selected tag values will be shown in the Viewer display. Select more tag values from other columns to further refine your search.

Only files matching these tag values are displayed in the Viewer.

⚠ The "Category" and "Sub Category" tags are directly linked to each other: for each Category value, there are certain Sub Category values available. Changing the Category value in the first tag column will give you different values in the Sub Category column! The same applies to the Style and Sub Style tag values.

⚠ Each tag column displays only the tag values found in the folder selected in the Browser section of the MediaBay! This means that selecting another folder in the Browser may lead to the display of different search settings.

▪ Selected tag values in the same tag column form an OR condition.

This means that files must be tagged according to either one or the other value to be displayed in the Viewer section.

For the "Style" tag, the files found either have the "Blues" OR the "Jazz" tag value.

▪ Tag values in different columns form an AND condition.
This means that files must be tagged according to all these values to be shown in the Viewer display.

The files found belong to the "E. Guitar" Sub Category AND show "Blues" for the Style tag.

Categorization by tagging makes it easy to organize your media files.

Category searches are used not only in the MediaBay, but throughout Cubase Essential in various VST Sound-related contexts (see "What is VST Sound?" on page 170).

Further search options

▪ The text field at the top serves as an additional name filter: you can enter a file name or part of a file name here.

In addition to the filter defined by the tag columns, the file name must contain "120".

▪ To select a tag value, simply click on it. To deselect it, click the value again.
Note that you can select more than one value in each tag column.

▪ Click the Reset Filter button at the top right of the Filter section to clear all settings in the tag columns.
This will also reset the tag list settings.

Performing a context menu search

You can use the "Search for" options on the context menus of the Viewer to automatically show only those files that correspond with a certain tag value of the currently selected file.

Right-click the file with the desired tag value to open the context menu and select it from the "Search for…" sub-menu. This way you can easily find all the files that have a value in common, e.g. if you want to view all files that belong to a certain family.

⇨ When you used the context menu search functions, the "Reset Filter" button in the Filter section will be replaced by the "Go Back" button. Clicking this button will return you to the previous view, rather then resetting all search options.

Additional Viewer operations

▪ You can move/copy a file from the Viewer section to another location by clicking and dragging it to another folder in the Browser section.
You will be asked if you wish to copy or move the file to the new location.

▪ To insert a file into the project, right-click the file and select one of the "Insert into Project" options from the context menu.
This will import this file into your current project, either at the start of the project or at the current cursor position.

▪ To delete a file, right-click it in the Viewer and select Delete from the context menu.
A warning message is displayed, asking you to confirm that you really want to move this file to the operating system's trash folder.

Previewing files in the Scope section

Below the Viewer you will find the Scope section. It allows you to play back files selected in the Viewer section.

The elements visible in this section and their functions depend on the type of media file selected in the Viewer.

⚠ The Scope section does not play back video files or project files. Also, it is not possible to preview audio track presets in the MediaBay (see below).

Previewing audio files
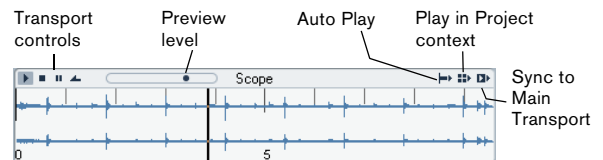
The Scope section for an audio file

▪ To preview an audio file, simply click the Play button.

▪ When Auto Play is activated, selecting a file in the Viewer will automatically start playback.

▪ When "Play in Project context" is activated, the file will be played back together with the current project, starting at the current project cursor position.

Note that activating "Play in Project context" may apply realtime time-stretching to your audio file. When you import an audio file into your project, the setting for "Play in Project context" determines whether Musical mode is activated automatically for this file.

▪ When "Sync to Main Transport" is activated, the Play and Stop functions from the Transport panel also control Play and Stop in the Scope section. To use this, the "Play in Project context" option also has to be activated.

This option is very useful for previewing audio loops. To use it to its full extent, set the left locator on the beginning of a bar, then start playing back the project using the Transport panel. The loops that you now select in the Viewer section will start together with the project in perfect sync. Play and Stop of the scope transport can still be used on its own if needed.

Previewing MIDI files
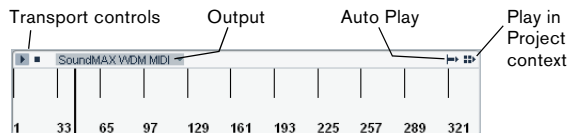
The Scope section for a MIDI file

▪ To preview a MIDI file (.mid), you first have to select an output device in the Output pop-up.

▪ Auto Play and "Play in Project context" work as for audio files, see above.

Previewing pattern banks

Pattern banks containing drum patterns can be created with the MIDI plug-in "Beat Designer". Detailed information on the Beat Designer and its functions can be found in the chapter "MIDI effects" in the separate PDF document "Plug-in Reference". One pattern bank contains 4 subbanks which in turn contain 12 patterns each. In the Scope section for a pattern bank file, a keyboard-style display allows you to select a subbank (click on a number at the top) and a pattern (click on a key).
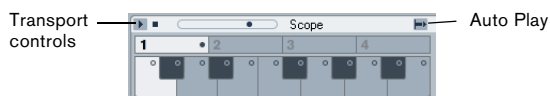
The Scope section for a pattern bank

▪ To preview a pattern, select the pattern bank in the Viewer section. In the Scope section, choose the desired subbank and pattern. Then click the Play button.

Note that it is possible that a subbank may also contain empty patterns. Patterns that contain data are indicated by a circle in the upper part of the key in the keyboard display. Selecting an empty pattern will have no effect.

▪ When Auto Play is activated, selecting a file in the Viewer will automatically start playback.

When you have found the pattern bank you want to use in your project, double-click on it in the Viewer section to create a new MIDI track in the Project window which contains one instance of the Beat Designer using this pattern bank.

Displaying tags in the Viewer

Most of the time, tags displayed in the MediaBay are sorted alphabetically. Only in the Viewer can you change the tag display order:

▪ Move the mouse pointer to a column heading, click and drag that heading to another position in the display.

Tagging media files

The search functions become a truly powerful media management tool when making extensive use of tagging.

Media files are usually organized in complex folder structures to provide a logical way of guiding the user to the desired files, with the folder and/or file names indicating the instrument, style, tempo, etc.

To find a particular sound or loop in such a folder structure can be very time consuming – tagging is the answer! To assign a number of meaningful tags, e.g. to a number of loop files, proceed as follows:

1. Copy the loop files to your hard disk.
Tagging means editing the files, so you need them on your system.

2. Open the MediaBay and browse to where the new loops are located.

3. Navigate to a folder containing loops.
For example, you might have a folder containing Metal style drum loops, at 120 bpm.

4. In the Viewer, select files contained in this folder.
Make sure that the Deep Results button is deactivated, so that only files contained in this folder are displayed.

5. In the Viewer display, click in the field of the column to which you want to assign a new value (e.g. Category). You can choose any of the selected loops for this.

Depending on the attribute type, a pop-up menu with tag values organized in submenus will show or, in the case of numeric values, you will be able to enter the value directly into the corresponding field.

6. Choose values from the pop-up menus and/or enter the desired numeric values.

For example, you could choose the Sub Category "Snare Drum" from the "DrumPerc" menu, choose "Hard Rock" as a Sub Style from the "Rock/Metal Style" category and enter 120.00 in the Tempo field.

You can now use the search functions to quickly find all Metal style drum loops at 120bpm, without the need to navigate through a large number of folders and subfolders.

Tagging multiple files simultaneously

There is no limit as to how many files can be tagged at the same time, but you need to be aware that the tagging of thousands of files in one go may take quite a while. This operation is executed in background, so that you can continue with your work as usual. By looking at the Tagging Counter in the MediaBay info line you can see how many files still have to be updated.

The Tagging Counter shows the number of files that still need to be updated.

▪ The display will be updated immediately in the different MediaBay sections, even if the values have not been written to the corresponding media files yet.

▪ If you close Cubase Essential before the Tagging Counter has gone down to zero, a dialog with a progress bar is displayed, indicating how long the updating process will take. You can choose to abort this process if you need to close the application immediately.

In this case only the files that were updated before you clicked "Abort" will have the new tag value.

Tagging write-protected files

Media files may be write-protected due to a number of reasons: They may belong to content that was provided by someone else who write-protected the files, you may have write-protected them yourself in order not to overwrite them accidentally, or they could be generally unwritable because the file format does not allow write operations by the MediaBay.

In the MediaBay, the write protection status of files is shown as an attribute in the Tag Editor and in the Write Protection column in the Viewer display.
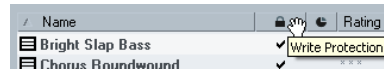
The Write Protection column in the Viewer display

▪ Regardless of the write protection status, you can always change the attribute values of a file in the MediaBay. If the corresponding file is write-protected, however, these changes will not be written to disk and occur in the MediaBay only.

▪ If you have set new attribute values for a file that is write-protected, this will be reflected in the Pending Tags column.

Note that if you rescan the MediaBay content and a media file on your hard disk has changed since the last scan, all pending tags for this file will be lost.

▪ If a file has pending tags, and you want to write the corresponding attributes to the file, you need to remove the write protection first, and then select the "Write Tags to File" command from the context menu.

You can change the write-protection status of your media files, provided that the file type allows write operations and you have the necessary operation system permissions:

▪ To set or remove the write protection attribute for a file, simply select the file in the Viewer display and select "Set/Remove Write Protection" from the context menu.

⇨ If you use other programs than Cubase Essential to change the write-protection status of a file, this will not be reflected in the MediaBay until you rescan the files! Be aware, however, that this might lead to further changes in the MediaBay content.

17

Working with track presets

Introduction

Track presets are templates from audio, MIDI or instrument tracks that can be applied to newly created or existing tracks of the same type. They contain sound and channel settings, thus allowing you to quickly browse, preview, select and change sounds, or reuse channel settings across projects.

Track presets are organized in the Sound Browser (a view of the MediaBay, see).

Types of track presets

There are four kinds of track presets (audio, instrument, MIDI and Multi) and two kinds of VST presets (VST instrument presets and VST effect plug-in presets). These are described in the following sections.

⇨ Note that volume and pan will be restored only when creating a new track from a track preset.

Audio track presets

Track presets for audio tracks include all settings that "define" the sound. You can use the factory presets as a starting point for your own editing and save the audio settings that you optimized for an artist you often work with as a preset for future recordings.

The following data will be saved in audio track presets:

- Insert FX settings (including VST effect presets)
- EQ settings
- Volume + Pan

Instrument track presets

Instrument track presets offer both MIDI and audio features and are best choice when handling sounds of simple, mono-timbral VST instruments. Use instrument track presets for auditioning your tracks, inspiration, or saving your preferred sound settings. You can directly extract sounds from instrument track presets for use in instrument tracks.

The following data will be saved in instrument track presets:

- Audio Insert FX
- Audio EQ
- Audio Volume + Pan
- MIDI Insert FX

- MIDI Track Parameters
- VST Instrument
- Staff settings
- Color settings
- Drum map settings

MIDI track presets

MIDI tracks should be used for multi-timbral VST instruments. When creating MIDI track presets you can either include the currently set channel, or the currently set patch. See for details.

The following data will be saved in MIDI track presets:

- MIDI Modifiers (Transpose, etc.)
- MIDI Inserts (FX)
- Output + Channel or Program Change
- Volume + Pan
- Staff settings
- Color settings
- Drum map settings

Multi track presets

You can use multi track presets, for example, when recording setups that require several microphones (a drum set or a choir, where you record always under the same conditions) and you have to edit the resulting tracks in a similar way, or for layered tracks, where you use several tracks to generate a certain sound instead of manipulating only one track.

If you select more than one track when creating a track preset, the settings of all selected tracks will be saved as one multi track preset. Since you can apply a multi track preset only if the target tracks are of the same type, number and sequence as the tracks in the track preset, multi track presets are useful when you have a recurring situation with very similar tracks and settings.

VST (instrument) presets

VST instrument presets (extension .vstpreset) are VST presets that behave like instrument track presets in the context of the Project window and contain a VST instrument and its settings but no modifiers, MIDI inserts, inserts or EQ settings. You can directly extract sounds from VST presets for use in instrument tracks.

The following data is saved in VST instrument presets:

- VST instrument
- VST instrument settings

VST effect plug-ins are available in VST3 and VST2 format. Presets for these effects are also saved as VST presets. These that can be part of audio track presets (see "Audio track presets" on page 181).

⇨ In this manual, "VST presets" stands for VST3 instrument presets, unless stated otherwise.

Pattern Banks

Pattern Banks are Presets created for the Beat Designer MIDI effect. They behave much like track presets. For detailed information, see "Previewing pattern banks" on page 178 and the chapter "MIDI effects" in the separate PDF document "Plug-in Reference".

Applying track presets

When you apply a track preset, all saved settings are applied, see "Types of track presets" on page 181. Track presets can be applied to tracks of their own type only, i.e. audio track presets to audio tracks, etc. The only exception are instrument tracks: for these VST presets are also available. Note that applying VST presets to instrument tracks leads to removal of modifiers, MIDI inserts, inserts or EQs, since these settings are not stored in VST presets, see "Previewing MIDI, instrument and VST presets independently of tracks" on page 185.

⚠ Once a track preset is applied, you cannot undo the changes! It is not possible to remove an applied preset from a track and return to the previous state. If you are not satisfied with the track settings, you can either edit the settings manually or apply another preset.

Applying track or VST presets via drag and drop

1. Open the Sound Browser from the Media menu.
The general handling of the Sound Browser is the same as for the MediaBay, see "The MediaBay" on page 169.
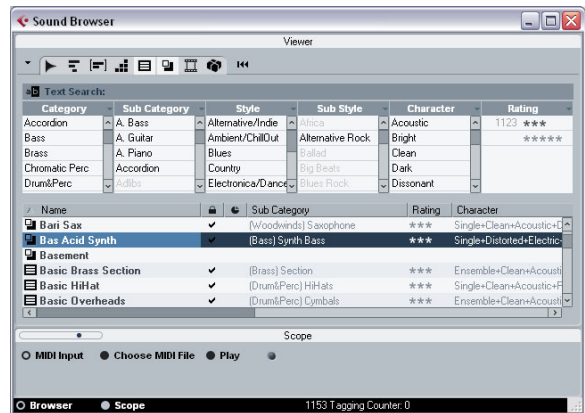
The Sound Browser

2. Select a MIDI or instrument track preset, or a VST preset.

3. Preview the preset using the preview functions in the Scope section (for further information, see "Previewing files in the Scope section" on page 177).

4. Drag and drop it onto a track of the same type.

⇨ You can also drag and drop track presets from the Windows Explorer or the Mac OS Finder, but in this case, no preview for track presets is possible.

Applying track or VST presets in the Inspector or the context menu of the track

1. Select a track in the Project window.

2. Click the VST Sound button in the Inspector or right-click the track to open the context menu and select "Apply Track Preset".
The Presets browser opens. Here, the files are presented in list form.

3. Select a track or VST preset from the list.

If needed, activate the Categories option in order to show a customizable filter section that is similar to the one in the MediaBay, see .
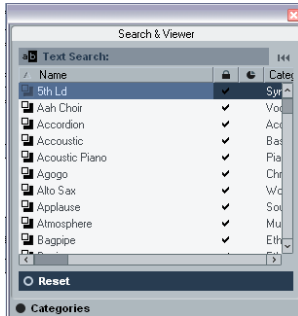
4. Hit the Play button on the Transport panel to preview the selected audio, MIDI, instrument track or VSTpreset.

All settings from the track preset will be applied in realtime to the selected track. If you set up your target track to a cycle and play back in loop, previewing will be very comfortable. Note that you cannot preview multi track presets.

5. Click outside the browser to apply the selected preset or click the Reset button below the list to return to the unchanged track.

Applying a multi track preset

1. Select several tracks in your project.

The selected tracks have to be of the same type, number and sequence as the tracks in the track preset.

2. Right-click the track to open the context menu and select "Apply Track Preset".

The Presets browser opens. Only multi track presets corresponding to the selection of tracks in the project will be shown.

3. Select a multi track preset from the list.

4. Click outside the browser to apply the selected preset or click the Reset button below the list to return to the unchanged track.

Reloading track or VST presets

To revert to the default settings of the applied preset, click the "Reload Track Preset" button.
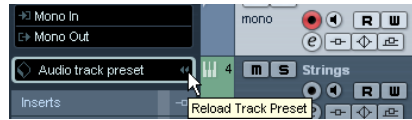
Applying Inserts and EQ settings from track presets

Instead of handling complete track presets, it is also possible to apply Insert or Equalizer settings from track presets:

1. Select the desired track, open the Inspector or the Channel Settings window and click the VST Sound button on the Inserts or Equalizers tab/section.

The presets pop-up menu is opened.

2. Select "From Track Preset…" in the pop-up menu.

The Presets browser opens, showing all available track presets that contain Inserts or EQ settings.

3. Select the track preset with the desired Inserts or EQs and click outside the browser.

For information on the general handling of Inserts presets, see . The general handling of EQ presets is described in the section .

Extracting sound from an instrument track or VST preset

For instrument tracks, you can extract the "sound" of an instrument track preset or VST preset, that means the VST instrument and its settings.

Proceed as follows:

1. Select the instrument track to which you want to apply a sound.

2. Click the VST Sound button below the Output Routing field in the Inspector.

The Presets browser opens, showing a list of all available presets.

3. Select an instrument track preset or VST preset by double-clicking on it.

The VST instrument and its settings (but no inserts, EQs and modifiers) of the existing track are overwritten with the data of the track preset. The previous VST instrument for this instrument track is removed and the new VST instrument with its settings is set up for the instrument track.

⇨ The VST instrument of an instrument track does not show up in the VST Instrument window but only in the Plug-In Information window, see the section "The Plug-in Information window" on page 108.

Creating a track preset

A track preset is created from an existing audio, MIDI or instrument track – or several of these tracks. Proceed as follows:

1. Select one or more tracks in the Project window.

If several tracks are selected, all of them are stored in one combined multi track preset, see "Multi track presets" on page 181.

2. Right-click one of the selected tracks in the Track list to open the context menu and select "Create Track Preset".

The Save Track Preset dialog opens. The buttons on top work like the corresponding ones in the MediaBay, see "Folder operations" on page 174.
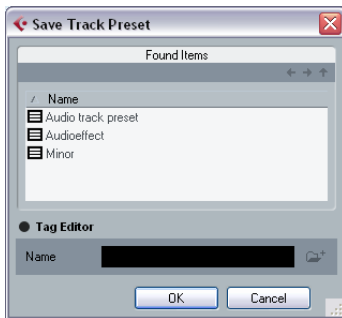
3. Enter a file name in the "File Name" field.

The track preset file name extension .trackpreset is assigned automatically.

▪ If you selected a MIDI track, you can include either the MIDI channel or the MIDI patch in your track preset.

⇨ If you want to use a MIDI track preset for a pre-configured VST instrument setup, load the VST instrument(s) in the VST Instruments window, select a VST instrument patch, save the track preset and do not change the patch afterwards. To ensure this, use a template project with the VSTi setup included and save the sounds (track presets) of this template project in specific subfolders, as they only work within this setup.

4. Open the "Tag Editor" by clicking on the corresponding option and edit the tags.

5. Click OK to create the track preset.

Track presets are saved within the application folder in the "Track Presets" folder (in default subfolders named according to their track type: audio, MIDI, instrument and multi).

⚠ You cannot change the default folders, but you can add further subfolders, e.g. "drums" and "choir".

All presets are available under the (virtual) VST Sound node, see "The VST Sound node" on page 173.

Creating tracks from track presets or VST presets

Using drag and drop

1. Open the Sound Browser from the Media menu.

2. Select a track or VST preset from the list of all presets.

3. Hit the Play button on the Transport panel to preview the selected VSTpreset.

All settings will be applied in realtime to the selected track. If you set up your target track to a cycle and play back in loop, previewing will be very comfortable. Note that you cannot preview multi track presets.

4. Drag and drop the preset onto the Track list in the Project window.

One or more (in case of multi track presets) tracks will be created. If you drag and drop a VST instrument preset, this will result in an instrument track.

⇨ You can also drag and drop from the Windows Explorer or the Mac OS Finder, but in this case, no preview for MIDI and instrument track presets is possible.

Using the Browse Sounds dialog

1. Right-click the Track list to open the context menu and, on the Add Track submenu, select "Browse Sounds…".
The Browse Sounds dialog with all available presets opens.

2. Select a track or VST preset from the list of all presets.
At this point you can preview selected MIDI and instrument track presets as well as VST presets, see "Previewing MIDI, instrument and VST presets independently of tracks" on page 185. If you want to list a certain track preset type only, open the respective folder in the Browser section.

3. Click OK to create one or more (in case of multi track presets) tracks.

Using the Add Track function

1. Right-click the Track list to open the context menu and select the desired option on the context menu.

▪ If you want to create more than one track of the same type, enter the number in the Count field.

2. Click "Browse Presets" to open the Browse Presets section of the "Add Track" dialog with the search pane and a list of all available presets.
The view is filtered to show only the corresponding track presets.

▪ If you want to see the contents of presets subfolders within the VST Sound node, click the "Show Location" option to open the Browser section (see "Browsing for media files" on page 172).

3. Select a track or VST preset.

4. Click OK to create the track.
Notice that the new track will not be named after the track preset.

⇨ This method is not available for multi track presets.

Previewing MIDI, instrument and VST presets independently of tracks

There are two possibilities for previewing MIDI, instrument track presets and VST presets in the Sound Browser or in dialogs with the Browse Presets section open.

Via standard MIDI input

1. Open the "Browse Sounds" dialog and select a MIDI, an instrument track or a VST preset.
The preview buttons appear on the lower right. (In the Sound Browser, the preview buttons appear in the Scope section.)
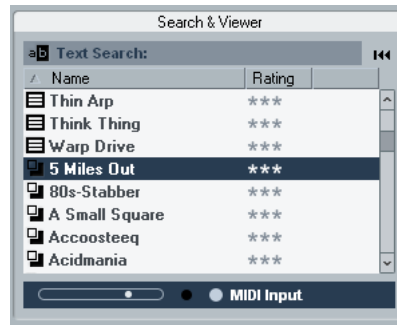
Track-independent preview, for example a VST preset in the "Browse Sounds" dialog

2. Make sure the "In 'All MIDI Inputs'" option is activated for your MIDI input device (default setting).
Only MIDI data incoming via "All MIDI Inputs" is used for preview.

3. Click the MIDI Input button.

4. Play some MIDI notes via your MIDI input device, for example a keyboard.
The Activity meter on the far right mirrors the MIDI in activity.

Using a MIDI file

1. Open the Sound Browser and select a MIDI or instrument track preset or a VST preset.
The preview buttons appear in the Scope section.

2. Click the Choose MIDI File button, select a MIDI file (.mid) in the file dialog that appears and click OK.

3. Click the MIDI Input button and activate "Play" (the Play button is now available).
The chosen MIDI file will be played back with the track or VST preset.

⇨ The MIDI file selection is not saved when closing the Sound Browser. Therefore, you have to select a new file the next time you want to preview a preset using a MIDI file.

18

Remote controlling Cubase Essential

Introduction

It is possible to control Cubase Essential via MIDI. A large number of MIDI control devices is supported. This chapter describes how to set up Cubase Essential for remote control. The supported devices are described in the separate PDF document "Remote Control Devices".

▪ There is also a Generic Remote Device option, allowing you to use any MIDI controller to remote control Cubase Essential.
How to set this up is described in the section "The Generic Remote device" on page 189.

Setting Up

Connecting the remote device

Connect the MIDI Out on the remote unit to a MIDI In on your MIDI interface. Depending on the remote unit model, you may also need to connect a MIDI Out on the interface to a MIDI In on the remote unit (this is necessary if the remote unit features "feedback devices" such as indicators, motorized faders, etc.).

If you will be recording MIDI tracks, you do not want any MIDI data from the remote unit to accidentally be recorded as well. To avoid this, you should also make the following setting:

1. Open the Device Setup dialog from the Devices menu.

2. Select "MIDI Port Setup" in the list to the left.

3. Check the table to the right and locate the MIDI input to which you have connected the MIDI remote unit.

4. Deactivate the checkbox in the "In 'All MIDI Inputs'" column for that input, so that the State column reads "Inactive".

5. Click OK to close the Device Setup dialog.

Now you have removed the remote unit input from the "All MIDI Inputs" group. This means that you can record MIDI tracks with the "All MIDI Inputs" port selected without risking to record the data from the remote unit at the same time.

Selecting a remote device

1. Pull down the Devices menu and select Device Setup.
A dialog window opens with a list of device categories and devices shown in the left part of the window.

2. If you cannot find the remote device you are looking for, click on the plus sign in the top left corner and select the device from the pop-up menu.
The selected device is added to the Devices list.

▪ Note that it is possible to select more than one remote device of the same type.
If you have more than one remote device of the same type, these will be numbered in the Devices list. For example, to be able to use a Mackie Control Extender, you must install a second Mackie control device.

3. Now select your MIDI control device model from the Devices list.
Depending on the selected device, either a list of programmable function commands or a blank panel is shown in the right half of the dialog window.
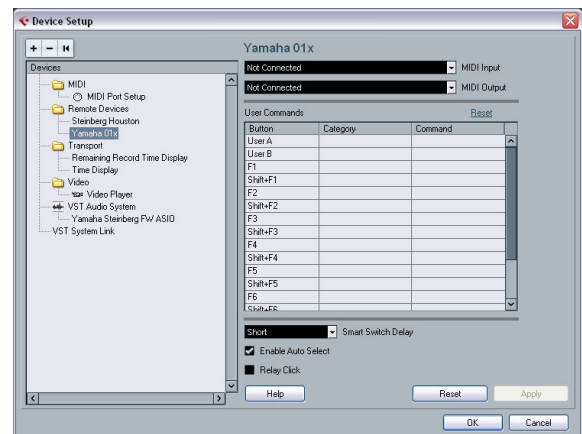
A Yamaha 01x selected as remote control device.

4. Select the correct MIDI input from the pop-up menu.
If necessary, select the correct MIDI output from the pop-up menu.

5. Click OK to close the dialog.
You can now use the MIDI control device to move faders and knobs, activate Mute and Solo, etc. The exact parameter configuration depends on which external MIDI control device you are using.

▪ In the Project window (Track list) and the Mixer (bottom of channel strips) you will now see white stripes indicating which channels are currently linked to the remote control device.

Audio 01 can be remote controlled, while Audio 02 is not linked to the remote control device.

⚠ Sometimes communication between Cubase Essential and a remote device is interrupted or the handshaking protocol fails to create a connection. To re-establish communication with any device in the Devices list, select it and click the Reset button in the Device Setup dialog. Also, the "Send Reset Message to all Devices" button at the top of the dialog will reset every device in the Devices list.

Operations

Global options for remote controllers

In the Device Setup dialog, on the page for your remote device, some (or all) of the following global functions may be available (depending on your remote device):

Option	Description
Reset	This allows you to revert to the factory default settings for the remote device.
Bank	If your remote device contains several banks, you can select the bank you want to use on this pop-up menu. The bank you select here will be the one used by default when Cubase Essential is launched.
Smart Switch Delay	Some of the Cubase Essential functions (e.g. Solo and Mute) support the so called "smart switch" behavior: In addition to regular activation/deactivation of a function by clicking a button, you can also activate the function for as long as the button is pressed. Upon releasing the mouse button, the function is deactivated. This pop-up menu allows you to specify how long a button must be pressed before it goes into "smart switch" mode. When "Off" is selected, the "smart switch" function is deactivated in Cubase Essential.

Writing automation using remote controls

Automating the Mixer using a remote control device is done in the same way as when you operate on-screen controls in Write mode. However, when it comes to replacing existing automation data, there is one important difference:

▪ If you activate Write mode and move a control on the remote control device, all data for the corresponding parameter is replaced from the position where you moved the control, up until the position where playback is stopped!
In other words, as soon as you move a control in Write mode, it remains "active" until you stop playback. The reason for this is explained below.

As a consequence, an additional precaution must be taken:

▪ Make sure you move only the controller you want to replace!

In order to replace existing automation data for a control, the computer needs to know how long the user actually "grabbed" or used the control. When doing this "on screen", the program simply detects when the mouse button is pressed and released. When you are using an external remote control device, however, there is no mouse button involved, and Cubase Essential cannot tell whether you "grab and hold" a fader, or simply move it and release it. Instead, you have to indicate that you have "released" the control by stopping playback.

⚠ The above does not apply to the Mackie Control or any other remote control device with touch sensitive controls. These devices will stop writing as they have touch sensitive faders, which means that they stop writing as soon as you release the fader.

⚠ This is only relevant when you are using a remote control device and Write mode is activated in the Mixer.

Assigning remote key commands

For some of the supported remote devices, you can assign any Cubase Essential function (to which a key command can be assigned) to generic buttons, wheels or other controls. As of this writing, these devices are:

- Tascam US-428
- Yamaha 01x
- Yamaha DM 2000v2
- Yamaha DM 1000v2
- Steinberg Houston

Proceed as follows:

1. Open the Device Setup dialog and select one of the remote devices that support this feature.
On the right side of the window you will find a three column table. This is where you assign commands.

2. Use the "Button" column to locate a remote device control or button to which you wish to assign a Cubase Essential function.

3. Click in the "Category" column for the control, and select one of the Cubase Essential function categories from the pop-up menu.

4. Click in the "Command" column, and select the desired Cubase Essential function from the pop-up menu.
The available items on the pop-up menu depend on the selected category.

5. Click "Apply" when you are done.

The selected function is now assigned to the button or control on the remote device.

A note about remote controlling MIDI tracks

While most remote control devices will be able to control both MIDI and audio channels in Cubase Essential, the parameter setup may be different. For example, audio-specific controls (such as EQ) will be disregarded when controlling MIDI channels.

The Generic Remote device

If you have a generic MIDI controller, you can use this for remote control of Cubase Essential by setting up the Generic Remote device:

1. Open the Device Setup dialog on the Devices menu.
If the Generic Remote device is not on the Devices list, you need to add it.

2. Click the "+" sign in the top left corner and select the "Generic Remote" device from the pop-up menu.

- When the Generic Remote device is added in the Device Setup dialog, you can open the corresponding window by selecting "Generic Remote" from the Devices menu.
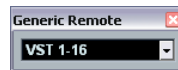
The Generic Remote window

3. Select the Generic Remote device in the Devices list to the left.
The settings for the Generic Remote device are displayed, allowing you to specify which control on your device should control which parameter in Cubase Essential.
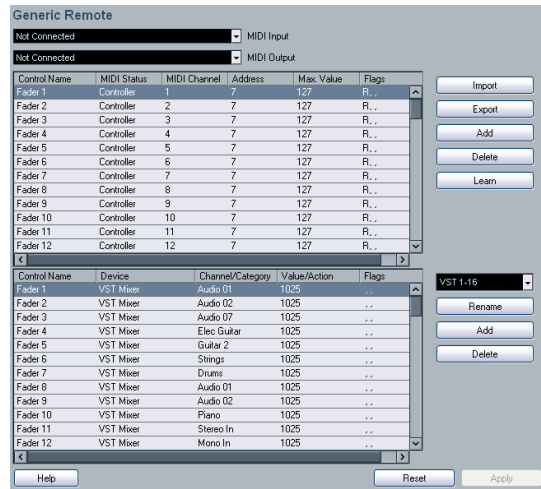
4. Use the MIDI Input and Output pop-up menus to select the MIDI port(s) to which your remote device is connected.

5. Use the pop-up menu to the right to select a bank.

Banks are combinations of a certain number of channels, and are used because most MIDI devices can control only a limited number of channels at a time (often 8 or 16). For example, if your MIDI control device has 16 volume faders, and you are using 32 mixer channels in Cubase Essential, you would need two banks of 16 channels each. When the first bank is selected you control channel 1 to 16; when the second Bank is selected you control channel 17 to 32. Since you can control Transport functions as well, you may need several banks.

6. Set up the table at the top according to the controls on your MIDI control device.

The columns have the following functionality:

Column	Description
Control Name	Double-clicking this field allows you to enter a descriptive name for the control (typically a name written on the console). This name is automatically reflected in the Control Name column in the lower table.
MIDI Status	Clicking in this column pulls down a pop-up menu, allowing you to specify the type of MIDI message sent by the control. The options are Controller, Program Change, Note On, Note Off, Aftertouch and Polyphonic Pressure. Also available are Continuous Control NRPN and RPN, a way to extend the available control messages. The "Ctrl JLCooper" option is a special version of a Continuous Controller where the 3rd byte of a MIDI message is used as address instead of the 2nd byte (a method supported by various JL-Cooper remote devices).
MIDI Channel	Clicking in this column opens a pop-up menu, allowing you to select the MIDI channel on which the controller is transmitted.
Address	The Continuous Controller number, the pitch of a note or the address of a NRPN/RPN Continuous Controller.
Max. Value	The maximum value the control will transmit. This value is used by the program to "scale" the value range of the MIDI controller to the value range of the program parameter.
Flags	Clicking in this column pulls down a pop-up menu, allowing you to activate or deactivate three flags: Receive – activate this if the MIDI message should be processed on reception. Transmit – activate this if a MIDI message should be transmitted when the corresponding value in the program changes. Relative – activate this if the control is an "endless" rotary encoder, which reports the number of turns instead of an absolute value.

▪ If you find that the table at the top holds too many or too few controls, you can add or remove controls with the Add and Delete buttons to the right of the table.

▪ If you are uncertain of which MIDI message a certain controller sends, you can use the Learn function.

Select the control in the upper table (by clicking in the Control Name column), move the corresponding control on your MIDI device and click the Learn button to the right of the table. The MIDI Status, MIDI Channel and Address values are automatically set to those of the moved control.

7. Use the table at the bottom to specify which Cubase Essential parameters you want to control.

Each row in the table is associated to the controller in the corresponding row in the first table (as indicated by the Control Name column). The other columns have the following functionality:

Column	Description
Device	Clicking in this column pulls down a pop-up menu, used for determining which device in Cubase Essential should be controlled. The special option "Command" allows you to perform certain command actions by remote control. One example of this is the selection of remote banks.
Channel/ Category	This is where you select the channel to be controlled or, if the "Command" Device option is selected, the Command category.
Value/Action	Clicking in this column pulls down a pop-up menu, allowing you to select the parameter of the channel to be controlled (typically, if the "VST Mixer" Device option is selected you can choose between volume, pan, send levels, EQ, etc.). If the "Command" Device option is selected, this is where you specify the "Action" of the category.
Flags	Clicking in this column pulls down a pop-up menu, allowing you to activate or deactivate three flags: Push Button – When activated, the parameter is only changed if the received MIDI message shows a value unequal to 0. Toggle – When activated, the parameter value is switched between minimum and maximum value each time a MIDI message is received. The combination of Push Button and Toggle is useful for remote controls which do not latch the state of a button. One example is controlling mute status with a device on which pressing the Mute button turns it on, and releasing the Mute button turns it off. If Push Button and Toggle are activated, the Mute status will change between on and off whenever the button is pressed on the console. Not Automated – When activated, the parameter will not be automated.

8. If necessary, make settings for another bank.

Note that you only need to make settings in the bottom table for this bank. The table at the top is already set up according to the MIDI remote device.

▪ If necessary, you can add banks by clicking the Add button below the Bank pop-up.

Clicking the Rename button allows you to assign a new name to the currently selected bank, and you can remove an unneeded bank by selecting it and clicking the Delete button.

9. When you are finished, close the Device Setup window.
Now, you can control the specified Cubase Essential parameters from the MIDI remote device. To select another bank, use the pop-up menu in the Remote Status window (or use a control on the MIDI remote device, if you have assigned one for this).

Importing and exporting remote setups

The Export button in the top right corner of the Generic Remote Setup window allows you to export the current setup, including the Control configuration (the table at the top) and all banks. The setup is saved as a file (with the file extension ".xml"). Clicking the Import button allows you to import saved remote setup files.

▪ The last imported or exported remote setup will automatically be loaded when the program starts or the Generic Remote control is added in the Device Setup dialog.

Apple Remote (Macintosh only)

Many Apple computers come with an Apple Remote Control, a small hand-held device akin to TV remote controls. It allows you to remotely control certain features in Cubase Essential.

1. Open the Device Setup dialog and select Apple Remote Control from the Add Device pop-up.

2. In the list on the right, the Apple Remote's buttons are listed. For each button you can open a pop-up menu from which you can select a Cubase Essential parameter.
The parameter you select will be assigned to the corresponding button on the Apple Remote.
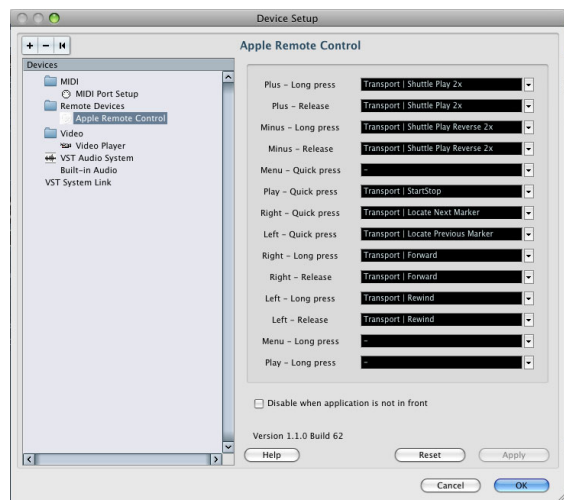
By default, the Apple Remote always controls the application that currently has the focus on your Macintosh computer (provided that this application supports the Apple Remote).

▪ When the option "Disable when application is not in front" is not selected, the Apple Remote will control Cubase Essential even if it does not have the focus.

19

MIDI realtime parameters and effects

Introduction

For each MIDI track, you can set up a number of track parameters, or modifiers, and MIDI effects. These affect how the MIDI data is played back, "transforming" MIDI events in realtime before they are sent to the MIDI outputs.

On the following pages, the available parameters and effects are described. Keep in mind:

• The actual MIDI events will not be affected – the changes happen "on the fly".
• Since the modifier settings do not change the actual MIDI data on the track, they will not be reflected in the MIDI editors. To convert the track settings into "real" MIDI events, use the Freeze MIDI Modifiers function (see "Permanent settings with Freeze MIDI Modifiers" on page 205).

The Inspector – General handling

The MIDI modifiers and effects are set up in the Inspector. Here's a brief rundown on how to handle the Inspector:

• To show or hide the Inspector, click the Inspector icon on the Project window toolbar.
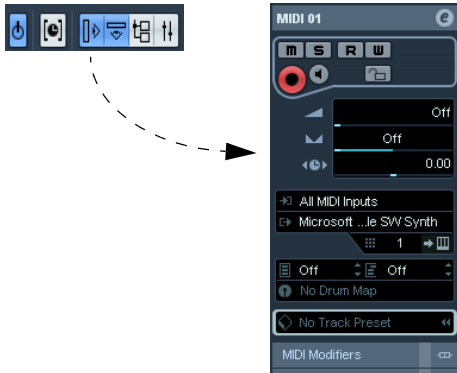
The Inspector for a MIDI track

• For a MIDI track, up to five sections are available. Which of these sections are displayed in the Inspector is determined in the setup context menu or the Setup dialog of the Inspector.
For information about setting up the Inspector, see "Using the Setup options" on page 298.

• You can fold or unfold the sections individually by clicking on the section name.
Clicking the name for a hidden section brings it to view and hides the other sections. [Ctrl]/[Command]-clicking the tab allows you to hide or show a section without affecting other sections. [Alt]/[Option]-clicking a tab shows or hides all sections in the Inspector.

⇨ Folding or hiding (via the Setup dialog) a section does not affect the functionality but merely hides the section from view.
This means your settings will still be active even if you fold or hide the Inspector settings.

The Inspector sections

Apart from the basic track settings in the topmost Inspector section (see below), the Inspector for a MIDI track also contains the following sections: MIDI Modifiers, MIDI Inserts, MIDI Sends, MIDI Fader and one for a connected VST instrument. With the exception of the MIDI Inserts and Sends sections (see "MIDI effects" on page 197) these are described below.

Basic track settings

These are settings that either affect the basic functionality for the track (mute, solo, enable record, etc.) or send out additional MIDI data to the connected devices (program change, volume, etc.). The section contains all settings in the Track list (see "The Track list" on page 17), with a few additional parameters:

Parameter	Description
Track name field	Click once to show/hide the topmost Inspector section. Double-click to rename the track.
Edit button	This opens the Channel Settings window for the track (a window showing a channel strip with volume fader and other controls, along with effect settings – see "Using Channel Settings" on page 86).
Mute/Solo buttons	Mutes or solos the MIDI track.
Read/Write buttons	Used for automating the track settings – see "Enabling and disabling the writing of automation data" on page 122.
Record enable button	Activate this to make the track ready for recording.
Monitor button	When this is activated (and the option "MIDI Thru Active" is activated in the Preferences–MIDI page), incoming MIDI will be routed to the selected MIDI output.
Lock button	Activate this to disable all editing of all events on the track.

