

# **Cubase Sx Complete: Beginners' Guide**

**the musicians' guide and reference**

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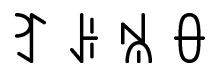
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This book is dedicated to everyone who makes music.



...especially to the regulars at [www.auxbuss.com](http://www.auxbuss.com)



# Preface

The seemingly ceaseless increase in power of desktop computers has led to an ever-increasing ability for composers and songwriters, musicians, mixers and mastering engineers to perform more and more of their work inside of their computers. Indeed, it is feasible, with today's hardware and software, to wholly produce a track for release whose only tangible, touchable entity is the final CD. And truth be told, even the CD is unnecessary. Whether this is progress is moot; but it is certainly a lot of fun.

Hardware power, however, can only be harnessed by software; the gateway that enables us to exploit the number crunching, digital machinery in those whirring boxes.

Music software comes in many flavors, including: dedicated audio manipulation software; sound generation software (among its number many fine emulations of classic hardware); and sequencers. There is so much more; an almost inexhaustible supply.

Cubase SX is a sequencer (a piece of software dedicated to the production of audio), but it takes the genre a step further, a step further even than the sequencer from which it was born: Nuendo. Cubase SX's ability to edit and combine both audio, MIDI, video and virtual instruments, is second to none (at the time of writing). Indeed, one wonders whether its arrival prompted the withdrawal (from the PC platform) of a major competitor; SX really is *that* good. Certainly anyone serious about music, audio-visual and multimedia production should be taking a long, hard look at Cubase SX.

*Cubase SX Complete* is written for those folk looking to exploit the wealth of features to be found in Cubase SX for creating music. It takes you all the way from song writing, composition and arrangement, through recording and editing, to the production of a 2-Track master. (Cubase SX is also Surround Sound enabled, and this is covered briefly in the text.) The book describes the techniques for using Cubase SX in a studio production environment. A basic familiarity with sequencers and their fundamental operations is assumed. My hope is that *Cubase SX Complete* can be used as a reference, as well as a guide. To this end, it has a generous index, special indexes based on SX's commands and a huge amount of cross-referencing within the text.

There are many definitions required to complete a book such as this, and I felt that putting these directly inline with the text would, for the most part, be inappropriate. Equally, I understand, from my own experience, how difficult it can be to grasp the various concepts and, in particular, how they interrelate.

So, as well as a glossary, I have endeavored to cover the essentials of digital, audio and MIDI recording theory and technique in the text. There are many specialist books on any one sub-topic of these fields, so much of the text is concise, and further investigation might be necessary to fully explore a point of specific interest. I hope, however, that someone coming cold to Cubase S<sub>X</sub>, and audio software, will find enough here to enable them to grasp the fundamentals of digital audio. However, I felt that those who chose to own Cubase S<sub>X</sub> would be familiar with much of this content, and would rather just get right down to it. I know I would!

All errors and omissions are mine. Please be liberal with comments and suggestions (and any mistakes you find). We now provide a support forum, primarily for discussion of the creative use of Cubase S<sub>X</sub>, at

<http://www.auxbuss.com>

Any discussion regarding Cubase S<sub>X</sub>, or digital audio in general, is most welcome. Support questions regarding Cubase S<sub>X</sub> should be posted to the Steinberg support boards at

<http://forum.cubase.net>

I'll see you there.

Enjoy.

Marc

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## **Addition for the *Cubase S<sub>X</sub> Complete: Beginners***

This a special cut-down version of *Cubase S<sub>X</sub> Complete*. It contains sufficient detail to enable someone coming to Cubase S<sub>X</sub> for the first time to start making music.

In addition to chapters from Cubase S<sub>X</sub>, Laurence Payne's *Cubase S<sub>X</sub> FAQ* is provided, in its entirety, as an appendix. The up-to-date FAQ can be found at <http://www.laurencepayne.co.uk/CubaseFAQ.htm>

Because the whole book has not been supplied, there are references to chapters, sections and pages that don't exist in this document. These missing references are indicated by ???. Also, note that the index in Cubase S<sub>X</sub> is a lot larger than that supplied here.

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# 1 Overview

Cubase S<sub>X</sub> is a Windows and Mac OSX computer software program for the recording, editing and play back of audio, video, MIDI and VSTi's. This type of program is generally called a sequencer. The technology has advanced to such a degree, however, that what we in fact have in Cubase S<sub>X</sub> is a virtual recording studio. Cubase S<sub>X</sub> also has integrated surround sound features, and it can import and playback video.

A large array of file and project formats can be imported into and exported from Cubase S<sub>X</sub>, including REX and REX 2 files, and the popular MP3 and Real Audio formats.

One of Cubase S<sub>X</sub>'s significant features is the ability to be able to perform almost all tasks from the main Project window. This, combined with an audio editing approach that enables totally non-destructive audio editing with unlimited undos, provides a truly flexible and creative environment for music production. Furthermore, full automation can be applied to almost every function, both in visual and list formats. It is possible to have multiple Cubase S<sub>X</sub> projects open at the same time, and items can be dragged from one to the other.

Audio processing of any plug-in effect (both VST and DirectX) or the in-built Cubase S<sub>X</sub> processes can be applied immediately to any audio event. Not only that, but one is able to preview the result in real-time while adjusting to taste. The supplied processes include fully integrated audio time stretching (see page ?? and ??).

Almost all functions have keystroke equivalents, and these are fully user configurable. (See appendix C for a complete list of available functions.)

Cubase S<sub>X</sub> provides the user with, theoretically, unlimited audio and MIDI Tracks. In reality these will be limited by the processing power of the computer in use, since the CPU of the computer performs all audio processing (so-called *native processing*). However, external effects processors, such as Universal Audio's UAD-1, allow you to off-load the processing of plug-in effects, not only freeing the host processor, but also providing extremely high quality processing.

Each audio Track (which can be mono or stereo) has the following features, all of which operate in real-time:

- Volume, Pan, Mute and Solo
- 8 Aux (or Send) effects buses (that can also be routed to groups). Sends can be pre or post fader, and are provided with individual and Track bypass switches.
- 4-band parametric EQ with user-definable presets



Fig. 1.1: Channel Settings – Available for each track

- 8 Insert buses with individual and Track bypass switches.
- Full automation of all Track items
- Monitoring

Cubase S<sub>X</sub> supports VST and DirectX plug-in architectures for effects and audio processing; a number of VST plug-ins are supplied with the package (see appendix B, page 129). Cubase S<sub>X</sub> also comes supplied with a number of in-built processes. These include time stretching, phase-reversal, audio stamping, and more (see chapter 16, page 75). VST plug-ins can be controlled via automation (see chapter 18, page 103)

### SL SL Info

SL is supplied with UV22 dithering plug-in instead of UV22 HR. UV22 can only produce 16-bit output.

VST instruments (VSTi) are fully supported, allowing automation of all parameters that a VSTi makes available. A number of VSTi's are supplied with Cubase S<sub>X</sub> (see appendix B, page 129)

Audio mixdown can be performed to produce many common file types, using a variety of encoding methods (see chapter 17, page 77). Audio file resolutions from 16-bit, 24-bit and 32-bit float are available, as are sample rates of 11kHz to 48kHz. UV22 HR dither is supplied as standard (as a plug-in).

MIDI input and output is available on all installed MIDI ports. Cubase S<sub>X</sub> introduces MIDI insert and send plug-ins, and fourteen such effects are provided as standard (see appendix B, page 129).

## Basic Requirements

Cubase S<sub>X</sub> is supported on:

- Windows 2000 and XP, and Apple Mac OSX.  
From version 1.02 onward, Cubase S<sub>X</sub> is available on Windows 98. However, the Windows 98 version of Cubase S<sub>X</sub> is currently unsupported by Steinberg.



### Note

A USB port must be available for use by the Cubase S<sub>X</sub> dongle. Cubase S<sub>X</sub> will not run without the dongle installed at all times.

Cubase S<sub>X</sub> versions, and OS support, will change at intervals, and the latest information can be found at <http://www.steinberg.net>

Steinberg's recommended *minimum* PC specification is:

- ▷ 500MHz Pentium III (or AMD equivalent)  
Recommended: 1GHz Dual Pentium III (or AMD equivalent)
- ▷ 256Mb RAM  
Recommended: 512 Mb RAM
- ▷ Hard disk (the bigger and faster the better)
- ▷ A wheel mouse (this is an important item for moving around the Project Window, see page 11) and the fine adjustment of many on-screen values (see page 9).
- ▷ A appropriate computer soundcard (see below)
- ▷ A MIDI computer interface (see below)  
(MIDI use is optional, but will be a requirement for almost every user.)

To be able to use Cubase S<sub>X</sub>, you will require an audio soundcard. There are many suitable soundcards on the market, and these are being added to all the time. You should investigate the one that is most appropriate to you based on your studio set-up and particular computer. Nevertheless, your soundcard must meet the following minimum specification.

- Stereo record and playback
- 16-bit
- 44.1kHz sample rate
- ASIO (Audio Stream Input Output), DirectSound or Windows MME driver (many cards have all three types of driver). See the following section for a discussion on software drivers.