Parameter	Description
Volume	Use this to adjust the level for the track. Changing this setting will move the track's fader in the Mixer window, and vice versa. See "Setting volume in the Mixer" on page 84 for details about setting levels.
Pan	Use this to adjust the panning of the track.
Delay	This adjusts the playback timing of the MIDI track. Positive values delay the playback while negative values cause the track to play earlier. The values are set in milliseconds.
In/Out/Chn pop-ups	This is where you select MIDI input, MIDI output and MIDI channel for the track.
Edit Instrument button	If the MIDI track is routed to a VST instrument, clicking this button opens the control panel for the VST instrument.
Bank and Patch Selector pop-up	Allows you to select a sound, see below. (If no bank is available, only the Patch selector is shown.)
Map pop-up	Allows you to select a drum map for the track – see "Managing drum maps" on page 233.
Apply Track Preset button	Allows you to apply a track preset, see "Applying track presets" on page 182.

⇨ Note that the functionality of the Bank and Patch selector settings (used for selecting sounds in the connected MIDI instrument) depends on the instrument to which the MIDI output is routed, and how you have set it up in the MIDI Device Manager.

The MIDI Device Manager allows you to specify which MIDI instruments and other devices are connected to the various MIDI outputs, thus making it possible to select patches by name.

⇨ Many of the basic track settings are duplicated in "mixer channel strip form" in the MIDI Fader section of the Inspector (see below).

MIDI Modifiers

The settings on this tab affect the MIDI events on the track in realtime during playback. They will also be in effect if you play "live" with the track selected and record enabled (provided that "MIDI Thru Active" is activated on the Preferences–MIDI page). This makes it possible, for example, to transpose or adjust the velocity of your live playing.

⇨ If you want to compare the result of your modifier settings with the "unprocessed" MIDI, you can use the Bypass button in the MIDI Modifiers section.

When this is activated, the MIDI Modifiers settings will be temporarily disabled. A bypassed section is indicated by a yellow Bypass button.
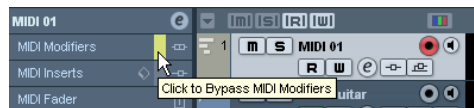
Transpose

This allows you to transpose all notes on the track in semitones. The available range is -127 to +127 semitones, but remember that the total range of MIDI note numbers is 0 to 127. Furthermore, not all instruments can play back notes over the whole range. Therefore, extreme transpositions can give rather strange and unwanted results.

▪ You can also transpose individual MIDI parts using the Transpose field in the info line.

The transposition in the info line (for the individual part) is added to the transpose value you have set up for the whole track in the Inspector.

Velocity Shift

This setting lets you change the dynamics of all notes on the track. The value in this field is added to the velocity of each note message that is sent out (use negative values to lower the velocities). The range is -127 to +127 with 0 representing no change in velocity.

Note that the effect of changing the velocity depends on the sound and instrument.

⇨ You can also adjust the velocity of events in individual MIDI parts using the Velocity field in the info line.
The velocity shift in the info line (for the individual part) is added to the velocity shift you have set up for the whole track in the Inspector.

Velocity Compression

This function multiplies the velocity values with the factor you specify. This factor is set using a numerator (left value) and a denominator (right value), resulting in a fractional number (1/2, 3/4, 3/2 etc.). For example, if you set the factor to 3/4, the velocities will be three quarters of their original values. This will also affect the difference in velocity between the notes, thus compressing or expanding the velocity scale. Typically, you would combine this setting with the Velocity Shift parameter.

An example:

Let's say you have three notes with the velocity values 60, 90 and 120, and wish to "even out" the velocity differences somewhat. If you set the Velocity Compression value to 1/2, the notes will play back with the velocities 30, 45 and 60. By adding 60 in the Velocity Shift field, the notes will play back with the velocities 90, 105 and 120, meaning you have compressed the velocity range.

In a similar way, you can use Velocity Compression values greater than 1/1 together with negative values in the Velocity Shift field, to expand the velocity range.

⚠ Remember that the maximum velocity is always 127 no matter how much you try to expand.

Length Compression

This value adjusts the lengths of all notes on the track. As with Velocity Compression, the value is set with a numerator and denominator. For example, the value 2/1 means that all note lengths will be doubled, while 1/4 means all note lengths will be a quarter of the actual lengths.

Random

The Random settings let you introduce random variations to various properties of MIDI notes. Anything from very subtle variations to dramatic changes can be applied. There are two separate "random generators", set up in the following way:

1. Pull down the Random pop-up menu and select which note property should be randomized.
The options are position, pitch, velocity and length.

⇨ Keep in mind that depending on the content of the track, certain parameter changes might not be immediately noticeable or have any effect at all (as would be the case if applying random length to a percussion track playing "one-shot" samples for example).
To best audition the random changes, choose a track with clearly defined rhythm and note content (as opposed to a string pad).

2. Set the desired range of random deviation by entering values in the two number fields.
The two values govern the limits of the randomization, so that the values will vary between the left value and the right value (you cannot set the left value higher than the right value). The maximum random range for each property is listed in the table below:

Property	Range
Position	-500 to +500 ticks
Pitch	-120 to +120 semitones
Velocity	-120 to +120
Length	-500 to +500 ticks

⇨ You can make independent settings for the two random generators.

▪ To deactivate the Random function, pull down the Random pop-up menu(s) and select "OFF".

Range

The Range function lets you specify a note (pitch) or velocity range and either force all notes to fit within this range, or exclude all notes outside this range from playback. As with the Random function, there are two separate Range settings. Set them up as follows:

1. Pull down the Range pop-up menu and select one of the following four modes:

Mode	Description
Vel. Limit	This function affects all velocity values outside the specified range. Velocity values below the Min setting (the lower limit of the range) are set to the Min value, and velocity values above the Max setting are set to the Max value. Notes with velocity values within the set range are not affected. Use this if you want to force all velocity values to fit within a certain range.
Vel. Filter	Velocity Filter works by excluding all notes with velocity values outside the specified range. Notes with velocity values below the Min setting or above the Max setting will not be played back. Use this to "isolate" notes with certain velocity values.
Note Limit	This function allows you to specify a pitch range, and forces all notes to fit within this range. Notes outside the specified range are transposed up or down in octave steps until they fit within the range. Note: If the range is too "narrow", so that some notes cannot be fit within the range by octave-transposing, these notes will get a pitch in the middle of the range. For example, if you have a note with a pitch of F3, and the range is C4-E4, that note will be transposed to D4.
Note Filter	Note Filter works by excluding all notes with pitches outside the specified range. Notes lower than the Min setting or higher than the Max setting will not be played back. Use this to "isolate" notes with certain pitches.

2. Use the two fields to the right to set the minimum and maximum values.
These values will be shown as numbers (0–127) for the velocity modes and as note numbers (C-2 to G8) for the pitch modes.

⇨ Note that you can make independent settings for the two Range functions.

▪ To deactivate the Range function, pull down the Range pop-up menu(s) and select "OFF".

MIDI Fader section

This contains a single channel strip, allowing you to set volume, pan, mute/solo and other parameters for the track, and a panel view of the active sends/inserts. This is a "mirror" of the track's channel strip in the Cubase Essential Mixer – see "The MIDI channel strips" on page 83.

VST Instrument section

If the MIDI track is routed to a VST instrument, a new sub-panel will appear at the bottom of the Inspector, labeled with the name of the VST instrument. Clicking this section shows a duplicate of the Inspector settings for the VST instrument channel. This makes it easy to adjust the channel settings for the VST instrument while you are editing the MIDI track.
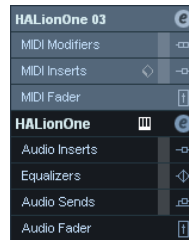
▪ If the VST instrument has multiple outputs (and thus several mixer channels), there will be a setting called "Output" at the top of the VST Instrument section.

New sub-panels will also be added in the following cases:

▪ When a MIDI track is routed to an effect plug-in that also receives audio data, i.e. that is used as an insert effect for an audio track (e.g. MIDI Gate), a sub-panel for this audio track appears in the MIDI track inspector.
▪ If a MIDI track is routed to a plug-in assigned to a FX Channel track, a corresponding FX sub-panel is added to the Inspector.

⇨ For an easy way to combine MIDI and VST instruments, check out instrument tracks (see "VST instruments and instrument tracks" on page 110).

MIDI effects

Cubase Essential comes with a number of MIDI effect plug-ins, capable of transforming the MIDI output from a track in various ways.

Just like the MIDI modifiers, MIDI effects are applied in re-altime to the MIDI data played back from the track (or to MIDI you play live "thru" the track).

What are MIDI effects?

Although a MIDI effect can be similar to an audio effect, it is important to remember that you're not processing the sound resulting from MIDI playback, but the MIDI data (the "instructions" for how the music should be played back).

A MIDI effect will change properties of the MIDI events (e.g. change the pitch of notes) and/or generate new MIDI events (for example, a MIDI delay may add new MIDI notes, "echoing" the original notes).

⇨ The included MIDI effect plug-ins are described in the separate manual "Plug-in Reference".

Insert and send effects

As with audio effects, there are two ways to route the MIDI events on a track to an effect:

⇨ If you add an insert effect, the MIDI events will be sent to the effect, which will process the data and pass it on to the track's MIDI output (or to another insert effect).
In other words, the MIDI events will be routed "through" the insert effect.

⇨ If you use a send effect, the MIDI events will be sent both to the track's MIDI output and to the effect.
That is, you will get both the unprocessed MIDI events and the output of the MIDI effect. Note that the effect can send its processed MIDI data to any MIDI output – not necessarily to the one used by the track.

There are separate sections in the Inspector for MIDI inserts and MIDI sends.

MIDI Inserts section

This allows you to add up to four MIDI insert effects. The section contains the following items:

Item	Description
Preset Management button	Click this to open the track presets pop-up menu and select an insert preset or apply an insert from a track preset, see "Previewing MIDI, instrument and VST presets independently of tracks" on page 185.
Bypass button	Click this to temporarily disable all insert effects for the track (useful for comparing with the unprocessed MIDI, etc.).
Inserts section tab	This is in blue if an insert effect is activated.
Effect selection pop-up menu (x 4)	Selecting an effect from this pop-up menu automatically activates it and brings up its control panel (which can be a separate window or a number of settings below the insert slot in the Inspector). To remove an insert effect completely, select "No Effect".
On button (x 4)	Allows you to turn the selected effect on or off.
Edit button (x4)	Click this to bring up the control panel for the selected effect. Depending on the effect, this may appear in a separate window or below the insert slot in the Inspector. Clicking the button again hides the control panel.

⇨ Effects that display their controls in the Inspector can be opened in a separate control panel window by pressing [Alt]/[Option] and clicking the Edit button.

MIDI Sends section

This allows you to add up to four MIDI send effects. Unlike audio send effects, you can select and activate send effects individually for each track. The section contains the following items:

Item	Description
Bypass button	Click this to temporarily disable all send effects for the track (useful for comparing with the unprocessed MIDI, etc.).
Sends section tab	This is in blue if any send effect is activated.
Effect selection pop-up menu (x 4)	Selecting an effect from this pop-up menu automatically activates it and brings up its control panel (which can be a separate window or a number of settings below the send slot in the Inspector). To remove a send effect completely, select "No Effect".
On button (x 4)	Allows you to turn the selected effect on or off.
Pre/Post button (x4)	If this is activated, the MIDI signals will be sent to the send effects before the MIDI modifiers and insert effects.
Edit button (x4)	Click this to bring up the control panel for the selected effect. Depending on the effect, this may appear in a separate window or below the sends slot in the Inspector. Clicking the button again hides the control panel.
Output pop-up menu (x4)	This determines to which MIDI output the effect should send the processed MIDI events.
Channel setting (x4)	This determines on which MIDI channel the effect should send the processed MIDI events.

⇨ Effects that display their controls in the Inspector can be opened in a separate control panel window by pressing [Alt]/[Option] and clicking the Edit button.

About presets

Several of the MIDI plug-ins come with a number of presets for instant use.

MIDI In and Out activity indicators

Save and Remove Preset buttons

▪ To load a preset, select it from the Presets pop-up menu.

▪ To store your current settings as a preset, click on the plus (+) button ("Save Preset…") to the right of the Presets menu.

You will be asked to specify a name for the preset. The saved preset will then be available for selection from the pop-up menu for all instances of that MIDI plug-in, in all projects.

▪ To remove a preset, select it, click on the minus (-) button ("Remove Preset").

At the left and right borders of the Presets pop-up menu you will also find MIDI In and Out activity indicators. Whenever the plug-in receives or transmits MIDI data, the left or the right indicator will light up, respectively.

Applying a MIDI insert effect – an example

Here is a step-by-step example of how to add a MIDI insert effect to a MIDI track:

1. Select the MIDI track and open the Inspector.

2. Open the MIDI Inserts tab in the Inspector.

3. Click in one of the insert slots to open the MIDI effect pop-up menu.

4. Select the desired MIDI effect from the pop-up menu.
The effect is automatically activated (the power button for the insert slot lights up) and its control panel appears, either in a separate window or in the MIDI Inserts section below the slot (depending on the effect).

Now all MIDI from the track will be routed through the effect.

5. Use the control panel to make settings for the effect.
All included MIDI effects are described in the separate manual "Plug-in Reference".

▪ You can bypass the insert effect by clicking its power button (above the insert slot).

▪ To bypass all insert effects for the MIDI track, use the bypass button in the MIDI Inserts section in the Inspector, in the Mixer channel strip or in the Track list.

▪ To remove an insert effect, click in its slot and select "No Effect".

Managing plug-ins

Selecting Plug-in Information from the Devices menu opens a window in which all loaded plug-ins, audio and MIDI, are listed.

▪ To view the MIDI effect plug-ins, click the MIDI Plug-ins tab.
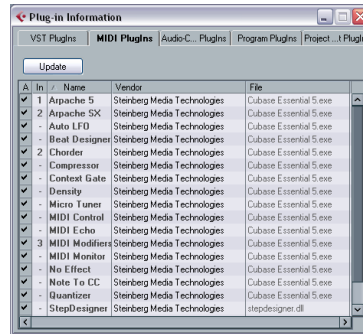
▪ The leftmost column allows you to deactivate plug-ins.
This is useful if you have plug-ins installed that you do not want to use in Cubase Essential. Only plug-ins that are activated (ticked checkbox) will appear on the MIDI effect pop-up menus.
Note that plug-ins that are currently in use cannot be deactivated.

▪ The second column shows how many instances of each plug-in are currently used in the project.

▪ The remaining columns show various information about each plug-in and cannot be edited.

20

MIDI processing and quantizing

Introduction

This chapter describes the various MIDI processing functions available on the MIDI menu. They offer various ways to edit MIDI notes and other events, either in the Project window or from within a MIDI editor.

MIDI functions vs. MIDI modifiers

In some cases, the result of a MIDI function can also be obtained by using MIDI modifiers and effects (see "MIDI realtime parameters and effects" on page 192). For example, the operations "Transpose" and "Quantize" are available both as MIDI modifiers and as MIDI functions.

The main difference is that MIDI modifiers and effects do not affect the actual MIDI events on the track in any way, while MIDI functions change the events "permanently" (although recent changes can be undone).

Use the following guidelines to decide which path to choose for operations that are available both as modifiers or effects and as functions:

• If you want to adjust a few parts or events only, use MIDI functions. The MIDI modifiers and effects affect the output of the whole track.

• If you want to experiment with different settings, use MIDI modifiers and effects.

• MIDI modifiers and effects settings are not reflected in the MIDI editors, since the actual MIDI events are not affected. This can be potentially confusing; if you have transposed notes using modifiers for example, the MIDI editors will still show the notes with their original pitch (but they will play back at their transposed pitch). Therefore, MIDI functions are a better solution if you want to see the effects of your editing in the MIDI editors.

What is affected by the MIDI functions?

Which events are affected when you use a MIDI function depends on the function, the active window and the current selection:

• Some MIDI functions only apply to MIDI events of a certain type.
For example, quantization only affects notes, while the Delete Controllers function only applies to MIDI controller events.

• In the Project window, the MIDI functions apply to all selected parts, affecting all events (of the relevant types) in them.

• In the MIDI editors, the MIDI functions apply to all selected events. If no events are selected, all events in the edited part(s) will be affected.

The Quantizing functions

What is quantizing?

Quantizing in its fundamental form is a function that automatically moves recorded notes, positioning them on exact note values:

For example, if you record a series of eighth notes, some of them may end up slightly beside the exact eighth note positions.
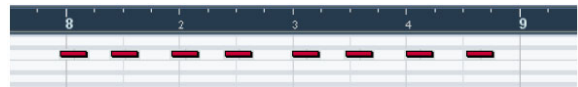
Quantizing the notes with the quantize grid set to eighth notes will move the "misplaced" notes to exact positions.
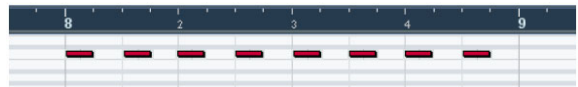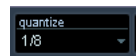
However, quantizing is not only a method of correcting errors, it can also be used creatively in various ways. For example, the "quantize grid" does not have to consist of perfectly straight notes, some notes can automatically be excluded from quantizing, etc.

⇨ When quantizing MIDI, only MIDI notes are affected (no other event types).
However, you can choose to move the controllers together with their respective notes by activating the "Move Controller" option in the Quantize Setup dialog, see "The Move Controller setting" on page 203.

Setting up quantize on the toolbar

At its most basic, setting up quantizing consists of selecting a note value from the Quantize pop-up menu on the toolbar (in the Project window or a MIDI editor).
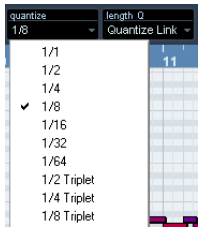
This allows you to quantize to exact note values (straight, triplet or dotted notes) only.

Setting up quantize in the Quantize Setup dialog

If you want more options than those available on the pop-up menu, select "Quantize Setup…" from the MIDI menu (or "Setup…" from the Quantize pop-up menu) to open the Quantize Setup dialog.

⇨ Any settings you make in the dialog are immediately reflected in the Quantize pop-up menus. However, if you want your settings permanently available on the Quantize pop-up menus, you have to use the presets functions (see "Presets" on page 203).

The grid display in the middle of the dialog shows one bar (four beats), with blue lines indicating the quantize grid (the positions that notes will be moved to). Value changes in the grid, presets and quantize options will be graphically reflected here, see below.

The Quantize Setup dialog contains the following settings:

The Grid and Type pop-ups

These are used to determine the basic note value for the quantizing grid. In other words, these have the same functionality as the Quantize pop-up menu on the toolbar.

Swing

The Swing slider is only available when a straight note value is selected for the grid and Tuplet is off (see below). It lets you offset every second position in the grid, creating a swing or shuffle feel. When you adjust the Swing slider, the result is shown in the grid display.
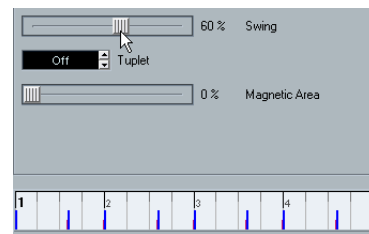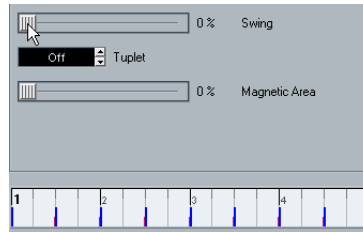
A straight eighth note grid compared with a grid with 60% swing.

Tuplet

Allows you to create more rhythmically complex grids by dividing the grid into smaller steps.

Magnetic Area

This allows you to specify that only notes within a certain distance from the grid lines should be affected by quantizing.

▪ When the slider is set to 0%, the Magnetic Area function is deactivated, i.e. all notes are affected by quantizing.
If you move the slider gradually to the right, you will note how the magnetic areas are shown around the blue lines in the grid display.
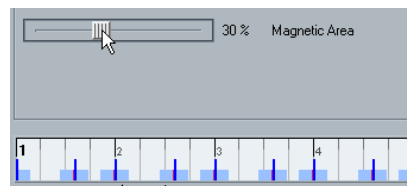
Only notes within the indicated zones will be affected by quantizing.

Presets

The controls in the lower left corner of the dialog allow you to store the current settings as a preset, which will then be available on the Quantize menus on the toolbars. The usual preset procedures apply:

▪ To store the settings as a preset, click the Store button.

▪ To load a stored preset into the dialog, simply select it from the pop-up menu.
This is useful if you want to modify an existing preset.

▪ To rename the selected preset, double-click on the name and type in a new one.

▪ To remove a stored preset, select it from the pop-up menu and click Remove.

Apply and Auto

These functions allow you to apply quantizing directly from the dialog, see below.

⚠ If you do not want to apply the quantizing you have set up in the dialog, close the window by clicking its close button.

The Non Quantize setting

This setting affects the result of the quantizing. It allows you to set a "distance" in ticks (120ths of sixteenth notes).
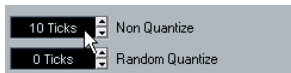
Events that already are within the specified distance from the quantize grid will not be quantized. This allows you to keep slight variations when you quantize, but still correct notes that are too far from the grid.

The Random Quantize setting

This setting affects the result of the quantizing. It allows you to set a "distance" in ticks (120ths of sixteenth notes).

Events will be quantized to random positions within the specified "distance" from the quantize grid, thus creating a more "loose" quantizing. Much like the Non Quantize setting, this allows for slight variations, while at the same time keeping notes from ending up too far from the grid.

The Iterative Strength setting

Here you specify how much the notes should be moved towards the grid when using the Iterative Quantize function, see below.

The Move Controller setting

When this is activated, controllers related to notes (pitch-bend, etc.) are automatically moved with the notes when these are quantized.

Applying quantize

There are several ways to apply the quantize:

▪ The standard method is to select "Over Quantize" from the MIDI menu (or using a key command, by default [Q]).
This quantizes the selected MIDI parts or notes according to the current Quantize pop-up menu setting.

▪ You can also apply quantizing directly from the Quantize Setup dialog, by clicking the "Apply Quantize" button.

▪ If you activate the "Auto" checkbox in the Quantize Setup dialog, any change you make in the dialog is immediately applied to the selected MIDI parts or notes.
A great way of using this feature is to set up a playback loop, and adjust the settings in the dialog until you get the desired result.

⚠ When you apply quantize, the result is based on the original position of the notes. Therefore, you can freely try out different quantize settings with no risk of "destroying" anything (see also "Undo Quantize" on page 204).

The Auto Quantize function

If you activate the Auto Q button on the Transport panel, all MIDI recordings you make are automatically quantized according to the settings you have made in the Quantize Setup dialog.

Iterative Quantize

Another way to apply "loose" quantization is to use the Iterative Quantize function on the MIDI menu. It works like this:

Instead of moving a note to the closest quantize grid position, Iterative Quantize moves it only part of the way. You specify how much the notes should be moved towards the grid with the "Iterative Strength" setting in the Quantize Setup dialog.

Iterative Quantize also differs from "regular" quantization in that the operation is not based on the notes' original positions but on their current, quantized position. This makes it possible to repeatedly use Iterative Quantize, gradually moving the notes closer to the quantize grid until you have found the desired timing.

Advanced Quantize functions

Quantize Lengths

⚠ This function is only available from within the MIDI editors.

This function (on the Advanced Quantize submenu on the MIDI menu) will quantize the length of the notes, without changing their start positions. At its most basic level, this function will set the length of the notes to the Length Quantize value on the MIDI editor toolbar. However, if you have selected the "Quantize Link" option on the Length Quantize pop-up menu, the function will resize the note according to the quantize grid, taking the Swing, Tuplet and Magnetic Area settings into account.

An example:
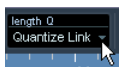
1. Length Quantize set to "Quantize Link".
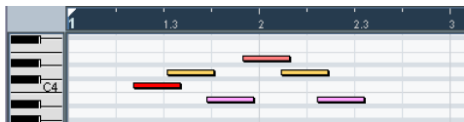
2. Some 16th notes.
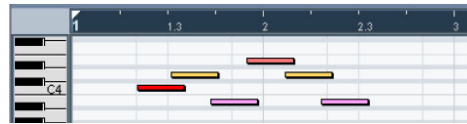
3. Here, the quantize value has been set to straight 16th notes with Swing at 100%.

4. Selecting Quantize Lengths will adjust the note lengths according to the grid. If you compare the result to the first figure above, you will find that notes that started within the odd sixteenth note "zones" show the longer grid length, and notes in the even zones have the shorter length.

Quantize Ends

The Quantize Ends function on the Advanced Quantize submenu will only affect the end positions of notes. Apart from that, it works just like regular quantizing, taking the Quantize pop-up menu setting into account.

Undo Quantize

As mentioned above, the original position of each quantized note is stored. Therefore, you can make the selected MIDI notes revert to their original, unquantized state at any time by selecting Undo Quantize from the Advanced Quantize submenu. This is independent from the regular Undo History.

Freeze Quantize

There may be situations when you want to make the quantized positions "permanent". For example, you may want to quantize notes a second time, having the results based on the current quantized positions rather than the original positions. To make this possible, select the notes in question and select "Freeze Quantize" from the Advanced Quantize submenu. This makes the quantized positions permanent.

⚠ After you have performed a Freeze Quantize for a note, you cannot undo its quantization.

Transpose

The Transpose item on the MIDI menu opens a dialog with settings for transposing the selected notes.
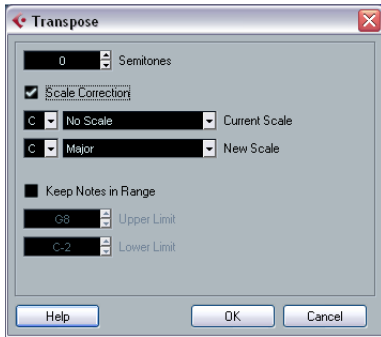
Semitones

This is where you set the amount of transposition.

Scale Correction

Scale Correction transposes the selected notes by forcing them to the closest note of the selected scale type. This can be used for creating interesting key and tonal changes, either by itself or in conjunction with the other settings in the Transpose dialog.

▪ To activate Scale Correction, click the checkbox.

▪ Select a root note and scale type for the current scale from the upper pop-up menus.

▪ Select a root note and scale type for the new scale from the lower pop-up menus.
Make sure to select the correct root note if you want to keep the result in the same key as the original notes, or select an entirely different key if you want to experiment.

Keep Notes in Range

When this is activated, transposed notes will remain within the Upper and Lower Limit values.

▪ If a note ends up outside the limits after transposition, it will be shifted to another octave, keeping the correct transposed pitch if possible.
If this is not possible (if you have set a very narrow range between the Upper and Lower Limit), the note will be transposed "as far as possible", i.e. to the Upper or Lower Limit note. If you set the Upper and Lower Limits to the same value, all notes will be transposed to this pitch!

OK and Cancel

Clicking OK performs the transposition. Clicking Cancel closes the dialog without transposing.

Permanent settings with Freeze MIDI Modifiers

The MIDI Modifier settings in the Inspector do not change the MIDI events themselves, but work like a "filter", affecting the music on playback. Therefore, you may want to make them permanent, i.e. convert them to "real" MIDI events, for example to transpose a track and then edit the transposed notes in a MIDI editor. For this, you can use the "Freeze MIDI Modifiers" command from the MIDI menu. This applies all filter settings permanently to the respective track.

The "Freeze MIDI Modifiers" function affects the following settings for MIDI tracks:

▪ Several settings on the main tab of the Inspector (program and bank selection and the Delay parameter).
▪ The settings on the MIDI Modifiers tab (i.e. Transpose, Velocity Shift, Velocity Compression and Length Compression).

The following settings for MIDI parts are taken into account as well:

▪ The Transpose and Velocity settings for parts displayed on the info line – please note that the Volume setting is not taken into account.

To use the "Freeze MIDI Modifiers" function, proceed as follows:

1. Select the desired MIDI track.

2. Pull down the MIDI menu and select "Freeze MIDI Modifiers".
The Inspector settings will be converted to MIDI events and inserted at the beginning of the part(s). All notes of the part(s) will be modified accordingly and the Inspector settings will be reset.

Dissolve Part

The Dissolve Part function on the MIDI menu allows you to separate MIDI events according to channels or pitches:

▪ When you work with MIDI parts (on MIDI channel "Any") containing events on different MIDI channels, activate the option "Separate Channels".

▪ To separate MIDI events according to pitch, activate the option "Separate Pitches".
A typical example would be drum and percussion tracks, where different pitches usually correspond to separate drum sounds.

⇨ When dissolving a part into either separate channels or separate pitches, you can automatically remove the silent (empty) areas of the resulting parts by activating the "Optimized Display" checkbox in the Dissolve Part dialog.

Dissolving parts into separate channels

Setting a track to MIDI channel "Any" will cause each MIDI event to play back on its original MIDI channel, rather than a channel set for the whole track. There are two main situations when "Any" channel tracks are useful:

▪ When you record several MIDI channels at the same time.
You may for example have a MIDI keyboard with several keyboard zones, where each zone sends MIDI on a separate channel. Recording on an "Any" channel track allows you to play back the recording with different sounds for each zone (since the different MIDI notes play back on separate MIDI channels).

▪ When you have imported a MIDI file of Type 0.
MIDI files of Type 0 contain only one track, with notes on up to 16 different MIDI channels. If you were to set this track to a specific MIDI channel, all notes in the MIDI file would be played back with the same sound; setting the track to "Any" will cause the imported file to play back as intended.

The Dissolve Part function scans MIDI parts for events on different MIDI channels and distributes the events into new parts on new tracks, one for each MIDI channel found. This allows you to work with each musical part individually. Proceed as follows:

1. Select the parts containing MIDI data on different channels.

2. Select "Dissolve Part" from the MIDI menu.

3. In the dialog that appears, select the "Separate Channels" option.

Now, for each MIDI channel used in the selected parts, a new MIDI track is created and set to the corresponding MIDI channel. Each event is then copied into the part on the track with the corresponding MIDI channel. Finally, the original parts are muted.

An example:

This part contains events on MIDI channels 1, 2 and 3.
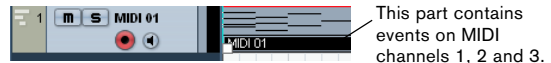
Selecting "Dissolve Part" creates new parts on new tracks, set to channels 1, 2 and 3. Each new part contains only the events on the respective MIDI channel.

The original MIDI part is muted.
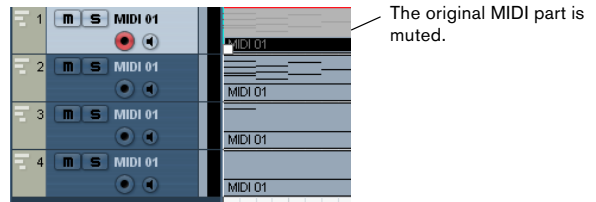
Dissolving parts into separate pitches

The Dissolve Part function can also scan MIDI parts for events of different pitches, and distribute the events into new parts on new tracks, one for each pitch. This is useful when the different pitches are not used in a melodic context, but rather for separating different sounds (e.g. MIDI drum tracks or sampler sound FX tracks). By dissolving such parts, you can work with each sound individually, on a separate track.

Proceed as follows:

1. Select the parts containing MIDI data.

2. Select "Dissolve Part" from the MIDI menu.

3. In the dialog that appears, select the "Separate Pitches" option.
A new MIDI track is created for each used pitch in the selected parts. The events are then copied into the parts on the track for the corresponding pitch. Finally, the original parts are muted.

Other MIDI functions

The following items can be found on the Functions submenu of the MIDI menu:

Legato

Extends each selected note so that it reaches the next note.

You can specify a gap or overlap for this function with the "Legato Overlap" setting in the Preferences (Editing–MIDI page).
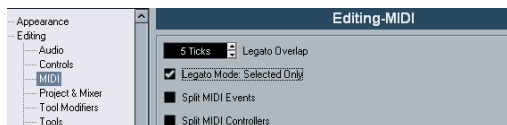
When using Legato with this setting, each note will be extended to end 5 ticks before the next note.

When you activate "Legato Mode: Selected Only", the length of the note will be adjusted so that it reaches the next selected note, allowing you, for example, to only apply Legato to your bass line (when playing on a keyboard).

Fixed Lengths

⚠ This function is only available from within the MIDI editors.

This function resizes all selected notes to the length set with the Length Quantize pop-up menu on the MIDI editor toolbar.

Delete Doubles

This function removes double notes, i.e. notes of the same pitch on the exact same position from the selected MIDI parts. Double notes can occur when recording in Cycle mode, after Quantizing, etc.

Delete Controllers

This function removes all MIDI controllers from the selected MIDI parts.

Delete Continuous Controllers

This function removes all "continuous" MIDI controller events from the selected MIDI parts. Therefore, "on/off" events such as sustain pedal events are not removed.

Delete Notes

Allows you to delete very short or weak notes. This is useful for automatically removing unwanted "ghost notes" after recording. Selecting "Delete Notes…" opens a dialog in which you set up the criteria for the function.
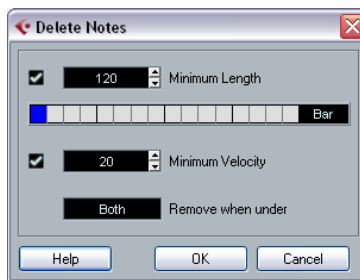
The parameters have the following functionality:

Minimum Length

When the Minimum Length checkbox is activated, the note length is taken into account, allowing you to remove short notes. You can either specify the minimum length (for notes to be kept) in the value field or by dragging the blue line in the graphical length display below.

• The graphical length display can correspond to 1/4 bar, one bar, two bars or four bars.
You change this setting by clicking in the field to the right of the display.

In this case, the whole length display corresponds to two bars, and the Minimum Length is set to 32nd notes (60 ticks).

Minimum Velocity

When the Minimum Velocity checkbox is activated, the velocity of notes is taken into account, allowing you to remove weak notes. You specify the minimum velocity (for notes to be kept) in the value display.

Remove when under

This setting is only available when both Minimum Length and Minimum Velocity is activated. By clicking in this field, you select whether both the length and the velocity criteria must be met for notes to be deleted, or whether one of the criteria will suffice.

OK and Cancel

Clicking OK performs the automatic delete according to the rules set up. Clicking Cancel closes the dialog without deleting notes.

Restrict Polyphony

Selecting this item opens a dialog in which you can specify how many "voices" should be used (for the selected notes or parts). Restricting the polyphony this way is useful when you have an instrument with limited polyphony and want to make sure all notes will be played. The effect is achieved by shortening notes as required, so that they end before the next note starts.

Pedals to Note Length

This function scans for Sustain pedal on/off events, lengthens the affected notes to match the Sustain pedal off position, and then removes the Sustain Controller on/off events.

Delete Overlaps (mono)

This function allows you to make sure that no notes of the same pitch overlap (i.e. that one starts before the other ends). Overlapping notes of the same pitch can confuse some MIDI instruments (a new Note On is transmitted before the Note Off is transmitted). This command can then be used to automatically solve the problem.

Delete Overlaps (poly)

This function shortens notes when required, so that no note begins before another ends. This happens regardless of which pitch the notes have.

Velocity

This function opens a dialog that allows you to manipulate the velocity of notes in various ways.
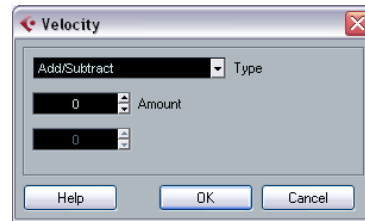
The following types of velocity processing are available:

Add/Subtract

This simply adds a fixed number to the existing velocity values. You set the value (positive or negative) with the Amount parameter.

Compress/Expand

Compresses or expands the "dynamic range" of MIDI notes by scaling the velocity values according to the Ratio setting (0–300%). The principle behind this is that multiplying different velocity values with a factor higher than 1 (over 100%) will also make the differences between velocity values greater, while using a factor lower than 1 (under 100%) will make the differences smaller. In short:

• To compress ("even out" velocity differences), use ratio values below 100%.

After compression, you would probably want to add a velocity amount (with the Add/Subtract function) to maintain the average velocity level.

• To expand (create greater difference in velocity), use ratio values above 100%.

Before you expand, you may want to adjust the velocity with the Add/Subtract function, so that the average velocity is somewhere in the middle of the range. If the average velocity is high (near 127) or low (near 0), expansion will not work properly, simply because velocity values can only be between 0 and 127!

Limit

This function allows you to make sure that no velocity values fall outside a given range (the Lower and Upper values). Any velocity values outside this range are raised/lowered to exactly the Lower/Upper values.

Fixed Velocity

This function sets the velocity of all selected notes to the Insert Velocity value on the toolbar in the MIDI editors.

Thin Out Data

Thins out MIDI data. Use this to ease the load on your external MIDI devices if you have recorded very dense controller curves etc.

You can also manually thin out the controller data by using the quantize function in the Key Editor.

Extract MIDI Automation

This is an extremely useful function as it allows you to quickly and easily convert the continuous controllers of your recorded MIDI parts into MIDI track automation data, making them available for editing in the Project window. Proceed as follows:

1. Select the desired MIDI part containing the continuous controller data.

2. Select "Extract MIDI Automation". (This command is also available on the Key Editor context menu.)
The controller data will automatically be removed from the controller lane in the editor.

3. In the Project window, open the automation track for the respective MIDI track. When you select one the continuous controllers from the parameter pop-up menu, the respective automation data will be displayed on the automation track.

This function can only be used for continuous controllers. Data such as Aftertouch, Pitchbend or SysEx cannot be converted to MIDI track automation data.

⇨ Remember that to be able to hear the automation data, you have to activate the Read button for the respective automation track(s).

Reverse

This function inverts the order of the selected events (or of all events in the selected parts), causing the MIDI music to play backwards. Note that the effect is different from reversing an audio recording. With MIDI, the individual notes will still play as usual in the MIDI instrument – it is only the order of playback that is changed.

21

The MIDI editors

Introduction

There are several ways to edit MIDI in Cubase Essential. You can use the tools and functions in the Project window for large-scale editing, or the functions on the MIDI menu to process MIDI parts in various ways (see "What is affected by the MIDI functions?" on page 201). For hands-on graphical editing of the contents of MIDI parts, you use the MIDI editors:

▪ The Key Editor is the default MIDI editor, presenting notes graphically in an intuitive piano roll-style grid.
The Key Editor also allows for detailed editing of non-note events such as MIDI controllers. For more information, see "The Key Editor – Overview" on page 213.

▪ The Drum Editor is similar to the Key Editor, but takes advantage of the fact that with drum parts, each key corresponds to a separate drum sound.
This is the editor to use when you're editing drum or percussion parts. For more information, see "The Drum Editor – Overview" on page 228.

▪ The List Editor shows all events in the selected MIDI parts as a list, allowing you to view and edit their properties numerically. It also allows you to edit SysEx messages.
For more information, see "The List Editor – Overview" on page 235 and "Working with System Exclusive messages" on page 239.

▪ The Score Editor shows MIDI notes as a musical score.
This offers basic score editing and printing – see "The Score Editor – Overview" on page 242 for details).

⇨ You can define each of the editors mentioned above as your default MIDI editor, see below.

Please note that features that are identical in these editors (especially in the Key and Drum Editors) will be described in the Key Editor section. The sections about the Drum Editor (see "The Drum Editor – Overview" on page 228), and the List Editor (see "The List Editor – Overview" on page 235) describe the specific features of these editors only.

Opening a MIDI editor

There are two ways to open a MIDI editor:

▪ Select one or several parts (or a MIDI track, with no parts selected), pull down the MIDI menu and select Open Key Editor, Open Drum Editor, Open List Editor or Open Score Editor from the Scores submenu (or use the corresponding key command).
The selected parts (or all parts on the track, if no part was selected) will open in the chosen editor.

▪ Double-click a part to open it in the default editor.
Which editor opens depends on the Default Edit Action setting in the Preferences (Event Display–MIDI page).
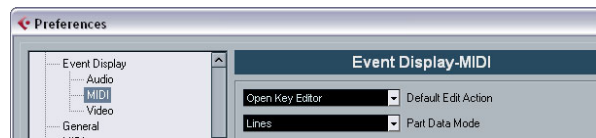
If the option "Edit as Drums when Drum Map is assigned" is activated and a drum map is selected for the edited track (see "Selecting a drum map for a track" on page 233), the Drum Editor will open. This way you can double-click to open the Key Editor (or the Score Editor or List Editor, depending on your preferences) but drum tracks will automatically open in the Drum Editor.

⇨ If the part you open for editing is a shared copy, any editing you perform will affect all shared copies of this part.
Shared copies are created by pressing [Alt]/[Option]-[Shift] and dragging, or by using the Repeat function with the "Shared copies" option activated. In the Project window, shared copies are indicated by the part name in italics and an icon in the bottom right corner of the part.

Handling several parts

When you open a MIDI editor with several parts (or a MIDI track containing several parts) selected, you might find it somewhat hard to get an overview of the different parts when editing.

For such cases the editor toolbar features a few functions to make working with multiple parts easier and more comprehensive:

▪ The Part List menu lists all parts that were selected when you opened the editor (or all parts on the track, if no parts were selected), and lets you select which part should be active for editing.
When you select a part from the list, it is automatically made active and centered in the note display.
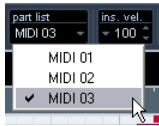
⇨ Note that it is also possible to activate a part by selecting an event within this part with the Arrow tool.