ASIO drivers will provide the best performance and should be regarded essential when using Cubase S<sub>X</sub>.

Furthermore, it is highly recommended that your soundcard should provide ASIO Direct Monitoring. This becomes important, in particular, when you wish to perform overdubs (punch-ins) in real-time. See chapter 14, page 71 for an example of using ASIO Direct Monitoring.

If you wish to record and playback MIDI then you will need a MIDI enabled keyboard (or another MIDI input device, such as a wind controller), and a MIDI interface for your computer. MIDI playback can be routed to VST instruments (VSTi) within Cubase S<sub>X</sub> or through Cubase S<sub>X</sub> to an external MIDI enabled device, such as a synthesizer.

To complete your studio set-up you will also need appropriate audio reproduction equipment including:

- Speakers
- Amplification (possibly via a hardware mixer)
- Appropriate cables

## Quick 101 on Audio Hardware and Drivers

It is not vitally important that you read this section, nor understand it. It might be useful background to some, and of assistance should you run into a soundcard related problem. For others it will probably be a great cure for insomnia. It's a bit of a geeky section, and the simple message is to pair up Cubase Sx with a soundcard with native ASIO drivers.

For an audio program to be able to communicate with an item of audio hardware, a special piece of software is required. This software is called a driver. The manufacturer writes the drivers for each piece of hardware.

These drivers are *specific* to the external device that they are written for (e.g. a soundcard), but *general* for the programs that can use them. In other words, a particular soundcard will not have one driver for Cubase Sx, another for Sonar, another for Logic, and so on. There will be just the one driver. Also, because of the "low-level" nature of a driver, they will frequently be operating system dependent; certainly a different driver will be required for a Mac than for Windows, for example. It may also be the case that a particular version of one of these operating systems requires a specific driver. So, when purchasing a new soundcard, it is imperative that you ensure that a driver exists to allow you to use it with the target system.

Since many different programs will want to use the driver to communicate with the soundcard, a further requirement is that the interface to the driver must be well-defined and published, so that the software developers of an audio program can use it.

To further complicate matters, there are a number of different ways in which the driver can communicate with the hardware. A hardware manufacturer may not provide drivers that support all of these formats. You need to be aware of these different formats because they will often provide different levels of functionality and, most importantly, the latency (delay) associated with different drivers can vary dramatically.

In the case of Cubase Sx you will, almost certainly, want to use an ASIO driver. Furthermore, always ensure that you are using the latest available drivers.

Figure 1.2 shows Cubase Sx's Device Set-up dialogue with the ASIO Driver dropdown showing. This machine has an RME Hammerfall soundcard installed. The top entry is for the "native" ASIO driver provided by the card's manufacturer. The other two entries are Cubase Sx's drivers for accessing the manufacturers' drivers, supplied for both DirectX and Windows Multimedia.

When you make your driver selection, you should be aiming for the top of the list and choose the native ASIO driver.

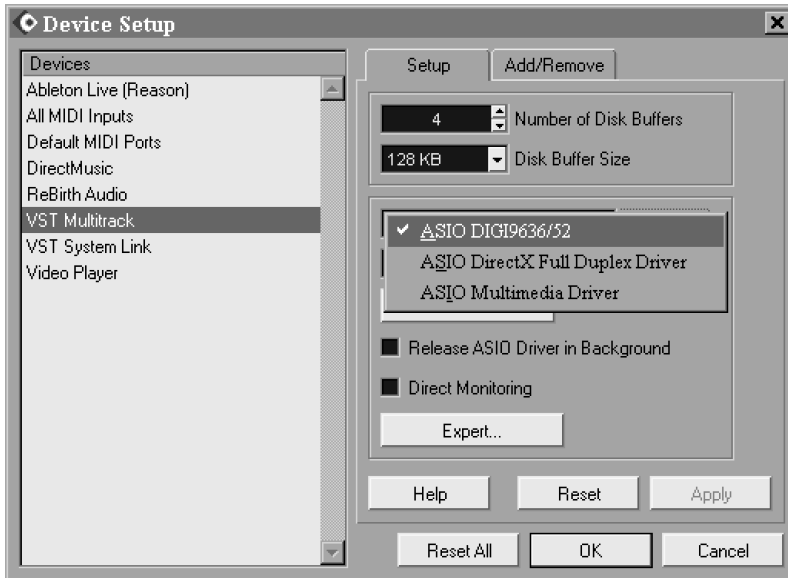


Fig. 1.2: Device Set-up dialog showing the available soundcard drivers

Drivers for audio hardware come in three major flavors, all of which are supported by Cubase S<sub>X</sub>. They are described in the following sections.

### ASIO

This is Steinberg's own soundcard driver format, and most hardware manufacturers support it on their soundcards. There are also many non-Steinberg software applications that support ASIO. It would be most unusual, nowadays, for a soundcard to be released without an ASIO driver being available for it. An ASIO driver allows direct communication between Cubase S<sub>X</sub> and the audio card, with minimal intervention from the operating system. As a result, these drivers can provide lower latency (see chapter 20, page 107). The ASIO specification also provides facilities for hardware manufacturers to exploit other functionality that can be useful in an audio environment (e.g. ASIO Direct Monitoring and sample accurate synchronization).

### DirectX

DirectX is a complex software environment developed by Microsoft that provides flexible use of a vast range of functions with Multimedia under Windows. DirectX is divided into a number of different areas of functionality, such as DirectDraw and DirectPlay, but the part that Cubase S<sub>X</sub> supports is called DirectSound. DirectSound is used for the playback and recording of audio.

When using DirectX with Cubase S<sub>X</sub>, Steinberg have provided a further "layer" of software that is dedicated to interfacing with DirectSound. This is called the *ASIO DirectX Full Duplex driver* and it is installed along with Cubase S<sub>X</sub>. So, to use DirectX (DirectSound) you will need a DirectX driver for the audio card to

be provided by the soundcard manufacturer. Be aware that not all soundcards support DirectX.

The difference between the ASIO DirectX Driver and the ASIO DirectX Full Duplex Driver is simply that the former does not support the recording of audio. To be able to take full advantage of the DirectX Full Duplex mode, your soundcard must support the Microsoft Windows Driver Model (WDM) and DirectX version 6.1 or higher. In all other cases, the audio inputs will be emulated by DirectX. Emulated inputs result in much higher latency, since the emulation takes place in software. These drivers also use a lot more CPU. This is a highly undesirable state of affairs all around, so it's best to use an alternative driver; preferably ASIO. You get the picture.

### **Windows Multimedia system**

When using this driver, the soundcard will communicate with the Windows Multimedia system and this will, in turn, communicate with Cubase S<sub>X</sub>. As with DirectX, this option requires two types of drivers: the driver installed along with Cubase S<sub>X</sub>, and one provided by the soundcard manufacturer. On selecting the ASIO Multimedia Driver for the first time, you will be asked whether you want the configuration to self-test. You should do this, and act on any failures reported. Changes to the ASIO Multimedia set-up are performed from the Control Panel found on the Devices/ Devices Set-up/ VST Multitrack tab.



## 2 Introduction

The support forums, hosted by the Steinberg team, are highly recommended as a source of support information. These can be found at:

<http://forum.cubase.net/>

Conversations can get pretty esoteric, but there's almost always a helping hand ready to solve your seemingly impenetrable, unfathomable problem. And if not, well you can just nose around and pick up a few tips and ideas.

The Cubase S<sub>X</sub> manuals and Cubase S<sub>X</sub>'s Help system (both of which can be accessed from the Cubase S<sub>X</sub> Help menu) are useful A-Z and context sensitive references to Cubase S<sub>X</sub>. The Help system can be useful for quick explanations on the meaning of options to many of the parameters to Cubase S<sub>X</sub>'s functions. The manuals can be usefully put to work in their electronic format in collaboration with the find functions in your PDF reader.

### Conventions used in this book

References to Cubase S<sub>X</sub>'s Menu items are made in the following way: *File/New Project*, where each division represents another level in the menu hierarchy.

References to chapter and sections are made with page numbers to assist navigating and cross-referencing within the text. For searching by topic, you can use one of the following methods:

- the index at the back of the book
- the *Key Commands* appendix C, page 135
- the contents list at the front of the book
- the glossary (page 115) for some technical definitions

Throughout the book the Cubase S<sub>X</sub> Key Commands (shortcuts) are referenced in the following manner: *Transport Panel [F2]* or *Browser [CTRL+B]*. These refer to the Cubase S<sub>X</sub> default key commands (which can be changed as you wish, or by using the templates provided for Logic, Sonar and older versions of Cubase). Where a key command is available, but has no default value, the notation [No default] is used.

The *Key Commands* [No default] function can be found here *File/Key Commands*. It is advisable to set this window to a Key Command itself right way. *K* is free to be assigned, and it is the recommended option. How to do this is explained right at the start of chapter 5, page 31.