▪ The button "Edit Active Part Only" lets you restrict editing operations to the active part only.
For example, if you select "All" from the Select submenu on the Edit menu with this option activated, only events in the active part will be selected. Similarly, if you select notes by dragging with the Arrow tool (making a selection rectangle), only the notes in the active part will be selected.

"Edit Active Part Only" is activated on the toolbar.

▪ You can zoom in on the active part so that it fills the screen by selecting "Zoom to Event" from the Zoom submenu on the Edit menu.

▪ The button "Show Part Borders" can be used if you want to see clearly defined borders for the active part.
When this is activated, all parts except the active one are grayed out, making the borders easily discernible. In the Key Editor, there are also two "markers" in the ruler with the name of the active part, marking its beginning and end. These can be moved freely to change the size of the part.

"Show Part Borders" is activated on the toolbar.

▪ It is possible to cycle between parts (making them active) using key commands.
In the Key Commands dialog – Edit category, you will find two functions for this: "Activate Next Part" and "Activate Previous Part". If you assign key commands to these, you can use them to cycle between parts in the editors. For further information, see "Setting up key commands" on page 305.

The Key Editor – Overview

Toolbar
Info line
Ruler
Note display
Controller display
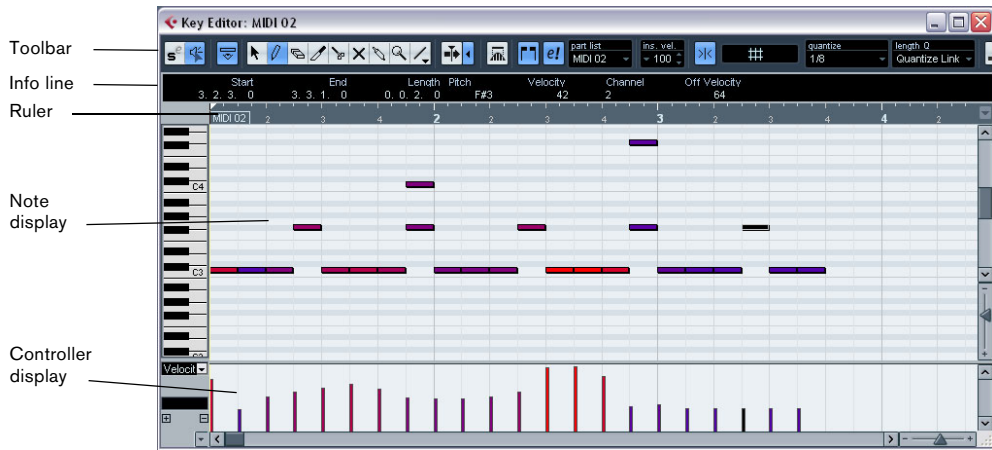
The toolbar

As in other windows, the toolbar contains tools and various settings. You can specify which toolbar items should be shown and store/recall different toolbar configurations – see "Using the Setup options" on page 298.
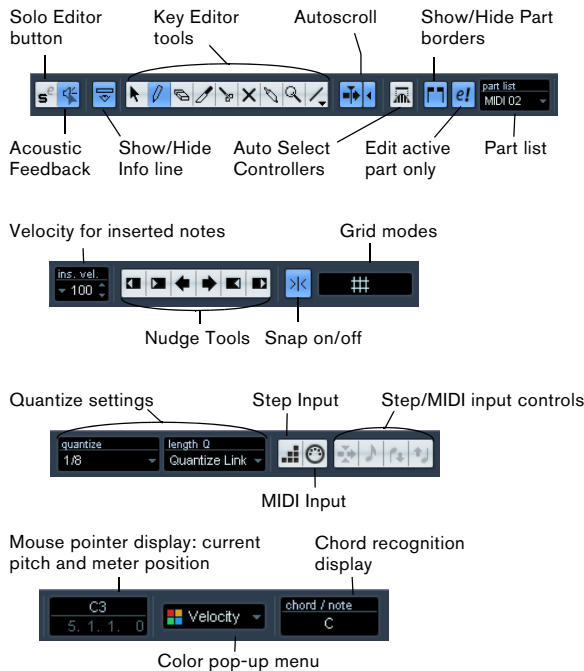
Solo Editor button
Key Editor tools
Autoscroll
Show/Hide Part borders

Acoustic Feedback
Show/Hide Info line
Auto Select Controllers
Edit active part only
Part list

Velocity for inserted notes
Grid modes

Nudge Tools   Snap on/off

Quantize settings
Step Input
Step/MIDI input controls

MIDI Input

Mouse pointer display: current pitch and meter position
Chord recognition display

Color pop-up menu

The info line

The info line shows information about selected MIDI notes. You can edit all values on the info line using regular value editing (see "Editing on the info line" on page 221 for details). Length and position values are displayed in the format currently selected for the ruler (see below).

▪ To hide or show the info line, click the icon in the toolbar.

The ruler

The ruler shows the timeline, by default in the display format selected on the Transport panel. You can select a separate format for a MIDI editor ruler on the Ruler pop-up menu, opened by clicking the arrow button to the right of it. For a list of the available formats, see "The ruler" on page 21.

At the bottom of the pop-up menu, there are two additional items:
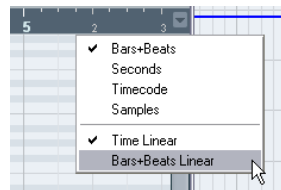
▪ If "Time Linear" is selected, the ruler, note display and controller display will be linear in relation to time.
This means that if the ruler shows bars and beats, the distance between the bar lines will vary depending on the tempo.

▪ If "Bars+Beats Linear" is selected, the ruler, note display and controller display will be linear in relation to tempo.
This means that if the ruler shows bars and beats, the distance between beats will be constant.

In most cases, you would probably set the display format to "Bars+Beats" in "Bars+Beats Linear" mode when editing MIDI.

The note display
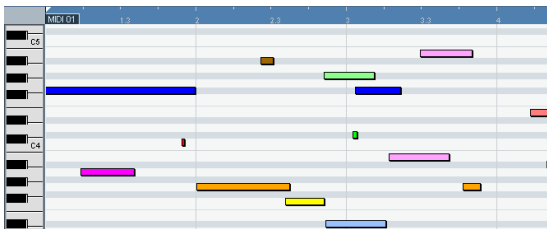
The note display is the main area in the Key Editor. It contains a grid in which MIDI notes are shown as boxes. The width of a box corresponds to the note length, and the vertical position of a box corresponds to the note number (pitch), with higher notes higher up in the grid. The piano keyboard to the left serves as a guide for finding the right note number.

For a description of how to display colors in the note display, see "Coloring notes and events" on page 217.

The chord recognition function

Cubase Essential features a handy chord recognition function that helps you identify chords in the Key Editor note display. To find out which chord is formed by simultaneously played notes, place the project cursor over the notes. All MIDI notes currently "touched" by the project cursor are analyzed and the chord recognition display in the toolbar shows you which chord the notes form.
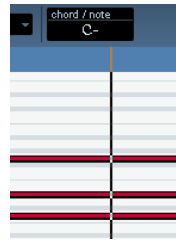
In the picture above, the project cursor touches the notes C, Eb and G. As shown in the chord recognition display, this results in a C minor chord.

The controller display

The area at the bottom of the Key Editor window is the controller display. This consists of one or several controller lanes, each showing one of the following properties or event types:

• Velocity values of the notes
• Pitchbend events
• Aftertouch events
• Poly Pressure events
• Program Change events
• SysEx events
• Any type of continuous controller event (see "Editing continuous controllers on the controller lane" on page 226)

To change the size of the controller display, drag the divider between the controller display and the note display. This will make the controller display larger and the note display smaller, or vice versa.

Velocity values are shown as vertical bars in the controller display, with higher bars corresponding to higher velocity values.
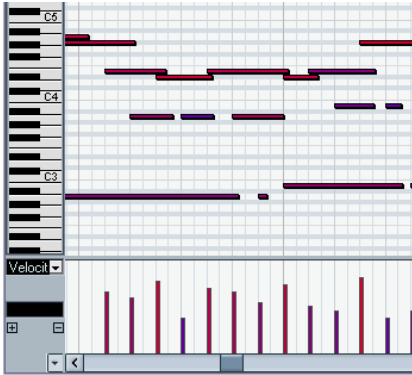
Each velocity bar corresponds to a note in the note display.

Events other than velocity values are shown as blocks, the heights of which correspond to the values of the events. The beginning of an event is marked by a curve point. To select an event, click on the curve point, so that it turns red.

⇨ Unlike notes, events in the controller display have no length. The value of an event in the display is "valid" until the start of the next event.
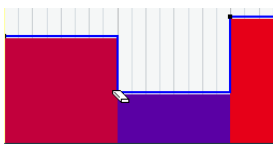
If you delete the second event…
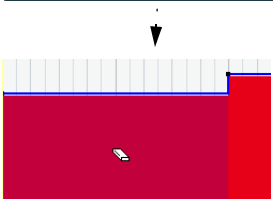
…the first event will be "valid" until the start of the third event.

For a description of editing in the controller display, see "Editing in the controller display" on page 222.

Key Editor operations

Zooming

Zooming in the Key Editor is done according to the standard zoom procedures, using the zoom sliders, the Zoom tool or the Zoom submenu on the Edit menu.

▪ When you drag a rectangle with the Zoom tool, the result depends on the option "Zoom Tool Standard Mode: Horizontal Zooming Only" in the Preferences (Editing–Tools page).
If this is activated, the window will only be zoomed horizontally; if not, the window will be zoomed both horizontally and vertically.

Using the Trim tool

The Trim tool allows you to change the length of note events by cutting off the end or the beginning of notes. It is available in the Key Editor and in the List Editor.

Using the Trim tool means moving the note-on or the note-off event for one or several notes to a position defined with the mouse. Proceed as follows:

1. Select the Trim tool in the toolbar.
The mouse pointer changes to a knife symbol.

2. Locate the notes that you wish to edit.

3. To edit a single note, click on it with the Trim tool. The range between the mouse pointer and the end of the note will be removed.
You can use the mouse position display in the toolbar to find the exact position for the trim operation.

4. To edit several notes, click and drag with the mouse across the notes.
A line is displayed. The notes will be trimmed along this line.

Trimming the end of three note events.

▪ By default, the Trim tool will cut off the end of notes. To trim the beginning of the note(s), press [Alt]/[Option] while dragging.

▪ If you press [Ctrl]/[Command] while dragging, you will get a vertical trim line, allowing you to set the same start or end time for all edited notes.

You can change the Trim tool key commands in the Preferences (Editing–Tool Modifiers page).

⇨ Note that when you trim the beginning of a note in the List Editor, the note may move to a different position in the list (since other events may now begin before the edited event).

⇨ Note that the trimmed note ends or starts do not snap to the grid.

Playing back

You can play back your music as usual when working in a MIDI editor. There are several features designed to make editing easier during playback:

Solo button

If you activate the Solo button, only the edited MIDI parts will be heard during regular playback.

Autoscroll

As described in the section "Autoscroll" on page 42, the Autoscroll function makes the window "follow" the project cursor during playback, so that the current play position is visible at all times. However, when you are working in a MIDI editor, you may want to deactivate Autoscroll – this way, the events you are working with will stay visible.

The Autoscroll buttons in each MIDI editor are independent of the Project window Autoscroll setting, which means that Autoscroll can be activated in the Project window and deactivated in the MIDI editor you are working in.

Acoustic Feedback
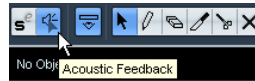
If the speaker icon on the toolbar is activated, individual notes will automatically be played back (auditioned) when you move or transpose them, or when you create new notes by drawing. This makes it easier to hear what you're doing.

In the Preferences dialog (MIDI page), you can specify whether the Acoustic Feedback function should also include any MIDI sends or inserts used for the track. Activate the option "Audition through MIDI Inserts/Sends" if you want the layering of MIDI instruments (by MIDI sends) to be active within the MIDI editors as well. This way, the acoustic feedback of the editors sends the MIDI data not only to the output selected for the track, but additionally through any MIDI inserts and MIDI sends assigned to it. Note, however, that this also means that the MIDI events will be sent through any MIDI plug-ins assigned to this track.

Snap

Snap is activated on the toolbar.

The Snap function helps you find exact positions when editing in a MIDI editor. It does this by restricting horizontal movement and positioning to certain positions. Operations affected by snap include moving, duplicating, drawing, sizing, etc.

▪ How Snap works depends on the Snap mode pop-up menu next to the Snap button.
See "The Snap function" on page 40.

▪ When the "Bars+Beats" display format is selected in the ruler, the snap grid is set by the Quantize value on the toolbar.
This makes it possible to snap not only to straight note values but also to swing grids set up in the Quantize Setup dialog (see "The Quantizing functions" on page 201).

When any of the other display formats is selected in the ruler, positioning is restricted to the displayed grid, i.e. you can snap in finer increments by zooming in, and in coarser increments by zooming out the display.

Coloring notes and events

By using the Colors pop-up menu on the toolbar, you can select a color scheme for the events in the editor. The following options are available:

Option	Description
Velocity	The notes get different colors depending on their velocity values.
Pitch	The notes get different colors depending on their pitch.
Channel	The notes get different colors depending on their MIDI channel value.
Part	The notes get the same color as their respective part in the Project window. Use this option when you are working with two or more tracks in an editor, to make it easier to see which notes belong to which track.
GridMatch	The notes get different colors depending on their time position. For example, this mode makes it easy to see if the notes in a chord start at the exact same beat.

When any of the options (apart from "Part") is selected, you can select "Setup…" from the Colors pop-up menu. This opens a dialog in which you can specify which colors should be associated with which velocities, pitches or channels, respectively.

Creating and editing notes

To draw in new notes in the Key Editor, you use the Pencil tool or the Line tool.

Drawing notes with the Pencil tool

With the Pencil tool, you insert single notes by clicking at the desired time (horizontal) and pitch position (vertical).

• When you move the pointer in the note display, its bar position is indicated in the toolbar, and its pitch is indicated both in the toolbar and on the piano keyboard to the left. This makes it easy to find the right note and insert position.
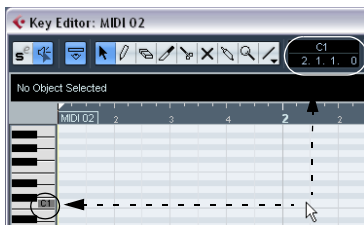
• If Snap is activated, this determines the start position of the created note.

• If you click once, the created note will have the length set on the Length Quantize pop-up menu on the toolbar. You can create a longer note by clicking and dragging. The length of the created note will be a multiple of the Length Quantize value.

Drawing notes with the Line tool

The Line tool can be used for creating series of contiguous notes. To do so, click and drag to draw a line and then release the mouse button.

⇨ The Line tool has several different modes.
To select one of the modes, click on the Line tool icon on the toolbar when the tool is already selected. This opens a pop-up menu from which you can select one of the Line tool modes.
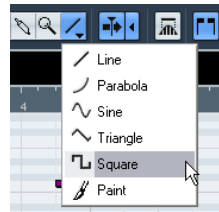
The tool icon will change appearance according to the selected mode.

Mode	Description
Line	This is the default mode for the Line tool. When this mode is selected, you click and drag to create a straight line, in any angle. When you release the mouse button a series of notes will be created, aligned with the line. If Snap is activated, the notes will be spaced and sized according to the Quantize value.
Parabola, Sine, Triangle, Square	These modes insert events along different curve shapes. While they can be used for creating notes, they are probably best suited for controller editing (see "Adding and editing events in the controller display" on page 224).
Paint	Allows you to insert multiple notes by dragging with the mouse button pressed. If Snap is activated, the notes will be positioned and sized according to the Quantize and Length Quantize values. If you press [Ctrl]/[Command] while painting, movement will be restricted to horizontal (i.e. the painted notes will have the same pitch).

Setting velocity values

When you draw notes in the Key Editor, the notes will get the velocity value set in the insert velocity field on the toolbar.

You can use one of four different methods for determining the velocity:

▪ When a tool modifier is assigned for the Select tool– Edit Velocity action (in the Editing–Tool Modifiers page of the Preferences dialog), you can select one or more notes, press the modifier (by default [Ctrl]/[Command]-[Shift]) and click on one of the selected notes to change the velocity.

The cursor changes into a speaker and, next to the note, a field with the velocity value appears – the Note Velocity slider. Move the mouse pointer up or down to change the value. Value changes will be applied to all selected notes, as you can see in the controller lane.

▪ Selecting a predefined velocity value from the insert velocity pop-up menu.

The menu contains five different predefined velocity values. The "Setup…" item opens a dialog that allows you to specify which five velocity values should be available on the pop-up menu. (This dialog can also be opened by selecting "Insert Velocities…" from the MIDI menu.)
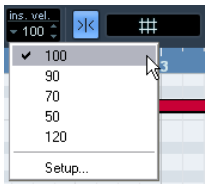
▪ Manually entering the desired velocity value by clicking in the insert velocity field and typing in the desired value.

▪ Using a key command.

You can assign a key command to each of the five available velocity values in the Key Commands dialog (MIDI category – the items Insert Velocity 1–5). This allows for quick switching between different velocity values when entering notes. See for instructions on how to set up key commands.

Selecting notes

Selecting notes is done using any of the following methods:

▪ Use the Arrow tool.

The standard selection techniques apply, like selecting by clicking on the note or using a selection rectangle. Note that when you press [Shift] and click on notes or draw a selection rectangle, these notes will be added to the overall selection. When you press [Ctrl]/[Command] and click on notes or draw a selection rectangle, these notes will be removed from the overall selection (standard Windows behavior).

▪ Use the Select submenu on the Edit menu or context menu.

The Select menu options are:

Option	Description
All	Selects all notes in the edited part.
None	Deselects all events.
In Loop	Selects all notes that are partially or completely inside the boundaries of the left and right locators (only visible if locators are set).
From Start to Cursor	Selects all notes that begin to the left of the project cursor.
From Cursor to End	Selects all notes that end to the right of the project cursor.

▪ You can also use the left and right arrow keys on the computer keyboard to step from one note to another.

If you press [Shift] and use the arrow keys, the current selection will be kept, allowing you to select several notes.

▪ To select all notes of a certain pitch, press [Ctrl]/[Command] and click on the desired key in the keyboard display to the left.

All notes of the corresponding pitch are selected.

You can also press [Shift] and double-click on a note to select all the following notes of the same pitch.

▪ If the option "Auto Select Events under Cursor" is activated in the Preferences (Editing page), all notes "touched" by the project cursor are automatically selected.

Toggle selections

If you want to toggle the selected elements within a selection rectangle, press [Ctrl]/[Command] and enclose the same elements within a new selection rectangle. Once you release the mouse button, the previous selection is deselected and vice versa.
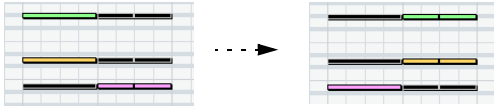
Selecting controllers within the note range

You can select the controllers within the range of the selected notes. The following applies:

▪ When the Auto Select Controllers button is activated on the toolbar, the controllers will always be selected when the respective notes are selected.

▪ A note range lasts until the start of the next note or the end of the part.

▪ Selected controllers for notes are moved when the corresponding notes are moved.

Moving and transposing notes

To move notes in the editor, use any of the following methods:

▪ Click and drag to a new position.
All selected notes will be moved, maintaining their relative positions. If Snap is activated, this determines to which positions you can move the notes, see "Snap" on page 216.

⚠ Note also that you can restrict movement to horizontal or vertical only by holding down [Ctrl]/[Command] while dragging.

▪ Use the up and down arrow keys on the computer keyboard.
This method allows you to transpose the selected notes, without risking to move them horizontally. You can also use the Transpose function (see "Transpose" on page 205) for this. Note that pressing [Shift] and using the up and down arrow keys will transpose notes in steps of one octave.

▪ Use the Move to Cursor function on the Edit menu.
This moves the selected notes to the project cursor position.

▪ Select a note and adjust its position or pitch on the info line.
See "Editing on the info line" on page 221.

▪ Use the Move buttons in the Nudge palette on the toolbar.
This moves the selected note(s) by the amount set on the Quantize pop-up menu.
By default, the Nudge palette is not shown on the toolbar – see "Using the Setup options" on page 298 for more information.

⇨ Note that when you move selected notes to a different position, any selected controllers for these notes will move accordingly.
See also "Moving and copying events" on page 226.

You can also adjust the position of notes by quantizing (see "The Quantizing functions" on page 201).

Duplicating and repeating notes

Notes are duplicated much in the same way as events in the Project window:

▪ Hold down [Alt]/[Option] and drag the note(s) to a new position.
If Snap is activated, this determines to which positions you can copy notes (see "Snap" on page 216).

▪ Selecting Duplicate from the Edit menu creates a copy of the selected note and places it directly after the original.
If several notes are selected, all of these are copied "as one unit", maintaining the relative distance between the notes.

▪ Selecting "Repeat…" from the Edit menu opens a dialog, allowing you to create a number of copies of the selected note(s).
This works like the Duplicate function, but you can specify the number of copies.

▪ You can also perform the Repeat function by dragging: Select the note(s) to repeat, press [Alt]/[Option], click the right edge of the last selected note and drag to the right.
The longer to the right you drag, the more copies are created (as indicated by the tooltip).
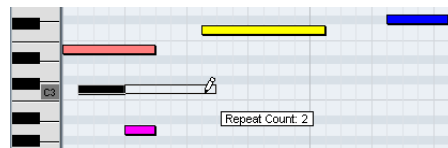
Using cut and paste

You can use the Cut, Copy and Paste options on the Edit menu to move or copy material within a part or between different parts. When you paste copied notes, you can either use the regular Paste function or the function "Paste Time" from the Range submenu of the Edit menu.

▪ "Paste" inserts the copied notes at the project cursor position without affecting existing notes.
▪ "Paste Time" inserts at the project cursor position, but moves (and if necessary, splits) existing notes to make room for the pasted notes.

Selecting "Paste Time" with this data on the clipboard and the project cursor here…

…will give you this.

Resizing notes

To resize a note, use one of the following methods:

▪ Position the arrow tool at the start or end of the note, so that the pointer takes on the shape of a small double arrow. Click and drag to the left or right to resize the note.
This method allows you to resize the note from either direction.

▪ Click with the Pencil tool within the note box and drag to the left or the right (to make the note shorter or longer, respectively).

With both these methods, the resulting length will be a multiple of the Length Quantize value on the toolbar.

▪ Use the Trim Start/End buttons on the Nudge palette on the toolbar.
This resizes the selected note(s) by moving their start or end positions, in steps according to the Length Quantize value on the toolbar. By default, the Nudge palette is not shown on the toolbar – see "Using the Setup options" on page 298 for more information.

▪ Select the note and adjust its length on the info line.
See "Editing on the info line" on page 221 for details on info line editing.

▪ Use the Trim tool, see "Using the Trim tool" on page 215.

Splitting notes

There are three ways to split notes:

▪ Clicking on a note with the Scissors tool splits the note at the position you pointed (taking the Snap setting into account if activated).
If several notes are selected, they are all split at the same position.

▪ If you select "Split at Cursor" from the Edit menu, all notes that are intersected by the project cursor are split at the cursor position.

▪ If you select "Split Loop" from the Edit menu, all notes that are intersected by the left or right locator are split at the locator positions.

Gluing notes

Clicking on a note with the Glue Tube tool will "glue it together" with the next note of the same pitch. The result will be one long note spanning from the start of the first note to the end of the second note and with the properties (velocity, etc.) of the first note.

Muting notes

Individual notes can be muted in the Key Editor, as opposed to muting an entire MIDI part in the Project window. This allows you to exclude notes from playback, but keep the option to bring them back again at any time. To mute a note, use one of the following methods:

▪ Click on it with the Mute tool.

▪ Drag a rectangle with the Mute tool, enclosing all notes you want to mute.

▪ Select the note(s) and choose Mute from the Edit menu.
The default key command for this is [Shift]-[M].
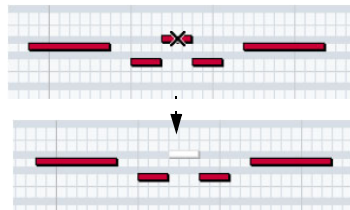
Muted notes are "dimmed" in the note display.

To unmute a note, either click it or enclose it with the Mute tool, or select it and choose Unmute from the Edit menu. The default key command for this is [Shift]-[U].

Deleting notes

To delete notes, either click on them with the Erase tool or select them and press [Backspace].

Editing on the info line

The info line shows the values and properties of the selected event(s). If a single event is selected, its values are displayed on the info line. If several events are selected, the info line shows the values of the first of these events in yellow.
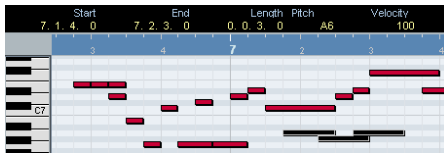
Several events are selected.

You can edit the values on the info line using regular value editing. This allows you to move, resize, transpose or change velocity of events in a very precise manner. It is also possible to click the Pitch or Velocity field in the info line and play a note on your MIDI keyboard – the pitch or velocity will be adjusted according to the note you played.

⇨ If you have several events selected and change a value, all selected events will be changed by the set amount.

⇨ If you have several events selected, hold down [Ctrl]/[Command] and change a value, the change will be absolute.

In other words, the value setting will be the same for all selected events.

How the Key Editor handles drum maps

When a drum map is assigned to a MIDI or instrument track (see "Working with drum maps" on page 231), the Key Editor will display the drum sound names as defined by the drum map.

In Cubase Essential, the name of the drum sound is displayed in the following locations:

In the info line, in the Pitch field.   In the Mouse Note Value field.
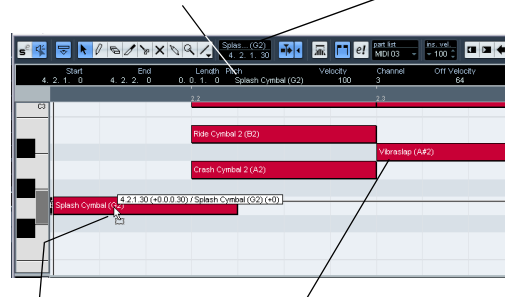
When dragging a note.   In the event itself (provided that the zoom factor is high enough).

This allows you to use the Key Editor for drum editing, e.g. when editing drum note lengths (which may be necessary for some external instruments) or when editing several parts, to identify drum events.

Editing notes via MIDI

You can change the properties of notes via MIDI. For example, this can be a fast way to get the right velocity value, since you will hear the result even as you edit:

1. Select the note you want to edit.

2. Click on the MIDI Input button on the toolbar to enable editing via MIDI.

3. Use the note buttons on the toolbar to decide which properties should be changed by the MIDI input.

You can enable editing of pitch, note-on and/or note-off velocity.

With this setting, the edited notes will get the pitch and velocity values of the notes input via MIDI, but the note-off velocities will be kept as they are.

4. Play a note on your MIDI instrument.

The note selected in the editor will get the pitch, velocity and/or note-off velocity of the played note.

The next note in the edited part is automatically selected, making it easy to quickly edit a series of notes.

▪ If you want another try, select the note again (e.g. by pressing the left arrow key on the computer keyboard) and again play a note on your MIDI instrument.

Step input

Step input, or step recording, is when you enter notes one at a time (or one chord at a time) without worrying about the exact timing. This is useful, for example, when you know the part you want to record but are not able to play it exactly as you want it.

Proceed as follows:

1. Click the Step Input button on the toolbar to activate Step Input mode.

2. Use the note buttons to the right to decide which properties should be included when you input the notes.
For example, you may not want to include the velocity and/or note-off velocity of the played notes. It is also possible to turn off the pitch property, in which case all notes will get the pitch C3, no matter what you play.

3. Click anywhere in the note display to set the start position (the desired position of the first note or chord).
The step input position is shown as a blue line in the note display, and in the lower mouse pointer display in the toolbar.
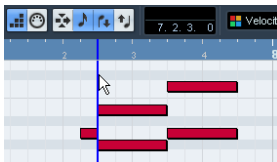
4. Specify the desired note spacing and length with the Quantize and Length Quantize pop-up menus.
The notes you input will be positioned according to the Quantize value and have the length set with the Length Quantize value. For instance, if you set Quantize to 1/8 notes and Length Quantize to 1/16 note, the notes will be sixteenth notes, appearing on each eighth note position.

5. Play the first note or chord on your MIDI instrument.
The note or chord appears in the editor and the step input position advances one quantize value step.

⇨ If Move Insert Mode is activated, all notes to the right of the step input position will be moved to "make room" for the inserted note or chord.
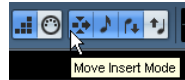
Move Insert Mode is activated.

6. Continue in the same way with the rest of the notes or chords.
You can adjust the Quantize or Length Quantize value as you go along, to change the timing or note lengths. You can also move the step input position manually by clicking anywhere in the note display.

▪ To insert a "rest", press the right arrow key on the computer keyboard.
This advances the step input position one step.

7. When you are done, click the Step Input button again to deactivate step input.

Editing in the controller display

About controller lanes

By default, the controller display has a single lane, showing one event type at a time. However, you can add lanes by clicking the plus button or by opening the context menu and selecting "Create New Controller Lane". The use of several controller lanes allows you to view and edit different controllers at the same time.
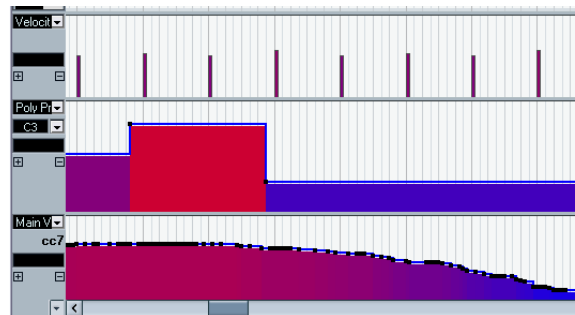
The controller display with three lanes set up

▪ To remove a lane, click on the minus sign or open the context menu and select "Remove this Lane".
This hides the lane from view – it does not affect the events in any way.

▪ If you remove all lanes, the controller display will be completely hidden.
To bring it back again, select "Create New Controller Lane" from the context menu.

▪ Editing the events in the controller display is much like editing automation data on an automation track in the Project window (except for velocity values, see).

Selecting the event type

Each controller lane shows one event type at a time. To select which type should be displayed, use the event type pop-up menu to the left of the lane.
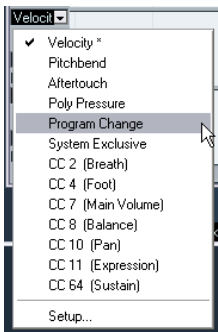
▪ Selecting "Setup…" opens a dialog in which you can specify which continuous controller event types should be available on the pop-up menu.

Controller types in this list are already listed on the pop-up menu.

Controller types in this list are not listed on the pop-up menu.
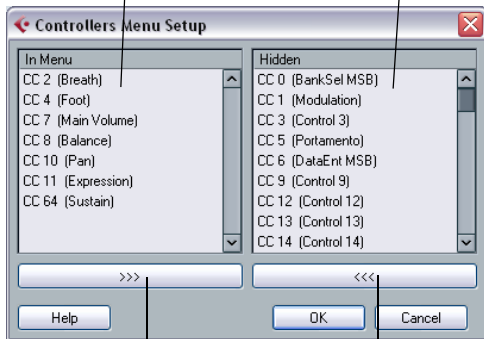
Click this button to remove the controller type selected in the left list from the pop-up menu.

Click this button to add the selected controller type to the pop-up menu.

▪ Each MIDI track has its own controller lane setup (number of lanes and selected event types).
When you create new tracks, they get the controller lane setup used last.

Controller lane presets

Once you have added the required number of controller lanes and selected the event types you need, you can store this combination as a controller lane preset. You could for example have a preset with one velocity lane only, another with a combination of velocity, pitchbend and modulation, and so on. This can make working with controllers much quicker.

▪ To add the current controller lane setup as a preset, pull down the pop-up menu to the left of the horizontal scroll-bar and select "Add".
Enter a name for the preset in the dialog that appears and click OK.

▪ To apply a stored preset, select it from the pop-up menu.
This immediately brings up the controller lanes and event types in the preset.

▪ To remove or rename presets, select "Organize…" from the pop-up menu.

Editing velocity values

When "Velocity" is selected, the lane shows the velocity of each note as a vertical bar.

Velocity values are edited with the Pencil or the Line tool. The different tools and Line tool modes offer several possibilities, as listed below:

⇨ The Arrow tool automatically switches to the Pencil tool when you move the pointer into the controller display.
If you want to use the Arrow tool to select events in the controller display, press [Alt]/[Option].

⇨ If the Speaker icon (Acoustic Feedback) is activated on the toolbar, the notes will be played back when you adjust the velocity, allowing you to audition your changes.

• You can use the Pencil tool to change the velocity of a single note: click on its velocity bar and drag the bar up or down.
While you drag, the current velocity value is shown in the display to the left.

• You can use the Pencil tool or the Line tool in Paint mode to change the velocity values of several notes by painting a "freehand curve".
When editing velocity, these two methods have the same functionality.
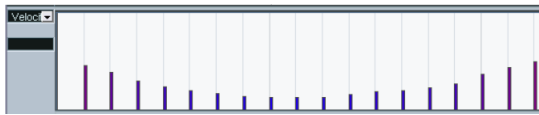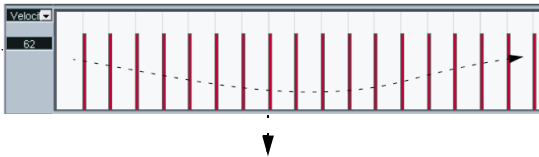
• Use the Line tool in Line mode for creating linear velocity ramps.
Click where you want the ramp to start and drag the cursor to where you want the ramp to end. When you release the mouse button, the velocity values are aligned with the line between the two points.
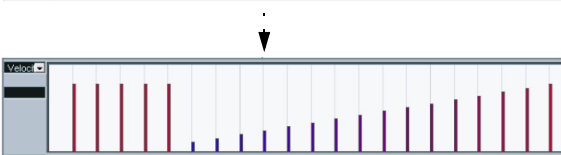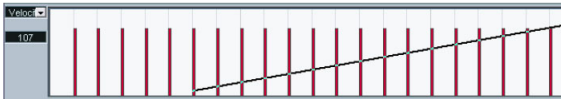
• Parabola mode works in the same way, but aligns the velocity values to a Parabola curve instead.
Use this for smooth, "natural" velocity fades, etc.
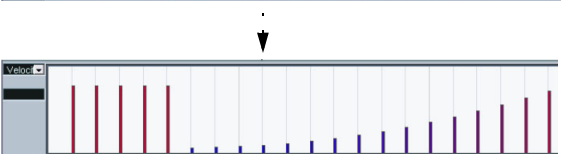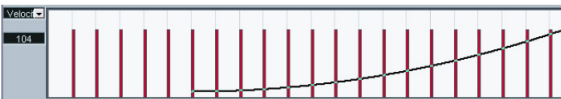
• The remaining three Line tool modes (Sine, Triangle and Square) align the velocity values to continuous curve shapes (see below).

⇨ If there is more than one note at the same position (e.g. a chord), their velocity bars will overlap in the controller lane.
If none of the notes are selected, all notes at the same position will be set to the same velocity value when you draw. To edit the velocity of only one of the notes at the same position, first select the note in the note display. Now, editing will only affect the velocity of the selected note.

You can also adjust the velocity of a single note by selecting it and changing its velocity value on the info line.

Adding and editing events in the controller display

When any option other than "Velocity" is selected for a controller lane, you can create new events or edit the values of existing events using the Pencil tool or the Line tool in its various modes:

• Click with the Pencil tool or the Line tool in Paint mode to create a new event.

• Press [Alt]/[Option] and use the Pencil tool or the Line tool in Paint mode to modify the value of an event (without creating a new one).
Note that you can click and drag to change or add multiple events, draw controller curves, etc. You can press or release [Alt]/[Option] while drawing, switching dynamically between "edit mode" and "create mode".

If you want to enter or adjust a single event, click once with the Pencil tool or the Line tool in Paint mode.

When you move the pointer in the controller lane, the corresponding value is displayed in this field.

If you want to "paint a curve", drag with the tool in the controller lane (keeping the mouse button pressed):
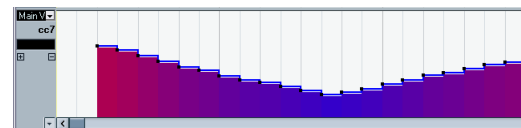
⇨ With the Pencil tool and the Line tool in Paint mode, the quantize value determines the "density" of created controller curves (if Snap is activated, see "Snap" on page 216).

For very smooth curves, you should use a small quantize value or turn off Snap. However, this will create a very large number of MIDI events, which can cause MIDI playback to "stutter" in some situations. A medium-low density is often sufficient.

▪ Clicking and dragging with the Line tool in Line mode shows a line in the controller lane, and creates events with values aligned to this line.

This is the best way to draw linear controller ramps. If you press [Alt]/[Option], no new events are created – use this mode for modifying existing controller curves.

Converting a controller curve to a ramp using the Line tool.
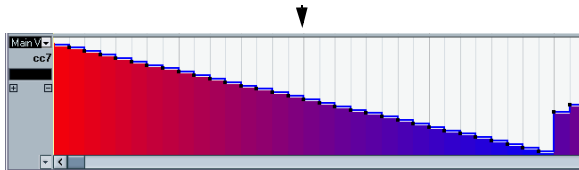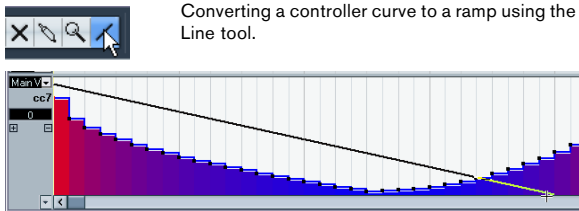
▪ The Parabola mode works in the same way, but aligns the values to a parabola curve instead, giving more "natural" curves and fades.

Note that the result depends on the direction from which you draw the parabola.
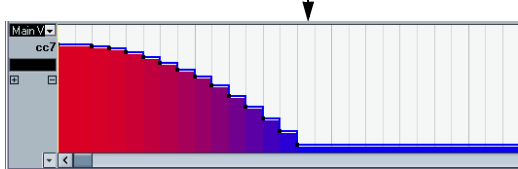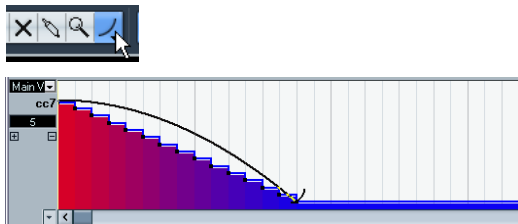
▪ In Parabola mode, you can use modifier keys to determine the shape of the parabola curve.

If you press [Ctrl]/[Command], the parabola curve will be reversed. If you press [Alt]/[Option]-[Ctrl]/[Command] while Snap is activated, you can change the position of the whole curve (in both cases the snap value for the positioning will be a quarter of the quantize value). If you press [Shift], the exponent will be increased or decreased.

⇨ In Line and Parabola modes, the length quantize value determines the "density" of created controller curves (if Snap is activated).

For very smooth curves, you should use a small length quantize value or turn off Snap. To avoid over-dense controller curves (which may cause MIDI playback to "stutter"), use a medium-low density.

▪ The Sine, Triangle and Square modes create events with values aligned to continuous curves.

In these modes, the quantize value determines the period of the curve (the length of one curve "cycle") and the length quantize value determines the density of the events (the lower the length quantize note value, the smoother the curve).

▪ In Sine, Triangle and Square mode you can also use modifier keys to determine the shape of the curve.

If you press [Ctrl]/[Command] you can change the phase of the beginning of the curve, if you press [Alt]/[Option]-[Ctrl]/[Command] while snap is activated you can change the position of the whole curve (in both cases the snap value for the positioning will be a quarter of the quantize value).
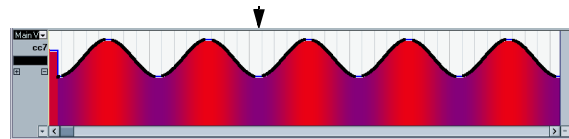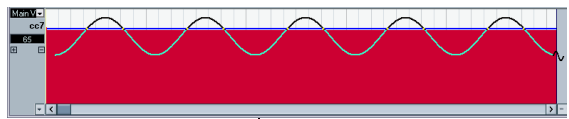
⇨ You can also set the curve period freely by holding down [Shift] when you insert events in Sine, Triangle or Square mode.

Activate Snap, [Shift]-click and drag to set the length of one period. The period length will be a multiple of the quantize value.

▪ In Triangle and Square mode, you can press [Shift]-[Ctrl]/[Command] to change the maximum position of the triangle curve (to create sawtooth curves) or the pulse of the square curve. As in other modes, you can press [Alt]/

[Option] if you want to change the existing events rather than creating new ones. Again, the snap value for the positioning will be a quarter of the quantize value.

Moving and copying events

You can move or duplicate events in a controller lane, much like you can with notes:

1. Click with the Arrow tool to select the events you want to cut or copy.
You can also click and drag to create a selection rectangle encompassing the desired events.

2. Click on a curve point and drag the events to move them.
If Snap is activated, this determines to which positions you can move the events (see "Snap" on page 216).

⚠ Remember that a non-note event does not have a length – it is "valid" until the next event (see "The controller display" on page 214).

⚠ When the Auto Select Controllers button is activated in the Key Editor toolbar, selecting notes will also select the corresponding controller events. Moving events (either using cut/copy/paste or drag & drop) in the note display will also move the corresponding controller events (see also "Selecting controllers within the note range" on page 219).

Using cut, copy and paste

You can use the standard Cut, Copy and Paste options on the Edit menu to move or copy events in the controller display:

1. Select the events you want to cut or copy.

2. Select Cut or Copy from the Edit menu.

3. If you want to paste the events into another MIDI part, open that part in another Key Editor window.

4. Position the project cursor where you want to paste the events.

5. Select Paste from the Edit menu.
The events on the clipboard are added, starting at the project cursor position, maintaining their relative distances. If a pasted event ends up at the same position as an existing event of the same type, the old event is replaced.

Deleting events in the controller display

You delete events by clicking on them with the Erase tool or by selecting them and pressing [Backspace]. Please note:

▪ Deleting a controller event makes the last event before this valid up until the next event. It does not "zero" any controller changes.

▪ You can delete notes by deleting their velocity bars in the controller display.
Please be aware that if there is more than one note on the same position, there may still only be one velocity bar visible – make sure you delete only the desired notes!

Editing continuous controllers on the controller lane

When a continuous controller is selected for a controller lane, additional data is displayed on the controller lane. This is due to the fact that MIDI controller data can be recorded (or entered) either for an automation track or for a MIDI part.

The following applies:

▪ In the event type pop-up menu, an asterisk is displayed next to the controller name if automation data already exists for this controller.
This can be either controller data you entered in a MIDI editor (the data will then be displayed on the controller lane), or controller data recorded on an automation track in the Project window (in which case no events are displayed on the controller lane).
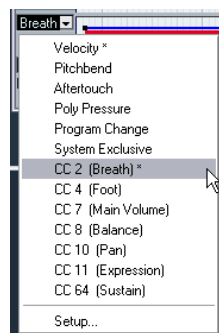
For this controller, automation data is available.

▪ On the controller lane, you can also see the controller curve that is applied before the part starts. That way, you know which controller value (if any) is currently being used at the starting point of the part so that you can choose the start value accordingly.

Adding and editing Poly Pressure events

Poly Pressure events are special, in that they "belong to" a specific note number (key). That is, each Poly Pressure event has two editable values: the note number and the amount of pressure. Therefore, when Poly Pressure is selected on the event type pop-up menu, there are two value fields to the left of the controller display, one for the note number and one for the amount.
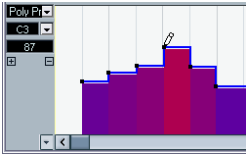
To add a new Poly Pressure event, proceed as follows:

1. Select Poly Pressure on the event type pop-up menu.

2. Set the note number by clicking on the keyboard display.
The selected note number is displayed in the upper value field to the left of the controller display. Note that this only works for the topmost lane. If you have selected "Poly Pressure" for several controller lanes, you have to type in the desired note number directly in the lower value field to the left of each lane.

3. Use the Pencil tool to add a new event, just as when adding regular controller events.

To view and edit existing Poly Pressure events, proceed as follows:

1. Select Poly Pressure on the event type pop-up menu.

2. Click on the arrow button next to the note number field to the left of the controller lane.
A pop-up menu appears, listing all note numbers for which there already are Poly Pressure events.

3. Select a note number from the pop-up menu.
The Poly Pressure events for the selected note number are shown in the controller lane.

4. Use the Pencil tool to edit the events as usual.
Press [Alt]/[Option] to edit existing events without adding any new ones.

▪ Poly Pressure events can also be added and edited in the List Editor.

The Drum Editor – Overview
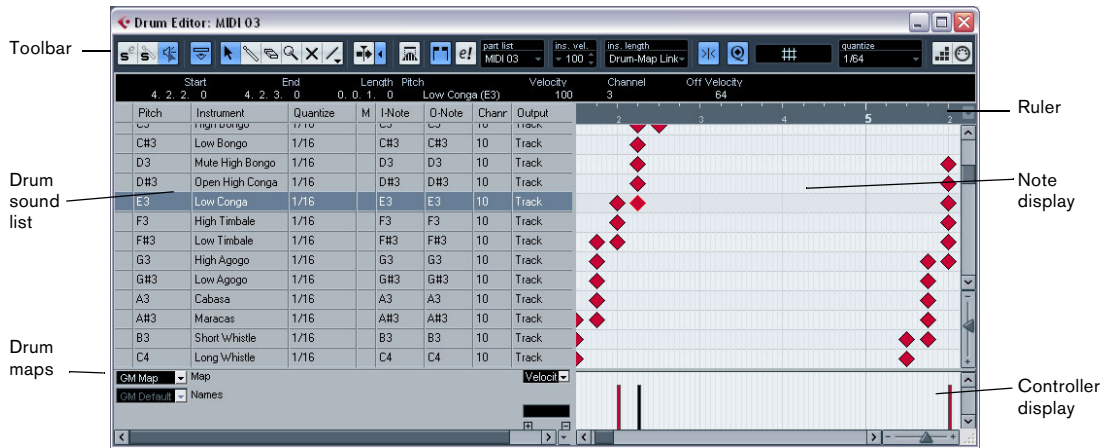
The toolbar and info line

These are much the same as the toolbar and info line in the Key Editor (see "The Key Editor – Overview" on page 213), with the following differences:

▪ The Drum Editor has no Pencil tool – instead there is a Drumstick tool (for entering and removing notes) and a Line tool with various line and curve modes (for drawing several notes in one go or editing controller events).

▪ There are no Scissors and Glue Tube tools in the Drum Editor.

▪ As in the Key Editor, the mouse pointer display in the toolbar shows the pitch and position of the pointer, but the pitch is shown as a drum sound name rather than a note number.

▪ The Use Global Quantize button allows you to select which value should be used when Snap is activated – the global quantize value on the toolbar or the individual quantize values for the drum sounds.

▪ Instead of a Length Quantize pop-up, there is an Insert Length pop-up menu.
It is used in much the same way, as described on the following pages.

The drum sound list

A drum sound list for GM Drum Map

The purpose of the Drum Editor is to edit MIDI tracks where each note (pitch) plays a separate sound, as is typically the case with a MIDI drum kit. The drum sound list to the left lists all drum sounds by name (according to the selected drum map or name list – see below), and lets you adjust and manipulate the drum sound setup in various ways.

Please note the following:

▪ The number of columns in the list depends on whether a drum map is selected for the track or not.
See "Working with drum maps" on page 231.

▪ You can reorder the columns by dragging the column headings, and resize them by dragging the dividers between the column headings.

The note display
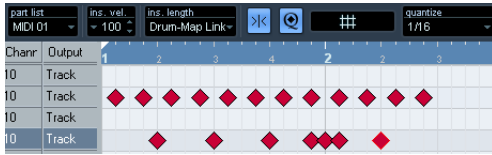
The note display of the Drum Editor displays notes as diamond symbols. The vertical position of the notes corresponds to the drum sound list to the left, while the horizontal position corresponds to the note's position in time, just as in the Key Editor. Note, however, that the diamond symbols do not indicate the length of the notes. This makes sense, since drum sounds most often are "one-shot" samples that play to their end regardless of the note lengths.

Drum map and name pop-up menus

Below the drum sound list you will find two pop-up menus, used for selecting a drum map for the edited track or (if no drum map is selected) a list of drum sound names. For an explanation of drum maps, see "Working with drum maps" on page 231.

Controller display

The controller display in the Drum Editor is the same as in the Key Editor. You can add or remove controller lanes via the context menu, and create and edit events as described in the section "Editing in the controller display" on page 222.

▪ Note that when you select a line in the drum sound list (to the left of the event display), only the velocity controller events belonging to the note events on this line are displayed in the controller display.

▪ You can select more than one line in the drum sound list (using [Shift] or [Ctrl]/[Command] as usual), which will show all velocity controller events for all notes on all selected lines.
This will help you when having to adjust the controller values between different drum sounds.

Drum Editor operations

The basic handling (zooming, playback, auditioning, etc.) is the same as in the Key Editor (see "Key Editor operations" on page 215). The following sections describe the procedures and features specific to the Drum Editor.

Creating and editing notes

The standard way of entering notes in the Drum Editor is to click with the Drumstick tool.
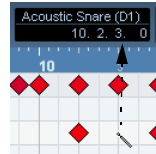
When you move the pointer in the note display, its bar position and drum sound is indicated in the toolbar, making it easy to find the right sound and position.

The position of the created note depends on the following factors:

▪ If Snap is deactivated on the toolbar, the note will appear exactly where you clicked.
In this mode, notes can be positioned freely.

▪ If Snap is activated and Use Global Quantize is deactivated on the toolbar, the note will snap to positions according to the quantize value set for the sound in the drum sound list.
You can set up different quantize values for different drum sounds. You may for example want hi-hat notes snap to sixteenth notes, but snare and bass drum snap to eighth notes.

▪ If Snap and Use Global Quantize are activated, the note will snap to positions according to the Quantize setting on the toolbar (next to the Use Global Quantize button).

The length of the inserted note is determined by the Insert Length setting on the toolbar. However, if this is set to "Drum-Map Link", the note will get the length of the quantize value for the drum sound.

⇨ You can quickly audition the drum sounds by clicking in the leftmost column in the drum sound list.
This plays the corresponding note.

⇨ Clicking with the Drumstick tool on an existing note will remove it.
This makes drum pattern editing very quick and intuitive.

Setting velocity values

The notes you enter will get the insert velocity value set in the insert velocity field on the toolbar – to speed up things you may want to assign key commands to the insert velocity options, see "Setting velocity values" on page 218.

Selecting notes

Selecting notes is done by any of the following methods:

• Use the Arrow tool.
The standard selection techniques apply.

• Use the Select submenu on the context menu (see "Selecting notes" on page 218).

• Use the left and right arrow keys on the computer keyboard to step from one note to the next or previous note.
If you press [Shift] and use the arrow keys, the current selection will be kept, allowing you to select several notes.

• You can also press [Shift] and double-click on a note to select all the following notes for the same drum sound.

• If the option "Auto Select Events under Cursor" is activated in the Preferences (Editing page), all notes currently "touched" by the project cursor are automatically selected.

Moving, duplicating or repeating notes

To move or copy notes in the editor (to other positions or other drum sounds), you use the same methods as in the Key Editor: click and drag, use the arrow keys or Edit menu functions, etc. – see "Moving and transposing notes" on page 219. To help you identify the right notes, the drum sound names as defined in the drum map are displayed in the Pitch field on the Drum Editor info line and, when dragging notes in the event display, in the text fields displayed next to the mouse pointer.

There is one other thing to note:

When you move or copy several selected notes by dragging them and Snap is activated but Use Global Quantize is deactivated, the notes will snap to positions according to the quantize values for the drum sounds. If the moved/copied notes have different quantize values, the largest value will determine snapping. For example, if you are moving two notes, with the quantize values 1/16 and 1/4 respectively, the notes will snap to quarter notes (1/4).

⇨ You can also adjust the position of notes by quantizing (see "The Quantizing functions" on page 201).
Again, which quantize value is used depends on whether Global Quantize is used.

Muting notes and drum sounds

You can mute individual notes by clicking or enclosing them with the Mute tool or by using the Mute function on the Edit menu (see "Muting notes" on page 220).

Furthermore, if a drum map is selected (see "Selecting a drum map for a track" on page 233), the drum sound list will have a Mute column. Click in the Mute column for a drum sound to mute that sound. Clicking the Drum Solo button will mute all drum sounds other than the selected one.

Pitch	Instrument	Quantize	Mute	I-Note
C1	Bass Drum	1/16		C1
C#1	Side Stick	1/16	●	C#1
D1	Acoustic Snare	1/16		D1
D#1	Hand Clap	1/16	○	D#1
E1	Electric Snare	1/16		E1

Muted drum sounds

⚠ Please note that the mute state for drum sounds is part of the drum map, so any other tracks using the same map will also be affected.

Deleting notes

To delete notes, click on them with the Drumstick or Erase tool, or select them and press [Backspace].

Other editing methods

As in the Key Editor, you can edit notes on the info line or via MIDI, and enter notes using step input, see "Editing on the info line" on page 221.

Working with drum maps

Background

A drum kit in a MIDI instrument is most often a set of different drum sounds with each sound placed on a separate key (i.e. the different sounds are assigned to different MIDI note numbers). One key plays a bass drum sound, another a snare and so on.

Unfortunately, different MIDI instruments often use different key assignments. This can be troublesome if you have made a drum pattern using one MIDI device, and then want to try it on another. When you switch the device, it is very likely that your snare drum becomes a ride cymbal, or your hi-hat becomes a tom, etc. – just because the drum sounds are distributed differently in the two instruments.

To solve this problem, and simplify several aspects of MIDI drum kits (like using drum sounds from different instruments in the same "drum kit"), Cubase Essential features so-called drum maps. A drum map is a list of drum sounds, with a number of settings for each sound. When you play back a MIDI track for which you have selected a drum map, the MIDI notes are "filtered" through the drum map before being sent to the MIDI instrument. Among other things, the map determines which MIDI note number is sent out for each drum sound, and so which sound is played in the receiving MIDI device.

A solution to the problem above would therefore be to set up drum maps for all your instruments. When you want to try your drum pattern on another instrument, you simply switch to the corresponding drum map and your snare drum sound will remain a snare drum sound.

Drum map settings

A drum map consists of settings for 128 drum sounds (one for each MIDI note number). To get an overview of these settings, open the Drum Editor and use the Map pop-up menu below the drum sound list to select the "GM Map" drum map.
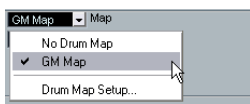
This drum map is set up according to the General MIDI standard. For information on how to load, create and select other drum maps, see "Managing drum maps" on page 233.

Now, take a look at the drum sound list (you may have to drag the divider between the list and the note display to the right to see all columns). The columns show the settings of the drum map for each sound.

Pitch	Instrument	Quantize	Mute	I-Note	O-Note	Channel	Output
C1	Bass Drum	1/16		C1	C1	10	Track
C#1	Side Stick	1/16		C#1	C#1	10	Track
D1	Acoustic Snare	1/16		D1	D1	10	Track
D#1	Hand Clap	1/16		D#1	D#1	10	Track
E1	Electric Snare	1/16		E1	E1	10	Track
F1	Low Floor Tom	1/16		F1	F1	10	Track
F#1	Closed Hi-Hat	1/16		F#1	F#1	10	Track
G1	High Floor Tom	1/16		G1	G1	10	Track
G#1	Pedal Hi-Hat	1/16		G#1	G#1	10	Track
A1	Low Tom	1/16		A1	A1	10	Track
A#1	Open Hi-Hat	1/16		A#1	A#1	10	Track
B1	Low Middle Tom	1/16		B1	B1	10	Track

Here's a brief description (details follow below):

Column	Description
Pitch	The actual note number of the drum sound. This is what links notes on a MIDI track to drum sounds. For example, with the above drum map, all MIDI notes with the pitch C1 would be mapped to the Bass Drum sound.
Instrument	The name of the drum sound.
Quantize	This value is used when entering and editing notes as described in the sections "Creating and editing notes" on page 229 and "Moving, duplicating or repeating notes" on page 230.
Mute	Allows you to mute a drum sound, excluding it from playback, see "Muting notes and drum sounds" on page 230.
I-Note	This is the "input note" for the drum sound. When this MIDI note is sent into Cubase Essential, (i.e. played by you), the note will be mapped to the corresponding drum sound (and automatically transposed according to the Pitch setting for the sound).
O-Note	This is the "output note", i.e. the MIDI note number that is sent out every time the drum sound is played back.
Channel	The drum sound will be played back on this MIDI channel.
Output	The drum sound will be played back on this MIDI output. If you set this to "Default", the MIDI output selected for the track will be used.

⇨ All settings in a drum map (except the pitch) can be changed directly in the drum sound list or in the Drum Map Setup dialog (see "The Drum Map Setup dialog" on page 233).

Note that the changes you make will affect all tracks that use the drum map.

About pitch, I-note and O-note

This can be a somewhat confusing area, but once you have grasped how it all works it is not very complicated. Going through the following "theory" will help you make the most out of the drum map concept – especially if you want to create your own drum maps.

As mentioned earlier, a drum map is a kind of "filter", transforming notes according to the settings in the map. It does this transformation twice; once when it receives an incoming note (i.e. when you play a note on your MIDI controller) and once when a note is sent from the program to the MIDI sound device.

In the following example, we have modified the drum map, so that the Bass Drum sound has different pitch, I-note and O-note values.

Pitch	Instrument	Quantize	M	I-Note	O-Note	Channel
C1	Bass Drum	1/16		A1	B0	10
C#1	Side Stick	1/16		C#1	C#1	10
D1	Acoustic Snare	1/16		D1	D1	10

I-notes (input notes)

Let's look at what happens on input: When you play a note on your MIDI instrument, the program will look for this note number among the I-notes in the drum map. If you play the note A1, the program will find that this is the I-note of the Bass Drum sound.

This is where the first transformation happens: the note will get a new note number according to the Pitch setting for the drum sound. In our case, the note will be transformed to a C1 note, because that is the pitch of the Bass Drum sound. If you record the note, it will be recorded as a C1 note.

O-notes (output notes)

The next step is the output. This is what happens when you play back the recorded note, or when the note you play is sent back out to a MIDI instrument in realtime (MIDI Thru):

The program checks the drum map and finds the drum sound with the pitch of the note. In our case, this is a C1 note and the drum sound is the Bass Drum. Before the note is sent to the MIDI output, the second transformation takes place: the note number is changed to that of the O-note for the sound. In our example, the note sent to the MIDI instrument will be a B0 note.

Usage

Again, the purposes are different for I-notes and O-notes:

⇨ Changing the I-note settings allows you to choose which keys will play which drum sounds, when playing or recording from a MIDI instrument.

For example, you may want to place some drum sounds near each other on the keyboard so that they can be easily played together, move sounds so that the most important sounds can be played from a short keyboard, play a sound from a black key instead of a white, and so on.
If you never play your drum parts from a MIDI controller (but draw them in the editor) you need not care about the I-note setting.

⇨ The O-note settings let you set things up so that the "Bass Drum" sound really plays a bass drum.

If you are using a MIDI instrument in which the bass drum sound is on the C2 key, you set the O-note for the Bass Drum sound to C2. When you switch to another instrument (in which the bass drum is on C1) you want the Bass Drum O-note set to C1. Once you have set up drum maps for all your MIDI instruments, you need not care about this anymore – you just select another drum map when you want to use another MIDI instrument for drum sounds.

The channel and output settings

You can set separate MIDI channels and/or MIDI outputs for each sound in a drum map. The following rules apply:

▪ When a drum map is selected for a track, the MIDI channel settings in the drum map override the MIDI channel setting for the track.

In other words, the MIDI channel setting you make in the Track list or Inspector for the track is normally disregarded. If you want a drum sound to use the channel of the track, set it to channel "Any" in the drum map.

▪ If the MIDI output is set to "default" for a sound in a drum map, the sound will use the MIDI output selected for the track.

Selecting any other option allows you to direct the sound to a specific MIDI output.

By making specific MIDI channel and output settings for all sounds in a drum map, you can direct your drum tracks directly to another MIDI instrument simply by selecting another drum map – you need not make any channel or output changes for the actual track.

⇨ To select the same MIDI channel for all sounds in a drum map, click in the Channel column, press [Ctrl]/ [Command] and select the desired channel.

All drum sounds will be set to this MIDI channel. The same procedure can be used for selecting the same MIDI output for all sounds as well.

It can also be useful to select different channels and/or outputs for different sounds. This allows you to construct drum kits with sounds from several different MIDI devices, etc.

Managing drum maps

Selecting a drum map for a track

To select a drum map for a MIDI track, use the Map pop-up menu in the Inspector or in the Drum Editor.

Selecting "No Drum Map" turns off the drum map functionality in the Drum Editor. Even if you do not use a drum map, you can still separate sounds by name using a name list (see "Using drum name lists" on page 234).

⚠️ Initially, the Map pop-up menu will only contain one map: "GM Map". However, you will find a number of drum maps included on the program DVD – how to load these is described below.

The Drum Map Setup dialog

To set up and manage your drum maps, select Drum Map Setup from the Map pop-up menu or the MIDI menu. This opens the following dialog:
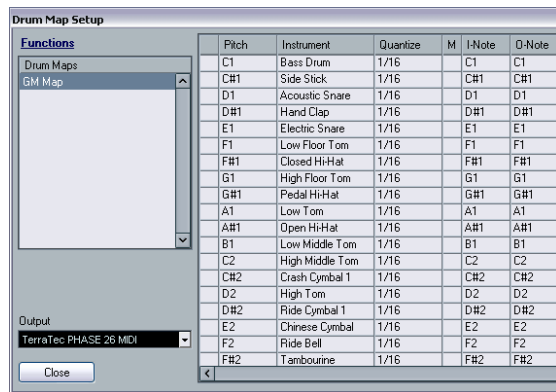
The Drum Map Setup dialog

This is where you load, create, modify and save drum maps. The list to the left shows the currently loaded drum maps; selecting a drum map in the list displays its sounds and settings to the right.

⇨ The settings for the drum sounds are exactly the same as in the Drum Editor (see "Drum map settings" on page 231).

As in the Drum Editor, you can click the leftmost column to audition a drum sound. Note: if you audition a sound in the Drum Map Setup dialog, and the sound is set to MIDI output "Default", the output selected on the Output pop-up menu in the lower left corner will be used. When auditioning a Default output sound in the Drum Editor, the MIDI output selected for the track will be used, as described in section "The channel and output settings" on page 232.

Open the Functions pop-up menu in the top left corner to open a list of available functionalities:

Button	Description
New Map	Click this to add a new drum map to the project. The drum sounds will be named "Sound 1, Sound 2" and so on, and have all parameters set to default values. The map will be named "Empty Map", but you can rename it by clicking and typing in the list.
New Copy	Adds a copy of the currently selected drum map. This is probably the quickest way to create a new drum map: select the map that is similar to what you want, create a copy, change the desired drum sound settings and rename the map in the list.
Remove	Removes the selected drum map from the project.
Load	Opens a file dialog, allowing you to load drum maps from disk. On the Cubase Essential DVD you will find a number of drum maps for different MIDI instruments – use this function to load the desired maps into your project.
Save	Opens a file dialog for saving the drum map selected in the list. If you have created or modified a drum map, you should use this function to save it as a file on disk – this allows you to load it into other projects. Drum map files have the extension ".drm".
Init Display Notes	Allows you to reset the Display Notes entry to the original setting, i.e. the Pitch entry.
Close	Closes the dialog.

⇨ Drum maps are saved with the project files. If you have created or modified a drum map, you should use the Save function to store it as a separate XML file, available for loading into other projects.

If you always want to have the same drum map(s) included in your projects, you may want to load these into the template – see "Save as Template" on page 289.

O-Note Conversion

This function on the MIDI menu goes through the selected MIDI part(s) and sets the actual pitch of each note according to its O-note setting. This is useful if you want to convert a track to a "regular" MIDI track (with no drum map) and still have the notes play back the correct drum sound. A typical application is if you want to export your MIDI recording as a standard MIDI file (see "Exporting and importing standard MIDI files" on page 294) – by first performing an O-Note Conversion you make sure that your drum tracks play back as they should when they are exported.

Using drum name lists

Even if no drum map is selected for the edited MIDI track, you can still use the Drum Editor if needed. As previously mentioned, the drum sound list will then only have four columns: Audition, Pitch, Instrument (drum sound name) and Quantize. There will be no I-note and O-note functionality.

In this mode, the names shown in the Instrument column depend on the selection on the Names pop-up menu, just below the Map pop-up in the Drum Editor.
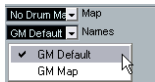
The options on this pop-up menu are the currently loaded drum maps plus a "GM Default" item which is always available. This means you can use the drum sound names in any loaded drum map without using I-notes and O-notes, if you want to.

The List Editor – Overview
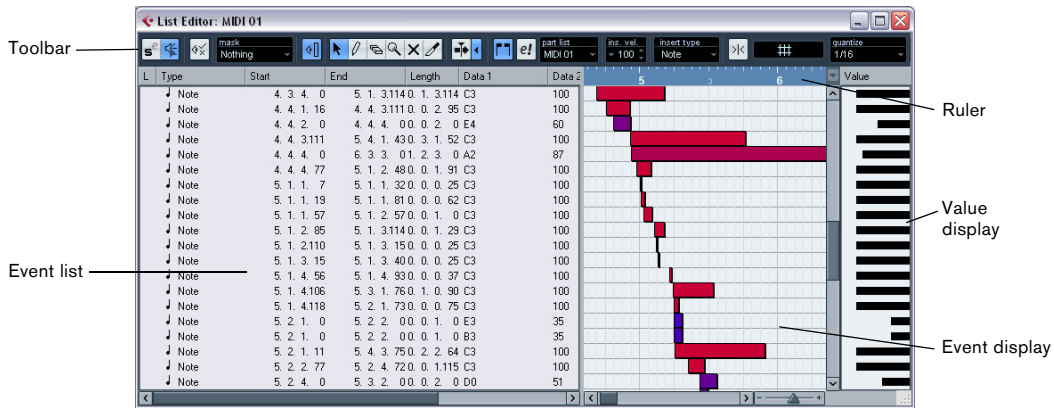
The toolbar

The toolbar contains several items that are the same as in the Key Editor (edit solo, snap, quantize settings, etc.). These are described earlier in this chapter. The following toolbar items are unique to the List Editor:

• The Insert pop-up menu is used when creating new events.
This is where you determine what type of event to add (see "Inserting events" on page 236).

• The Mask pop-up menu and Filter view (Show Filter View button) allow you to hide events from view, based on their type and other properties.
See "Filtering" on page 237.

• The Value View button can be used for hiding and showing the Value display (see below).

The List Editor has no info line (numerical editing is available in the list instead).

⇨ If you see an empty or incomplete list of items although the items are visible in the Key Editor, check if you have activated any filters (see "Filtering" on page 237).

The event list

This lists all events in the selected MIDI part(s), in the order (from top to bottom) in which they are played back. You can edit the event properties by using regular value editing, see "Editing in the list" on page 236.

The event display

This shows the events graphically. The vertical position of an event in the display corresponds to its entry in the list (i.e. to the playback order), while the horizontal position corresponds to its actual position in the project. This is where you add new parts or events, drag to move them, etc.

The value display

This display shows the "value" of each event, allowing for easy viewing and graphical editing. Typically, the value shown is the "Data 2" or "Value 2" property (amounts to MIDI controller events, velocity for notes, etc.). You can show or hide this display by clicking the "Show List Value View" button on the toolbar.

List Editor operations

Customizing the view

You can click and drag the divider between the list and the event display to make one area wider and the other narrower. Furthermore, the list can be customized in the following ways:

▪ You can change the order of the columns by dragging the column headings.

▪ You can resize columns by dragging the dividers between the column headings.

Setting the display format

Just like in the Project window, you set the display format (bars+beats, seconds, etc.) by right-clicking in the ruler and selecting an option from the pop-up menu. This setting affects both the ruler and all start, end and length values shown in the list.

Zooming

You can change the horizontal magnification in the event display by using the zoom slider below the display or the Zoom tool (the magnification glass).

Inserting events

To add a new event to the edited part, proceed as follows:

1. Use the Insert Type pop-up menu on the toolbar to select the event type.
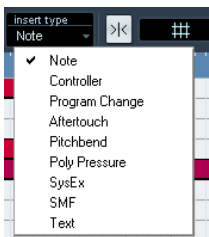
2. Select the Pencil tool and click in the event display at the desired position (relative to the ruler).

If you are creating note events, you can click and drag to set the length of the note.

The new event appears in the list and in the display. Its properties will be set to default values, but can be adjusted in the list.

▪ Notes will get the insert velocity value set in the insert velocity field on the toolbar, see "Setting velocity values" on page 218.

Editing in the list

The list allows you to perform detailed numerical editing of the events properties. The columns have the following functionality:

Column	Description
L	An arrow in this column indicates the event that starts closest before the project cursor position. If you click in this column for an event, the project cursor is moved to the start of that event. Double-clicking moves the cursor position and starts/stops playback – useful for auditioning when editing in the list.
Type	The event type. This cannot be changed.
Start	The start position of the event, shown in the format selected for the ruler. Changing this is the same as moving the event. Note that moving the event past any other event in the list will re-sort the list (the list always shows the events in the order they are played back).
End	This is only used for note events, allowing you to view and edit the end position of a note (thereby resizing it).
Length	This is only used for note events. It shows the length of the note – changing this resizes the note and automatically changes the End value as well.
Data 1	This is the "data 1" or "value 1" property of the event. The content of this depends on the event type – for notes, this is the pitch, for example. Where applicable, the values are shown in the most relevant form. For instance, the Data 1 value for notes is shown as a note number in the format selected in the Preferences (Event Display–MIDI page). See also the table in the section "Editing in the value display" on page 238.
Data 2	This is the "data 2" or "value 2" property of the event. The content of this depends on the event type – for notes, this is the note-on velocity value, for example. See the table in the section "Editing in the value display" on page 238.
Data 3	This is the "data 3" or "value 3" property of the event. This value is only used for note events, where it corresponds with the note-off velocity.
Channel	The MIDI channel of the event. Note that this setting is normally overridden by the channel setting for the track. To make a MIDI event play back on "its own" channel, set its track to channel "Any" in the Project window.
Comment	This column is used for some event types only, providing an additional comment about the event.

- You can edit several events at once. If several events are selected and you edit a value for one event, the other selected events' values will be changed as well.
Normally, any initial value differences between the events will be maintained – i.e. the values will change by the same amount. If you press [Ctrl]/[Command] when you edit, however, all events will get the same value.

⇨ For SysEx (system exclusive) events, you can only edit the position (Start) in the list.
However, when you click the Comment column, the MIDI SysEx Editor opens, in which you can perform detailed editing of system exclusive events (see "Working with System Exclusive messages" on page 239).

Editing in the event display

The event display allows you to edit the events graphically using the tools on the toolbar. You can edit single events as well as several selected events simultaneously.

- To move an event, click and drag it to a new position.
Note that moving the event past any other event in the display will re-sort the list (the list always shows the events in the order they are played back). As a result, the vertical position of the event in the display will change as well.

- To make a copy of an event, press [Alt]/[Option] and drag it to a new position.

- To resize a note, select it and drag its end point with the Arrow tool as in the Project window.
This only works with notes.

- To mute or unmute an event, click on it with the Mute tool.
You can mute or unmute several events in one go by enclosing them in a selection rectangle with the Mute tool.

- You can select a color scheme for the events with the Colors pop-up menu on the toolbar.
This affects how all MIDI events are shown in the List, Key and Drum Editors – see "Coloring notes and events" on page 217.

- To delete an event, select it and press [Backspace] or [Delete], or click on it with the Erase tool in the event display.

Filtering

Clicking the "Show Filter View" button on the toolbar opens an additional filter bar that allows you to hide specific event types from view. For example, it may be hard to find note events if the part contains a lot of controllers. By hiding these, the list becomes more manageable.

- To hide an event type, activate its checkbox on the filter view.

- To see one event type only (hide all other event types), press [Ctrl]/[Command] and click its checkbox. If you [Ctrl]/[Command]-click again, all checkboxes are cleared (all events will be visible).

⇨ The event types remain hidden even if you close the filter view.
To make sure you see all events, open the filter view and check that all checkboxes are deactivated.

⇨ The filter view does not remove, mute or change the events in any way.

Masking
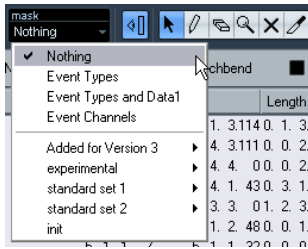
The Mask function is similar to the filter view but allows you to hide events based on other criteria as well. Proceed as follows:

1. Select an event (or several events) of the type you want to view.

2. Pull down the Mask pop-up menu on the toolbar and select one of the options.
The results are as follows:

Option	Description
Event Types	Only events with the type of the selected event will be shown. This does the same as the filter view but is quicker if you only want to view a single event type.
Event Types and Data 1	Only events of the same type and with the same "Data 1" value will be shown. For example, if a note event is selected, only notes with the same pitch will be shown. If a controller event is selected, only controllers of the same type will be shown.
Event Channels	Only events with the same MIDI channel value as the selected event will be shown.

In addition to the above options, the menu also gives you access to the Logical presets.

When you apply any of the Logical presets, only the events that meet the criteria specified will be visible.

▪ To deactivate the Mask function, select "Nothing" from the Mask pop-up menu.

The most typical usage of the Mask function is to view a certain type of controller only (e.g. Modulation, Breath Control, etc.). Since these are all the same event types (controller), this would not be possible using the filter view. With the "Event Types and Data 1" option on the Mask pop-up menu, it is!

Editing in the value display

The value display to the right of the event display is a tool for quick viewing and editing of multiple values, e.g. velocities or controller amounts. The values are shown as horizontal bars, with the bar length corresponding to the value.

A velocity ramp in the value display

You edit the values by clicking and dragging. Note that the pointer automatically takes on the shape of the Pencil tool when you move it into the value display – you do not have to select the Pencil tool for this.

Exactly which value is shown for an event depends on the event type. The following table shows what is displayed and edited in the Data columns and the value display:

Event type	Data 1	Data 2	Value display
Note	Pitch (note number)	Note-on velocity	Velocity
Controller	Controller type	Controller amount	Controller amount
Program Change	Program number	Not used	Program number
Aftertouch	Aftertouch amount	Not used	Aftertouch amount
Pitchbend	Bend amount	Not used	Bend amount
SysEx	Not used	Not used	Not used

▪ For note events there will also be a value in the Data 3 column, which is used for note-off velocity.

▪ The value display can be hidden from view by clicking the "Show List Value View" button on the toolbar, so that it is not lit.
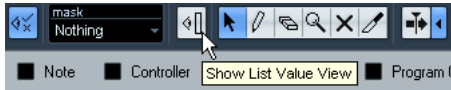
Working with System Exclusive messages

SysEx (System Exclusive) messages are model-specific messages for setting various parameters of a MIDI device. This makes it possible to address device parameters that would not be available via normal MIDI syntax.

Every major MIDI manufacturer has its own SysEx identity code. SysEx messages are typically used for transmitting patch data, i.e. the numbers that make up the settings of one or more sounds in a MIDI instrument.

Cubase Essential allows you to record and manipulate SysEx data in various ways. The following sections point to various features that help you manage and create SysEx data.

Bulk dumps

Recording a bulk dump in Cubase Essential

In any programmable device, the settings are stored as numbers in computer memory. Change those numbers, and you will change the settings.

Normally, MIDI devices allow you to dump (transmit) all or some settings in the device's memory in the form of MIDI SysEx messages. A dump is therefore (among other things) a way of making backup copies of the settings of your instrument: sending such a dump back to the MIDI device will restore the settings.

If your instrument allows the dumping of a few or all of its settings via MIDI by activating some function on the front panel, this dump will probably be recordable in Cubase Essential.

1. Open the Preferences dialog from the File menu (on the Mac, this is located on the Cubase Essential menu) and select the MIDI–MIDI Filter page.
This allows you to govern which MIDI event types should be recorded and/or thru-put.

2. Make sure that recording of SysEx data is not filtered, by deactivating the SysEx checkbox in the Record section. The SysEx checkbox in the Thru section can be left as it is (by default activated).
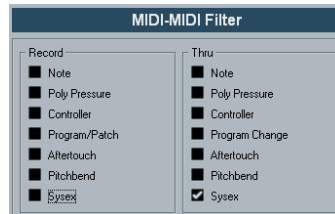
This way, SysEx messages will be recorded but not echoed back out to the instrument (which might lead to unpredictable results).

3. Activate recording on a MIDI track and initiate the dump from the front panel of the instrument.

4. When done recording, select the new part and open the List Editor from the MIDI menu.
This allows you to check that the SysEx dump was recorded – there should be one or several SysEx events in the part/event list.

⚠ If your MIDI instrument does not offer a way to initiate a dump "by itself", you have to send a Dump Request message from Cubase Essential to start the dump. In that case, use the MIDI SysEx Editor (see "Editing System Exclusive messages" on page 241) to insert the specific Dump Request message (see the instrument's documentation) at the beginning of a MIDI track. When you activate recording, the Dump Request message will be played back (sent to the instrument), the dump will start and be recorded as above.

Transmitting a bulk dump back to a device

1. Make sure the MIDI track with the System Exclusive data is routed to the device.
You may want to check your device's documentation to find details about which MIDI channel should be used, etc.

2. Solo the track.
This might not be necessary, but it is a good safety measure.

3. Make sure the device is set up to receive SysEx messages (often, receiving SysEx is turned off by default).

4. If necessary, put the device in "Standby to Receive System Exclusive" mode.

5. Play back the data.

Some advice

▪ Do not transmit more data than you need. If all you want is a single program, do not send them all, it will only make it harder to find the one you want. Usually, you can specify exactly what you want to send.
▪ If you want the sequencer to dump the pertinent sounds to your instrument each time you load a project, put the SysEx data in a silent "count-in" before the project itself starts.
▪ If the dump is very short (for instance, a single sound) you can put it in the middle of the project to re-program a device on the fly. However, you can achieve the same effect by using Program Change. This is definitely preferable, since less MIDI data is sent and recorded. Some devices may be set up to dump the settings for a sound as soon as you select it on the front panel.
▪ If you create parts with useful SysEx dumps, you can put these on a special muted track. When you want to use one of them, drag it to an empty unmuted track and play it back from there.
▪ Do not transmit several SysEx dumps to several instruments at the same time.
▪ Make a note of the current device ID setting of the instrument. If you change this, the instrument may refuse to load the dump later.

Recording System Exclusive parameter changes

Often you can use SysEx to remotely change individual settings in a device, e.g. open a filter, select a waveform, change the decay of the reverb etc. Many devices are also capable of transmitting changes made on the front panel as SysEx messages. These can be recorded in Cubase Essential, and thus incorporated into a regular MIDI recording.

Here's how it works: let's say you open up a filter while playing some notes. In that case, you will record both the notes and the SysEx messages generated when you opened of the filter. When you play it back, the sound changes exactly like it did when you recorded it.

1. Open the Preferences dialog from the File menu, select the MIDI–MIDI Filter page and make sure that SysEx is recorded, i.e. the SysEx checkbox in the Record section is deactivated.

2. Make sure the instrument is actually set to transmit changes of front panel controls as SysEx messages.

3. Record normally.
When you're done, you can check that the events were recorded properly in the List Editor.

Editing System Exclusive messages

While SysEx events are shown in the List Editor, their entire content is not (only the beginning of the message is displayed in the Comment column for the event). Also, you cannot edit the event (other than moving it) as you can with other event types in the List Editor.

Instead, you have to use the MIDI SysEx Editor for this.

• To open the MIDI SysEx Editor for an event, click in the Comments column for the event in the List Editor.
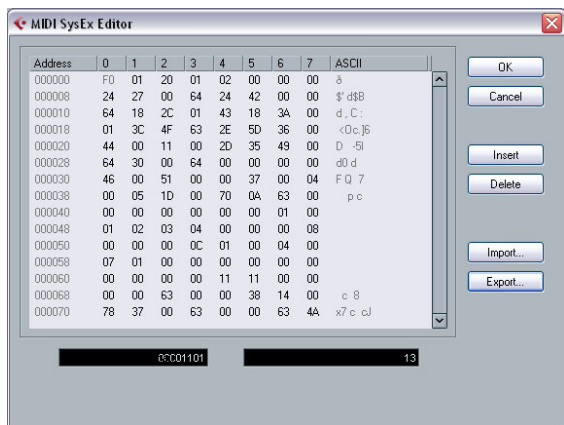
The display shows the entire message on one or several lines. SysEx messages always begin with F0 and end with F7 with a number of arbitrary bytes in between. If the message contains more bytes than fit on one line, it continues on the next. The Address indication to the left helps you find out on which position in the message a certain value resides.

You can edit all values except for the first (F0) and last one (F7).

Selecting and viewing values

To select a value, either click on it or use the cursor keys. The selected byte is displayed in various formats:

• In the main display, values are shown in hexadecimal format.
• To the right of this, values are shown in ASCII format.
• At the bottom of the dialog, the selected value is shown in binary and decimal formats.

Editing a value

The selected value can be edited directly in the main display or in the decimal and binary displays. Just click on it and type in the desired value as usual.

Adding and deleting bytes

Using the Insert and Delete buttons or their corresponding computer keyboard keys, you can add and delete bytes from the message. Inserted data will appear before the selection.