## Installation Notes

Installation of Cubase S<sub>X</sub> is covered in detail in *Cubase S<sub>X</sub>: Getting Started Manual* in the chapters *Installation Requirements* and *Setting up Your System*. Note that the supplied dongle must only be fitted onto the computer, in the appropriate USB port, *after* installation of Cubase S<sub>X</sub>. Audio hardware and MIDI interfaces, and all soundcard and external device drivers, should be fitted, and preferably tested, before installing Cubase S<sub>X</sub>.

If you are unsure of how to set-up your audio and MIDI equipment, then chapter 3: *Setting up your system* in *Cubase S<sub>X</sub>: Getting Started Manual* is the place to start. Providing you are getting sound out of system, then you can proceed with the *Quick-start* chapter 3, page 13.

VST plug-ins can be accessed by Cubase S<sub>X</sub> from two places; a dedicated folder named `Vstplugins`, directly under the Cubase S<sub>X</sub> installation folder, and a shared folder, of the same name, that can be placed wherever you wish.

It is advisable that you keep your Cubase S<sub>X</sub> plug-ins in the dedicated Cubase S<sub>X</sub> plug-ins folder. This is because many of the plug-ins supplied with Cubase S<sub>X</sub> will only work with Cubase S<sub>X</sub>. You can then use the shared plug-ins folder for VST plug-ins that you wish to use with Cubase S<sub>X</sub> and other applications. Some applications may crash if they try to use Cubase S<sub>X</sub>'s plug-ins.

There are, however, a number of VST plug-ins supplied with Cubase S<sub>X</sub> that *will* work with other audio software, and you may wish to move these to the shared VST plug-ins folder after installation. A list of Cubase S<sub>X</sub> plug-ins that can and cannot be shared is given in appendix B, page 129.

Please ensure that you de-fragment the disk to which you will be recording audio files, before commencing recording audio. Before installation, it is suggested that you also de-fragment the disk onto which you are going to install Cubase S<sub>X</sub> itself.

After installing Cubase S<sub>X</sub>, make sure that you re-boot your computer, and attach the dongle, before trying to run Cubase S<sub>X</sub>.

## Basic User Interface Features

There are many common display and interaction features between Cubase S<sub>X</sub>'s various windows. Most of these are described below.

### Menus and on-screen information

#### Main Menus

Standard menus are always visible (e.g. File, Edit, Help). Menu items that are not relevant in the current context will be unavailable for use (grayed-out in the menu list). For example, the Score menu items will be unavailable unless you are using Score.

### Dropdown Lists

Available on many screens (as shown). Used for selecting a field value from the available options.

### Quick Menus

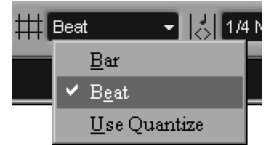
Right-click almost anywhere to obtain a quick menu of available functions and processes. The menus are context sensitive, so the Ruler quick menu will differ from the Event List quick menu, etc.

### Tool Tips

Available for most screen items when you hover the mouse for a second or two. (Tool-tips can be switched off in *Preferences/ User Interface*.)

### Help

Hit [F1] to bring up Cubase Sx's context-sensitive Help system. Thus, when you are in, say, the Sample Editor, the help page for the Sample Editor will be displayed. There are also Help buttons on most dialogues. This is an excellent feature providing access to most information contained in the *Cubase Sx: Operations Manual*.



A dropdown list



A tool-tip

## Editing and entering Values into Fields

The way that fields can be edited is influenced by *Files/Preferences/User Interface Controls* tab *Value Box/Time Control Mode*, see page 41.

There are many editing methods for fields, some of which will only apply to certain field types. For example:

- Click a field and over-type (or edit) the entry. Press [Return] or click away from the control to complete the action. This can be useful for making rapid changes in the *Info Line*.
- Use the mouse-wheel. Try this on the tempo field in the *Transport* [F2]. Switch off *Master* first, by the way.
- Point at the upper or lower edge of a numerical field value (or one of the segments within it) and click the small + (increment) or – (decrement) icons that appear. This is a bit fiddly, but can be a rapid way of accurately changing a value.
- Click on a numeric field then drag the mouse to change the value. You will need to click away from that field, or perform a keyboard operation, to complete the operation.
- Similar to above, but hover the mouse pointer over a field then use the mouse wheel to adjust the value.

Note that if Snap is switched on, then this will be applied to most editing operations.

## Notes on editing fields

There is some inconsistency in the way these functions operate, so experiment and find the best method that works for you. Most folk seem to prefer a mixture of using the mouse-wheel and entering directly from the keyboard. This section is simply to make you aware of the options and explain what might sometimes appear to be confusing behavior.

You can move through the segments (e.g. Hours, Minutes, Seconds, Frames, etc.) when editing a field by using the cursor keys, period or colon.

Format field editing varies depending on the format being edited. This is determined by the Ruler display type being used (see page ??). Note that some fields must be right-clicked to allow free-format data entry, while others must be double-clicked.

### Bars + Beats (1/16th notes and ticks)

If you enter a value with less than four segments, then the least significant segments will be set to their lowest values. E.g. “4.2” becomes “4.2.1.0”.

### Frame-based (i.e. “24 fps” or “30 dfps” types)

If you enter a value with less than four segments, then the most significant segments will be set to their lowest values. E.g. “7:5” becomes “0:0:7:05”.

### Seconds

This is the same as Frame-based, except that the milliseconds segment is treated as if you were using a calculator. E.g. “2:50” becomes “0:0:2:500” and not “0:0:2:050”

### Editing Numeric Fields

For numeric values other than positions (e.g volume), you can right-click, or double-click and edit. For some values, a slider is available via ALT+Click. Sliders are also available for many values in the Inspector. For these fields, a right click will usually open the field for text editing.

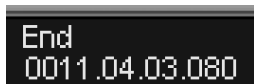
## Knobs and Faders/Sliders

You’ve never seen a fader, right? Or twiddled a knob? And you’ve been into music for how long? The thing to know is that the behavior of knobs and sliders can be changed in *File/ Preferences/ User Interface/ Controls* tab.

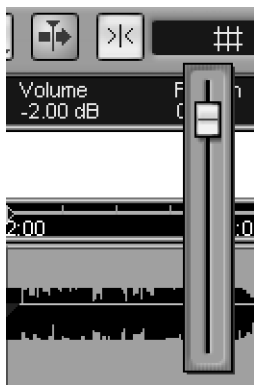
Knobs have three settings: Circular, Relative Circular, and Linear. Whichever you choose to use will be very much a matter of personal preference. The Circular options are those that require a circular movement of the mouse, whereas Linear allows you to go left/right or up/down.

Sliders/Faders also have three settings (in all three cases you can grab the handle and move it): Jump, which causes the handle to move to that spot immediately; Touch, where the handle will only move when you click and drag it; Ramp, where the handle will move slowly to a spot clicked on the control.

Numeric field



Slider



These two options affect Cubase Sx's controls, VST plug-ins (but not DirectX plug-ins) and VSTi's, although some plug-ins and instruments may override this setting and implement their own control over knobs and faders.

## Scrolling the Views

There are, of course, the standard slider controls alongside the edge of every window for horizontal and vertical scrolling. However, there are also these additional methods if you have a mouse-wheel:

### Sample Editor

The mouse-wheel scrolls the audio image left to right.

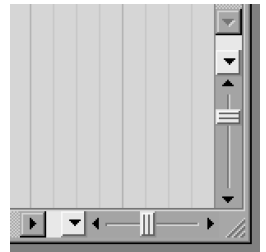
### Event Display, MIDI Editors and Audio Part Editor

- If the data in the editor does *not* extend off the bottom of the display, then the mouse-wheel will scroll the Event List left to right (along the timeline).
- If the data in the editor *does* extend off the bottom of the display, then the mouse-wheel will scroll the data items up and down. However, if you want to scroll left to right, then simultaneously hold [Shift].

## Zooming

Basic horizontal and vertical zooming in and out can be performed with the zoom sliders at bottom-right of most display windows, or with the *Zoom Tool*. The default key commands for horizontal zooming are **G** and **H**. There are no defaults key commands for vertical zooming, but these can be set from the key commands editor. For more on zoom controls see chapter 6, page ??.

Typical Zoom Sliders



## Launching Programs

The Cubase Sx installation process adds a number of shortcut items to the start menu enabling you to launch Cubase Sx and other utility programs. These are:

- *Documentation*: Giving access to the *Cubase Sx: Getting Started Manual*, the *Cubase Sx: Operations Manual* and *Cubase Sx: Score Layout and Printing Manual*.
- *ASIO DirectX Full Duplex Set-up*: Utility for adjusting the ASIO DirectX settings for a soundcard for audio playback and recording.
- *ASIO Multimedia Set-up*: Utility for adjusting the ASIO Multimedia settings for a soundcard for audio recording and playback.
- *Cubase Sx*: Gateway to infinite wealth, beauty, and sleepless nights for all the *wrong* reasons.
- *LCC*: Not very interesting, but if you ever need it, it'll be here.