To delete the complete SysEx message, select it in the List Editor and press [Delete] or [Backspace].

Importing and exporting data

The Import and Export buttons allow you to get SysEx data from disk and to export the edited data to a file. The file has to be in "MIDI SysEx" (.SYX) binary format. Only the first dump in a .SYX file will be loaded.

This format should not be confused with MIDI files, which have the extension .MID.

The Score Editor – Overview
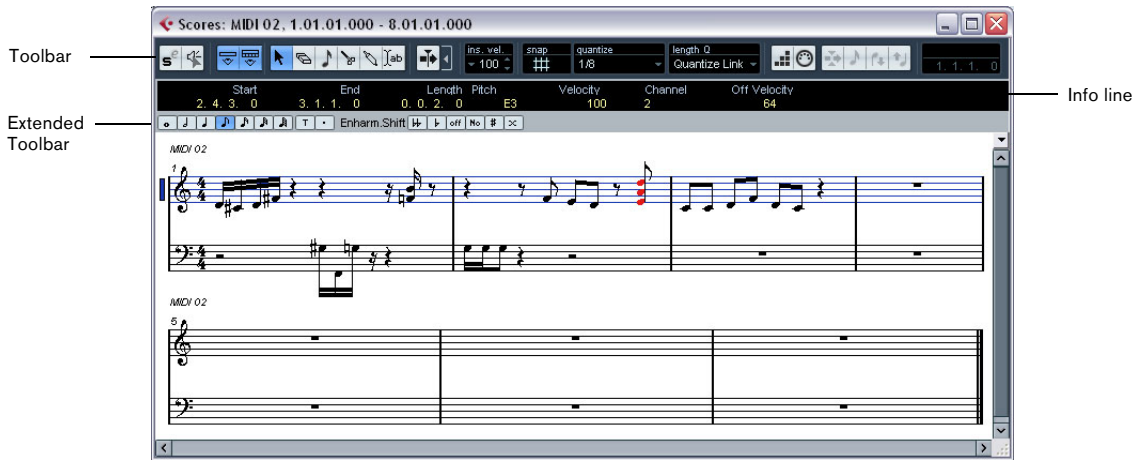
The Score Editor shows the MIDI notes as a musical score. The window contains the following sections and items:

The toolbar

The Score Editor toolbar is similar to the toolbar in the Key Editor, with the following differences:

- The Score Editor toolbar has a button for showing or hiding the extended toolbar (see below).
- There are no active part settings – in the Score Editor, parts on different tracks are shown on different staves.
- There are no chord recognition functions.

The info line

The info line shows information about selected MIDI notes, just like in the Key and Drum Editors. You can edit all values on the info line using regular value editing (see "Editing on the info line" on page 221 for details).

- To hide or show the info line, click the "Show Info" button in the toolbar.

The extended toolbar
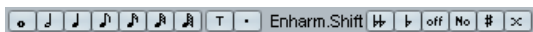
The extended toolbar (shown or hidden by clicking the "Show Tool Strip" button on the main toolbar) contains the following items:

Note value buttons

Click one of these to select a note value for input. The "T" and "." options are for triplet and dotted note values. You can also press [Ctrl]/[Command] and click one of the note value buttons – this will resize all selected notes to the note value you choose.

Enharmonic shift

Allows you to manually select whether a note should be shown with flat or sharp accidentals, see "Enharmonic Shift" on page 248.

The score display

The main area of the Score Editor window shows the notes in the edited parts on one or several staves.

- If you are editing one or several parts on the same track, as much of them as possible is shown on several staves – one above the other – just as with a score on paper.

• If you are editing parts on several tracks, they are put on a grand staff (multiple staves, tied together by bar lines).

• The number of bars across the screen depends on the size of the window and the number of notes in each bar.
The maximum number of bars across the page is four.

• The end of the last part is indicated by a double bar line.

• Unlike the other MIDI editors, the Score Editor does not have a ruler.
A conventional ruler would not make sense, since there is no exact relationship between a note's horizontal position in the score and its musical position in the project.

Score Editor operations

Opening the Score Editor

To open one or several parts in the Score Editor, select one or several tracks or any number of parts (on the same or different tracks), and select "Open Score Editor" from the Scores submenu on the MIDI menu. The default key command for this is [Ctrl]/[Command]-[R].

• You can also select the Score Editor as your default editor, allowing you to open it by double-clicking parts.
This is done with the Default Edit Action pop-up menu in the Preferences dialog (Event Display–MIDI page).

About editing parts on different tracks

If you have selected parts on two or more tracks and open the Score Editor, you will get one staff for each track (although you can split a staff in two, e.g. when scoring for piano). The staves are tied together by bar lines and placed in the order of the tracks in the Project window.

• If you need to rearrange the staves: close the editor, go back into the Project window, drag the tracks to the order you want them, and open the Score Editor again.

The active staff

Just as in the other editors, all MIDI input (as when recording from your instrument) is directed to one of the tracks, here called the active staff. The active staff is indicated by a blue rectangle to the left of the cleft symbol.
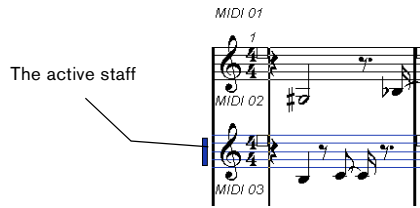
The active staff

To change the active staff, click on the staff you want to activate.

Getting the score displayed correctly

When you open the Score Editor for a part recorded in real time, the score may not look as legible as you expect. The Score Editor can ignore the minor time variances in performance and make a neater score almost instantly. To achieve this, there are a number of Staff Settings that determine how the program displays the music.

⇨ Note that the time signature follows the time signature(s) set in the Tempo Track Editor, and that these settings are common to all tracks/staves in the score.

There are two ways to open the Staff Settings dialog:

• Double-click in the area to the left of the staff.

• Activate a staff by clicking in it, and select "Staff Settings…" from the Scores submenu on the MIDI menu.
The Staff Settings dialog appears.
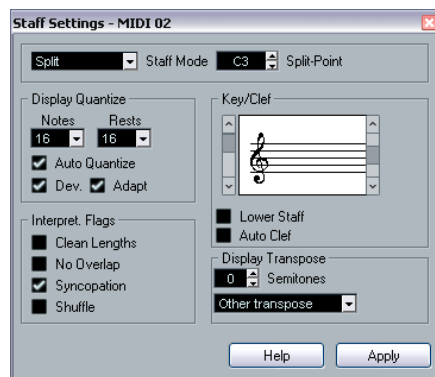
⚠ The settings you make in this dialog are independent for each staff (track), but common for a piano staff which you have created by choosing the "Split" Staff Mode option (see below).

Staff Mode
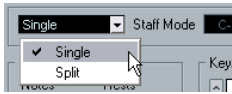
This pop-up menu determines how the staff is shown:

▪ When set to "Single", all notes in the part are shown in the same staff.

▪ When set to "Split", the part is split on the screen into a bass and treble clef, as in a piano score.

You use the Split-Point value field to set the note where you want the split to occur. Notes above and including the split note will appear on the upper staff, and notes below the split note will appear on the lower staff.

Before and after setting a split at C3.

Display Quantize

Notes are not an absolute language, and you must give the program a few hints on how the score should be displayed. This is done using the Display Quantize section of the Staff Settings dialog.

⚠️ These are only display values used for the graphics in the Score Editor. They do not affect the actual playback in any way.

Here is a description of the functions:

Parameter	Description
Notes	Determines the smallest note value to be displayed and the "smallest position" to be recognized and properly displayed. Set this to the smallest significant note position used in your music. For example, if you have notes on odd sixteenth note positions, you should set this value to 16. The "T" values are for triplet note values. This setting is partly overridden by Auto Quantize (see below).
Rests	This value is used as a "recommendation" – the program will not display rests smaller than this value, except where necessary. In effect, this setting also determines how the length of notes should be displayed. Set this value according to the smallest note value (length) you want to be displayed for a single note, positioned on a beat.
Auto Quantize	Generally, if your music contains mixed triplets and straight notes, try activating this checkbox. Otherwise, make sure it is deactivated. Auto Quantize is used to make your score look as legible as possible. Auto Quantize allows you to mix straight notes with tuplets (triplets) in a part. But Auto Quantize also uses the (display) Quantize value. If it can not find an appropriate note value for a certain note or group of notes, it will use the set Quantize value to display it. If the part is imprecisely played and/or complex, Auto Quantize may have a problem "figuring out" exactly what you "mean".
Dev.	This option is only available if Auto Quantize is on. When Dev. (Deviation) is activated, triplets/straight notes will be detected even if they are not exactly "on the beat". However, if you know your triplets/straight notes are perfectly recorded (quantized or entered by hand), turn this off.
Adapt	This option is only available if Auto Quantize is on. When Adapt is activated, the program "guesses" that when one triplet is found, there are probably more triplets surrounding it. Turn this on if not all of your triplets are detected.

Key and Clef

The correct Key and Clef are set using the two scroll bars in the Key/Clef section.
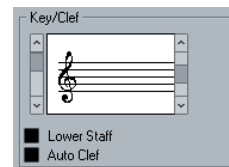
If you activate the "Auto Clef" checkbox, the program attempts to guess the correct clef, judging from the pitch of the music.

▪ To set the clef and key for the lower staff, activate the "Lower Staff" checkbox in the Key/Clef section.

Display Transpose
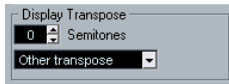
Some instruments, for example a lot of brass instruments, are scored transposed. For this purpose, the Staff Settings dialog allows you to specify a separate Display Transpose setting for each staff (track). This transposes the notes in the score (i.e. how they are displayed) without affecting how the notes play back. This allows you to record and play back a multi staff arrangement, and still score each instrument according to its own transposition.

▪ Use the pop-up menu to select the instrument for which you are scoring.
You can also manually set a display transpose value with the Semitones box above.

Interpret. Flags
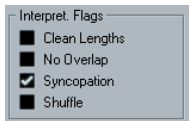
These provide additional options for how the score should be displayed:

Parameter	Description
Clean Lengths	When this is activated, notes that are considered to be chords will be shown with identical lengths. This is done by showing the longer notes as shorter than they are. When Clean Lengths is turned on, notes with very short overlaps are also cut off; a bit as with No Overlap (see below), but with a more subtle effect.
No Overlap	When this is activated one note will never be shown as overlapping another, lengthwise. This allows long and short notes starting at the same point to be displayed without ties; the long notes are cut off in the display. This will make the music more legible.

An example measure with No Overlap deactivated…

…and with No Overlap activated.

Parameter	Description
Syncopation	When this function is activated, syncopated notes are shown in a more legible way.

This is a dotted quarter at the end of a bar when Syncopation is Off…

…and when it is On.

Parameter	Description
Shuffle	Activate this function when you have played a shuffle beat and want it displayed as straight notes (not triplets). This is very common in jazz notation.

Applying your settings

After you have made your settings, click Apply to apply them to the active staff. You can select another staff in the score and make settings for that, without having to close the Staff Settings dialog first – just remember to click Apply before you change staff, otherwise your changes will be lost.

Entering notes with the mouse

To enter notes into a part in the Score Editor, you use the Note tool. However, first you need to set the note value (length) and spacing:

Selecting a note value for input

This can be done in two ways:

▪ By clicking the note symbols on the extended toolbar.
You can select any note value from 1/1 to 1/64th and turn on and off the dotted and triplet options by clicking the two buttons to the right. The selected note value is displayed in the Length value field on the toolbar and in the Note tool cursor shape.

▪ By selecting an option from the Length Q pop-up on the toolbar.

Selecting a Quantize value

When you move the mouse pointer over the score, you will see that the position box on the toolbar tracks your movement and shows the current position in bars, beats, sixteenth notes and ticks.

Positioning on screen is controlled by the current Quantize value. If, for example, you set this to 1/8 you can only insert and move notes to eighth note positions, at quarter notes, at half bars or at bar positions. It is a good strategy to set the Quantize value to the smallest note value in the piece. This does not stop you from inputting notes at "coarser" positions. However, if you set the Quantize value to too small a note value, it is easier to make mistakes.

With the Quantize value set to 1/8, you can only input notes at eighth note positions.

The Quantize value is set with the Quantize pop-up menu on the toolbar.

• You can also assign key commands to the different Quantize values.
This is done in the Key Commands dialog, in the "MIDI Quantize" category.

• Just like in the other MIDI editors, you can use the Quantize Setup dialog to create other quantize values, irregular grids, etc.
However, this is not often used when entering score notes.

Entering a note

To add a note to the score, proceed as follows:

1. Make the staff active.
Notes are always put in on the active staff.

2. Select the type of note by selecting a note value.
This is described in detail above.

3. If you selected the note value by clicking on a symbol on the extended toolbar, the Note tool was automatically selected – otherwise select the Note tool from the toolbar or context menu.

4. Select a Quantize value.
As described above, the Quantize value will determine the spacing between notes. If you have Quantize set to 1/1 you will only be able to add notes at downbeats. If you set Quantize to 1/8 you will be able to add notes at all eighth note positions etc.

5. Click in the staff and keep the mouse button pressed.
A note appears under the mouse pointer.

6. Move the mouse horizontally to find the correct position.
Check the lower mouse position box on the toolbar – the position is "magnetically" attracted to the grid defined by the current Quantize value. This allows you to easily find the correct position.

7. Move the mouse vertically to find the correct pitch.
The upper mouse position box shows the pitch at the pointer position, making it easy to find the right pitch.

8. Release the mouse button.
The note appears in the score.

The notes you enter will get the insert velocity value set in the insert velocity field on the toolbar, see "Setting velocity values" on page 218.

Selecting notes

There are several ways to select notes in the Score Editor:

By clicking

To select a note, click on its note head with the Arrow tool. The note head gets red to indicate that it is selected.

• To select more notes, hold down [Shift] and click on them.

• To deselect notes, hold [Shift] down and click on them again.

• If you hold down [Shift] and double-click on a note, this note and all the following notes in the same staff are selected.

Using a selection rectangle

1. Press the mouse button with the Arrow tool in some free (white) space in the score.

2. Drag the mouse pointer to create a selection rectangle.
You can drag to select notes on several voices or staves if you wish.

3. Release the mouse button.
All notes with their note heads inside the rectangle get selected.

If you want to deselect one or more of the notes, hold down [Shift] and click as described above.

Using the keyboard

By default, you can step through the notes in the staff using the left and right arrow keys. If you press [Shift], you will select the notes as you step through them.

▪ If you want to use other keys for selecting notes, you can customize the settings in the Key Commands dialog (in the Navigate category).

Deselecting everything

To deselect everything, simply click with the Arrow tool in some "free" (white) space in the score.

Deleting notes

Notes can be deleted in two ways:

Using the Erase tool

1. Select the Erase tool from the toolbar or context menu.

2. One at a time, click on the note(s) you want to erase, or drag over them with the mouse button pressed.

Using the keyboard or delete menu item

1. Select the note(s) you want to delete.

2. Select Delete from the Edit menu, or press [Delete] or [Backspace] on the computer keyboard.

Moving notes

To move or transpose notes, proceed as follows:

1. Set the Quantize value.
The Quantize value will restrict your movement in time. You cannot place the notes on positions smaller than the Quantize value. If Quantize for example is set to 1/8, you will not be able to move the notes to a sixteenth note position. However, you will be able to put them on any eighth note, quarter note, half note or whole note position.

2. If you want to hear the pitch of the note while moving, activate the speaker icon on the toolbar.
When it is on, you will hear the current pitch of the "dragged" note.

3. Select the note(s) you plan to move.

4. Click one of the selected notes and drag it to a new position and/or pitch.
The horizontal movement of the note is "magnetically attracted" to the current Quantize value. The position boxes on the toolbar show what the new position and pitch for the dragged note will be.

5. Release the mouse.
The notes appear at their new position.

▪ If you hold [Ctrl]/[Command] and drag, movement is restricted to vertical or horizontal (depending on the direction in which you drag).

▪ You can also move selected notes by using key commands, as assigned in the Nudge category in the Key Commands dialog.
When moving notes to the left or right using key commands, the notes will be moved in steps according to the current Quantize value. The keys assigned for up/down nudging will transpose notes in semitone steps.

Duplicating notes

1. Set the Quantize value and select the notes, as for moving.

2. Hold down [Alt]/[Option] and drag the notes to their new position.

▪ If you want to restrict movements to one direction, press [Ctrl]/[Command].
This works just as for moving, as described above.

▪ [Alt]/[Option] is the default modifier key for copying/duplicating. If you like, you can change this in the Preferences dialog (Editing–Tool Modifiers page).
The entry for this is found in the Drag & Drop category ("Copy").

Changing the length of notes

As described earlier (see "Getting the score displayed correctly" on page 243), the displayed length of a note is not necessarily the actual note length, but also depends on the Notes and Rests values for Display Quantize in the Staff Settings dialog. This is important to remember when you change the length of a note, since it can lead to confusing results.

There are several ways to change the length of a note in the Score Editor:

By using the Note tool

1. Select the notes you want to change.

2. Select a Note value that you wish to apply to the note(s).
This can be done by clicking a note value icon in the extended toolbar or by selecting a new Length value.

3. Select the Note tool if it is not already selected.

4. Hold down [Alt]/[Option] and click on the notes you wish to set to this length.

By using the note value icons on the extended toolbar

Using the extended toolbar is another quick way to set a number of notes to the same length:

1. Select the notes you want to change.

2. Hold down [Ctrl]/[Command] and click on one of the note icons on the extended toolbar.
All the selected notes are now given the length of the clicked note.

By using the info line

You can also edit length values numerically on the info line, just like in the Key and Drum Editors (see "Editing on the info line" on page 221).

Splitting and Gluing notes

▪ If you have two notes strung together by a tie, and click on the "tied" note head with the Scissors tool, the note will be divided into two, with the respective length of the "main" and the tied note.

▪ Conversely, if you click on a note with the Glue Tube tool it will be joined to the next note with the same pitch.

Enharmonic Shift

The buttons to the right on the extended toolbar allow you to shift the display of selected notes so that for example an F# (F sharp) is instead shown as a Gb (G flat) and vice versa:

1. Select the note(s) you want to affect.

2. Click on one of the buttons to display the selected note(s) a certain way.

The "off" button resets the notes to original display. The other five options are double flats, flats, No (no accidentals shown, regardless of pitch), sharps and double sharps.

Flip Stems

Normally the direction of the note stems is automatically selected according to the note pitches, but you can change this manually if you like:

1. Select the notes for which you want to change (flip) the stem direction.

2. Pull down the MIDI menu and select Flip Stems from the Scores submenu.

Working with text

You can use the Text tool to add comments, articulation or instrumentation advice and other text strings anywhere in the score:

Adding a text string

1. Select the Text tool from the toolbar or context menu.
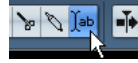
2. Click anywhere in the score.
A text input line dialog box appears.

3. Enter the text and press [Return].

Editing text

To edit an already added text string, double-click it with the Arrow tool. This opens the text for editing, and you can use the arrow keys to move the cursor, delete characters with the [Delete] or [Backspace] keys and type new text as usual. Finish by pressing [Return].

▪ To delete a text block, select it with the Arrow tool and press [Backspace] or [Delete].

▪ You can move or duplicate text blocks by dragging (or [Alt]/[Option]-dragging) them, just as with notes.

Changing the text font, size and style

To change the font settings for the text you have added, proceed as follows:

1. Select the text by clicking it with the Arrow tool.

2. Pull down the MIDI menu and select "Set Font…" from the Scores submenu.
The Font Settings dialog appears, containing the following settings:

Item	Description
Font	This is where you specify the font for the text. Which fonts are available on the pop-up menu depends on the fonts you have installed on you computer. You probably do not want to use the "Steinberg" fonts – these are special fonts used by the program (e.g. for score symbols) and not suited for common text.
Size	Sets the size of the text.
Frame	Allows you to encase the text in a rectangular (box) or oval frame.
Font options	These checkboxes determine whether the text should be bold, italic, and/or underlined.

3. When you have made your settings, click Apply.

If you like, you can leave the Font Settings dialog open, select another text block and adjust the settings for that – just remember to click Apply before you select a new text block.

▪ If you make settings in the Font Settings dialog with no text selected, the settings will be used as default for all new text.

In other words, all text you enter from then on will get the settings you have specified (although you can of course change this manually for each text as usual).

Printing

To print your score, proceed as follows:

1. Open the parts you want to print in the Score Editor.

Printing is only available from within the Score Editor.

2. Select "Page Setup…" from the File menu and make sure all your printer settings are correct. Close the dialog.

⚠ If you change your setting for paper size, scale and margins now, the score may change its look.

3. Select "Print…" from the File menu.

4. A standard print dialog appears. Fill out the options as desired.

5. Click Print.

22

Editing tempo and signature

Background

Whenever you create a new project, Cubase Essential will automatically set the tempo and time signature for this project. The tempo and signature settings can be displayed in the Tempo Track Editor.

Tempo modes

Before we go into detail about tempo and signature settings, you should understand the different tempo modes.

For tempo-based tracks, the tempo can either be fixed throughout the entire project (this is called "fixed tempo mode") or follow the tempo track (this is called "tempo track mode"), which may contain tempo changes.

▪ To switch between fixed tempo mode and tempo track mode, use the Tempo button on the Transport panel:
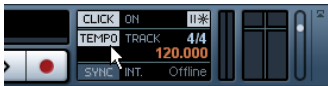
When the Tempo button is lit (and the text "Track" is shown), the tempo follows the tempo track; when it is deactivated (and the text "Fixed" is shown), a fixed tempo is used (see "Setting the fixed tempo" on page 253). You can also switch the tempo mode with the Activate Tempo Track button on the Tempo Track Editor toolbar.

In tempo track mode, the tempo cannot be changed on the Transport panel, i.e. the tempo information here is for display purposes only.

Signature events are always active, regardless of whether fixed tempo mode or tempo track mode is selected.

A note about tempo-based audio tracks

For tempo-based tracks, the start position of audio events on the timeline depends on the current tempo setting. However, it is important to realize that the actual audio ("within" the events) will play back as recorded, regardless of any tempo changes you make. Therefore, it is good practice to make the proper tempo and time signature settings before you start recording tempo-based audio.

⇨ To make an already recorded audio track follow the tempo changes, you can use the Sample Editor, see the chapter "The Sample Editor" on page 138.
How well this works depends on the character of the audio recordings, since the hitpoint detection feature works best with fairly rhythmical material.

Tempo and signature display

You can view the current tempo and signature settings of your project in a number of ways:

▪ On the Transport panel.
See above, and the section "The Transport panel" on page 44.

▪ In the Tempo Track Editor.
Open the Project menu and select Tempo Track Editor, or [Ctrl]/[Command]-click the Tempo button on the Transport panel.

About the Tempo Track Editor
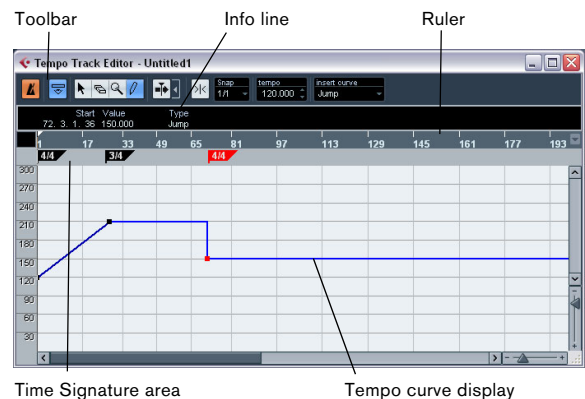
The Tempo Track Editor has a toolbar, info line and ruler just like other editors in Cubase Essential, plus an area for the display of time signature events and a tempo curve display.

The toolbar

The toolbar contains various tools and settings:
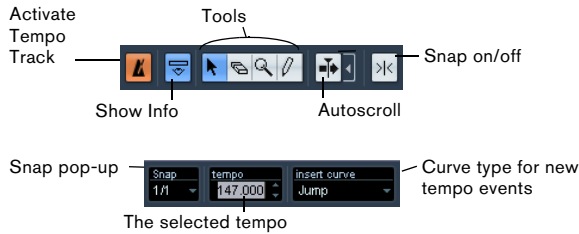
- **The tools for Object Selection, Erase, Zoom and Draw** are used in the same way as in other editors. The Snap and Autoscroll functions also work exactly like in the Project window.
Note that in the Tempo Track Editor, the Snap function affects tempo events only. Time signature events always snap to the beginning of bars.

- The info line in the Tempo Track Editor allows you to change settings for selected time signature events, and the type and tempo of selected tempo curve points.

- The ruler in the Tempo Track Editor shows the timeline, and is similar to the ruler in the Project window. See "The ruler" on page 21 for details.

- The area below the ruler shows time signature events.

- The main display shows the tempo curve (or, if fixed tempo mode is selected, the fixed tempo – see "Setting the fixed tempo" on page 253). To the left of the display you will find a tempo scale to help you quickly locate the desired tempo.
Note that the vertical "grid lines" in the tempo curve display correspond to the display format selected for the ruler.

Editing tempo and signature

Editing the tempo curve

⚠ This section assumes that you are working in tempo track mode, i.e. the Tempo button must be activated on the Transport panel.

Adding tempo curve points

1. Use the "Insert curve" pop-up menu in the toolbar of the Tempo Track Editor to select whether you want the tempo to change gradually from the previous curve point to the new one ("Ramp") or change instantly to the new value ("Jump"). You can also set this to Automatic. In this case, the types of existing tempo curve points will be used when inserting new points at the same position.

2. Select the Pencil tool.

3. Click and drag in the tempo curve display to draw a tempo curve.
When you click, the tempo display in the toolbar shows the tempo value. If Snap is activated on the toolbar, this determines at which time positions you can insert tempo curve points, see "The Snap function" on page 40.
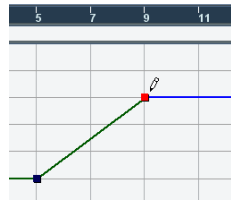
Insert curve set to "Ramp"   Insert curve set to "Jump"
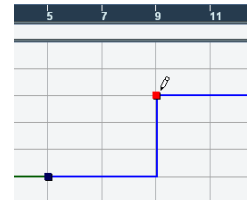
- You can also click on the tempo curve with the Arrow tool.
This adds a single point with each click.

⇨ Tempo values can also be automatically inserted by the Beat Calculator, see "The Beat Calculator" on page 254.

Selecting tempo curve points

Curve points can be selected as follows:

▪ Using the Arrow tool.
The standard selection techniques apply.

▪ Using the Select submenu on the Edit menu.
The options are:

Option	Description
All	Selects all curve points on the tempo track.
None	Deselects all curve points.
In Loop	Selects all curve points between the left and right locator.
From Start to Cursor	Selects all points to the left of the project cursor.
From Cursor to End	Selects all points to the right of the project cursor.

▪ You can also use the left and right arrow keys on the computer keyboard to go from one curve point to the next.
If you press [Shift] and use the arrow keys, you can select several points at the same time.

Editing tempo curve points

Curve points can be edited in the following ways:

▪ By clicking and dragging horizontally and/or vertically with the Arrow tool.
If several points are selected, all of them are moved. If Snap is activated on the toolbar, this determines to which time positions you can move curve points, see "The Snap function" on page 40.

▪ By adjusting the tempo value. You can do this in the tempo display on the Tempo Track Editor toolbar.

⚠ Dragging tempo curve points with a time-based display format (any other format than "Bars+Beats") may lead to confusing results. This is because moving a point will change the relationship between tempo and time. Let's say you move a tempo point to the right and drop it at a certain time position. When you release the mouse button, the mapping between tempo and time will be adjusted (since you have changed the tempo curve). As a result, the moved point will appear at another position. For this reason, we recommend using the Bars+Beats display format when editing tempo curves.

Adjusting the curve type

You can change the curve type of a tempo curve segment at any time, using the following method:

1. With the Arrow tool, select all curve points within the segment you want to edit.
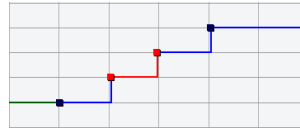
2. In the info line, click below the word "Type" to switch the curve type between "Jump" and "Ramp".
The curve sections between the selected points are adjusted.
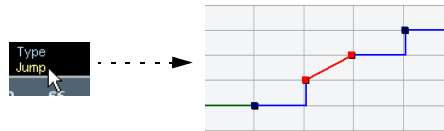
Removing tempo curve points

To remove a curve point, either click on it with the Erase tool or select it and press [Backspace]. The first tempo curve point cannot be removed.

Setting the fixed tempo

When the tempo track is deactivated, the tempo track curve is grayed out (but still visible). Since the tempo is fixed throughout the whole project, there are no tempo curve points. Instead, the fixed tempo is displayed as a horizontal black line in the tempo curve display.
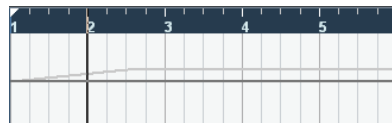
To set the tempo in fixed mode:

▪ Adjust the value numerically in the tempo display on the Tempo Track Editor toolbar.

▪ On the Transport panel, click on the tempo value to select it, enter a new value and press [Enter].

Adding and editing time signature events

▪ To add a time signature event, click in the time signature area with the Pencil tool.
This adds a default 4/4 time signature event at the closest bar position.

▪ To edit the value of a time signature event, select it and adjust the value on the info line, or double-click the event and enter a new value.
Note that there are two controls for the signature display; the left one adjusts the numerator and the right one adjusts the denominator.

▪ You can move a time signature event by clicking and dragging it with the Arrow tool.
Note that you can [Shift]-click to select multiple events. Also note that time signature events can only be positioned at the start of bars. This is also true if Snap is deactivated.

▪ To remove a time signature, either click on it with the Erase tool or select it and press [Backspace] or [Delete].
The first time signature event cannot be removed.

The Beat Calculator
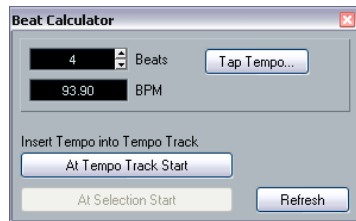
The Beat Calculator is a tool for calculating the tempo of freely recorded audio or MIDI material. It also allows you to set the tempo by tapping.

Calculating the tempo of a recording

1. In the Project window, make a selection that covers an exact number of beats of the recording.

2. Select "Beat Calculator…" from the Project menu.
The Beat Calculator window appears.

3. In the Beats field, enter the number of beats that the selection encompasses.
The corresponding tempo is calculated and displayed in the BPM field.

▪ If you need to adjust the selection, you can go back to the Project window, leaving the Beat Calculator open.
To re-calculate the tempo after adjusting the selection, click Refresh.

4. You can also insert the calculated tempo into the tempo track by clicking one of the buttons in the lower left corner of the Beat Calculator window.
Clicking "At Tempo Track Start" will adjust the first tempo curve point, while "At Selection Start" will add a new tempo curve point at the selection's start position, using the "Jump" curve type (see "Adding tempo curve points" on page 252).

⚠ If fixed tempo mode is selected when you insert the calculated tempo, the fixed tempo will be adjusted, regardless of which button you click.

Using Tap Tempo

The Tap Tempo function allows you to specify a tempo by tapping:

1. Open the Beat Calculator.

2. If you want to tap the tempo to some recorded material, activate playback.

3. Click the Tap Tempo button.
The Tap Tempo window appears.
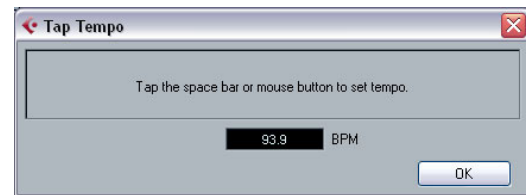
4. Tap the tempo on the Spacebar of the computer keyboard or with the mouse button.
The tempo display will update the calculated tempo between each tap.

5. Click OK to close the Tap Tempo dialog.
The tapped tempo is now shown in the Beat Calculator's BPM display. You can insert it into the tempo track as described above.

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Export Audio Mixdown

Introduction

The Export Audio Mixdown function in Cubase Essential allows you to mix down audio from the program to a file on your hard disk.

You always mix down an output channel. For example, if you have set up a stereo mix with tracks routed to a stereo output bus, mixing down that output bus would give you a mixdown file containing the whole mix.

Please note the following:

▪ The Export Audio Mixdown function mixes down the area between the left and right locators.

▪ When you mix down, you get what you hear – mutes, mixer settings and insert effects are taken into account. Note though that you will only include the sound of the channel you select for mixdown.

▪ MIDI tracks are not included in the mixdown! To make a complete mixdown containing both MIDI and audio, you first need to record all your MIDI music onto audio tracks (by connecting the outputs of your MIDI instruments to your audio inputs and recording, as with any other sound source).

Mixing down to audio files

1. Set up the left and right locators to encompass the section you want to mix down.

2. Set up your tracks so that they play back the way you want.
This includes muting unwanted tracks or parts, making manual mixer settings and/or activating the R (Read) automation buttons for some or all mixer channels.

3. Pull down the File menu and select "Audio Mixdown…" from the Export submenu.
The Export Audio Mixdown dialog appears.
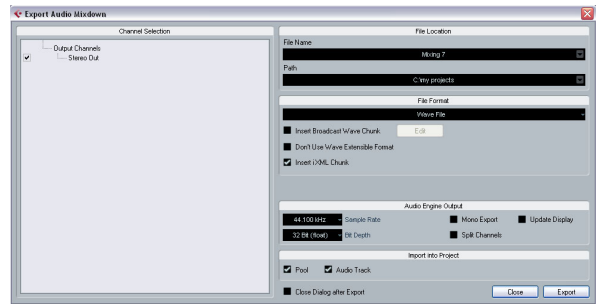
The available settings and options differ depending on the selected file format (see "The available file formats" on page 257).

4. In the Channel Selection section to the left, select the channel you want to mix down. The list contains all output channels available in the project (see "About the Channel Selection section" on page 257).

5. In the File Location section at the top you can specify a name and path for the mixdown file.

To the right of the File Name and the Path fields you will find two pop-up menus with a number of options:

Naming Options pop-up menu:

▪ Select "Set to Project Name" to use the project name for the export file.

▪ Activate the "Auto Update Name" option (so that a checkmark is displayed before it) to add a number to the specified file name every time you click the Export button.

Path Options pop-up menu:

▪ Select "Choose…" to open a dialog in which you can browse for a path and enter a file name.
The file name will automatically be shown in the File Name/Prefix field.

▪ Select an entry from the Recent Paths section to reuse a path specified for a previous export.
This section is only shown after an export has been completed. With the "Clear Recent Paths" option you can delete all entries from the Recent Paths section.

▪ Activate the option "Use Project Audio Folder" to save the mixdown file in the project's Audio folder.

6. Choose an entry from the File Format pop-up menu.

7. Activate the Split Channels option if you want to export the two channels of a stereo bus as separate mono files.

8. Make additional settings for the file to be created.
This includes selecting sample rate, bit depth, etc. The available options depend on the selected file format – see

9. If you want to automatically import the resulting audio file back into Cubase Essential, activate any of the checkboxes in the "Import into project" section.
If you activate the Pool checkbox, a clip referring to the file will appear in the Pool. Activating the Audio Track checkbox as well will create an audio event that plays the clip, and place it on a new audio track, starting at the left locator.

10. If you activate Update Display, the meters will be updated during the export process.
This allows you to check for clipping, for example.

11. Click Export.

A dialog with a progress bar is displayed while the audio file is created. If you change your mind during the file creation, you can click the Abort button to cancel the operation.

▪ If the option "Close dialog after export" is activated, the dialog will be closed.

▪ If you have activated any of the "Import into project" options, the file will be imported back into the same project.
When playing back the re-imported file, remember to mute the original tracks so that you really hear the correct file.

About the Channel Selection section

The Channel Selection section shows all output and audio-related channels available in the project. These channels are organized in a hierarchical structure that allows you to easily identify and select the channels you want to export. The different channel types are listed below each other, with channels of the same type being grouped in a node (e.g. instrument tracks).

▪ You can activate/deactivate channels by clicking on the checkboxes in front of the channel names.

About the Import Options dialog

If you activate any of the options in the Import into project section, the Import Options dialog will open when the export is complete. For a detailed description of the options in this dialog see

The available file formats

The following pages describe the different export file formats, as well as their options and settings.

⇨ Most of the settings described below for AIFF files are available for all file types. Where this is not the case, you will find additional information in the corresponding section.

MP3 Export

This version of Cubase Essential provides a function for exporting your audio mixdown as mp3 files. This function is limited to 20 trial encodings or a trial period of 30 days from the installation date (whichever ends first). After this period, the function will be disabled until you purchase the mp3 encoder for Cubase Essential.

▪ When the mp3 format is selected, and you click the Export button, a window opens showing you how many trial encodings you have left. You can upgrade to an unlimited mp3 export function by clicking the "Go to Online Shop" button in the dialog.
This will take you to Steinberg's online shop where you can purchase the upgrade. Note that a working internet connection is required.

AIFF files

AIFF stands for Audio Interchange File Format, a standard defined by Apple Inc. AIFF files have the extension ".aif" and are used on most computer platforms.

For AIFF files the following options are available:

Option	Description
File Name	In this field you can enter a name for the mixdown file.
Naming options pop-up menu	This allows you to define how your project should be named. If you select "Set to Project Name" the project name will be used for the export file. If you activate the "Auto Update Name" option a number will be added to the specified file name every time you click the Export button.

Option	Description
Path	Here you can specify a path where you want the mix-down to be saved.
Path options pop-up menu	This allows you to specify where the file should be saved. If you select "Choose…" a file dialog will open and the file name will automatically be shown in the File Name field. If you already have exported a file, the Recent Paths section will be shown where you can choose to reuse a previous path. If you activate "Use Project Audio Folder", the mixdown file will be saved in the project's Audio folder.
Insert Broadcast Wave Chunk	This allows you to include information about the date and time of creation, a timecode position (allowing you to insert exported audio at the correct position in other projects, etc.) along with author, description and reference text strings in the exported file. Some applications may not be able to handle files with embedded info – if you get problems using the file in another application, deactivate the option and re-export.
Edit button	By clicking this button the "Broadcast Wave Chunk" dialog opens where you can enter additional information that will be embedded in the exported files. Note that in the Preferences (Record–Audio–Broadcast Wave page) you can enter default text strings for author, description and reference that will automatically be displayed in the "Broadcast Wave Chunk" dialog.
Insert iXML chunk	This allows you to include additional project-based or sound metadata (e.g. scene and take information) in the exported file. Some applications may not be able to handle files with embedded info – if you get problems using the file in another application, deactivate the option and re-export.
Sample Rate	This setting determines the frequency range of the exported audio – the lower the sample rate, the lower the highest audible frequency in the audio. In most cases, you should select the sample rate set for the project, since a lower sample rate will degrade the audio quality (mainly reducing the high frequency content) and a higher sample rate will only increase the file size, without adding to audio quality. Also consider the future usage of the file: If you plan to import the file into another application, for example, you should select a sample rate supported by that application. If you are making a mixdown for CD burning, you should select 44.100 kHz, since this is the sample rate used on audio CDs.

Option	Description
Bit Depth	Allows you to select 8, 16, 24 bit or 32 bit (float) files. If the file is an "intermediate mixdown" that you plan to re-import and continue working on in Cubase Essential, we recommend that you select the 32 bit (float) option. 32 bit (float) is a very high resolution (the same resolution as used internally for audio processing in Cubase Essential), and the audio files will be twice the size of 16 bit files. If you are making a mixdown for CD burning, you should use the 16 bit option, as CD audio is always 16 bit. In this case, we recommend that you activate the UV-22HR dithering plug-in (see the separate PDF document "Plug-in Reference" for details). This reduces the effects of quantization noise and artifacts from being introduced when converting the audio down to 16 bit. 8 bit resolution should only be used if required, since it will result in limited audio quality. 8 bit audio may be suitable in some multimedia applications, etc.
Mono Export	If you activate this option, the exported audio is mixed down to mono.
Split Channels	Activate this option if you want to export the two channels of a stereo bus as separate mono files.
Update Display	If you activate this option, the meters will be updated during the export process. This allows you to check for clipping, for example.
Pool	Activate this option if you want to import the resulting audio file automatically back into the Pool. A clip referring to the file will appear in the Pool. If this option is activated, the Import Options dialog appears on export. For a description of the available settings, see "About the Import Medium dialog" on page 165.
Audio Track	If you activate this option, an audio event that plays the clip will be created and placed on a new audio track, starting at the left locator. Furthermore, the Import Options dialog appears on export. For a description of the available settings, see "About the Import Medium dialog" on page 165.
Close Dialog after Export	If this option is activated, the dialog will be closed after the export, otherwise it will be left open.

AIFC files

AIFC stands for Audio Interchange File Format Compressed, a standard defined by Apple Inc. These files support compression ratios as high as 6:1 and contain tags in the header. AIFC files have the extension ".aifc" and are used on most computer platforms.

AIFC files support the same options as AIFF files.

Wave files

Wave files have the extension ".wav" and are the most common file format on the PC platform.

Wave files support the same options as AIFF files and have one additional option:

▪ Don't Use Wave Extensible Format
The Wave Extensible format contains additional metadata, such as the speaker configuration. It is an extension to the normal Wave format that some applications may not be able to handle.
If you get problems using the Wave file in another application, activate this option and re-export.

Broadcast Wave files

Concerning audio, Broadcast Wave files are the same as regular Wave files, but without compression. To create a Broadcast Wave file, select Wave as the file format and activate the Insert Broadcast Wave Chunk option. Click Edit if you wish to edit the chunk information, otherwise the defaults as specified in the Preferences (Record–Audio–Broadcast Wave page) will be used. Broadcast Wave files have the extension ".wav".

Broadcast Wave files support the same options as regular Wave files.

MPEG 1 Layer 3 files

MPEG 1 Layer 3 files have the extension ".mp3". By use of advanced audio compression algorithms, mp3 files can be made very small, yet maintaining good audio quality.

Apart from the Sample Rate and Bit Depth options, MPEG 1 Layer 3 files support the same settings as AIFF files in the sections File Location, Audio Engine Output and Import into project. The File Format settings are different, though.

For MPEG 1 Layer 3 files the following options are available in the File Format section:

Option	Description
Bit Rate fader	By moving this fader, you can select a bit rate for the mp3 file. As a rule, the higher the bit rate, the better the audio quality and the larger the file. For stereo audio, 128 kBit/s is often considered to result in "good" audio quality.
Sample Rate pop-up	On this pop-up menu you can select a Sample Rate for the mp3 file.

Option	Description
High Quality Mode option	When this is activated, the encoder will use a different resampling mode, which can give better results depending on your settings. In this mode, you cannot specify the Sample Rate, but only the Bit Rate for the mp3 file.
Insert ID3 Tag option	This allows you to include ID3 Tag information in the exported file.
Edit ID3 Tag button	When you click this, the ID3 Tag dialog opens, in which you can enter information about the file. This additional information will be embedded as text strings in the file, and can be displayed by most mp3 playback applications.

Ogg Vorbis files

Ogg Vorbis is an open source, patent-free audio encoding and streaming technology, offering compressed audio files (extension ".ogg") of small size, but with comparatively high audio quality.

Apart from the Sample Rate and Bit Depth options, Ogg Vorbis files support the same settings as AIFF files in the sections File Location, Audio Engine Output and Import into project.

In the File Format section you will find only one setting: the Quality fader. The Ogg Vorbis encoder uses variable bit rate encoding, and the Quality setting determines between which limits the bit rate will vary. Generally speaking, the higher the Quality setting, the higher the sound quality but also the larger the files.

Windows Media Audio files (Windows only)

This is a format developed by Microsoft Inc. Due to the advanced audio codecs and lossless compression used, WMA files can be decreased in size with no loss of audio quality. The files have the extension ".wma".

When you select "Windows Media Audio File" as the file format, you can click the "Codec Settings…" button to open the "Windows Media Audio File Settings" window.
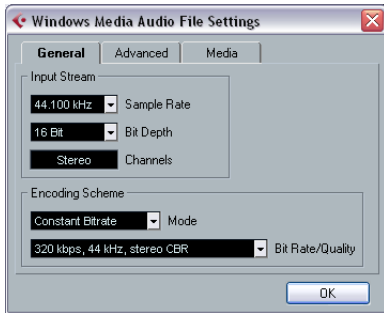
Windows Media Audio File Settings

Note that the configuration options may vary, depending on the chosen output.

General tab

In the Input Stream section, you set the sample rate (44.1, 48 or 96 kHz) and the bit resolution (16 bit or 24 bit) of the encoded file. These should be set to match the sample rate and bit resolution of the source material. If no value matches that of your source material, use the closest available value that is higher than the actual value. For example, if you're using 20 bit source material, set the bit resolution to 24 bit rather than 16 bit.

⇨ The setting in the Channels field depends on the chosen output and cannot be changed manually.

The settings in the Encoding Scheme section are used for defining the desired output from the encoder. Make settings appropriate for the intended use of the file. If the file will be downloaded or streamed on the Internet, you might not want too high bit rates, for example. See below for descriptions of the options.

• Mode

The WMA encoder can use either a constant bit rate or a variable bit rate, or it can use lossless encoding for encoding to stereo. The options on this menu are as follows:

Mode	Description
Constant Bitrate	This will encode to a file with a constant bit rate (set in the Bit Rate/Channels menu, see below). Constant bit rate is preferably used if you want to limit the size of the final file. The size of a file encoded with a constant bit rate is always the bit rate times the duration of the file.
Variable Bitrate	Encodes to a file with a variable bit rate, according to a quality scale (the desired quality is set in the Bit Rate/Quality menu, see below). When you encode with variable bit rates, the bit rate fluctuates depending on the character and intricacy of the material being encoded. The more complex passages in the source material, the higher the bit rate – and the larger the final file.
Lossless	Encodes to a file with lossless compression.

• Bit Rate/Quality

This menu allows you to set the desired bit rate. The available bit rate settings vary depending on the selected mode and/or output channels (see above). If the Variable Bitrate mode is used, the menu allows you to select from various levels of quality, with 10 being the lowest and 100 the highest. Generally, the higher the bitrate or quality you select, the larger the final file will be.

Advanced tab

• Dynamic Range Control

These controls allow you to define the dynamic range of the encoded file. The dynamic range is the difference in dB between the average loudness and the peak audio level (the loudest sounds) of the audio. These settings affect how the audio is reproduced if the file is played on a Windows XP computer with a player from the Windows Media series, and the "Quiet Mode" feature of the player is activated to control the dynamic range.

The dynamic range is automatically calculated during the encoding process, but you can specify it manually as well.

To manually specify the dynamic range, first put a checkmark in the box to the left by clicking in it, and then enter the desired dB values in the Peak and Average fields. You can enter any value between 0 and -90 dB. Note, how-

ever, that it is usually not recommended to change the Average value, since this affects the overall volume level of the audio and therefore can have a negative effect on the audio quality.

The Quiet Mode in a Windows Media player can be set to one of three settings. Below, these settings are listed together with an explanation of how the Dynamic Range settings affect them:

- Off: If Quiet Mode is off, the dynamic range settings that were automatically calculated during the encoding will be used.
- Little Difference: If this is selected and you have not manually changed the dynamic range settings, the peak level will be limited to 6 dB above the average level during playback. If you have manually specified the dynamic range, the peak level will be limited to the mean value between the peak and average values you specified.
- Medium Difference: If this is selected and you have not manually changed the dynamic range settings, the peak level will be limited to 12 dB above the average level. If you have changed the dynamic range, the peak level will be limited to the peak value you specified.

Media tab

In these fields you can enter a number of text strings with information about the file – title, author, copyright information and a description of its contents. This information will then be embedded in the file header and can be displayed by some Windows Media Audio playback applications.

24

Synchronization

Background

What is synchronization?

Synchronization is said to exist when you make two pieces of equipment agree on time or tempo and position info. You can establish synchronization between Cubase Essential and a number of other types of devices, including tape recorders and video decks, but also MIDI devices that "play back", such as other sequencers, drum machines, "workstation sequencers", etc.

When you set up a synchronization system, you must decide which unit is the master. All other devices are then slaved to this unit, which means they will adjust their playback speed to the master's.

⚠ For a description of the VST System Link feature (with which you can synchronize separate computers running Cubase Essential or Nuendo for example), see "Working with VST System Link" on page 270.

Cubase Essential as slave

When a synchronization signal is coming in to Cubase Essential, from another device, this device is the master and Cubase Essential is the slave. Cubase Essential will adjust its playback to the other device.

Cubase Essential as master

When you set up Cubase Essential to transmit synchronization information to other devices, Cubase Essential is the master and the other devices are the slaves; they will adjust their playback to Cubase Essential.

Cubase Essential – both master and slave

Cubase Essential is a very capable synchronization device. It can operate as both master and slave at the same time. For example, Cubase Essential might be slaved to a tape recorder transmitting timecode, while at the same time transmitting MIDI Clock to a drum machine, acting as a master for that.

Synchronization signals

Basically there are three types of synchronization signals for audio: timecode, MIDI clock and word clock.

Timecode (SMPTE, EBU, MTC, VITC, etc.)

Timecode appears in a number of guises. No matter which "format" it has, it always supplies a "clock on the wall" type of synchronization, that is, a synchronization related to hours, minutes, seconds and two smaller units called "frames" and "subframes".

- LTC (SMPTE, EBU) is the audio version of timecode. This means that it can be recorded on the audio track of an audio or video recorder.
- VITC is the video format timecode, stored in the actual video image.
- MTC is the MIDI version of timecode, transmitted via MIDI cables.
- ADAT sync (Alesis) is only used with the ASIO Positioning Protocol, see "About the ASIO Positioning Protocol (APP)" on page 268.

For the ASIO Positioning Protocol, other high precision timecode formats may also be supported.

Format recommendations for timecode – without ASIO Positioning Protocol

- When using synchronizer to synchronize your system to external timecode, the most common timecode format is MTC. Contrary to some reports you might have heard, MTC delivers good precision for external sync. This is due to the fact that the operating system can "time stamp" incoming MIDI messages, which increases precision.

Format recommendations for timecode – with ASIO Positioning Protocol

- LTC and VITC are the formats with the highest precision and are recommended when available.
- MTC is the next best option and probably the most common choice, since few audio hardware solutions have built-in LTC or VITC readers. However, LTC and VITC offer even higher precision when available.

MIDI Clock

MIDI Clock is a tempo-based type of synchronization signals, i.e. it is related to the number of "beats per minute". MIDI Clock signals are suitable for synchronizing two devices that agree on tempo, such as Cubase Essential and a drum machine.

⚠ MIDI Clock is not suitable as a master sync source for an application like Cubase Essential. Therefore Cubase Essential will transmit MIDI Clock signals to other devices, but it will not receive MIDI Clock.

Word Clock

Word clock is basically a replacement for the sample rate clock (e.g. in an audio card). Word clock hence runs at the same rate as the sample rate in the audio, 44.1 kHz, 48 kHz, etc.

Word clock does not contain any position information, it is only a "simple" signal for clocking the audio at its sample rate.

Word clock comes in many formats, analog on coaxial cable, digital as part of an S/PDIF, AES/EBU or ADAT audio signal, etc.

Synchronizing the transport vs. synchronizing audio

How timing is handled in a non-synchronized system

Let's first look at the situation where Cubase Essential is not synchronized to any external source:

Any digital playback system has an internal clock that ultimately affects the playback speed and stability, and PC audio hardware is no exception. This clock is extremely stable.

When Cubase Essential is playing back with no external synchronization, all playback is internally synchronized to the internal digital audio clock.

Synchronizing Cubase Essential's playback

Let's assume now that we use external timecode synchronization with Cubase Essential. For example, we might synchronize playback to a tape recorder.

Timecode coming from an analog tape recorder will always vary slightly in speed. Different timecode generators and different tape recorders will also supply timecode with slight differences in speed. In addition, the shuttling of tape mechanisms due to overdubs and re-recordings can cause the physical tape to wear and stretch, which affects the speed of the timecode.

If you use a synchronizer that generates word clock and set up Cubase Essential to sync to incoming timecode, it will vary its overall playback speed to compensate for such fluctuations in the speed of the timecode – that's the whole purpose of synchronization.

What happens with the digital audio?

The fact that Cubase Essential's playback is synchronized to the timecode does not affect the playback of the digital audio. It still relies on the perfectly stable, built-in clock in the audio hardware.

As might be expected, problems will appear when the perfectly stable digital audio gets related to the slightly varying speed of a system synchronized to timecode.

The playback timing of each event will not be in total accordance with the tape or the MIDI playback, since the playback speed of the audio is determined by the digital audio hardware's built-in clock.

Resolving to word clock

The solution to this problem is to use one external clock for all components in the system. One master clock is used to derive whatever type of clock signal each component in the system needs. For example, something called a house clock can be used to generate sample rate clocks for the digital audio hardware and timecode for Cubase Essential. This ensures that all components in the system use the same reference source for their timing.

Synchronizing digital audio to external clocks running at sample rate is often called "resolving" or "synchronizing to word clock".

If you aim to perform synchronization to external signals, we strongly recommend that you obtain proper synchronization equipment. This encompasses:

▪ An audio card that can be slaved to external word clock.
▪ A synchronizer that can read timecode (and possibly house clock) and generate the required sync signals from that, such as the Steinberg TimeLock Pro.

or…

▪ An audio system with complete built-in synchronization possibilities, preferably supporting the ASIO Positioning Protocol (see "About the ASIO Positioning Protocol (APP)" on page 268).

Using timecode without word clock

Of course, it is possible to set up a synchronization system where you lock Cubase Essential to timecode without using word clock. However, please note that the timing of audio vs. MIDI cannot be guaranteed and that fluctuations in speed in the incoming timecode will not affect the playback of audio events. This means that synchronizing to timecode may work in the following situations:

▪ When the timecode was originally generated by the audio card itself.

▪ When the source providing the timecode is extremely stable (such as a digital video system, a digital tape recorder or another computer).

▪ When you remain synchronized to that same stable source throughout the entire process, both while recording and playing back audio.

Making basic settings and connections

Setting the Frame Rate

The frame rate is the number of frames per second in a film or on a video tape. However, the frame rate used varies with the type of media (film or video), which country the video tape has been produced in, and other circumstances.

In the Project Setup dialog are two settings for frame rates:

▪ The Frame Rate pop-up is automatically adjusted to the frame rate of the incoming timecode.
There is an exception to this when you are synchronizing Cubase Essential to MIDI Timecode: If you have selected 29.97 fps or 30 dfps as Frame Rate in Cubase Essential, this selection will be kept, since these frame rates are not included in the MTC format.

The following frame rates are available:

Frame Rate	Description
24 fps	The traditional frame rate of 35 mm film.
25 fps	The frame rate used for all video and audio in Europe (EBU).
29.97 fps	Straight 29.97 frames per second.
29.97 dfps	"Drop frame" code running at 29.97 frames per second, most often used in the United States of America for work with color video.
30 fps	Straight 30 frames per second. This is often used in the United States for audio only work.
30 dfps	Very rarely used.

▪ The Display Format pop-up contains a number of formats that function as the "master" setting for the display format used in the various rulers and position displays.

Making connections

The following connections are required for external sync via a synchronizer, including resolving of the audio card. For details on audio card and synchronizer settings and connections, see the manuals for these devices.

▪ Route the master clock signal (LTC, VITC, etc.) to an input on the synchronizer.

▪ Connect the word clock output on the synchronizer to a word clock input on the audio card.

▪ Connect the MIDI Timecode (MTC) output on the synchronizer to the corresponding input on the computer.

• Set up the synchronizer and make sure the frame rate settings are in accordance with the master clock.
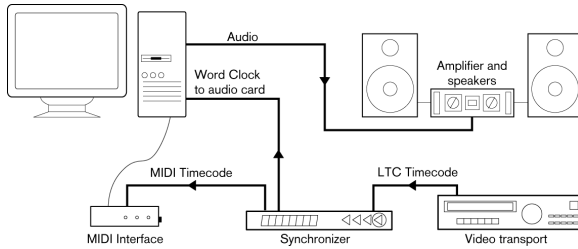
A typical synchronization setup

Synchronization settings

In the following sections you will find a description of how to set up your system for the different timecode sources.

Internal Timecode

In this mode, Cubase Essential is the master.

Use the "MIDI Timecode Destinations" and "MIDI Clock Destinations" sections to specify which devices should be slaved to Cubase Essential.

Synchronizing other Equipment to Cubase Essential

You may have other MIDI devices that you want to synchronize to Cubase Essential. There are two types of synchronization signals that Cubase Essential can transmit: MIDI Clock and MIDI Timecode.

Transmitting MIDI Clock

If you transmit MIDI Clock to a device supporting this type of synchronization signal, the other device will follow Cubase Essential's tempo. The tempo setting in the other device is of no relevance. If the device also reacts to Song Position Pointers (which Cubase Essential transmits) it will follow when you wind, rewind and locate using the Cubase Essential Transport panel.

⇨ MIDI Clock transport commands include "Start", "Stop" and "Continue". However, some MIDI equipment (e.g. some drum machines) do not recognize the "Continue" command. If this is the case with your equipment, activate the option "Always Send Start Message" in the Project Synchronization Setup dialog (MIDI Clock Destinations).
When this is activated, only the Start command is used.

• Activate "MIDI Clock Follows Project Position" if you want the other device to follow when you loop, jump and locate during playback.
When this is activated, the sent MIDI Clock signals will follow the sequencer time and tempo position at all times.

⚠ Please note that some external devices may not react smoothly to these repositioning messages. Especially when working with some older devices, it may take some time for them to synchronize accurately to the project time.

Send MIDI Clock in Stop Mode

When the option "Send MIDI Clock in Stop Mode" in the Project Synchronization Setup dialog (MIDI Clock Destinations section) is activated, Cubase Essential will send MIDI Clock signals to the selected MIDI Clock destinations even when Cubase Essential is in Stop mode.

This is, for example, useful if you are working with a keyboard that has a built-in arpeggiator, the tempo of which you are controlling via MIDI Clock messages. This way, the arpeggiator will keep the right tempo even when Cubase Essential is in Stop mode. You may also be able to use this feature with some external drum machines, as it allows you to play the drum patterns in the current sequencer tempo even when Cubase Essential is stopped.

• When this option is deactivated, Cubase Essential will send MIDI Clock signals to the selected MIDI Clock destinations only during playback.
In this mode, you will not be able to use the above-mentioned arpeggiator of your keyboard in Stop mode.

⇨ Keep in mind that the MIDI Clock information always refers to the tempo at the current project position.

Transmitting MIDI Timecode

If you transmit MIDI Timecode to a device supporting this type of synchronization signal, the device will synchronize time-wise to Cubase Essential, that is, the time displays on Cubase Essential's Transport panel and on the other device will agree. When you wind and locate Cubase Essential and then activate playback, the other device will follow from the same position (if it has this capability and is set up for it!).

Setting Up

1. Connect the desired MIDI Outputs from Cubase Essential to the device(s) that you plan to synchronize.

2. Open the Project Synchronization Setup dialog from the Transport menu.
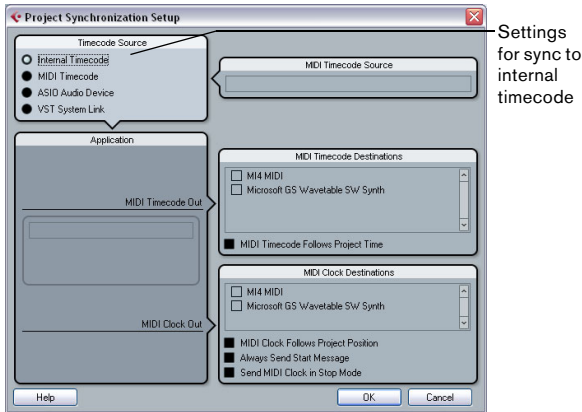
Settings for sync to internal timecode

3. Activate the sync outputs by using the corresponding checkboxes.
You can output any combination of MIDI Timecode and MIDI Clock to any combination of outputs (however, you probably do not want to send MTC and MIDI Clock to the same output).

⚠ Some MIDI interfaces will automatically send MIDI Clock to all MIDI outputs, regardless of the MIDI Clock Port selection in Cubase Essential. If this is the case, you should only select one MIDI Clock port (consult the documentation of the MIDI Interface if in doubt).

4. Set the other device(s) to their "external synchronization" mode (or some other mode with a similar name) and activate playback on them if necessary.

5. Activate playback in Cubase Essential, and the other device(s) will follow.

MIDI Timecode

In this mode, Cubase Essential is the slave and the timecode is sent by the MIDI Timecode Source specified in the corresponding section.

Setting up Cubase Essential for external sync to timecode

1. In the Project Synchronization Setup dialog, set Timecode Source to MIDI Timecode.

2. Use the pop-up menu in the MIDI Timecode Source section to select an input for the timecode.

Sync to timecode activated
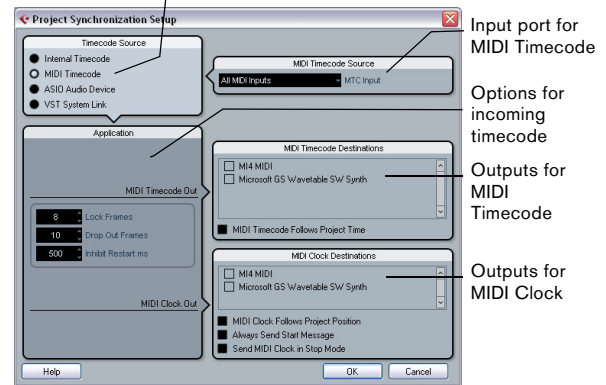
Input port for MIDI Timecode

Options for incoming timecode

Outputs for MIDI Timecode

Outputs for MIDI Clock

3. Close the Project Synchronization Setup dialog and open the Project Setup dialog from the Project menu.

4. Use the Start value to set which frame on the external device (e.g. a video tape) should correspond to the beginning of the project.
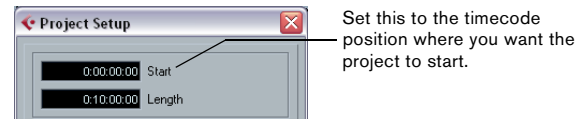
Set this to the timecode position where you want the project to start.

5. In the dialog that appears, you are asked if you want to keep the project content at its timecode positions. Select "No".
This will make all events and parts keep their positions relative to the project start.

6. Close the Project Setup dialog.

7. On the Transport panel, activate the Sync button (or select Use External Sync from the Transport menu).

8. Start the tape (or video, or other master device) that contains the timecode. Cubase Essential starts playing when it receives timecode with a position "higher" than or equal to the project Start frame.

You can wind the device that sends the timecode to any position and start from there.

⚠ When the master device with the timecode is stopped, you can use the Cubase Essential transport controls as you normally do.

You should also take a look at the Sync Options, see

The Sync indicator

On the Transport panel you can check the status of incoming timecode by observing the sync indicator. It switches between "Offline" (not waiting for sync), "Idle" (ready for sync but no signal is coming in), and "Lock xx" (where xx indicates the frame rate of the incoming signal).

The Sync indicator

ASIO Audio Device

⚠ This option is only available if your hardware is compatible with the ASIO Positioning Protocol.

In this mode, Cubase Essential is the slave and the synchronization signal can be received from another device connected to a digital interface of the audio hardware.

About the ASIO Positioning Protocol (APP)

⚠ The ASIO Positioning Protocol requires audio hardware with specific ASIO drivers.

The ASIO Positioning Protocol is a technology that expands on the type of sync described above and makes sample-accurate positioning possible.

When transferring audio digitally between devices, it is important that synchronization using word clock and timecode is completely correlated. If not, the audio will not be recorded at the exact intended (sample-accurate) position, which can cause various types of problems, such as inaccurately positioned audio material, clicks and pops, etc.

A typical situation is when transferring material from a digital multi-track tape recorder to Cubase Essential (for editing) and then back again. If you do not have sample-accurate synchronization set up, you cannot be sure that the material will appear in its exact original position, when transferred back to the tape recorder.

In order to take advantage of the ASIO Positioning Protocol, your audio hardware must be suitably equipped and the functionality must be included in the ASIO driver for the hardware.

An example of a system for doing sample-accurate transfers would be transferring audio tracks from an Alesis ADAT to Cubase Essential. Here the ADAT will be the sync master (though it does not necessarily have to be). It provides both the digital audio (with an inherent word clock) and position information (timecode) via its ADAT sync protocol. The master clock is generated by the ADAT itself.

Hardware and software requirements for APP

- Your computer audio hardware (in the example above, this would be an ADAT card in your computer) must support all the functionality required for the ASIO Positioning Protocol. That is, it must be able to read the digital audio and the corresponding position information from the external device.
- There must be an ASIO 2.0 driver for the audio hardware.
- For resolving to external timecode, the audio hardware must have an integrated timecode reader/generator.
- For information about which audio hardware models currently support APP, see the Steinberg web site (www.steinberg.net).

⚠ The ASIO Positioning Protocol exploits the specific advantage of having an audio card that has an integrated timecode reader. With such a card and the ASIO Positioning Protocol, you can achieve constant sample-accurate synchronization between the audio source and Cubase Essential.

Setting up the audio card for external synchronization

1. Open the Device Setup dialog from the Devices menu and, on the VST Audio System page, select the name of your audio interface.

2. Click the Control Panel button to open the card's proprietary setup dialog.

If this card is accessed via a special ASIO driver (as opposed to DirectX or the Generic Low Latency ASIO Driver), this dialog is provided by the card, not by Cubase Essential. Hence the settings vary with the card brand and model.

3. Adjust the settings as recommended by the card manufacturer, then close the dialog.

The dialog may also contain various diagnostic tools that allow you to verify for example whether word clock is arriving correctly.

4. From the Clock Source pop-up, select the input to which you routed the word clock signal.

This pop-up menu may not be used if you selected an input in the Control Panel dialog instead.

You can now set up the synchronization:

1. Open the Project Synchronization Setup dialog and set the Timecode Source to "ASIO Audio Device".
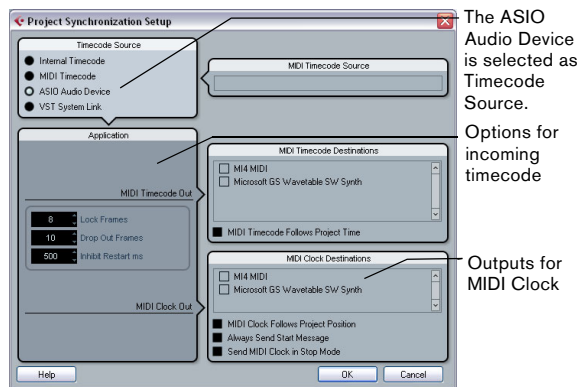
The ASIO Audio Device is selected as Timecode Source.

Options for incoming timecode

Outputs for MIDI Clock

2. Make the necessary settings in the dialog.

For information on the different sections, click the Help button in the dialog.

3. Close the Project Synchronization Setup dialog.

4. Open the Project Setup dialog from the Project menu and use the Start value to set which frame on the external device (e.g. a video tape) should correspond to the beginning of the project.
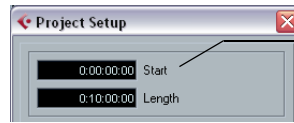
Set this to the timecode position where you want the project to start.

5. A message appears, asking you whether you want to keep the project content at its timecode positions. Select "No".

This will make all events and parts keep their positions relative to the project start.

6. Close the Project Setup dialog.

7. On the Transport panel, activate the Sync button (or select "Use External Sync" from the Transport menu).

8. Start the tape (or video, or other master device) that contains the timecode. Cubase Essential starts playing when it receives timecode with a position "higher" than or equal to the project Start frame.

You can wind the device that sends the timecode to any position and start from there.

⚠ When the master device is stopped, you can use the Cubase Essential transport controls as you normally do, when it is not synchronized.

You should also take a look at the Sync Options, see "Sync Options" on page 270.

The Sync indicator

On the Transport panel you can check the status of incoming timecode by observing the sync indicator. It switches between "Offline" (not waiting for sync), "Idle" (ready for sync but no signal is coming in), and "Lock xx" (where xx indicates the frame rate of the incoming signal).

VST System Link

⚠ For a description of the VST System Link feature (with which you can synchronize separate computers running Cubase Essential or Nuendo for example) see

Sync Options

The following Sync options are available in the Project Synchronization Setup dialog:

Lock Frames

Using this field you can set how many frames of "correct" timecode Cubase Essential should receive before attempting to "lock" (synchronize) to incoming timecode. If you have an external tape transport with a very short start-up time, you could try lowering this number to make lock-up even faster than it already is.

Drop Out Frames

On an analog tape with timecode, dropouts may occur. If a drop-out is very long, Cubase Essential may (temporarily) stop. In the Drop Out Frames field you can set how long a drop-out (in frames) should be tolerated until Cubase Essential decides that the tape is not good enough to synchronize to. If you have a very stable timecode source, you may lower this number to make Cubase Essential stop more swiftly after the tape recorder has been stopped.

Inhibit Restart

Some synchronizers will still transmit MIDI Timecode for a short period after an external tape machine has been stopped. These extra frames of timecode can sometimes cause Cubase Essential to restart suddenly. Inhibit Restart allows you to control the amount of time in milliseconds that Cubase Essential will wait to restart (ignoring incoming MTC) once it has stopped.

Working with VST System Link

VST System Link is a network system for digital audio that allows you to have several computers working together in one large system. Unlike conventional networks it does not require Ethernet cards, hubs, or CAT-5 cables; instead it uses the kind of digital audio hardware and cables you probably already possess in your studio.

VST System Link has been designed to be simple to set up and operate, yet give enormous flexibility and performance gains in use. It is capable of linking computers in a "ring" network (the System Link signal is passed from one machine to the next, and eventually returns to the first machine). VST System Link can send its networking signal over any type of digital audio cable, including S/PDIF, ADAT, TDIF, or AES, as long as each computer in the system is equipped with a suitable ASIO compatible audio interface.

Linking up two or more computers gives you vast possibilities:

- Dedicate one computer to running VST instruments while recording audio tracks on another.
- If you need lots of audio tracks, you may simply add tracks on another computer.
- You could have one computer serve as a "virtual effect rack", running CPU-intensive send effect plug-ins only.

Since you can use VST System Link to connect different VST System Link applications on different platforms, you can take advantage of effect plug-ins and VST instruments that are specific to certain programs or platforms.

Preparations

Requirements

The following equipment is required for VST System Link operation:

- Two or more computers.

These can be of the same type or use different operating systems – it does not matter. For example, you can link an Intel-based PC to an Apple Macintosh without problems.

- Each computer must have audio hardware with specific ASIO drivers, installed and working.

- The audio hardware must have digital inputs and outputs.

Of course, to be able to connect the computers, the digital connections must be compatible (i.e. the same digital formats and connection types must be available).

- At least one digital audio cable for each computer in the network.

- A VST System Link host application installed on each computer.

Any VST System Link applications can connect to each other.

Additionally, we recommend that you use a KVM switchbox.

Using a KVM switchbox

If you want to set up a multi-computer network, or even a small network in a limited space, it is a good idea to invest in a KVM (Keyboard, Video, Mouse) switchbox. With one of these you can use the same keyboard, monitor, and mouse to control each computer in the system, and switch between computers very rapidly. KVM switchboxes are not too expensive, and very easy to set up and operate. If you decide not to go this route, the network will function just the same, but you may end up doing a lot of jumping from one machine to the other while setting up!

Making connections

Below, we assume that you are connecting two computers. Should you have more than two computers, it is still best to start with two and add the others one by one once the system is working – this makes troubleshooting easier if you run into problems. For two computers, you will need two digital audio cables, one in each direction:

1. Use the first digital audio cable to connect digital output of computer 1 with the digital input of computer 2.

2. Use the other cable to connect the digital output of computer 2 with the digital input of computer 1.

▪ If a card has more than one set of inputs and outputs, choose whichever one that suits you – for simplicity usually the first set is best.

Synchronization

Before you proceed, you need to make sure that the clock signals on your ASIO cards are synchronized correctly. This is essential when cabling any kind of digital audio system, not just VST System Link.

⚠ All digital audio cables by definition always carry a clock signal as well as audio signals, so you do not have to use a special Word Clock input and output for this (although you may find that you get a slightly more stable audio system if you do, especially when using multiple computers).

The Clock Mode or Sync Mode is set up in the ASIO control panel of the audio hardware. In Cubase Essential, you proceed as follows:

1. Pull down the Devices menu and open the Device Setup dialog.

2. On the VST Audio System page, select your audio interface from the "ASIO Driver" pop-up menu.
The name of the audio interface now appears as a subentry to the VST Audio System entry in the Devices list.

3. Select your audio interface in the Devices list to the left.

4. Click the Control Panel button.
The ASIO control panel appears.

5. Open the ASIO control panel on the other computer as well.
If you are using another VST System Link host application on that computer, check its documentation for details on how to open the ASIO control panel.

6. Now, you need to make sure that one audio card is set to be the Clock Master, and all the other cards are set to listen for the clock signal coming from the Clock Master, i.e. they must be Clock Slaves.
The naming and procedure for this differs depending on the audio hardware – consult its documentation if required. If you are using Steinberg Nuendo ASIO hardware, all cards default to the "AutoSync" setting – in this case you must set one of the cards (and only one) to "Master" in the Clock Mode section of the control panel.

▪ Typically, the ASIO control panel for an audio card contains some indication of whether the card receives a proper sync signal or not, and the sample rate of that signal.
This is a good indication that you have connected the cards and set up clock sync properly. Check your audio hardware's documentation for details.

⚠ It is very important that one and only one card is the clock master, otherwise the network cannot function correctly. Once you have set this up, all the other cards in the network will take their clock signal from this card automatically.

The only exception to this procedure is if you are using an external clock – which could be from a digital mixing desk or special Word Clock synchronizer for example. If so, you must leave all your ASIO cards in Clock Slave or AutoSync

mode, and make sure that each of them is listening for the signal coming from the synchronizer, usually passed through your ADAT cables or Word Clock connectors in a daisy chain fashion.

VST System Link and latency

The general definition of latency is the amount of time it takes any system to respond to whatever messages are sent to it. For example, if your system's latency is high and you play VST instruments in realtime, you will get a noticeable delay between when you press a key and when you hear the sound of the VST instrument. Nowadays, most ASIO-compatible audio cards are capable of operating with very low latencies. Also, all VST applications are designed to compensate for latency during playback, making the playback timing tight.

However, the latency time of a VST System Link network is the total latency of all the ASIO cards in the system added together. Therefore it is extra important to minimize the latency times for each computer in the network.

⇨ The latency does *not* affect the synchronization – it is always perfectly in time. But it can affect the time it takes to send and receive MIDI and audio signals, or make the system seem sluggish.

To adjust the latency of a system, you adjust the size of the buffers in the ASIO control panel – the lower the buffer size, the lower the latency. It is best to keep to fairly low latencies (buffer sizes) if your system can handle it – about 12 ms or less is usually a good idea.

Setting up your software

Now it is time to set up your programs. The procedures below describe how to set things up in Cubase Essential. If you are using another program on the other computer, please refer to its documentation.

Setting the sample rate

The projects in both programs must be set to use the same sample rate. Select "Project Setup…" from the Project menu and make sure the sample rate is the same in both systems.

Streaming digital audio between applications

1. Create input and output busses in both applications and route these to the digital inputs and outputs.
The number and configuration of the busses depends on your audio hardware and on your needs. If you have a system with eight digital i/o channels (such as an ADAT connection), you could create several stereo or mono busses, or any combination you need. The important thing is that you should have the same configuration in both applications – if you have four stereo output busses on computer 1, you want four stereo input busses on computer 2, etc.

2. Set things up so that computer 1 plays back some audio.
You could for example import an audio file and play it back in Cycle mode.

3. In the Inspector or Mixer, make sure the playing audio channel is routed to one of the digital output busses you set up.

4. In computer 2, open the Mixer and locate the corresponding digital input bus.
The audio being played back should now "appear" in the program running on computer 2. You should see the input bus level meters moving.

5. Reverse this procedure so that computer 2 plays back and computer 1 "listens".

Now you have verified that the digital connection works as it should.

⇨ From this point on in this chapter, we refer to the busses connected to the digital inputs and outputs as "VST System Link busses".

Settings for the audio hardware

When you send VST System Link data between computers, it is important that the digital information is not changed in any way between the programs. Therefore, you should open the control panel (or additional application) for your audio hardware and make sure that the following conditions are met:

▪ If there are additional "format settings" for the digital ports that you use for VST System Link data, make sure these are turned off.
For example, if you are using an S/PDIF connection for VST System Link, make sure that "Professional format", Emphasis and Dithering are turned off.

▪ If your audio hardware has a mixer application allowing you to adjust the levels of digital inputs and outputs, make sure that this mixer is disabled or that the levels for the VST System Link channels are set to ± 0dB.

▪ Similarly, make sure no other forms of DSP (pan, effects, etc.) are applied to the VST System Link signal.

Notes for Hammerfall DSP users

If you are using RME Audio Hammerfall DSP audio hardware, the Totalmix function allows for extremely complex signal routing and mixing in the audio hardware. This can in some situations lead to "signal loops" in which case the VST System Link will not work. If you want to make absolutely sure this will not cause any problems, select the default or "plain" preset for the Totalmix function.

Activating VST System Link

Before you proceed, you need to make sure that VST System Link is set as Timecode Source in the Project Synchronization Setup dialog and that the desired Sync options are activated, see "Sync Options" on page 270.

After setting up the inputs and outputs, you now need to define which input/output should carry the actual VST System Link information.

The System Link networking signal is carried on only one bit of one channel. This means that if you have an ADAT based system which normally carries eight channels of 24-bit audio, once you activate VST System Link you will have seven channels of 24-bit audio and one channel of 23-bit audio (the least significant bit of this last channel will be used for networking). In practice this makes no discernible difference to the audio quality, since you will still have around 138dB headroom on this channel.

To set things up, open the VST System Link panel:

1. Open the Device Setup dialog on the Devices menu.

2. Select VST System Link in the Devices list to the left.
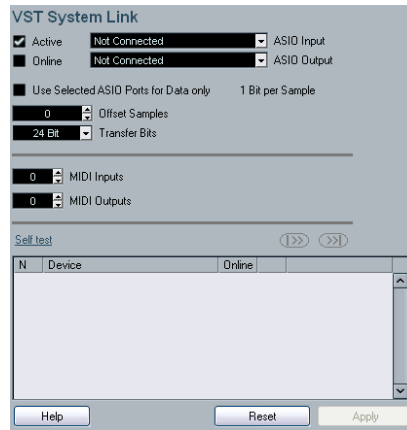
3. Use the ASIO Input and ASIO Output pop-up menus to define which channel should be the networking channel (and thus become a 23-bit audio channel, in our example). Quite often you will be able to leave these pop-ups the way they are.

4. Click the Active checkbox at the top of the panel.

5. Repeat the steps above for every computer on the network.

As the computers are made active, you should see the small Sending and Receiving indicators flashing on each active computer, and the name of each computer should appear in the list at the bottom of the pane. Each computer is assigned a random number – do not worry about this, it is just so the network knows internally which one is which.

▪ You can double-click on the name in bold (which is the name of the computer you are currently working on) and set it to whatever other name you wish.
This name will appear in the System Link window of every computer on the network.

⇨ If you do not see the name of each computer appearing once you have made it active, you may have to check your settings.
Go through the procedure above again and make sure that all ASIO cards are listening to the digital clock signals correctly, and that each computer has the correct inputs and outputs assigned to the System Link network.

Putting the network online

After each computer's name you will see whether it is online or not. When a computer is online, it will receive transport and timecode signals, and its sequencer application can be started and stopped by remote control. If it is off-line, it can only be started from its own keyboard – it is effectively an independent machine, although it is still on the network.

⇨ Note that any computer can control any and all of the others – VST System Link is a peer-to-peer network and there is no absolute "master" computer.
However, most users do like to think of one machine as the master (in a one person/two computer network, this would be the machine you actually sit behind most of the time).

For now, let's put all computers online:

1. Activate the Online checkbox in the VST System Link panel for all computers.

2. Check that the system is working by pressing Play on one computer – all computers should start almost instantly and play perfectly in time, with sample-accurate precision.

• The Offset setting allows you to adjust whether one machine will play back slightly ahead or behind the rest.
This is normally not needed, but occasionally with some hardware you may find that the lock is a few samples out. In that case you can adjust the lock with the Offset value. For now, leave it set to 0 – it will most likely be what you want.

• The Transfer Bits setting allows you to specify whether you want to transfer 24 or 16 bits. This allows you to use older audio cards which do not support transfer of 24 bits.

VST System Link sends and understands all transport commands, so you can play, stop, fast forward, rewind, etc. the entire network from one computer without a problem – try it! If you jump to a locator point on one machine, all other machines will also instantly jump to that locator point. You can even scrub on one computer and have the video and audio on another computer actually scrub right along with you.

⚠ Make sure that all computers have their tempos set to the same value, otherwise your synchronization will be seriously skewed.

Using MIDI

As well as supplying transport and sync control, VST System Link also supplies up to 16 MIDI ports, each with 16 channels. You set this up as follows:

1. Use the MIDI Inputs and Outputs value boxes to specify the number of MIDI ports you need.
The default value is 0 MIDI In and 0 MIDI Out ports.

2. Create a MIDI track in the Project window and open the Inspector (top section).

3. If you now pull down the Input or Output Routing pop-up menu, you will find the specified System Link ports added to the list of MIDI Inputs and Outputs.

This allows you to route MIDI tracks to VST instruments running on another computer, as described in the application examples (see "Using one computer for VST instruments" on page 276).

The "Use Selected ASIO Ports for Data only" setting

If you are sending huge amounts of MIDI data at once, there is a small possibility that you might run out of bandwidth on your VST System Link network. This will manifest itself by notes "choking" or timing becoming erratic.

If this happens, you can devote more bandwidth to MIDI by activating "Use Selected ASIO Ports for Data only" in the VST System Link Setup panel. When this is activated, the VST System Link information will be sent on the entire channel instead of just one bit, more than enough for all the MIDI you could ever hope to use. The downside is that

you can no longer use this ASIO channel for audio transfer (do not connect it to a speaker!), thus leaving you only 7 channels of audio in our ADAT cable example. Depending on how you work this might be a reasonable compromise.