Note that the soundcard driver utilities noted above can also be launched from *Devices/ Device Set-up/ VST Multi-Track* tab then pressing the Control Panel button.



### Info

If you've read this far in this section, then take heart, it really does get a lot more interesting from here.



## 3 Quick-start

For those of you who are new to Cubase S<sub>X</sub>, but familiar with other music software, this chapter is a hand-holding exercise to get you through creating your first Cubase S<sub>X</sub> Project with both audio and MIDI. It will also allow you to determine whether your equipment set-up is operating as expected.

Cubase S<sub>X</sub> is probably the easiest of the commercial sequencers with which you can get immediate results. Providing your audio and MIDI interfaces, instruments and sound reproduction gear are operating and interconnected correctly, then you can be producing sound as soon as Cubase S<sub>X</sub> loads. Well, after a few mouse-clicks.

You are going to need to switch on some sound making equipment for this chapter. And, if you are going to be using MIDI equipment, then that will be needed too. It is assumed that your gear is working and properly interconnected.

We will start with audio and move on to MIDI.

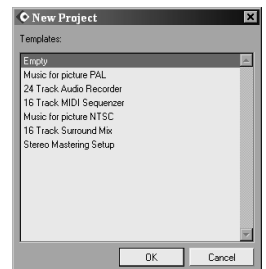
### Your first Project: Audio first

Make sure that all the gear that you want to use is switched on, plugged in and correctly connected. Now let's load her up, and go and make beautiful music.

The first thing that you will see when you load Cubase S<sub>X</sub> for the first time is a big blank work-surface and the Cubase S<sub>X</sub> *Transport Panel* [F2]. Select *File/New Project* [CTRL+N] and you will be presented with a list of Templates kindly supplied during the Cubase S<sub>X</sub> installation.

We will ignore the more complex template options and select the *Empty* Template.

Cubase S<sub>X</sub> will then prompt you to select a directory for the Project Folder. For now, create a folder in a convenient location (there's a handy *Create* button to facilitate this), then highlight the folder and press OK. (For more detail on Project Folders see chapter 4, page 27.



Templates choices



#### Tip

It can be useful to keep a “dummy” folder on your Desktop for unimportant experimental Projects, such as learning Cubase S<sub>X</sub>.



Fig. 3.1: The Project Window

## Houston, we have a Project.

In front of you is the Project Window. We will examine the Project Window in detail in chapter 6, page 45 and you are welcome to take a quick read through the introduction of that chapter now if you wish to familiarize yourself with what is on display. For now, simply ensure that you can identify the two main work areas: the Track List to the left, and the Event Display to the right.

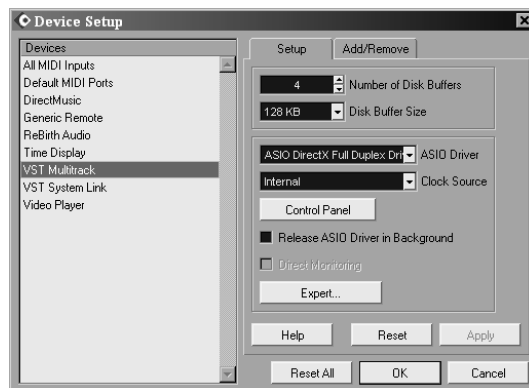


Fig. 3.2: Selecting a soundcard driver

## Select an audio device

Before we do anything else it is very important that we establish that your soundcard is set-up correctly and that Cubase Sx is set to use the driver that you want to use (presuming that your soundcard has different driver types).

Go to *Devices/Device Set-up* [No Default] and select VST Multi-Track. From



the ASIO Driver dropdown list select the soundcard you wish to use. You can configure the soundcard from this dialogue, should you wish, by pressing the Control Panel button.

It is very strongly recommended that you select the ASIO driver written by your hardware manufacturer and supplied with your soundcard. It is also recommended that you regularly check for the availability of updated drivers on your manufacturer's Web-site.

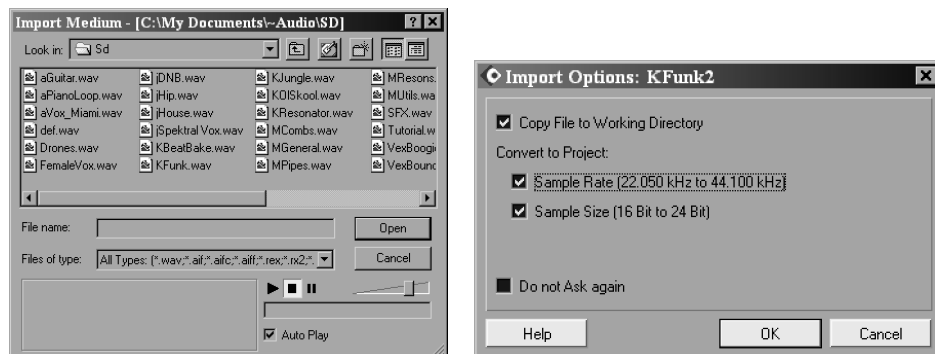


Fig. 3.3: Importing audio

## Importing some audio into the Pool

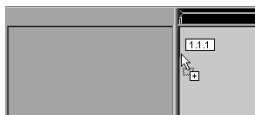
Let's not get ahead of ourselves. First, let's check playback before trying to record. For this you will need to have access to an audio file on one of your disks. (If you don't have anything to hand, there are usually audio files in one of the operating system's folders. Alternatively, grab some from the Cubase Sx demo projects). Open the *Pool* [CTRL+P] and press the *Import* button. Now navigate to your audio file, make sure it is highlighted, then press OK.

You will be presented with the Import Options window. Check the *Copy File to Working Directory* box and the *Sample Rate* and *Sample Size* boxes and then press OK. (The *Sample Rate* and *Sample Size* check boxes will be greyed-out if the values for the audio file match the corresponding values for the Project (see *Project Set-up Box* [SHIFT+S])). Voila, the audio file appears in the Pool.

(*Important:* If you mistakenly checked the *Do Not Ask Again* box on the Import Options window, then you should immediately reset the option by going to *Preferences/Audio* [No default] and set *On Import Audio Files* to *Open Options Dialog*. This setting is not specific to a particular Project and so you are at risk of importing audio in the wrong format if you do not make this change.)

## It's actually a Clip

Of course, the audio file is not really in the Pool. Eh? What we actually have is a reference to the audio file; something that "points" to the audio file. In



Dragging a Clip over the Event Display



After dropping the Clip

Cubase Sx this is called a *Clip*. It's important to begin to understand Cubase Sx's terminology early on, as things start to get a little more complex than this.

There are many ways of inserting our newly imported Clip into the Project. Let's start by using Cubase Sx's graphical interface and drag the Clip on to the Project Window.

Grab the Clip from the Pool and drag it over the Event Display in the Project Window. Don't worry about the marker jumping around, or the box of numbers, as you do this; just place the Clip at the left-hand edge of the Event Display.

### Now it's a Track *and* an Event

As you drop the Clip onto the Event Display a new Track is created. The newly created Track will be either mono or stereo, depending on the original audio file. Cubase Sx cannot mix mono and stereo audio on the same Track, so you will have to convert any audio that is not of the correct format should you wish to include it in a Track. This can be done by right-clicking on a Clip in the Pool and choosing the *Convert files...* [No default] function (see ??).

The representation of the audio file in the Event Display is called an Event (hence Event Display). You should be able to see a visual representation of the audio waveform in the Event. If you can't, then you might have imported an empty (or very low-level) audio file. This is not much use to us right now, so make sure that the audio file has some playable content before proceeding.

You can double-click on the Event to get a close up view of your audio in the Sample Editor, if you wish. Then use *Zoom In* [H] and *Zoom Out* [G]. You can also try *Zoom/Zoom Full* [SHIFT+F] to zoom all the way out.

You might want to save the Project *File/Save* [CTRL+S] at this point.

### A quick Undo and Redo

Cubase Sx's Undo feature is very powerful; one of the most powerful features in Sx. Gone are the one level undos of the past (that still exist, unfortunately, in some other sequencers). In Cubase Sx, the number of levels of undo is unlimited. It is actually bigger than that, in a sense, since Undo is contextual. In other words it is possible to Undo operations at an object level (e.g. for an Event or a Part). For example, say you printed reverb to a vocal section last week, but now you want to remove it; in Cubase Sx this is not a problem.

You will learn how to do all this later, that was just to whet your appetite. Right now press *Undo* [CTRL+Z]. The Event will disappear. Now press *Redo* [CTRL+SHIFT+Z]; the Event reappears. That is all there is to perform a simple Undo and Redo. Marvelous.

As mentioned, there is a great deal more power under the Undo hood. But we'll get to it later. (See chapter 16, page ??.)



#### Info

If you are feeling up too it, then you can get the detail on Clips and Events (and a few more objects) in chapter 9, page 51.

## Time to play

Make sure the Project Cursor is to the left of the Event that you wish to hear. Since our Event is at the start of the Project, then we can set the Cursor to the start position by using *Return to Start* [Pad '.' (point) or ',' (comma)]. Now *Start the Transport* [ENTER] and you should hear your audio. Rock and R-o-l-l.