Hearing the network audio

If you are using an external mixing desk, hearing your audio really is not an issue – just plug the outputs of each computer into the desired channels on the external mixing desk, press Play on one of the computers, and you're good to go.

However, many people prefer to mix internally inside the computer and just use a desk for monitoring (or maybe not use any external mixer at all). In this case you will need to select one computer to be your "main mix computer" and send the audio from your other computers into this.

In the following example, we assume you are using two computers, with computer 1 as your main mix computer and computer 2 running two additional stereo audio tracks, an FX channel track with a reverb plug-in and a VST instrument plug-in with stereo outputs.

1. First you want to set things up so that you can listen to the audio playback from computer 1.
In other words, you need an unused set of outputs, e.g. an analog stereo output, connected to your monitoring equipment.

2. Go to computer 2 and route each of the two audio tracks to a separate output bus.
These should be busses connected to the digital outputs – let's call them Bus 1 and 2.

3. Route the FX channel track to another VST System Link bus (Bus 3).

4. Route the VST instrument channel to yet another bus (Bus 4).

5. Go back to computer 1 and check the corresponding four VST System Link input busses.
If you start playback on computer 2, the audio should "appear" on the input busses on computer 1. However, to mix these audio sources you need actual mixer channels.

6. Add four new stereo audio tracks on computer 1 and route these to the output bus you use for listening, e.g. to the analog stereo outputs.

7. For each of the audio tracks, select one of the four input busses.
Now, each computer 2 bus is routed to a separate audio channel on computer 1.

8. Activate monitoring for the four tracks.

If you now start playback, the audio from computer 2 will be sent "live" to the new tracks on computer 1, allowing you to hear them together with any tracks you play back on computer 1.

For more information about Monitoring, see "About monitoring" on page 13.

Adding more tracks

What if you have more audio tracks than you have VST System Link busses (physical outputs)? Then you just use the computer 2 mixer as a submixer: Route several audio channels to the same output bus and adjust the output bus level if needed.

Note also that if your audio cards have multiple sets of input and output connections you can link up multiple ADAT cables and send audio via any of the busses on any of the cables.

Internal mixing and latency

One problem with mixing inside the computer is the latency issue we mentioned earlier. The VST engine always compensates for record latencies, but if you are monitoring through computer 1 you will hear a processing delay while you listen to signals coming from your other computers (not on your recording!). If your audio card in computer 1 supports ASIO Direct Monitoring you should definitely turn this on – you can find the setting in the VST Audio System Device Setup panel (see "ASIO Direct Monitoring" on page 55). Most modern ASIO cards support this function. If yours does not you may want to change the Offset value in the VST System Link Setup panel to compensate for any latency issues.

Setting up a larger network

This is not much more difficult than a two computer network. The main thing to remember is that VST System Link is a daisy chain system. In other words, the output of computer 1 goes to the input of computer 2, the output of computer 2 goes to the input of computer 3, and so on around the chain. The output of the last computer in the chain must always go back into the input of computer 1, to complete the ring.

Once you have done this, the transmission of all the transport, sync, and MIDI information to the whole network is handled pretty much automatically. However, where you may run into confusion in a large network is in the transmission of audio signals back to a central mix computer.

If you have lots of hardware inputs and outputs on your ASIO cards you do not have to send audio via the chain at all, but can transmit it directly to the master mix computer via one or more of its other hardware Inputs. For example, if you have a Nuendo Digiset interface or 9652 card on computer 1 you could use ADAT cable 1 for networking, ADAT cable 2 as a direct audio input from computer 2, and ADAT cable 3 as a direct audio input from computer 3.

You can also transmit audio via the ring system if you do not have enough hardware I/Os for direct audio transmission. For example, in a four computer scenario you could send audio from computer 2 into a channel in the Mixer in computer 3, and from there to a channel in the Mixer in computer 4, and from there back to the master Mixer in computer 1. This can certainly be tricky to set up, so generally it is recommended that if you want to set up a complex network, you should make sure to use ASIO cards with at least three separate digital I/Os.

Application examples

Using one computer for VST instruments

In this example, one computer will be used as main record and playback machine, and another computer as a virtual synth rack.

1. Record a MIDI track into computer 1.

2. Once you have finished recording, route the MIDI output of that track to System Link MIDI port 1.

3. Now go to computer 2, open up the VST Instrument rack and assign an instrument to the first slot in the rack.

4. Route the VST instrument channel to the desired output bus.
If you are using computer 1 as your main mixing computer, this would be one of the VST System Link output busses, connected to computer 1.

5. Create a new MIDI track in the Project window of computer 2, and assign the MIDI output of the track to the VST instrument you created.

6. Assign the MIDI input of the track to be VST System Link port 1.
Now, the MIDI track on computer 1 is routed to the MIDI track on computer 2, which in turn is routed to the VST instrument.

7. Now activate monitoring for the MIDI track on computer 2, so that it will listen and respond to any MIDI commands coming in.
In Cubase Essential, you would click the Monitor button in the Track list or Inspector.

8. Start Playback on computer 1.
It will now send the MIDI information on the track to the VST instrument loaded on computer 2.

Even with a slow computer you should be able to stack a whole bunch of extra VST instruments this way, expanding your sound palette considerably. Do not forget that VST System Link MIDI is also sample-accurate, and thus has much tighter timing than any hardware MIDI interface ever invented!

Creating a virtual effect rack

The effect sends for an audio channel in Cubase Essential can either be routed to an FX channel track or to any activated Group or output bus. This allows you to use a separate computer as a "virtual effect rack", by setting things up in the following way:

1. Go to computer 2 (the machine you will use as effect rack) and add a new stereo audio track.
You cannot use an FX channel track in this case, since the track must have an audio input.

2. Add the desired effect as an insert effect for the track.
Let's say you add a high-quality reverb plug-in.

3. In the Inspector, select one of the VST System Link busses as input for the audio track.
You want to use a separate System Link bus, which will only be used for this purpose.

4. Route the channel to the desired output bus.
If you are using computer 1 as your main mixing computer, this would be one of the VST System Link output busses, connected to computer 1.

5. Activate monitoring for the track.

6. Now, go back to computer 1 and select a track to which you want to add some reverb.

7. Bring up the effect sends for the track in the Inspector.

8. Open the Send Routing pop-up menu for one of the sends, and select the VST System Link bus assigned to the reverb in step 3.

9. Use the Send slider to adjust the amount of effect as usual.

The signal will be sent to the track on computer 2 and processed through its insert effect, without using any processor power on computer 1.

You can repeat the steps above to add more effects to the "virtual effect rack". The number of effects available this way is only limited by the number of ports used in the VST System Link connection (and of course by the performance of computer 2, but given that it will not have to handle any recording or playback, you should be able to use quite a lot of effects).

Getting extra audio tracks

All computers on a VST System Link network are locked with sample-accuracy. Therefore, if you find that the hard drive on one computer is not fast enough to run as many audio tracks as you need, you can record new tracks on one of the other computers instead. This would create a "virtual RAID system", with several disks all operating together. All tracks will remain locked together just as tightly as if they were all running on the same machine. This means that you effectively have an unlimited track count! Need another 100 tracks? Just add another computer.

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Video

Background

Cubase Essential plays back video films in a number of formats.

Under Windows, video playback can be done using one of three playback engines: Video for Windows, Direct-Show or QuickTime 7.1. This ensures compatibility with as wide a range of video files as possible. The following file formats are supported: AVI, QuickTime and MPEG.

Under Mac OS X, QuickTime is always used as playback engine. QuickTime supports the following video file formats: AVI, MPEG, QuickTime and DV.

There are two ways to play back video:

▪ Without any special hardware.
See "Playing back video without any hardware" on page 280.

▪ Using video hardware that, for example, connects to an external monitor.
See "Playing back video file using video hardware" on page 281.

Before you start

When working on a project involving a video file, there are several points to bear in mind:

Have you selected the right playback engine? (Windows only)

The playback engine is used not only for playback of the video file, but also to provide file information in the Pool and in the Import Video dialog. Therefore, to make sure that you have chosen the right playback engine for a particular type of video file, check the file information displayed in the Import Video dialog or the Pool prior to trying to import or playing back the file.

When this information reads "0x0 pixel", "0.000 s" and "0 Frames", the video file is either corrupt, or the format is not supported by the codecs available to the selected video playback engine. You will either have to change the video playback engine, or install the required codec.

⚠ Trying to import or play back a file not supported by the selected video playback engine leads to unpredictable results – if no information on the number of frames, the length and the pixel resolution is available in the Import Video dialog, the Pool or the MediaBay, you cannot import/play this file properly with this particular video playback engine.

⚠ You can change the video playback engine in the Device Setup dialog. After having done so, make sure to remove any previously imported video file from the Pool first, and re-import it.

About the QuickTime video playback engine

In Cubase Essential for Windows, you select a playback engine in the Device Setup–Video Player page:
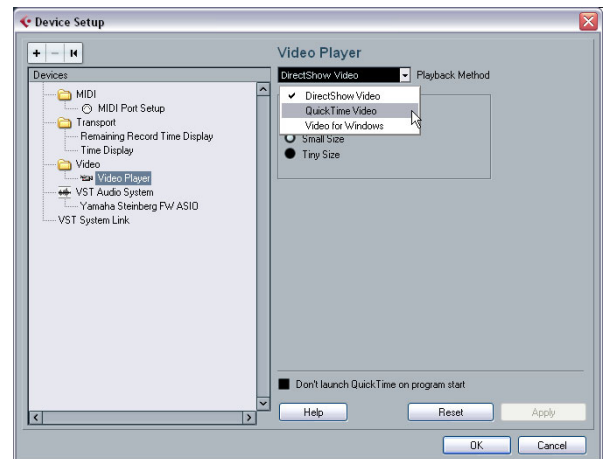
▪ Generally, you can expect most Windows hardware to work with DirectShow.
On a Windows system, the DirectShow and Video for Windows players are provided by the operating system, so you do not have to install any additional software.

▪ Under Windows, QuickTime 7.1 must be installed on your computer for QuickTime playback to be available.
There is a freeware version (a QuickTime installer is included on the Cubase Essential DVD if required, or you can download it from www.quicktime.com) and a "pro" version, which offers additional video cutting options. The engine is the same in both versions, so for mere playback in Cubase Essential there is no need to purchase the "pro" version.

▪ Under Mac OS X, only the QuickTime playback engine is available, supporting the formats AVI, MPEG, Quick-Time and DV. If your system has a FireWire port, there is also a FireWire option – see below.

⚠ QuickTime as a video playback engine is available only if you have QuickTime 7.1 (or higher) installed on your computer. If you do not have QuickTime, or if a version lower than 7.1 is installed, this option will not be available in Cubase Essential.

Video quality in QuickTime

When you are using QuickTime as your video playback engine, you can select "High Quality" from the Video window context-menu, or "Use high-quality video settings when available" in the Device Setup dialog, Video Player page, in the Video Properties section for QuickTime.

▪ When your QuickTime video was recorded with the corresponding quality settings, selecting the "Use high-quality video settings when available" or the "High Quality" option will make the video display sharper and smoother. Note that this will also lead to increased processor load.

Video playback preferences

In the Preferences (Event Display–Video page), there are two options for video playback:

▪ Show Video Thumbnails.
When this is activated, thumbnail frames of the video contents are shown in the track.

▪ Video Cache Size.
This determines how much memory is available for video thumbnails. If you have long video clips and/or work with a large zoom factor (so that a lot of frames are shown in the thumbnails), you may have to raise this value.

Playing back a video file

Video files are displayed as events/clips on the video track, with thumbnails representing the frames in the film (if the option Show Video Thumbnails is activated in the Preferences, see above).

A video event on a video track

In the Track list and Inspector, you will find the following controls for video tracks:

Button	Description
Lock	When this is activated, the video event will be locked, see "Locking events" on page 34.
Mute Video	When this is activated, video playback will be stopped, but playback of any other events in the project will continue (to decrease the processor load). You may have to use the Track Controls Settings dialog to make this button visible in the Track list.

To view the video on the computer screen (as opposed to on an external monitor, see below), proceed as follows:

▪ If you're running Mac OS X, open the Device Setup dialog from the Devices menu, click "Video Player" in the list and make sure "Onscreen Window" is selected in the Video Output section of the dialog.

▪ Under Windows, either pull down the Devices menu and select Video, or use a key command – by default [F8], or double-click the video clip.
A video window appears. In Stop mode, this displays the video frame at the project cursor position.

The video will be played back together with any other events in the Project window as usual.

Playing back video without any hardware

▪ For the DirectShow video player, open the Device Setup dialog from the Devices menu, click Video Player in the Devices list and use the buttons in the Video Properties section to select a size or right-click in the video window to switch to full screen. Right-click again to exit full screen.

▪ For the QuickTime player (Windows and Mac), you can drag the borders, just like resizing other windows. You can also right-click in the video window to open the Video window context menu and select one of the Size options. There is also a Full Screen Mode available in the menu. Right-click again or press the [Esc] key on your computer keyboard to exit full screen mode.

⇨ Playing back video on your computer screen puts a limit on the size of the video window as well as the image quality.

Playing back video file using video hardware

Under Windows, multi-head graphics cards that support overlay functionality can be used to display the video picture on an external TV or computer monitor in full screen mode. The manufacturers nVIDIA and Matrox have working (and tested) solutions available. Check the card's documentation for information on how it handles video output and how to set it up for multi-monitor display.

For Apple computers equipped with a FireWire port, you can easily connect external video hardware via this, as OS X has built-in video support for the most common formats (NTSC/PAL/DVCPRO). FireWire is capable of high data-transfer speed and is the most common standard for communicating with video-related peripheral equipment. To play back a video file via hardware connected to the FireWire port, select "FireWire" in the Outputs pop-up of the Device Setup–Video Player dialog. When FireWire is selected as output, a number of format options appear on the Format pop-up, allowing you to select between various video formats and resolutions.

Operations

Importing a video file

Video files are imported in the same manner as audio files.

• By using the File menu (Import–Video File).

• By using drag and drop from the Windows Explorer/ Mac OS Finder, the Pool or the MediaBay.
This requires that a video track has been added to the Project and that you drop the video file onto this track.

• By importing the file to the Pool first and then dragging it into the Project window (see the chapter "The Pool" on for details).

Please note the following:

• You can only have one video track in each project. The Video track is added like other tracks in the Project window by using the Add Track submenu on the Project menu. If a project does not contain a video track when you import a video file via File–Import–Video file, this is added automatically.

• All video files on the track must be of the same size and compression format.

Video import preferences

In the Preferences dialog (Editing–Video page), you will find one option that affects the import of video files:

• Generate Thumbnail Cache on Import Video File
When this is activated, a thumbnail cache file will be created automatically when you import a video file. This is handy, as a cache file will also be created when you import a video file using drag and drop.

Advantage of thumbnail cache files

⇨ To display video thumbnails in the Project window, the option "Show Video Thumbnails" has to be activated in the Preferences dialog (Event Display–Video page).

When working with video in Cubase Essential, video files are displayed as events/clips on the video track with thumbnails representing the frames in the film. These are calculated in realtime, i.e. they have to be redrawn during scrolling or moving. As this consumes quite a lot of processor power, reaction sometimes may be sluggish. To remedy this, you can generate a thumbnail cache file.

The cache file is used in situations where the processor load is very high and the correct redrawing or realtime calculation might use system resources necessary for editing or processing. When the cache file is used and you zoom in on the thumbnails, you will see that they are in a lower resolution, i.e. the pictures are not as clean as when they are calculated. When the processes that rely heavily on the computer CPU are finished, the frames will be automatically recalculated, i.e. the program automatically switches between realtime calculation of the pictures and using the cache file.

The generated thumbnail cache file will be stored in the same folder as the video file and will get the name of the file with the suffix ".videocache".

Generating thumbnail cache files during video import

A thumbnail cache file will be created automatically before the file is inserted in the Project window, if you activated "Generate Thumbnail Cache on Import Video File" in the Preferences (Editing–Video page).

A window will be displayed, showing you the progress and the estimated time for the process.
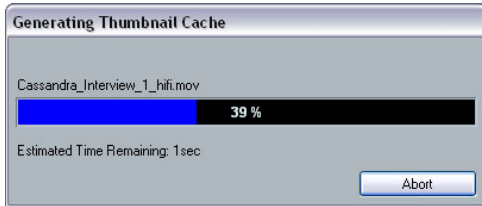
The thumbnail cache file is being created.

After the cache file is created, the window will be closed and the video clip is inserted as usual. When you now start video playback and perform processor consuming operations, the thumbnail file is used to display the video frames in the Project window. When enough processor power is available, the "real" calculated thumbnail frames are displayed again.

Generating thumbnail cache files from within the Pool

When you have video files without thumbnail cache files (e.g. if you did not create a thumbnail cache file during import), you always have the possibility to generate the thumbnail cache file at a later stage. This is done from within the Pool.

Proceed as follows:

1. Open the Pool window and locate the video file you want to create a thumbnail cache file for.

2. Right-click the file to open the context menu and select "Generate Thumbnail Cache", or select "Generate Thumbnail Cache" from the Media menu.
Just as when creating the file during import, the status window opens (see above).

After the file is created, the window will be closed and the thumbnail cache file is used when necessary, i.e. under high load.

⚠ Please note that the cache file will not be automatically updated if a video file is edited. Whenever you change a video file (e.g. in a video editing application), you need to create a new thumbnail cache file manually, as described above. (To refresh the "real" thumbnails of an edited video file, resize the video track so that they are calculated again.)

Editing a video file

Video clips are played back by events just as audio clips are. You can use all the basic editing operations on video events, just as with audio events. The following operations are not possible on the video track:

▪ Drawing, Gluing, and Scrubbing.
Note that when you activate the Mute button for a video track, the video playback will be stopped, but playback of any other Project events will continue, see below.

▪ The video track has no editor and does not make use of parts.

▪ Cubase Essential allows you to cut, copy, paste and trim video events, i.e. your video track may contain more than one video event. However, when using the DirectShow video player (Windows only), you may find that only the first event on the video track is played back correctly. In such a case make sure that the video track contains no more than one video event.

▪ Under Windows, you may find that you are unable to edit a video file copied from a CD. This is because files copied from CD are write protected by default. Right-click the file, and deactivate the "Read-Only" option in the File Properties dialog.

▪ When you have a video file in a format not supported by Cubase Essential, use an external application to convert the file to a format that Cubase Essential can import.

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ReWire

Introduction

ReWire and ReWire2 are special protocols for streaming audio between two computer applications. Developed by Propellerhead Software and Steinberg, ReWire provides the following possibilities and features:

• Realtime streaming of up to 64 separate audio channels (256 with ReWire2), at full bandwidth, from the "synthesizer application" into the "mixer application".
In this case, the "mixer application" is of course Cubase Essential. An example of a "synthesizer application" is Propellerhead Software's Reason.

• Automatic, sample accurate synchronization between the audio in the two programs.

• The possibility to have the two programs share one audio card and take advantage of multiple outputs on that card.

• Linked transport controls that allow you to play, rewind, etc., either from Cubase Essential or from the synthesizer application (provided it has some kind of transport functionality).

• Automatic audio mixing functions of separate channels as required.
In the case of Reason, for example, this allows you to have separate mixer channels for the different devices.

• Additionally, ReWire2 offers the possibility to route MIDI tracks in Cubase Essential to the other application, for full MIDI control.
For each ReWire2 compatible device, a number of extra MIDI outputs will be made available in Cubase Essential. In the case of Reason, this allows you to route different MIDI tracks in Cubase Essential to different devices in Reason, with Cubase Essential serving as the main MIDI sequencer.

• The overall load on your system is much reduced, compared to when using the programs together in the conventional way.

Launching and quitting

When using ReWire, the order in which you launch and quit the two programs is very important:

Launching for normal use with ReWire

1. First launch Cubase Essential.

2. Enable one or several ReWire channels in the ReWire Device dialog for the other application.
This is described in detail in the section "Activating ReWire channels" on page 285.

3. Launch the other application.
It may take slightly longer for the application to start when you are using ReWire.

Quitting a ReWire session

When you are finished, you also need to quit the applications in a special order:

1. First quit the synthesizer application.

2. Then quit Cubase Essential.

Launching both programs without using ReWire

We cannot think of any scenario, in which you would need to run Cubase Essential and the synthesizer application simultaneously on the same computer, without using ReWire, but you can:

1. First launch the synthesizer application.

2. Then launch Cubase Essential.

⇨ Please note that the two programs now compete for system resources such as audio cards, just as when running either with other, non-ReWire audio applications.

Activating ReWire channels

ReWire supports streaming of up to 64 separate audio channels, while ReWire2 supports 256 channels. The exact number of available ReWire channels depends on the synthesizer application. Using the ReWire Device panels in Cubase Essential, you can specify which of the available channels you want to use:

1. Pull down the Devices menu and select the menu item with the name of the ReWire application. All recognized ReWire compatible applications will be available on the menu.
The ReWire panel appears. This consists of a number of rows, one for each available ReWire channel.

The ReWire panel for Reason

2. Click on the power buttons to the left to activate/deactivate the desired channels.
The buttons light up to indicate activated channels. Please note that the more ReWire channels you activate, the more processing power is required.

• For information about exactly what signal is carried on each channel, see the documentation of the synthesizer application.

3. If desired, double-click on the labels in the right column, and type in another name.
These labels will be used in the Cubase Essential Mixer to identify the ReWire channels.

Using the transport and tempo controls

⚠ This is only relevant if the synthesizer application has some sort of built-in sequencer or similar.

Basic transport controls

When you run ReWire, the transports in the two programs are completely linked. It does not matter in which program you play, stop, fast forward or rewind. However, recording (if applicable) is still completely separate in the two applications.

Loop settings

If there is a loop or cycle facility in the synthesizer application, that loop will be completely linked to the cycle in Cubase Essential. This means that you can move the start and end point for the loop or turn the loop on or off in either program, and this will be reflected in the other.

Tempo settings

As far as tempo goes, Cubase Essential is always the master. This means that both programs will run in the tempo set in Cubase Essential.

However, if you are not using the tempo track in Cubase Essential, you can adjust the tempo in either program, and this will immediately be reflected in the other.

⚠ If you are using the tempo track in Cubase Essential (i.e. the Tempo button is activated on the Transport panel), you should not adjust the tempo in the synthesizer application, since a tempo request from ReWire will automatically deactivate the tempo track in Cubase Essential!

How the ReWire channels are handled in Cubase Essential

When you activate ReWire channels in the ReWire Device panels, they will become available as channel strips in the Mixer. The ReWire channel strips have the following properties:

▪ ReWire channels appear to the right of the other audio and MIDI channel strips in the Mixer.

▪ ReWire channels may be any combination of mono and stereo, depending on the synthesizer application.

▪ ReWire channels have the same functionality as regular audio channels.
This means you can set volume and pan, add EQ, insert effects and sends and route the channel outputs to groups or busses (done in the Inspector). However, ReWire channels have no monitor buttons.

▪ All ReWire channel settings can be automated using the Read/Write buttons.
When you write automation, channel automation tracks will automatically appear in the Project window. This allows you to view and edit the automation graphically, just as with VST instrument channels, etc.

▪ You can mix down the audio from ReWire channels to a file on your hard disk with the Export Audio Mixdown function (see "Mixing down to audio files" on page 256).
You can export the output bus to which you have routed the ReWire channels.

Routing MIDI via ReWire2

⚠ This feature is only available with ReWire2-compatible applications.

When using Cubase Essential with a ReWire2-compatible application, additional MIDI outputs will automatically appear on the MIDI Output pop-up menus for MIDI tracks. This allows you to play the synthesizer application via MIDI from Cubase Essential, using it as one or several separate MIDI sound sources.
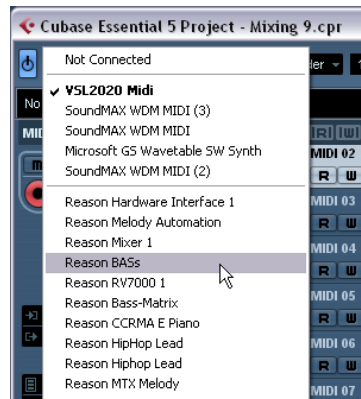
The MIDI outputs for a Reason song. Here, each output goes directly to a device in the Reason rack.

▪ The number and configuration of MIDI outputs depends on the synthesizer application.

Considerations and limitations

Sample rates

Synthesizer applications may be limited to audio playback in certain sample rates. If Cubase Essential is set to a sample rate other than those, the synthesizer application will play back at the wrong pitch. Consult the documentation of the synthesizer application for details.

ASIO drivers

ReWire works well with ASIO drivers. By using the Cubase Essential bus system you can route sounds from the synthesizer application to various outputs on an ASIO compatible audio card.

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File handling

Working with Projects

New Project

The New Project command on the File menu allows you to create a new project, either as an empty project or based on a template:

1. Select "New Project…" from the File menu.
The templates list is displayed. When you install Cubase Essential, templates for various purposes are included, but you can also create your own (see "Save as Template" on page 289).

2. Select a template from the list or select "Empty".
A file dialog opens, allowing you to specify a folder for the new project.

3. Select an existing project folder or create a new folder and click OK.
A new, untitled project is created.

Open

The "Open…" command on the File menu is used for opening saved project files.

1. Select "Open…" from the File menu.
A file dialog opens, allowing you to select a project.

2. Click Open to open the selected project.

▪ Several projects can be open at the same time.
This is useful if you want to copy parts or entire sections from one project to another.

3. If there is already an open project, you will be asked if you want to activate the new project.
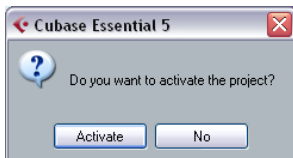
▪ Click No to open the project inactive.
This significantly reduces load times, especially for large projects.

▪ Click Activate to open and activate the new project.
The active project is indicated by the blue Activate Project button in the upper left corner of the Project window. To activate a different project, simply click its Activate Project button.

▪ You can also open project files by selecting an entry from the "Recent Projects" submenu on the File menu.
This submenu lists the projects you have recently worked with, with the most recent at the top of the list.

▪ You can also set Cubase Essential to automatically open a project when you launch the program (see "Startup Options" on page 290).

About the "Missing Ports" dialog

If you open a Cubase Essential project created on a different system (other audio hardware), the program tries to find matching audio inputs and outputs for the i/o busses (this is one of the reasons why you should use descriptive, generic names for your input and output ports – see "Preparations" on page 10).

If the program cannot resolve all audio/MIDI inputs and outputs used in the project, a Missing Ports dialog will open. This allows you to manually re-route any ports specified in the project to ports available in your system.

Close

The Close command on the File menu closes the active window. If a Project window is active, selecting this closes the corresponding project.

▪ If the project contains unsaved changes, you are asked whether you want to save it before closing.
If you select "Don't Save" and have recorded or created new audio files since saving, you will be asked if you want to delete or keep these.

Save and Save As

The commands Save and Save As allow you to save the active project as a project file (file extension ".cpr"). The Save command stores the project under its current name and location, while Save As allows you to rename and/or relocate the file. If a project has not been saved yet or if it has not been changed since it was last saved, only Save As is available.

⚠ Generally, we recommend that you save project files in their project folders, to keep the projects as manageable as possible.

A word about file extensions

Under Windows, file types are indicated by three letter file name extensions (such as *.cpr for Cubase Essential project files).

Under Mac OS X, it is not necessary to use file name extensions, since the file types are stored internally in the files. However, if you want your Cubase Essential projects to be compatible with both platforms, you should make sure the option "Use File Extension in File Dialog" is activated in the Preferences (General page). When this is activated, the proper file name extension is automatically added when you save a file.

Save New Version

This function is only available as a key command, by default [Ctrl]/[Command]-[Alt]/[Option]-[S]. When you use this function, an identical, new project file is being created and activated.

The new file will get the same name as the original project, but with an incremental number attached. For example, if your project is called "My Project", you will get new versions called "My Project-01", "My Project-02", and so on.

Save New Version is useful if you are experimenting with edits and arrangements and want to be able to go back to a previous version at any time. The newest versions are always listed on the Recent Projects submenu on the File menu for instant access.

Save as Template

This function allows you to save the current project as a template. When you create a new project, the available templates are listed, allowing you to base the new project on a template.

Proceed as follows:

1. Set up a project.

2. Select "Save As Template…" from the File menu and save the project template under the desired name.

▪ Templates can contain clips and events just like regular projects.
If this is not what you want, make sure to remove all clips from the Pool before you save the project as a template.

Templates are always stored in the Templates folder, see .

Setting up a default template

If you always want the same default project to open when you launch Cubase Essential, you can save a default template. Proceed as follows:

1. Set up a project.

2. Select "Save As Template…" from the File menu and save the project template with the name "default".

3. Open the Preferences dialog and select the General page.

4. Open the "On Startup" pop-up and select "Open 'Default' Template".

The next time you launch Cubase Essential, the default template will automatically be opened. For details on the other Startup options, see .

Back up Project

This function is very useful if you want to move or backup your project.

1. Select "Back up Project…" from the File menu.
A file dialog opens in which you can choose an existing empty folder or create a new folder to save the project.

2. Click OK.
The "Back up Project Options" dialog opens.

This dialog contains the following options:

Option	Description
Project Name	Enter a project name if you want to change it from the default (the current name of the project).
Keep Current Project Active	When this option is activated, the current project will still be the active project after clicking OK. If you wish to switch to the new backup project instead, you need to deactivate this option.
Minimize Audio Files	If this is activated, only the audio file portions that are actually used in the project will be included. This can significantly reduce the size of the project folder (if you are using small sections of large files), but it also means you cannot use other portions of the audio files if you continue working with the project in its new folder.
Freeze Edits	This will perform a Freeze Edits operation, making all processing and applied effects permanent to each clip in the Pool, see "Freeze Edits" on page 137.
Remove Unused Files	When this is activated, only files in the Pool that are actually used in the project will be stored in the new folder.
Do Not Back up Video	When this is activated, any video clips on the video track or in the Pool of the current project will not be included in the backup project.

3. Make the desired settings.

4. Click OK.
A copy of the project is saved in the new folder. The original project is not affected.

Auto Save
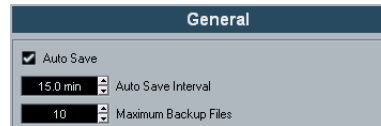
If you activate the Auto Save option in the Preferences (General page), Cubase Essential will automatically save backup copies of all open projects with unsaved changes.

These backup copies are named "<project name>-xx.bak", where xx is an incremental number. Unsaved projects are backed up in a similar way as "UntitledX-xx.bak", with X being the incremental number for unsaved projects. All backup files are saved in the project folder.

▪ Use the "Auto Save Interval" setting to specify the time intervals in which a backup copy will be created.

▪ Use the "Maximum Backup Files" option to specify how many backup files will be created with the Auto Save function.
When the maximum number of backup files is reached, the existing files will be overwritten (starting with the oldest file).

⇨ With this option only the project files themselves will be backed up. If you want to include the files from the Pool and save your project in a different location, you need to use the "Back up Project" function.

Startup Options

The "On Startup" pop-up menu in the Preferences (General page) allows you to specify what should happen each time you launch Cubase Essential.
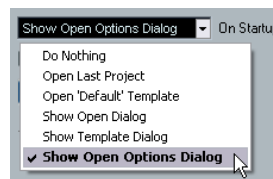
The following options are available:

Option	Description
Do Nothing	Cubase Essential launches without opening a project.
Open Last Project	The last saved project is opened on launch.

Option	Description
Open 'Default' Template	The default template is opened, see "Setting up a default template" on page 289.
Show Open Options Dialog	The Open dialog opens on launch, allowing you to manually locate and open the desired project.

Cubase Essential Open Document Options dialog

This dialog will open in two cases:

▪ If you launch Cubase Essential with the option "Show Open Options Dialog" selected on the "On Startup" pop-up menu in the Preferences (General page).

▪ If you hold down [Ctrl]/[Command] while launching Cubase Essential.
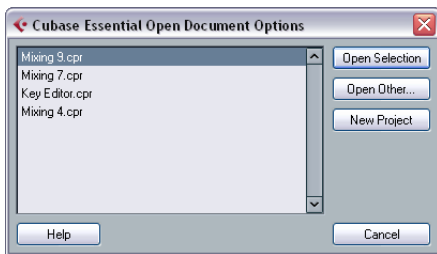
The Open Document Options Dialog

The dialog lists your recently used projects.

▪ To open a project, select it and click the "Open Selection" button.

▪ To open another project not listed here, click the "Open Other…" button.
A file dialog opens that allows you to look for the desired file on your disk.

▪ To create a new project, click the "New Project" button.

Revert

If you select "Revert" from the File menu, you will be asked whether you really want to revert to the last saved version of the project. If you click "Revert", all changes you have made since saving will be discarded.

If you have recorded or created new audio files since saving, you will be asked whether you want to delete or keep these.

Importing audio

In Cubase Essential audio can be imported in a variety of different formats. For example, you can import tracks from audio CDs, or import audio files saved in different formats (compressed and uncompressed).

For information on audio file import preferences, see "Audio file import options" on page 27. For information on how to import audio files into the Pool and import options, see "About the Import Medium dialog" on page 165.

Importing audio CD tracks

You can import audio from audio CDs into Cubase Essential projects in two ways:

▪ To import the CD tracks directly into project tracks, choose the "Audio CD…" option from the Import sub-menu on the File menu.
The imported audio CD track(s) are inserted on the selected audio track(s) at the project cursor position.

▪ To import the CD tracks into the Pool, select "Import Audio CD…" from the Media menu.
This might be the preferred method if you want to import several CD tracks in one go.

Selecting one of the Import Audio CD menu items brings up the following dialog:
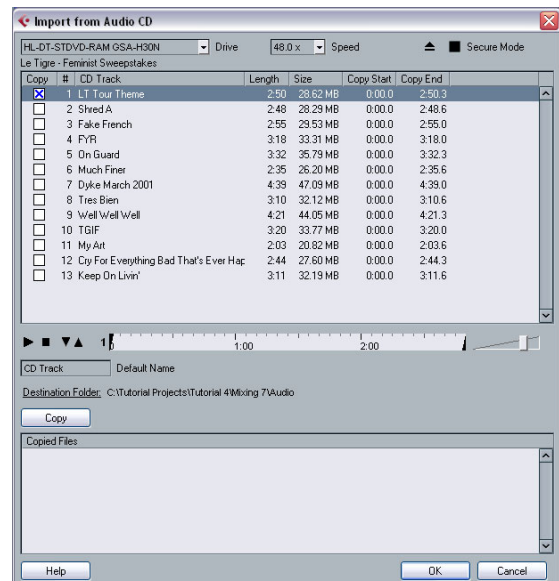
To import one or more tracks, proceed as follows:

1. If you have more than one CD drive, select the correct one from the Drives pop-up menu at the top left.
On opening the CD, the program tries to retrieve the track names from CDDB (a CD database). If no connection to CDDB can be established or the CD track names are not found, you can manually change the generic track name in the Default Name field.

2. Windows only: Activate the "Secure Mode" option if you want to use a Secure Read mode.
Use this if you encounter problems when trying to import an audio CD. Error checking and correction will be done during the process. Note that this mode will take more time.

3. In the Windows version, select the data transfer speed from the Speed pop-up menu.
While you normally want to use the fastest possible speed, you may have to select a slower speed for flawless audio extraction.

4. Activate the Copy checkbox for every audio file you want to import.
You can also select a copy section for every file, see below.

5. Click on the Copy button to create a local copy of the audio file(s) or section(s).
The copied files are listed at the bottom of the dialog. By default, imported audio CD tracks will be stored as Wave files (Windows) or AIFF files (Mac) in the Audio folder of the current project. To change the folder, click Destination Folder and select a different folder from the dialog. During copying, the Copy button is labeled "Stop"; click it to stop the process.

6. Click OK to import the copied audio files into the project, or click Cancel to stop the import and discard the copied files.

▪ If you import more than one audio file into project tracks, a dialog opens in which you have to choose whether to insert the tracks on one track or on different ones.
The new track(s) are displayed in the Project window. New audio clips are created and added to the Pool.

The columns in the "Import from Audio CD" dialog have the following functionality:

Column	Description
Copy	Activate the checkbox in this column for the track you want to copy/import. To activate more than one checkbox, click and drag over the checkboxes (or press [Ctrl]/[Command] or [Shift] and click).
#	This is the track number.

Column	Description
CD Track as shown	When you import an audio CD track, the file is named according to this column. The names are pulled automatically from CDDB, if possible. You can rename a track by clicking in the CD Track column and typing a new name. You can also apply a generic name to all audio CD tracks, if no name was available in CDDB.
Length	The length of the audio CD track in minutes and seconds.
Size	The file size of the audio CD track in MB.
Copy Start	You can copy a section of a track if you like. This indicates the start of the section to be copied in the track. By default, this is set to the start of the track (0.000) but you can adjust this on the copy selection ruler (see below).
Copy End	Indicates the end of the section to be copied in the track. By default, this is set to the end of the track but you can adjust this on the copy selection ruler (see below).

By default, complete tracks are selected.

▪ If you want to copy and import a section of an audio CD track only, select the track in the list and specify the start and end of the selection to be copied by dragging the handles in the copy selection ruler.
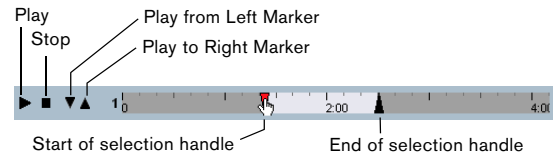
⇨ Note that you can import sections of several audio CD tracks by selecting them in turn and adjusting the selection. The start and end settings for each track are displayed in the list.

▪ You can audition the selected audio CD track by clicking the Play button.
The track will be played back from selection start to selection end (or until you click the Stop button).

▪ The Play from left Marker (down arrow) and Play to Right Marker (up arrow) buttons allow you to audition the start and end of the selection only.
The down arrow button will play a short snippet beginning at the start of the selection, while the up arrow button will play a snippet starting just before the end of the selection.

▪ To open the CD drive, click on the Eject button at the top of the dialog.

Importing ReCycle files

ReCycle by Propellerhead Software is a program designed especially for working with sampled loops. By "slicing" a loop and making separate samples of each beat, ReCycle makes it possible to match the tempo of a loop and edit the loop as if it was built of individual sounds. Cubase Essential can import two file types created by ReCycle:

▪ REX files (export file format of the first versions of ReCycle, extension ".rex").

▪ REX 2 files (file format of ReCycle 2.0 and later, extension ".rx2").

⚠ For this to work, the REX Shared Library needs to be installed on your system. If this is not the case, you will find the corresponding installer on the installation DVD (in the "Additional Content\Installer Data" folder).

Proceed as follows:

1. Select an audio track and move the project cursor to where you want the imported file to start.
You probably want to import REX files to tempo based audio tracks, since this will allow you to change the tempo later on (having the imported REX file automatically adjust).

2. Select "Audio File…" from the Import submenu on the File menu.

3. On the file type pop-up menu in the file dialog, select REX File or REX 2 File.

4. Locate and select the file you want to import, and click Open.
The file is imported and automatically adjusted to the current Cubase Essential tempo.

Unlike a regular audio file, the imported REX file will consist of several events, one for each "slice" in the loop. The events will automatically be placed in an audio part on the selected track and positioned so that the original internal timing of the loop is preserved.

5. If you now open the part in the Audio Part Editor, you can edit each slice separately by muting, moving and resizing events, adding effects and processing, etc.
You can also adjust the tempo and have the REX file automatically follow (provided that its track is tempo based).

⇨ You can achieve similar results by using Cubase Essential's own loop slicing features, see "Working with hitpoints and slices" on page 148.

Importing compressed audio files

Cubase Essential can import (and export, see "Mixing down to audio files" on page 256) several common audio compression formats. The procedure is the same as when importing any non-compressed audio file, with one important thing to note:

▪ When you import a compressed audio file, Cubase Essential creates a copy of the file and converts this to Wave format (Windows) or AIFF format (Mac OS X) before importing it. The original compressed file will not be used in the project.
The imported file is placed in the designated project Audio folder.

⚠ The resulting Wave/AIFF file will be several times larger than the original compressed file.

The following file types are supported:

MPEG audio files

MPEG, which stands for Moving Picture Experts Group, is the name of a family of standards used for encoding audiovisual information (e.g. movies, video, music) in a digital compressed format.

Cubase Essential can read MPEG Layer 3 (*.mp3) files.

Ogg Vorbis files

Ogg Vorbis is an open and patent-free format that offers very small audio files maintaining comparatively high audio quality. Ogg Vorbis files have the extension ".ogg".

Windows Media Audio files (Windows only)

Windows Media Audio is an audio format developed by Microsoft, Inc. Due to advanced audio compression algorithms, Windows Media Audio files can be made very small, maintaining good audio quality. The files have the extension ".wma".

⇨ For exporting Audio, see the chapter "Export Audio Mixdown" on page 255.