When Cubase Sx is playing back audio on a Track, the Output Activity Indicators will show green level meters. These indicators are found on the right-hand edge of the Track List for each Track.



Green level indicator shows that Cubase Sx is outputting audio

## Sigh...No sound!

If you don't hear anything, then it's basic diagnostic time.

There are many reasons that could be the cause of why you aren't getting any sound. And right now that is the foremost thing on your mind, so it's a big deal. First things first: chill. Cubase Sx does work, trust me, so the problem is sitting right in front of you and we need to find it. It's not possible to provide a list of all of the possible causes here (that would be another book), but below is a guide to help with the diagnostics.

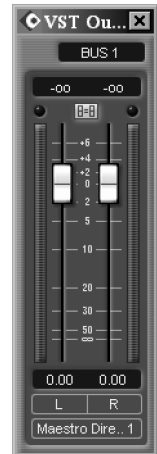
The most probable sources of the problem are:

- Audio file
- Cubase Sx audio chain incorrectly set
- Wrong soundcard driver selected
- Soundcard driver corrupt/inoperative
- Soundcard audio chain incorrectly set
- Post soundcard audio incorrectly routed

Start by ensuring that the Output Activity Indicators are showing active - jumping green bars when audio is playing. If they aren't, then check that the Track is not muted. A Track is muted when the X button for the Track is active, when it will be yellow; when off it is gray. Next check that the Track level is not fully attenuated by opening the *Track Mixer* [F3]. If this still doesn't work, then create another Track by dragging the Clip across from the Pool again. Make sure you create another Track when doing this. If the meters are still not registering when you hit Play, then check that the audio file is not empty. (It is possible that the file contains sub or ultrasonic audio and for the Output Activity Indicators to light, but let's ignore this eventuality.)

If the Output Activity Indicators are showing green, then the problem is a routing problem. Check that you have not selected the wrong soundcard driver, and that you've wired and routed your external audio correctly. Check your soundcard output by using it with another audio application. If it works using another ASIO audio application, then it will work with Cubase Sx.

Next check that the *VST Outputs* [F4] are set to 0dB ([CTRL+Click] on the fader to reset it). Also check that the *Master* section on the *Track Mixer* [F3] is set to 0dB (you will need to switch this on by pressing the Show Master button



A VST Output fader



Show Master Button from the Track Mixer

found bottom left of the VST mixer). There is no reason for this to happen, but it's worth a check.

If you're still not going, you will need more help. A cup of coffee and a ten minute break usually does the trick.

## The Sound of Music

Presuming all is well, then congratulations. You can wear your Cubase SX User's Badge with pride. Maybe even a bumper sticker. Perhaps both. Coz there ain't no stopping you now.

## Performance, performance, performance

Just as a quick aside, press [F12]. This is the Performance monitor. It gives you approximate readings on the current disk and CPU usage. If the meters ever move across to the right-hand side and light the red "over" indicators, you will need to reduce the stress levels on you computer. Usually when this happens you hear it as audio glitches. Suggestions on how to reduce CPU an disk usage are littered through this book, but obvious causes are: the use of processor intensive plug-ins or VSTi's; a large Track count; a large number of plug-ins or, perhaps, recording to or playing back audio from the same physical disk on which Cubase SX is loaded.

If you [right-click] on the meters you will find an *Always on Top option*. Keep this in mind, as many 'floating' windows in Cubase SX have this option available, and it might come in handy when organizing your window layouts.



### Info

*Always on Top option* is also available for VST Inputs [F5], Send Effects [F6], Master Effects [F7] and VSTi Rack [F11].

## Basic Audio Recording

We'll now go through the outline procedure for recording a mono signal coming into Cubase SX from a soundcard. It is assumed that the audio connections to the soundcard are operational and correctly configured. Please test this with another program before trying Cubase SX. Or be brave and fearless, and try it in Cubase SX.

### Making the connection

Decide what it is that you are going to record and make the appropriate attachments to the soundcard. Now open the *VST Inputs* [F5]. This window shows a list of all the available input ports for the soundcard that you selected on the *Device Set-up/VST Multitrack* screen. Make sure that the button is lit for the input port that you wish to use. The routing to this port will vary depending on the soundcard you have. Please refer to the soundcard's documentation if input signal routing is not obvious.



Fig. 3.4: A VST Input

## Select an Input Port

Create a new Audio Track by right-clicking in the Track List and selecting *Add Audio Track*. (You can set a key command for this action if you are feeling adventurous. **ALT+A** is free.) By default a mono Track is created, we'll change this in a second should you require a stereo Track.

There are quite a few ways to select an input port for a Track, but let's do it by way of one of *Sx*'s great innovations, the *Inspector* [**ALT+I**]. Once open, when you select a Track in the Track List (but not an Event), the Inspector will provide a wealth of information on the selected Track and a veritable host of editing options (more later).

Before selecting the input source, you need to select whether you wish the Track to be stereo or mono. Audio Tracks are created in mono by default. If you want to change the Track to stereo then hit the Stereo/Mono button for the Track in the Inspector. For mono the button is 'off' and shows a small circle; for stereo it's 'on' and shows two interlocking circles.

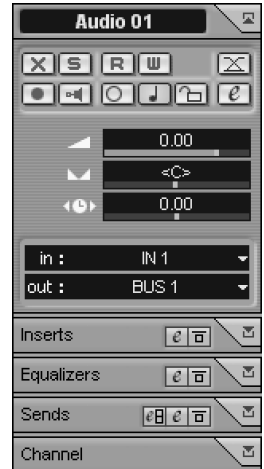
Now locate the dropdown labeled *in* : in the Inspector and click the downward pointing arrow. A dropdown will appear from which you can select the input you wish to use. This action routes the soundcard's physical input port (or ports) to an audio Channel (either stereo or mono) that can then be recorded on an Audio Track. (There is nothing to stop you assigning the same audio input to multiple channels, if you wish.)

## Checking the input level

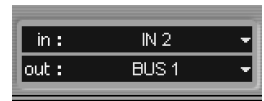
We are now in a position to monitor the incoming level of the audio. This is often necessary to ensure that the level of the incoming signal is neither too low, nor too high. Click the button that looks a bit like a loudspeaker. You can find it both in the Inspector and on the Track (where it's immediately below the Track name). This switches the visual level indicator from showing the output level, to showing the input level.

Make some noise. By sending your audio source to the appropriate soundcard input port, you should see the level indicator show a reading.

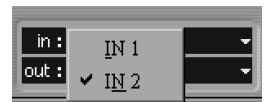
We can now adjust the level of the incoming source signal to an appropriate level for recording. If you click the Channel tab on the Inspector, then the main audio page will close and the Channel tab will open. The channel fader does not alter the level of the incoming signal, however; this must be done outside of *Cubase Sx*. It is important that the signal does not clip; this is shown when the channel meter turns red. This can be checked visually by reading the numerical



The Inspector



Input selector



Available input ports



Monitor button

value above the channel strip fader. If it ever reads zero, then lower the level of your input source in some way.

## Arm a Track for recording

To arm the Track click on the *Record Enable* [R] button marked ● in the Track list or Inspector. The button will turn red.



## Recording audio

Let's get down to it. Display the *Transport* [F2]. Make sure the Cursor is in the position that you wish to start recording. Moving the Cursor can be achieved in a variety of ways, but for now just click in the Ruler, which is just above the Event Display. This will move the Cursor to the spot that you clicked.

The Ruler



You may wish to switch on the *Metronome* [C] by pressing the Click button found on the Transport. The metronome is configured via *Transport/Metronome Setup* [No Default] (see page ??).

Make sure that the buttons on the left-hand side of the Transport (Punch-in, Cycle and Punch-out) are all switched off. Also ensure that the Sync button on the Transport is off.



### Note

When a Track is selected (indicated by a bright color in the Track List), then you can use *Arm for recording* [R], *Solo* [S] and *Mute* [M].

When you are ready, press the Record button on the Transport [Pad \*]. If you switched on the metronome then you might get a pre-count with appropriate beeps. The Cursor will then start to move across the Event Display and an ever-enlarging rectangle will appear on the Track that represents the recording in progress. Make some more noise. When you are finished, press *Stop* [Pad 0]. You can now playback your masterpiece, and the world will tremble...with anticipation, of course.

If you have the *Preferences/Transport* entry *Return to Start Position on Stop* checked, then the Cursor will have automatically returned to the start of the Project. If you have switched this option off, then the easiest way to get back to the start of the Audio Event you have just recorded is to select the Event by clicking on it (with the default Select Tool), and press L (Locate Selection key command). If you just want to go back to the start of the Project then *Return to Zero* [, (comma) or Pad . (point)] will do the job.

To start playback, simply press [Space] or ENTER.

## Audio recording and playback: Summary

At this point you should be happily recording and importing audio into Cubase SX for playback. In going through this process you have been exposed to a large number of Cubase SX's features. You will also have noted that there is a lot more to explore and experiment within this tool.

Depending on your specific requirements you are free to leap off and explore at your leisure. But before you go, be advised to investigate Cubase SX's key commands at the earliest opportunity. There is a brief list of the basic key commands at the end of this chapter.

## An aside on resizing Tracks

At this point, I think that it's worth exploring how Tracks can be resized in the Project Window.

The most basic way is to grab the bottom edge of the Track in the Track List and drag it in the required direction. If you do this to the audio and MIDI Tracks that we have created you will discover a bunch of buttons and dropdowns. All of these are duplicated in the *Inspector* [ALT+I], but to save screen real estate you may wish to work with the Inspector closed and use these buttons and hopefully, in time, Key Commands.

If you take a look at Appendix C *Key Commands* (page 135), in the *Zoom* section you will find some useful commands. For much more on zooming see page ??.

To zoom selected Tracks without affecting the other Tracks use *Zoom In and Out Tracks* [ALT+Up] and [ALT+Down]

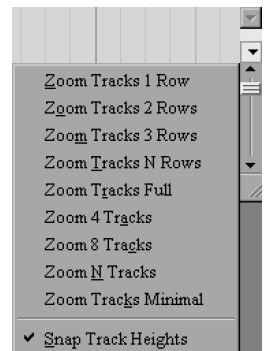
To zoom selected Tracks and 'minimize' *all* of the other Tracks use *Zoom Tracks Exclusive* [Z] or [CTRL+Down].

To zoom *all* Tracks together use the zoom sliders at the bottom right of the Event Display. This method will retain the Tracks' relative height. You can also [CTRL+Drag] a Track border, which will resize all Tracks. Finally you can use *Zoom In Vertical* [No Default] and *Zoom In Horizontal* [No Default] to do this, but you will first have to assign key commands to them.

Also try out the Track Scale popup options. This is hidden away as a downward pointing arrow down by the Zoom sliders at bottom right. The *Snap Track Heights* option hidden away here is useful to keep Track heights to workable sizes.

Notice that you can zoom the contents of Parts and Events with the slider at the top right hand corner of the Event display. This affects all Tracks at the same time.

I'm not particularly keen on the keystrokes assigned to the zoom functions. In part this is because there is no *Undo Zoom* command. It is all too easy to, say, hit the **Z** key and upset a carefully laid out Project Window. Further more, unlike Nuendo, track height and timeline positions settings cannot be stored with



a Window Layout (see page 43), so you cannot set-up preferred Track height zoom settings for instant recall.

For those superstar Sxers interested in MIDI, here we go...

## MIDI input and recording

I'm sure that you are dying to start fiddling with all the audio options that you have stumbled across, but we have work to do.

You'll need a MIDI keyboard (or another type of MIDI note generator) and a MIDI sound module (e.g. synth) for this section, so make sure that they're set-up correctly. Check that you are getting sound from the module by plugging the keyboard directly into the sound module's MIDI In port before you begin with Cubase Sx.

Now trundle over to the Track List and right-click in the space below the audio Track created above. You'll see a whole bunch of 'Add' options. Select *Add MIDI Track [No Default]* and gaze in wonder as a MIDI Track is created before your eyes. There are plenty more where that came from.

If you've not discovered Cubase Sx's right-click options until now, then spend a few moments right-clicking on things...plenty to explore, huh?

You might feel like renaming the MIDI Track. To do this either click on the current name (it should be MIDI 01) in the Inspector (or double-click in the Track List), then edit or retype the name.

Don't forget to *Save* [CTRL+S] your Project periodically, by the way.

### Back to MIDI input

By default, Cubase Sx creates new MIDI Tracks with the input set to *All MIDI Inputs*. Rather than using the *All MIDI Inputs* option here, click the Input dropdown list in the Inspector and select the MIDI port that your keyboard is attached to. (Note that you don't need to click directly on the tiny little arrow to see the dropdown list, you can click anywhere in the box. This applies generally in Cubase Sx, so try not to get in the habit of forcing yourself to click the arrows.) Most importantly, arm the Track by clicking on the *Record Enable* [R] button marked ● in the Track list or Inspector. The button will turn red.

In the same way as an audio Track, when a MIDI Track is selected, then you can press R on the keyboard to arm a Track for recording. Similarly, you can use S for Solo and M for Mute.

Now play a few notes on your MIDI input device. If Cubase Sx is receiving MIDI then the *Output Activity Indicators* will respond by lighting. The indicators respond to MIDI velocity, so the harder you hit the keys, the higher the bars will jump.

If you are not getting activity on the indicator then there is a connection problem somewhere, or a problem with your MIDI interface set-up. You will need to diagnose this before you can use your keyboard with Cubase Sx.

Add Audio Track  
Add Folder Track  
Add Group Channel Track  
Add MIDI Track  
Add Marker Track  
Add Master Automation Track  
Add Video Track  
Add Multiple Tracks...

Track List add options



### Info

Make sure that you read the file *MIDI Port filter.txt*, which should be in the main Cubase Sx folder.



Activity indicator



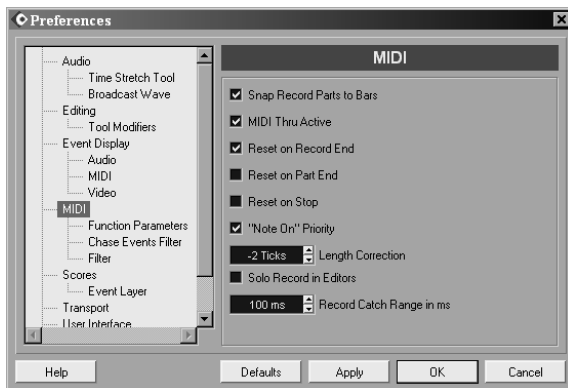


## Note

You can set the default MIDI input and outputs devices in *Devices/Device Set-up* [No Default] menu [Default MIDI Ports] tab. Every time you create a new MIDI Track it will take these values.

## Switch on MIDI Thru

By default MIDI Thru will be switched on, but before we continue let's just check. Open the *Preferences* MIDI tab and ensure that the second entry *MIDI Thru Active* is checked.



MIDI Preferences

When *MIDI Thru* is active, any incoming MIDI data on a Track will be routed to the Track's output, provided it is either *Record Enabled* or the Monitor button is active.

## Set the output MIDI Port

Unless you have earlier amended the default MIDI output port via *Devices/Device Set-up/Default MIDI Ports*, then the MIDI output field will show *Not Connected*. In the same way that you did for the MIDI input port, click on the MIDI output dropdown and make your selection. The list of available ports will depend on your set-up. Also select the appropriate MIDI channel from the numbered dropdown just below. Note that this is the *output* MIDI channel that you wish to use, and not the input MIDI channel. The channel setting will default to 1 for the first MIDI Track created, 2 for the second, 3 for the third and so on.

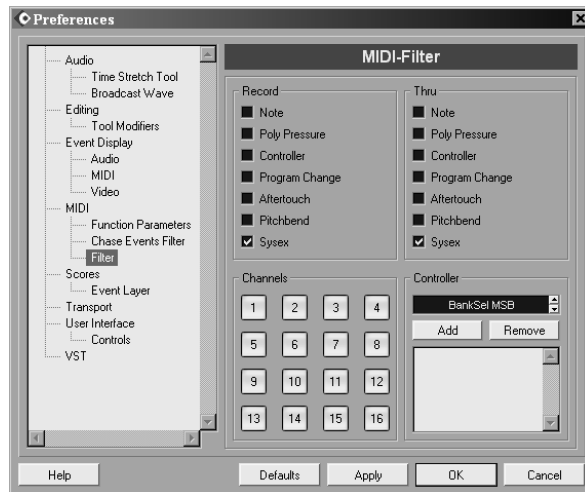
## Getting sound via MIDI

Now play a few notes on your keyboard and, presuming everything is switched on and correctly routed, you will hear your synth module burst into glorious life.

If you hear nothing, then check the following:

- The MIDI Track is armed (the *Record Enable* button is red or the *Monitoring* button is orange)
- The activity indicators are lighting up when you play
- MIDI Thru is checked in *Preferences/MIDI tab*
- The correct channel number is selected on the Track.  
If you have selected the Any option, then the MIDI channel used will be that produced by the keyboard.

Finally, check that only the SYSEX options are checked for both Record and Thru on the *Preferences/MIDI Filter* tab. See below.



MIDI Filter

## Recording MIDI

To record, first display the *Transport* [F2] and position the Cursor where you wish to start recording. You may wish to switch on the metronome by pressing the Click button in the Transport, or enable a pre-count. See the above section on recording audio for more on the metronome (or see page ??).

When you are ready, press the *Record* [Pad \*] button on the Transport. The Cursor will move across the Event Display, identically to recording audio, and a similar ever-enlarging rectangle will appear on the Track representing the recording in progress. Play your heart out. And when you are about to expire from creative exhaustion, press *Stop* [Pad 0].

For MIDI recordings, Cubase Sx adds the MIDI Events to the Tracks as it records, so you will already see a smattering of MIDI Events displayed in the MIDI Part.