Exporting and importing standard MIDI files

Cubase Essential can import and export Standard MIDI Files, which makes it possible to transfer MIDI material to and from virtually any MIDI application on any platform. When you import and export MIDI files, you can also specify whether certain settings associated with the tracks should be included in the files (automation tracks, volume and pan settings, etc.).

Exporting MIDI files

To export your MIDI tracks as a standard MIDI file, pull down the File menu and select "MIDI File…" from the Export submenu. A regular file dialog opens, allowing you to specify a location and name for the file.

When you have specified a location and a name for the file, click "Save". The Export Options dialog opens, allowing you to specify a number of options for the file – what should be included in the file, its type and its resolution (see below for a description of the options).
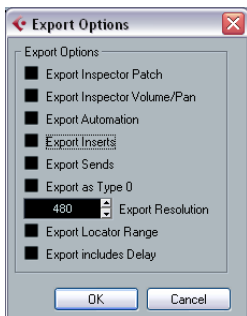
The Export Options dialog

You will also find these settings in the Preferences (MIDI–MIDI File page). If you set these up in the Preferences, you only need to click OK in the Export Options dialog to proceed.

The dialog contains the following options:

Option	Description
Export Inspector Patch	If this is activated, the MIDI patch settings in the Inspector – Bank Select and Program Select (used for selecting sounds in the connected MIDI instrument) are included as MIDI Bank Select and Program Change events in the MIDI file.
Export Inspector Volume/Pan	If this is activated, Volume and Pan settings made in the Inspector are included as MIDI Volume and Pan events in the MIDI file.
Export Automation	If this is activated, the automation data (as heard during playback) are converted to MIDI controller events and included in the MIDI file, see the chapter "Automation" on page 121. This also includes automation recorded with the MIDI Control plug-in (see the separate PDF document "Plug-in Reference").
	Note that if a continuous controller (e.g. CC7) has been recorded but the Read button is deactivated for the automation track (i.e. the automation is effectively switched off for this parameter), only the part data for this controller will be exported.
	If this option is deactivated and the Automation Read button is activated, no Continuous Controllers are exported. If the Read button is deactivated, the Controller data of the MIDI part are exported (these will now be handled like "regular" part data).
	In most cases, you would probably activate this option.
Export Inserts	If this is activated and you are using any MIDI plug-ins as insert effects, the modifications to the original MIDI notes that occur as a result of the effect(s) will be included in the MIDI file. A MIDI delay, for example, will produce a number of repeats to a MIDI note by actually adding additional, "echoing" notes at rhythmic intervals – these notes will be included in the MIDI file if the option is activated.
Export Sends	If this is activated and you are using any MIDI plug-ins as send effects, the modifications to the original MIDI notes that occur as a result of the effect(s) will be included in the MIDI file.
Export as Type 0	If this is activated, the MIDI file will be of type 0 (all data on a single track, but on different MIDI channels). If you do not activate this option, the MIDI file will be of Type 1 (data on separate tracks). Which type to choose depends on what you want to do with the MIDI file (in which application or sequencer it should be used, etc.).
Export Resolution	You can specify a MIDI resolution between 24 and 960 for the MIDI file. The resolution is the number of pulses, or ticks, per quarter note (PPQ) and determines the precision with which you will be able to view and edit the MIDI data. The higher the resolution, the higher the precision. The resolution should be chosen depending on the application or sequencer with which the MIDI file will be used though, since certain applications and sequencers may not be able to handle certain resolutions.
Export Locator Range	If this is activated, only the range between the locators will be exported.
Export includes Delay	If this is activated, the delay of the MIDI track will be included in the MIDI file. For more information about the Delay option, see "Basic track settings" on page 193.

⇨ The MIDI file will include the tempo information of the project (i.e. it will include the tempo and time signature events of the Tempo Track Editor or, if the Tempo Track is deactivated on the Transport panel, the current tempo and time signature).

⇨ Inspector settings other than those specified in the Export options are not included in the MIDI file!

Importing MIDI files

To import a MIDI file from disk, proceed as follows:

1. Select "MIDI File…" from the Import submenu on the File menu.

2. If there is already an open project, a dialog opens in which you can select whether a new project should be created for the file.
If you select "No", the MIDI file will be imported into the current project.

3. Locate and select the MIDI file in the file dialog that opens and click Open.

▪ If you choose to create a new project, select the project folder.
Select an existing project folder or create a new one.

The MIDI file is imported. The result depends on the contents of the MIDI file and the Import Options settings in the Preferences dialog (MIDI–MIDI File page). The Import Options are as follows:

Option	Description
Extract First Patch	If this is activated, the first Program Change and Bank Select events for each track are converted to Inspector settings for the track.
Extract First Volume/Pan	If this is activated, the first MIDI Volume and Pan events for each track are converted to Inspector settings for the track.
Import Controller as Automation Tracks	If this is activated, MIDI controller events in the MIDI file will be converted to automation data for the MIDI tracks. If this is deactivated, controller data for the MIDI Parts will be imported.
Import to Left Locator	If this is activated, the imported MIDI file will be placed so that it starts at the position of the left locator – otherwise it will start at the beginning of the project. Note that if you choose to have a new project created automatically, the MIDI file will always start at the beginning of the project.
Import dropped File as single Part	If this is activated and you drag and drop a MIDI file into the project, the whole file will be placed on a single track.

Option	Description
Ignore Master Track Events on Merge	If this is activated and you import a MIDI file into the current project, tempo track data in the MIDI file are ignored. The imported MIDI file will play according to the current tempo track in the project. If this option is deactivated, the Tempo Track Editor will be adjusted according to the tempo information in the MIDI file.
Auto Dissolve Format 0	If this is activated and you import a MIDI file of type 0 into the project, the file will automatically be "dissolved": For each embedded MIDI channel in the file, a separate track will be inserted in the Project window. If this is deactivated, only one MIDI track will be created. This track will be set to MIDI Channel "Any", allowing all MIDI events to play back on their original channels. You can also use the "Dissolve Part" function on the MIDI menu to distribute the events onto different tracks with different MIDI Channels at a later stage.
Import to Instrument tracks	If this is activated and you drag a MIDI file into the project, an Instrument track will be created instead of a MIDI track. Furthermore, the program will load the corresponding track preset for the instrument track (based on the program change events included in the MIDI file).

Cleanup

The Cleanup function on the File menu helps you to save hard disk space by locating and – if you like – deleting unused audio files in the project folders on your disk.

1. Select "Cleanup…" from the File menu.
If there are any open projects, an alert shows. Clicking "Close" closes all open projects and brings up the dialog "Cleanup Cubase Essential Project Folders".

2. To restrict the Cleanup function to a certain folder, click the "Search Folder" button and select the folder.
The default setting is that the Cleanup function is applied to all folders on all hard disks. You should only select a specific folder if you are certain it does not contain audio files used in other projects (outside the folder), see below. You can reset the function to search all folders by opening the "Search Folder" dialog again and clicking "Cancel".

3. Click the Start button.
Cubase Essential will now scan the selected folder (or all hard disks) for Cubase Essential project folders and check for audio and image files (in the Audio, Edits and Images subfolders) that are not used by any project. The found files are listed in the dialog.

4. When the scan is complete, you can select files by clicking in the list.
Use [Ctrl]/[Command]-click to select several files, and [Shift]-click to select a range of files. You can also click the Select All button to select all files in the list.

In the following situations, the Cleanup function will list files that are not unused:

- If you have moved or renamed files or folders (without updating the project files to use the new paths), there is no way for Cubase Essential to know that these files are used in a project.
- If you perform the Cleanup function on a folder in which there are audio files belonging to other projects (outside the folder), these files will be considered "unused".

- Also, make sure you do not delete any files used in other applications, or files that you generally want to keep!

However, you can always safely delete image files since these can be reconstructed by the program, if necessary.

5. Delete any files you do not want to keep by selecting them and clicking Delete.

6. Close the dialog by clicking the Close button.

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Customizing

Background

The user can customize the appearance and functionality of Cubase Essential in various ways.

User configurable items described in this chapter are:

- Setup dialogs
Several parts of the user interface (toolbars, Transport panel, Inspector, info lines and Channel Settings windows) provide a Setup dialog, where you can configure which items of the respective window area or panel are to be shown or hidden and where they should be located – see "Using the Setup options" on page 298.

- Track list
The controls shown in the Track list can be set for each track type – see "Customizing track controls" on page 299.

- Appearance
The general look of the program can be adjusted – see "Appearance" on page 301.

- Track and event colors
You can adjust which colors should be used – see "Applying track and event colors" on page 301.

This chapter also contains a section describing where your preferences and settings are stored (see "Where are the settings stored?" on page 303), to help you transfer your customized settings to another computer.

Using the Setup options

You can customize the appearance of the following elements:

- Transport panel
- Info line
- Channel Settings window
- Toolbars
- Inspector

The setup context menus

If you right-click the Transport panel, the toolbars, the info lines, or the Inspector, the respective setup context menu opens. For Channel Settings windows, these options are found in the dialog's context menu, on the Customize View submenu. Here, you can activate/deactivate elements as desired.

The following general options are available on the setup context menus:

- "Show All" makes all items visible.

- "Default" resets the interface to the default setting.

- "Setup…" opens the Setup dialog (see below).

If presets are available, they can be selected on the lower half of the menu.

This section shows Setup presets, if available.

The info line setup context menu

The Setup dialogs

If you select "Setup…" from the setup context menus, the Setup dialog opens. This allows you to specify which elements should be visible/hidden and to set the order of the elements. You can also save and recall setup presets in this dialog.
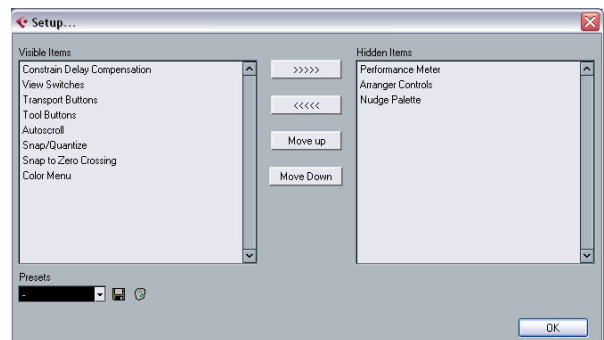
The dialog is divided into two sections. The left section displays the currently visible items and the right section displays the currently hidden items.

• You can change the current show/hide status by selecting items in one section and then use the arrow buttons in the middle of the dialog to move them to the other section. Changes are applied directly.

• By selecting items in the "Visible Items" list and using the Move Up and Move Down buttons, you can reorder the items list.
Changes are applied directly. To undo all changes and revert to the standard layout, select "Default" on the setup context menu.

• If you click the Save button (disk icon) in the Presets section, a dialog opens, allowing you to name the current configuration and save it as a preset.

• To remove a preset, select it on the presets pop-up menu and click the trash icon.

• Saved configurations are available for selection from the Presets pop-up in the Setup dialog or directly from the setup context menu.

Customizing track controls

For each track type you can configure which track controls should be shown in the Track list. You can also specify the order of controls and group controls so that they are always shown adjacent to each other. This is done using the Track Controls Settings dialog.

Opening the Track Controls Settings dialog

There are two ways to open the dialog:

• Right-click a track in the Track list and select "Track Controls Settings…" from the context menu.

• Click the arrow in the top left corner of the Track list and select "Track Controls Settings…".

Click here to open the pop-up menu.

Setting the track type

The settings made in the Track Controls Settings dialog apply to the selected track type, which is shown in the menu display in the top left corner of the dialog.

• To change the track type, click the arrow to the right in the menu display and select a track type from the pop-up menu that opens.
All settings made in the dialog will apply to all tracks (current and subsequent) of the selected type.
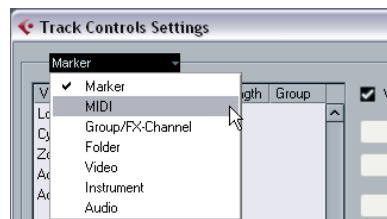
The Track Type pop-up in the Track Controls Settings dialog

⇨ Always make sure that you have selected the desired track type when editing the track controls!

Removing, adding and moving track controls

The dialog is divided into two sections. The left section displays controls currently visible on the Track list, and the right section displays the controls currently hidden.

▪ You can hide controls from the Track list by selecting them in the list to the left and clicking the Remove button. To show hidden elements, select them in the list to the right and click the Add button.
Click OK to apply the changes.

⇨ All controls can be removed except the Mute and Solo buttons.

▪ By selecting controls in the "Visible Controls" list and using the Move Up and Move Down buttons, you can change the order of the list.
Click OK to apply the changes.

Grouping track controls

If you resize the Track list, the position of the controls will change dynamically to accommodate as many controls as possible in the available space (given that Wrap Controls is activated – see below). By grouping several track controls you ensure that they are always be positioned side by side in the Track list. To group controls, proceed as follows:

1. Make sure you have selected the correct track type.

2. In the "Visible Controls" section, select at least two controls.
You can only group controls that are adjacent to each other in the list. To group controls that are currently not adjacent in the list, use the Move Up/Down buttons first.

3. Click Group.
A number is displayed in the Group column for the grouped controls. The first group created has the number 1, the second 2, and so on.

4. Click OK.
The controls are now grouped.

▪ You can ungroup commands by using the Ungroup button. Please note that this will remove the selected element and the elements below it in the list from this group. To remove an entire group, select the first (topmost) element belonging to this group and click the Ungroup button.

About Wrap Controls

This is activated by default. Wrap Controls allows the controls to be dynamically repositioned when resizing the Track list. That is, as many controls as possible will be displayed depending on the current size of the Track list.

If you deactivate Wrap Controls, the positions of the controls are fixed, regardless of the size of the Track list. In this mode, you may have to resize the tracks vertically (by dragging the dividers between them) to display all the controls.

About the Length column

The Length column in the Visible Controls list allows you to set the maximum length for certain text fields, e.g. Name. To change the setting, click on the number in the Length column and type in a new value.

Resetting Track list settings

You have two possibilities to reset the settings:

▪ Click Reset to restore all default track controls settings for the selected track type.

▪ Click Reset All to restore all default track controls settings for all track types.

Saving presets

You can save track controls settings as presets for later recall:

1. Click on the Save button (the plus sign) to the right of the Presets pop-up menu.
A dialog opens, asking you to type in a name for the preset.

2. Click OK to save the settings as a preset.
Saved presets are available for selection from the Presets pop-up menu and from the pop-up menu in the top left corner of the Track list.

▪ To remove a preset, select it in the Track Controls Settings dialog and click the Delete button (the minus sign).

⇨ Cubase Essential comes with a number of Track Control Settings presets available.

Appearance

In the Preferences dialog, you will find a page called Appearance. The following settings are available:

▪ Basic Appearance Scheme

By selecting an option from this pop-up menu you can adjust the general look of the program. After selecting an Appearance Scheme and clicking Apply or OK, you need to restart the program for the changes to take effect.

▪ Brightness/Intensity sliders

These sliders allow you to fine-tune the brightness and contrast in various areas in the program. Changes take effect when you click Apply or OK.

Applying track and event colors

You can use color scheming for easier overview of tracks and events in the Project window. Applying colors is divided into two areas; track and event colors.

▪ A track color is shown and can be edited in the Inspector, the Track list, and the corresponding channel in the Mixer. It is furthermore displayed in all parts and events for the track in the event display.
Track colors can be switched on and off globally.

▪ Event colors are shown for parts and events in the event display and are independent from the track colors.

⇨ An applied event color "overrides" the track color, if both are used.

The color palette can be customized, see "The Event Colors dialog" on page 302.

Track colors

Applying track colors manually

To activate track colors, proceed as follows:

1. Click the Show/Hide Track Colors button at the top of the Track list.

This brings up the Track Color Selector in the Inspector, the Track list and in the Mixer.

2. To bring up the color palette, click the Track Color Selector.

Click the arrow in the track name title bar or…

…click the color strip in the Track list.

In the Mixer, click the Channel Color Selector below the channel name.

3. Select a color from the color bar.

The track color is now applied to the Inspector title palette and the Track list as well as the channel strips in the Mixer and any parts and events on the selected track.

Applying track colors automatically

In the Preferences (Editing–Project & Mixer page), you can find the option "Auto Track Color Mode".
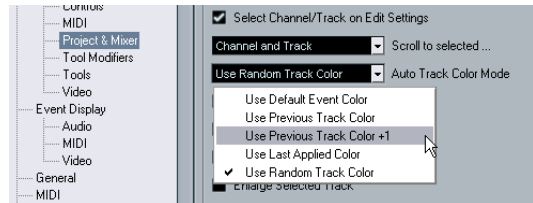
This offers you several options for automatically assigning colors to tracks that are added to the project.

Option	Effect
Use Default Event Color	The default color (gray) is assigned.
Use Previous Track Color	Uses the color of the track above the new one (i.e. the track that is selected when you add a new track).
Use Previous Track Color +1	Uses the color next to the color of the track above the new one (+1 refers to the color number in the palette).
Use Last Applied Color	The last manually assigned color is used.
Use Random Track Color	Track colors are assigned randomly.

Coloring parts and events

There are two ways to color parts and events in the Project window:

Using the color selector

1. Select the desired parts or events.

2. Choose a color from the Color Selector in the toolbar.
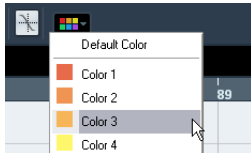
Using the Color tool

1. On the toolbar, select the Color tool.

2. Click the small strip below it to bring up the color palette.

3. Select a color.

4. Click on a part/event to assign the color.

The color is applied to all selected parts/events and overrides the track color (if used).

▪ If you press [Ctrl]/[Command] and click on a part/event with the Color tool, the color palette is displayed and you can choose the desired color for an event.

▪ If you press [Alt]/[Option], the Color tool cursor becomes a pipette, which can be used to select a color by clicking on a part/event.

Customizing the event background

On the Event Display page in the Preferences dialog, you can find the option "Colorize Event Background".
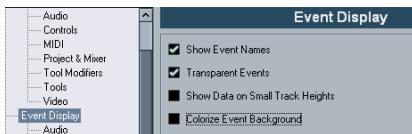
This option affects the display of events in the Project window.

▪ When this is activated, the events and parts in the event display will have the selected background color.

▪ When this is deactivated, the event "content", e.g. MIDI events and audio waveforms, are displayed in the selected color and the event background is gray.

The Event Colors dialog

You can open the Event Colors dialog in two ways:

▪ Double-click the small strip below the Color tool.

▪ Open the Color pop-up menu on the toolbar and select "Select Colors…".
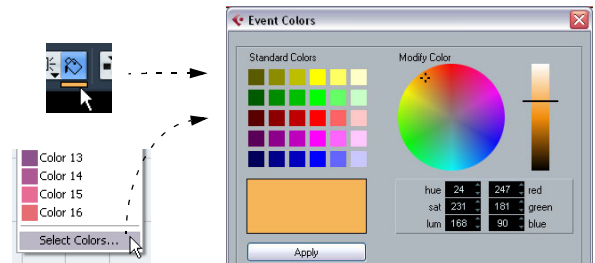
In the Event Colors dialog, you can fully customize the color palette, apart from the default color (gray).
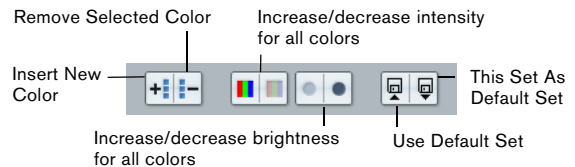
To add new colors to the color palette, proceed as follows:

1. Click the Insert New Color button in the Event Colors section to add a new color.
A new color icon and color name are added to the Event Colors section.

2. Click the color field next to the name field to activate the new color for editing.

3. In the Standard Colors section, select the standard color. You can modify the selected color as follows:

▪ Drag the cursor to another point in the color circle.
▪ Move the handle in the color meter.
▪ Enter the values for red, green and blue and hue, saturation and luminosity manually.

4. Click the Apply button in the Standard Colors section.
The color setting is applied to the selected color field in the Event Colors section.

You can edit every existing event color in the same way.

▪ To delete an event color item, select it and click the "Remove Selected Color" button in the Event Colors section.

▪ To increase or decrease the intensity and the brightness of all colors, use the corresponding buttons in the Event Colors section.

▪ To save the current set as default, click the button "This Set As Default Set" in the Event Colors section. You can then click the button "Use Default Set" to the right to apply the default set.

▪ To return to the standard setting of the palette in Cubase Essential, click Reset.

Where are the settings stored?

As you have seen, there are a large number of ways in which you can customize Cubase Essential. While some of the settings you make are stored with each project, others are stored in separate preference files.

If you need to transfer your projects to another computer (e.g. in another studio), you can bring all your settings along by copying the desired preference files and installing them on the other computer.

⇨ It is a good idea to make a backup copy of your preference files once you have set things up the way you want!
This way, if another Cubase Essential user wants to use his or her personal settings when working on your computer, you can restore your own preferences afterwards.

▪ Under Windows XP, preference files are stored in the folder "\Documents and Settings\<user name>\Application Data\Steinberg\Cubase Essential 5\".
On the Start menu, you will find a shortcut to this folder for easy access.

▪ Under Windows Vista, preference files are stored in the folder "\Users\<user name\AppData\Roaming\Steinberg\Cubase Essential 5\".
On the Start menu, you will find a shortcut to this folder for easy access.

▪ Under Mac OS X, preference files are stored in the folder "/Library/Preferences/Cubase Essential 5/" under your home directory.
The full path would be: "/Users/<user name>/Library/Preferences/Cubase Essential 5/".

⇨ The RAMpresets.xml file, which contains various presets settings (see below), is saved when exiting the program.

⇨ Program functions (e.g. crossfade) or configurations (e.g. panels) not used in the project will not be stored.

Some of the preferences are not stored in the default preferences folder. A list can be found in the article "Files for the program settings and preferences" in the Steinberg Knowledge Base.

To open the Knowledge Base, browse to the Steinberg web site, click "Support" and choose "Knowledge Base" in the list on the left.

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Key commands

Introduction

Most of the main menus in Cubase Essential have key command shortcuts for certain items on the menus. In addition, there are numerous other Cubase Essential functions that can be performed via key commands. These are all default settings. If you want, you can customize existing key commands to your liking, and also add commands for menu items and functions that have no key command assigned.

⚠️ You can also assign tool modifier keys, i.e. keys that change the behavior of various tools when pressed. This is done in the Preferences dialog – see "Setting up tool modifier keys" on page 308.

How are key commands settings saved?

Every time you edit or add any key command assignment, this is stored as a global Cubase Essential preference – not as part of a project. Hence, if you edit or add a key command assignment, any subsequent projects that you create or open will use these modified settings. However, the default settings can be restored at any time by clicking the Reset All button in the Key Commands dialog.

In addition, you can save key commands settings as a "key commands file", which is stored separately and can be imported into any project. This way you can quickly and easily recall customized settings, when moving projects between different computers, for example. The settings are saved in an .xml file on the hard disk.

How to save key commands settings is described in the section "About key commands presets" on page 307.

Setting up key commands

The following is a description of how you set up key commands and save them as presets for easy access. Key commands settings are accessed and edited in the Key Commands dialog.

Adding or modifying a key command

In the Key Commands dialog you will find all main menu items and a large number of other functions, arranged in a hierarchical way similar to the Windows Explorer and Mac OS Finder. The function categories are represented by a number of folders, each containing various menu items and

functions. When you open a category folder by clicking the plus sign beside it, the items and functions it contains are displayed with the currently assigned key commands.
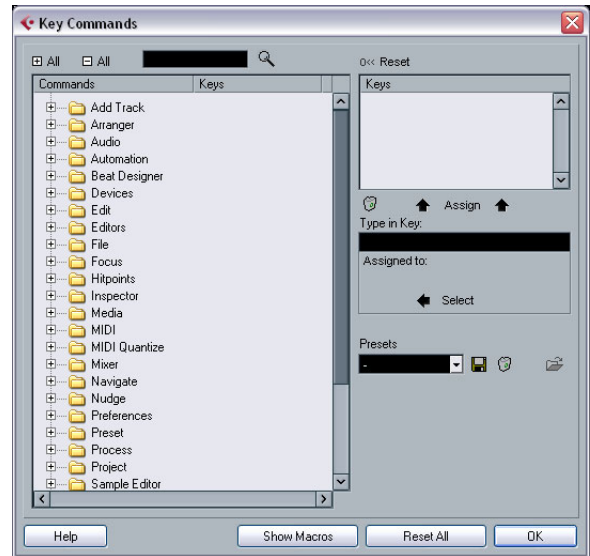
To add a key command, proceed as follows:

1. Pull down the File menu and select "Key Commands…".
The Key Commands dialog appears.

2. In the Commands list on the left, choose a category.

3. Click the plus sign to open the category folder and display the items it contains.
Note that you can also click the "global" plus and minus signs in the top left corner to open and close all category folders at once.

4. In the list, select the item to which you want to assign a key command.
Already assigned key commands are shown in the Keys column as well as in the Keys section in the top right corner.
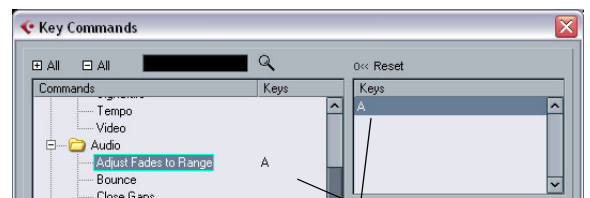
Key commands are displayed here.

5. Alternatively, you can use the search function in the dialog to find the desired item.

For a description of how to use the search function, see below.

6. When you have found and selected the desired item, click in the "Type in Key" field and enter a new key command.

You can choose any single key or a combination of one or several modifier keys ([Alt]/[Option], [Ctrl]/[Command], [Shift]) plus any key. Just press the keys you want to use.

7. If the key command you entered is already assigned to another item or function, this is displayed below the "Type in Key" field.

You can either ignore this and proceed to assign the key command to the new function instead, or you can select another key command.
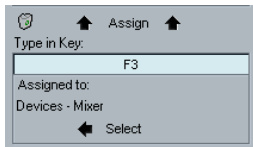
8. Click the Assign button above the field.

The new key command appears in the Keys List.

⚠ If the key command you enter is already assigned to another function, you will get a warning message asking if you really want to reassign the command to the new function.

9. Click OK to exit the dialog.

⇨ You can set up several different key commands for the same function. Adding a key command to a function that already has another key command will not replace the key command previously defined for the function. If you wish to remove a key command, see below.

Searching for key commands

If you want to know which key command is assigned to a certain function in the program, you can use the Search function in the Key Commands dialog:

1. Click in the search text field at the top left of the dialog and type in the function for which you want to know the key command.

This is a standard word search function, so you should type the command as it is spelled in the program. Partial words can be used; to search for all quantize related commands, type "Quantize", "Quant", etc.

2. Click the Search button (the magnifying glass icon).

The search is conducted and the first matching command is selected and displayed in the Commands list below. The Keys column and the Keys list show the assigned key commands, if any.

3. To search for more commands containing the word(s) you entered, click the Search button again.

4. When you are done, click OK to close the dialog.

Removing a key command

To remove a key command, proceed as follows:

1. Use the list of categories and commands to select the item or function for which you wish to remove a key command.

The key command is shown in the Keys column and the Keys list.

2. Select the key command in the Keys list and click the Delete button (the trash icon).

You are asked whether you really want to remove the key command.

3. Click Remove to remove the selected key command.

4. Click OK to close the dialog.

Setting up macros

A macro is a combination of several functions or commands to be performed in one go. For example, you could select all events on the selected audio track, remove DC offset, normalize the events and duplicate them, all with a single command.

Macros are set up in the Key Commands dialog as follows:

1. Click the Show Macros button.

The macro settings are shown in the lower part of the dialog. To hide these from view, click the button (now renamed Hide Macros) again.

2. Click New Macro.

A new, unnamed macro appears in the Macros list. Name it by typing the desired name. You can rename a macro at any time by selecting it in the list and typing in a new name.

3. Make sure the macro is selected, and use the categories and commands in the upper half of the dialog to select the first command you want to include in the macro.

4. Click Add Command.

The selected command appears in the list of commands in the Macros section.

5. Repeat the procedure to add more commands to the macro.

Note that commands are added after the currently selected command in the list. This allows you to insert commands "in the middle" of an existing macro.
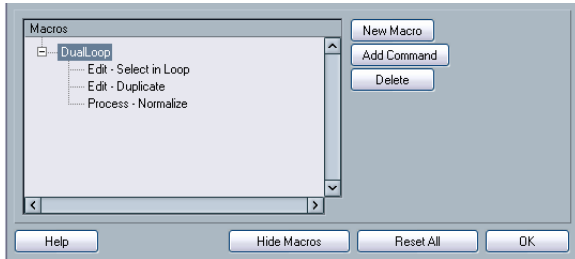
A macro with three commands

▪ To remove a command from the macro, select it in the Macros list and click Delete.

▪ Similarly, to remove an entire macro, select it in the Macros list and click Delete.

After you have closed the Key Commands dialog, all macros you have created appear at the bottom of the Edit menu in the Macros submenu, available for instant selection.
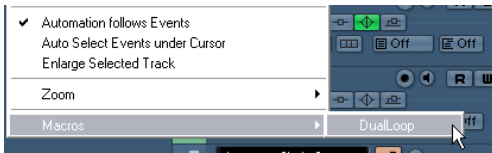
You can also assign key commands to macros. All macros you have created appear in the upper section of the Key Commands dialog under the Macros category – just select a macro and assign a key command as with any other function.

About key commands presets

As mentioned above, any changes made to the key commands (and macros) are automatically stored as a Cubase Essential preference. However, it is also possible to store key commands settings separately. This way, you can store any number of different key command settings as presets for instant recall.

Saving key commands presets

Proceed as follows:

1. Set up the key commands and macros to your liking.

When setting up key commands, remember to click "Assign" to make the changes.

2. Click the Save button next to the Presets pop-up menu.

A dialog appears, allowing you to type in a name for the preset.

3. Click OK to save the preset.

Your saved key commands settings are now available on the Presets pop-up menu.

Loading key command presets

To load a key command preset, simply select it from the Presets pop-up menu.

⇨ Note that this operation may replace existing key commands!

The key command settings you load will replace the current key command settings for the same functions (if any). If you have macros of the same name as those stored in the preset you load, these will be replaced too. If you want to be able to revert to your current settings again, make sure to save them first, as described above!

Loading earlier key commands settings

If you have saved key commands settings with an earlier program version, it is possible to use them in Cubase Essential 5, by using the "Import Key Command File" function, which lets you load and apply saved key commands or macros:

1. Open the Key Commands dialog.

2. Click the "Import Key Command File" button to the right of the Presets pop-up menu.

A standard file dialog opens.
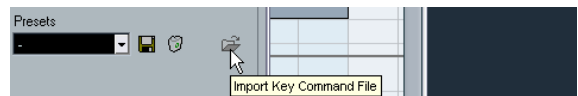
3. In the file dialog, use the "Files of type" pop-up menu to specify if you want to import a key commands file (".key") or a macro commands file (extension ".mac").

When you have imported an older file, you might want to save it as a preset (see above) to be able to access it from the Presets pop-up menu in the future.

4. Navigate to the file you want to import and click "Open".
The file is imported.

5. Click OK to exit the Key Commands dialog and apply the imported settings.
The settings in the loaded key commands or macros file now replace the current settings.

About the "Reset" and "Reset All" functions
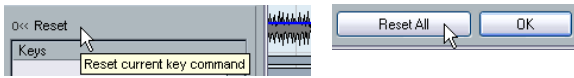
These two buttons in the Key Commands dialog will both restore the default settings. The following rules apply:

▪ "Reset" will restore the default key command setting for the function selected in the Commands list.

▪ "Reset All" will restore the default key commands for all commands.

⚠ Note that the "Reset All" operation will cause any changes made to the default key commands to be lost! If you want to be able to revert to these settings again, make sure to save them first!

Setting up tool modifier keys

A tool modifier key is a key you can press to get an alternate function when using a tool. For example, clicking and dragging an event with the Arrow tool normally moves it – holding down a modifier key (by default [Alt]/[Option]) will copy it instead.

The default assignments for tool modifier keys can be found in the Preferences (Editing–Tool Modifiers page). Here, you can also edit them:

1. Open the Preferences dialog and select the Editing–Tool Modifiers page.

2. Select an option in the Categories list, and locate the action for which you want to edit the modifier key.
For example, the "Copy" action mentioned above resides in the category "Drag & Drop".

3. Select the action in the Action list.

4. Hold down the desired modifier key(s) and click the Assign button.
The current modifier keys for the action are replaced. If the modifier keys you pressed are already assigned to another tool, you will be asked whether you want to overwrite them. If you do, this will leave the other tool without any modifier keys assigned.

5. When you're done, click OK to apply the changes and close the dialog.

The default key commands

Below, the default key commands are listed according to category.

⚠ When the Virtual Keyboard is displayed, the usual key commands are blocked because they are reserved for the Virtual Keyboard. The only exceptions are: [Ctrl]/[Command]-[S] (Save), Num [*] (Start/Stop Record), [Space] (Start/Stop Playback), Num [1] (Jump to left locator), [Delete] or [Backspace] (Delete), Num [/] (Cycle on/off), [F2] (Show/Hide Transport panel), and [Alt]/[Option]-[K] (Show/Hide Virtual Keyboard).

▪ As described in the section "Key command conventions" on page 8, modifier keys are written as: [Win modifier key]/[Mac modifier key].
For example, "[Ctrl]/[Command]-[N]" in the list below means "press [Ctrl] under Windows or [Command] under Mac OS X, then press [N]".

Audio category

Option	Key command
Adjust Fades to Range	[A]
Crossfade	[X]
Find Selected in Pool	[Ctrl]/[Command]-[F]

Automation category

Option	Key command
Toggle Read Enable All Tracks	[Alt]/[Option]-[R]
Toggle Write Enable All Tracks	[Alt]/[Option]-[W]

Devices category

Option	Key command
Mixer	[F3]
Virtual Keyboard	[Alt]/[Option]-[K]
Video	[F8]
VST Connections	[F4]
VST Instruments	[F11]
VST Performance	[F12]

Edit category

Option	Key command
Autoscroll	[F]
Copy	[Ctrl]/[Command]-[C]
Cut	[Ctrl]/[Command]-[X]
Cut Time	[Ctrl]/[Command]-[Shift]-[X]
Delete	[Delete] or [Backspace]
Delete Time	[Shift]-[Backspace]
Duplicate	[Ctrl]/[Command]-[D]
Group	[Ctrl]/[Command]-[G]
Insert Silence	[Ctrl]/[Command]-[Shift]-[E]
Left Selection Side to Cursor	[E]
Lock	[Ctrl]/[Command]-[Shift]-[L]
Move to Cursor	[Ctrl]/[Command]-[L]
Mute	[M]
Mute Events	[Shift]-[M]
Mute/Unmute Objects	[Alt]/[Option]-[M]
Open Default Editor	[Ctrl]/[Command]-[E]
Open Score Editor	[Ctrl]/[Command]-[R]
Open/Close Editor	[Return]
Paste	[Ctrl]/[Command]-[V]
Paste at Origin	[Alt]/[Option]-[V]
Paste Time	[Ctrl]/[Command]-[Shift]-[V]
Record Enable	[R]
Redo	[Ctrl]/[Command]-[Shift]-[Z]
Repeat	[Ctrl]/[Command]-[K]
Right Selection Side to Cursor	[D]
Select All	[Ctrl]/[Command]-[A]
Select None	[Ctrl]/[Command]-[Shift]-[A]
Snap On/Off	[J]
Solo	[S]
Split At Cursor	[Alt]/[Option]-[X]
Split Range	[Shift]-[X]
Undo	[Ctrl]/[Command]-[Z]
Ungroup	[Ctrl]/[Command]-[U]
Unlock	[Ctrl]/[Command]-[Shift]-[U]
Unmute Events	[Shift]-[U]

Editors category

Option	Key command
Show/Hide Info view	[Ctrl]/[Command]-[I]
Show/Hide Inspector	[Alt]/[Option]-[I]

File category

Option	Key command
Close	[Ctrl]/[Command]-[W]
New	[Ctrl]/[Command]-[N]
Open	[Ctrl]/[Command]-[O]
Quit	[Ctrl]/[Command]-[Q]
Save	[Ctrl]/[Command]-[S]
Save As	[Ctrl]/[Command]-[Shift]-[S]
Save New Version	[Ctrl]/[Command]-[Alt]/[Option]-[S]

Media category

Option	Key command
Open Loop Browser	[F6]
Open MediaBay	[F5]
Open Sound Browser	[F7]

MIDI category

Option	Key command
Quantize	[Q]

Navigate category

Option	Key command
Add Down: Expand/Undo selection in the Project window to the bottom/ Move selected event in the Key Editor down 1 octave	[Shift]-[Down Arrow]
Add Left: Expand/Undo selection in the Project window/Key Editor to the left	[Shift]-[Left Arrow]
Add Right: Expand/Undo selection in the Project window/Key Editor to the right	[Shift]-[Right Arrow]
Add Up: Expand/Undo selection in the Project window to the top/Move selected event in the Key Editor up one octave	[Shift]-[Up Arrow]

Option	Key command
Down: Select next in the Project window/ Move selected event in the Key Editor one semitone down	[Down Arrow]
Left: Select next in the Project window/ Key Editor	[Left Arrow]
Right: Select next in the Project window/ Key Editor	[Right Arrow]
Up: Select next in the Project window/ Move selected event in the Key Editor one semitone up	[Up Arrow]
Bottom Select bottom track in the Track list	[End]
Top: Select top track in the Track list	[Home]
Toggle Selection	[Ctrl]/[Command]-[Space]

Nudge category

Option	Key command
End Left	[Alt]/[Option]-[Shift]-[Left Arrow]
End Right	[Alt]/[Option]-[Shift]-[Right Arrow]
Left	[Ctrl]/[Command]-[Left Arrow]
Right	[Ctrl]/[Command]-[Right Arrow]
Start Left	[Alt]/[Option]-[Left Arrow]
Start Right	[Alt]/[Option]-[Right Arrow]

Project category

Option	Key command
Open Markers	[Ctrl]/[Command]-[M]
Open/Close Pool	[Ctrl]/[Command]-[P]
Open Tempo Track Editor	[Ctrl]/[Command]-[T]
Setup	[Shift]-[S]
Show/Hide Track Colors	[Shift]-[C]

Key commands

Tool category

Option	Key command
Delete tool	[5]
Draw tool	[8]
Drumstick tool	[0]
Glue tool	[4]
Mute tool	[7]
Next Tool	[F10]
Play tool	[9]
Previous Tool	[F9]
Range tool	[2]
Select tool	[1]
Split tool	[3]
Zoom tool	[6]

Transport category

Option	Key command
Auto Punch In	[I]
Auto Punch Out	[O]
Cycle	Num [/]
Exchange time formats	[.]
Fast Forward	[Shift]-Num [+]
Fast Rewind	[Shift]-Num [-]
Forward	Num [-]
Input Left Locator	[Shift]-[L]
Input Position	[Shift]-[P]
Input Right Locator	[Shift]-[R]
Input Tempo	[Shift]-[T]
Insert Marker	[Insert] (Win)
Locate Next Event	[N]
Locate Next Marker	[Shift]-[N]
Locate Previous Event	[B]
Locate Previous Marker	[Shift]-[B]
Locate Selection	[L]
Locators to Selection	[P]
Loop Selection	[Shift]-[G]
Metronome On	[C]
Nudge Cursor right	[Ctrl]/[Command]-Num [-]
Nudge Cursor left	[Ctrl]/[Command]-Num [+]
Panel (Transport panel)	[F2]

Option	Key command
Play Selection Range	[Alt]/[Option]-[Space]
Recall Cycle Marker 1 to 9	[Shift]-Num [1] to Num [9]
Record	Num [*]
Retrospective Record	[Shift]-Num [*]
Return to Zero	Num [.] or Num [,]
Rewind	Num [-]
Set Left Locator	[Ctrl]/[Command]-Num [1]
Set Marker 1	[Ctrl]/[Command]-[1]
Set Marker 2	[Ctrl]/[Command]-[2]
Set Marker 3 to 9	[Ctrl]/[Command]-Num [3] to [9] or [Ctrl]/[Command]- [3] to [9]
Set Right Locator	[Ctrl]/[Command]-Num [2]
Play	[Enter]
Start/Stop	[Space]
Stop	Num [0]
To Left Locator	Num [1]
To Marker 1	[Shift]-[1]
To Marker 2	[Shift]-[2]
To Marker 3 to 9	Num [3] to [9] or [Shift]-[3] to [9]
To Right Locator	Num [2]
Use External Sync	[T]

Zoom category

Option	Key command
Zoom Full	[Shift]-[F]
Zoom In	[H]
Zoom In Tracks	[Alt]/[Option]-[Down Arrow]
Zoom Out	[G]
Zoom Out Tracks	[Alt]/[Option]-[Up Arrow] or [Ctrl]/[Command]-[Up Arrow]
Zoom to Event	[Shift]-[E]
Zoom to Selection	[Alt]/[Option]-[S]
Zoom Tracks Exclusive	[Z] or [Ctrl]/[Command]- [Down Arrow]

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