Playback your masterpiece and revel in your genius. See the above section on recording audio for more on rewinding and playback.

## Basic Default Key Commands

Key Command	Function
Ctrl + N	Create a new Project
Ctrl + O	Open an existing Project
Ctrl + W	Close the active Project
Ctrl + S	Save the active Project
Ctrl + Shift + S	Save the active Project as...
Ctrl + Alt + S	Save a new version of the Project
Shift + S	Project Set-up
1	Select Tool
3	Split Tool
5	Delete Tool
7	Mute Tool
8	Draw Tool
Ctrl + P	Open the Audio Pool
Ctrl + B	Open the Browser
Ctrl + G	Open the List Editor
Ctrl + M	Open the Markers
Ctrl + T	Open the Master/Tempo Track
Return	Open/Close Event/Part/Drum Editor
Alt + I	Show/Hide the Inspector
Ctrl + I	Show/Hide the Info Line
Alt + O	Show/Hide the Overview
Ctrl + Z	Undo
Ctrl + Shift + Z	Redo
Ctrl + X	Cut
Ctrl + C	Copy
Ctrl + V	Paste
Ctrl + D	Duplicate
Alt + X	Split at Cursor
F2	Open Transport
F3	Open VST Mixer
F4	Open VST Outputs
F5	Open VST Inputs
F6	Open Sends
F9	Previous Tool
F10	Next Tool
F11	VST Instruments
F12	System performance indicators

Key Command	Function
L	Cursor to start of selection
Pad 1 or Shift + 1	Cursor to Left Locator
Pad 2 or Shift + 2	Cursor to Right Locator
N	Cursor to next Event
B	Cursor to previous Event
Pad . (point) or , (comma)	Cursor to Project start
P	Locators to selection
Ctrl + Pad 1 or 2	Set Left/Right Locator
Space	Play
Alt + Space	Play Selection
Space or Pad 0	Stop
Pad *	Record
Pad +	Forward
Pad -	Rewind
/	Cycle/Loop toggle
C	Metronome togle
H	Zoom In
G	Zoom Out
Alt + S	Zoom to Selection
Shift + E	Zoom to Event
Shift + F	Zoom Full
Alt + Up or Down	Zoom Track In/Out
Z or Ctrl + Down	Zoom Track Exclusive
S	Solo
M	Mute
R	Record Enable
I	Punch in toggle
O	Punch out toggle

See Appendix C, page 135 for a full list of the available keyboard commands and their defaults.

## 4 What is a Project?

It is important to understand the way in which Cubase S<sub>X</sub> stores a Project; that is, the directory structure it creates and uses, and where it places Project files. When you come to back-up and archive a Project (see chapter 22, page 111), or you simply want to move a Project to a new location (perhaps another disk or another computer, say via *File/Save Project to New Folder* [No Default]), you will want to ensure that nothing is misplaced. Cubase S<sub>X</sub> makes this process straightforward. However, understanding from the outset where data is going and why, will ensure that the essential back-up processes are in order should you need to restore the Project at a later date.

### Saving Projects

We have all lost work on a computer. Losing a Project is, almost without exception, a disaster. The old adage of “save, and save often” is good advice, and a highly recommended practice, but Cubase S<sub>X</sub> does make life easy in this department.

As well as *Save* [CTRL+S] and *Save As* [CTRL+SHIFT+S], there is also the extremely useful *Save As New Version* [CTRL+ALT+S].

As you are working on a project you will probably want to save your work at various points, not only for security, but so that you might return to it later. Clearly, you do not want to overwrite a previously saved project, so the *Save As New Version* is the way to go. (Note that this does not exist as a menu option.) The result of *Save As New Version* is that Cubase S<sub>X</sub> saves the current project as a new Project file by adding the suffix “-01” to the file name. Each subsequent *Save As New Version* will add 1 to the suffix. I.e. “-02”, “-03”, etc.

If you want to go back to the position at which the Project was last saved, then you can use *File/Revert* [No Default] to achieve this. It has the same effect as closing and re-opening the Project (without a Save).

#### Default.cpr

If you create, and save, a Project called `default.cpr` to the S<sub>X</sub> folder, then S<sub>X</sub> will load this automatically at startup providing you set *Preferences/User Interface* tab *On Startup to Open Default Project*.

#### S<sub>L</sub> SL Info

S<sub>L</sub> can open an S<sub>X</sub> Project, and vice versa. Conflicts due to S<sub>X</sub>'s extra features are reported on loading into S<sub>L</sub>.

## The Project Folder



Project Folder structure

The Project Folder is the top-level folder for a Cubase Sx Project. It is recommended that you create a new Project Folder for each Project/Song. In fact, not doing so can make life unnecessarily difficult for you later when you want to separate a Project's audio files. It is also highly advisable to place the Project Folder on a different physical disk to that on which Cubase Sx is installed, and to that which the operating system is installed. Ensure that a different physical, and not just a different logical, disk is chosen.

It pays to be organized with your Project Folders. Many folk dedicate an entire disk to them. Another method is to create a folder called, say *Songs*, and place all your Project Folders directly under that folder. However you decide to proceed, it is easy to change later. All the files that constitute your project are stored within the Project Folder and its sub-folder (all those, that is, unless you specifically tell Cubase Sx to reference files from elsewhere).

## The Project on disk

A Cubase Sx Project is contained within the Project Folder. This is the top of Cubase Sx's hierarchy of folders. You choose the location of the Project Folder when you create a *New Project* [CTRL+N].

When you create a new Project in an empty Project Folder, the only thing Cubase Sx does is create a sub-folder within it called *Audio*.

If you now *Save* [CTRL+S] the Project, then the Cubase Sx Project file is created in the Project Folder. You will have been prompted for the name of this file and the suffix *.cpr* will be added.

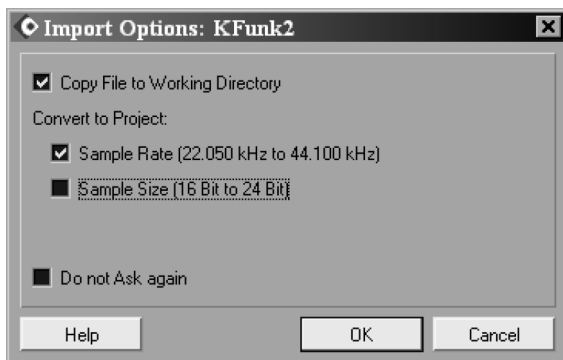
You may choose to share the same Project Folder for several Projects, but you need to take great care with file management and archiving if you do so. It is not recommended that you do this unless you are absolutely clear about the implication of any file management functions you may apply. In other words, it is very easy to mistakenly delete something in use by another Project.

## Where do my audio files go?

If we import an audio file then the file will be placed in the Project's *Audio* folder. In fact, there is an option available on the Import Options screen to leave the audio file in its current location and for Cubase Sx to reference it from there. If this is done, then care must be taken that the Audio File remains in a suitable state for all the Projects that make use of it.

By keeping all of the Project's audio files in one place, in the Project's Audio folder, we are guaranteed to keep all of our audio in sync across this, and other Projects. As well as this, it makes moving and replicating the Project straightforward, and also permits easy archiving of the Project.

When the first audio file is added to the Project, a folder named *Images* is created in the Project Folder. Thereafter, whenever an audio file is imported, or



a recording is made, an image of the audio is created by Cubase Sx and placed in the *Images* folder. You will see these images in the Event Display and the Pool, for example.

## Fade and edit files

When you apply a fade to an audio Event using the Fade Handles, the fade is created as a new audio file and placed in the *Fades* folder within the Project Folder. Only that part of the audio file that has the fade applied to it is copied, but this can still be of significant size. It might be worth considering an automation fade as an alternative, depending on requirements. If the fade is removed, then so is the fade's audio file.

Note, however, that the original audio file is left unchanged in the *Audio* folder. This is the key to understanding Cubase Sx's highly creative *Undo* feature.

A similar chain of events occurs when you Edit audio. The edit is created in a new audio file and placed in the *Edits* folder within the Project Folder, but only that part that has been edited is copied (with the edit applied to it).

## Wrapping up

From the above, it should be clear that the *Audio* and *Edits* folders are the key storage areas for your Projects' valuable audio files. Messing with these folders can be extremely hazardous to your Project, and therefore your health. Be very careful when manually fiddling with these folders and their contents.

The best way to manage the *Audio* and *Edits* folders is via the *Pool* [CTRL+P]; this tells you what is available and what is being used. If you need to trash files, then do it from the Pool (see chapter 15, page 73).

The *Fades* and *Images* folders can be deleted and Cubase Sx will recreate the folders and files.

Cubase Sx can, under certain conditions, recreate files deleted or otherwise "lost" from the Edits folder. If this is possible, the file will be marked as "Reconstructable" in the Pool's Status column. To rebuild the file use *Pool/Reconstruct* [No Default]. You got lucky.

### **The cubasesx.log file**

Cubase SX records any errors that it detects during its processing in the file cubasesx.log. This file is created in the Cubase SX application folder. The file contains technical information about the error. A warning is placed on the screen to inform you that an error has been detected and that the file has been created or updated. If the file already exists then subsequent errors are added to the file. Sometimes you are able to save your work before Cubase SX crashes. If you do attempt to save the current Project, then it is suggested that you give the Project a new name rather than overwriting the latest version of the current save (i.e. avoid using *Save* [CTRL+S] and instead use *Save As* [CTRL+SHIFT+S]).



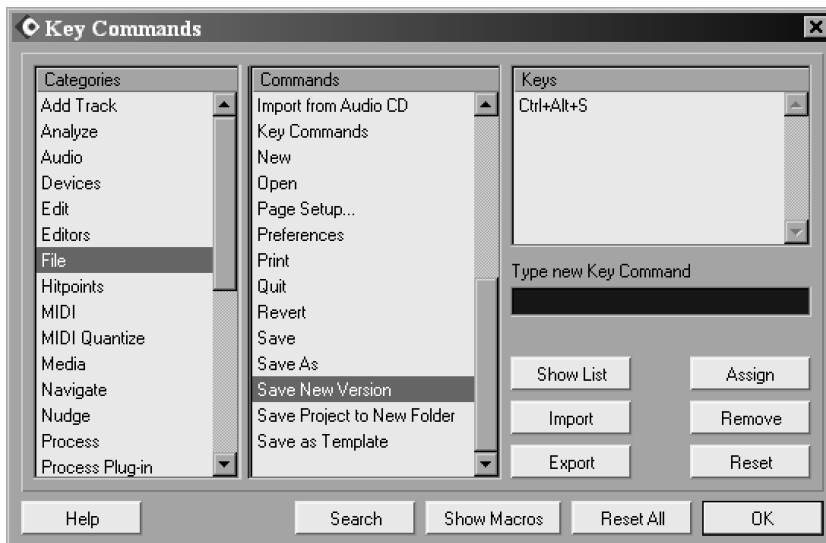
# 5 Important Set-up Issues

Before you start to use Cubase Sx in fury, you will probably want to set-up a few of the configurable items to work the way that you are used to working in other tools. This section doesn't cover everything, of course, but is a quick run through the things that you might want to get to early on, but don't particularly want to trawl through the manuals to find.

## Basic Key Commands

Key commands are either a single keystroke, or sequences of keystrokes (e.g. CTRL+ALT+A), that can be assigned to functions within Cubase Sx. A whole bunch of these are predefined, but you are free to change these. Many functions are available for which a key command has not been defined. If you wish, you can assign a key command to these as you see fit. Key commands are essential to being able to use Cubase Sx effectively and efficiently. However, there is no default key command to open the *Key Commands* editor itself; so, go to *File/Key Commands* and open it. Now resize the Key Command editor's window. This resizing is remembered globally, so you will only have to do this once.

**Note**  
You can have multiple key commands for the same function.



Select *File* in the Categories column and *Key Commands* from the *Commands* list. In the dark-colored *Type new Key Command* box insert *K*, then press *Assign*. Click on the OK button to close the Key Command editor. Now press [*K*]. You do not yet realize the amount of time that this action has saved you.



### Tip

When searching for a free keystroke sequence to use (or to evict), simply type into the *Type new Key Command* field. You can go through the whole alphabet very quickly.

Now that you know how to assign a Key Command, it might be worth your while making yourself familiar with the assignable functions available in Cubase Sx. Almost everything is available as a Key Command, but most folk find something that is unavailable. Some functions can only be used once they have been assigned a Key Command, so do make sure you explore appendix C, page 135 at some point.

It is well worth reviewing the Key Commands available in the editor every month or so. It is easy to forget that a useful command is available. In particular, as you use Cubase Sx and develop a style of working, certain commands that might not have appeared useful at an early stage, become useful later on. Just write them down and leave them next to the keyboard; you'll use them if they are truly useful.



### Tip

Export your Key Commands periodically and keep them as a backup.

This is a list of Key Commands the author finds invaluable, and so creates on any new installation of Cubase Sx. In doing so, most of the Cubase Sx's default key commands are left undisturbed; this ensures that movement from one installation to another is straightforward. This list is, naturally, an individual list, since everyone will, inevitably, work in a different manner.

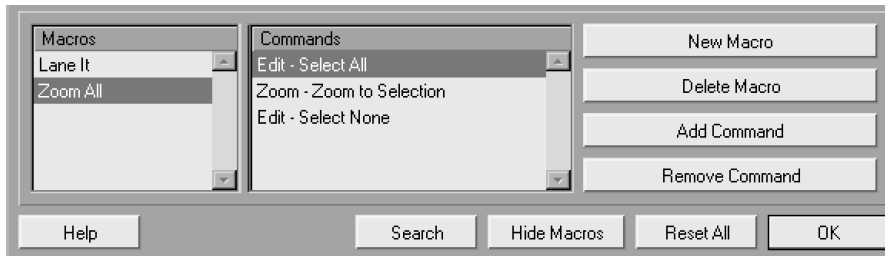
Add Track: Audio	ALT+A
Add Track: MIDI	ALT+D
Add Track: Group	ALT+G
Add Track: Folder	ALT+F
Audio: Events to Part	CTRL+ALT+P
Audio: Open Process History	ALT+H
Devices: Set-up	ALT+Z
Edit: Split at Cursor	/ (not Pad /, which is Cycle/Loop)
Edit: Zoom in Vertical	CTRL+H
Edit: Zoom out Vertical	CTRL+G
(replacing Edit: Open List Editor which becomes ALT+L)	
File: Export Audio Mixdown	ALT+B
File: Preferences	ALT+P
Nudge: Left	CTRL+SHIFT+left cursor
Nudge: Right	CTRL+SHIFT+right cursor
Transport: Restart	; (semicolon)
Transport: Sync Set-up	SHIFT+Z

Options are available on the Key Commands dialogue to Export, Import and Reset the Key Commands. There are also some Key Command templates provided with Cubase Sx that replicate (as close as possible) the key commands of other DAWs. You can use the *Show List* function to search for a free *Key*

*Command*, but a better method is to type commands into the *Type new Key Command* area. When a Key Command has been used, its assigned command will be shown just below. You can type commands repeatedly, thus finding a free command through trial and error. It's a shame that the *Show List* can't sort by its columns.

### Macros

Down at the bottom of the *Key Command* dialog is a button that reads: *Show Macros*. When you click it, you will, disappointingly, find nothing inside. The cupboard is bare. So, let's put a single morsel on the shelf.



*Macros* are sequences of *Sx* operations that, once created, appear in *Edit/Macros*. *Macros* can themselves be assigned a Key Command. The dialog shown is probably self-explanatory but, briefly, the idea is, after clicking *New Macro*, to select commands in the Key Command dialog, then click *Add Command* for each command. In this way, you build up a sequence in the *Command* list that will be carried out when the *Macro* is run.

Try adding the *Zoom All* macro shown. When you are done adding commands, assign *Macro/Zoom All* a Key Command of your choice, then try it out in the Project Window.

One word of caution: *Macro* commands do not necessarily wait for the previous command to complete. This can cause unexpected behavior.

## Adding Some Color

It is remarkable how adding a sprinkling of color to a Project can improve its readability on screen. If you develop a consistent color scheme across your Projects, then it can significantly speed up your understanding of the Project's structure when you return to it after some time.

Tracks and Parts can be colored via the *Color Selector* shown. Automation Events cannot be colored (which is a great shame). There are sixteen colors to choose from (although you can add and remove color choices), plus a "default" option that removes any previous color assigned.

You can change any of the default colors and rename them (e.g. to Drums, Bass, etc.) by clicking *Select Colors...* in the *Color Selector*. The sequence required to change a color is: select a default color box to overwrite (in the

### Note

The *Alt Gr* key is the same as *CTRL+ALT*.

### Tip

Can't quite remember that key command? Use the *Search* function in the *Key Commands* dialog. Also, note that key commands are displayed in the menus.



Color selector

lower section); create a mind-bending color in the top section; then click *Apply*. To change a name, simply over-type one of the existing names.

If you apply color to a Track in the *Track List*, then all existing, and future, Events and Parts on that Track will take the chosen color. However, if you apply a color to a Part/Event, then it will retain that color even when moved to a Track that has been assigned a different color.

Note that *Preferences/Event Display Tab/Colorize Event Background* option can be used to swap whether the background, or the waveforms, of Events are colored.

In the *MIDI Editors*, it is possible to color the display by either velocity, pitch, channel, or for Events to take the Part's color. The colors can be customized for each type (except for Part, which is done as explained above). Unfortunately, the MIDI colorings are applied to the editor and not the Parts. But you can't have everything.

## Templates



### Tip

Create your own *My Empty* Template with your common new Project settings.

A Template is a starter Cubase S<sub>X</sub> Project. Every new S<sub>X</sub> Project is created from a Template, whether you use one of the supplied Templates or the *Empty* Template.

A Template can, in fact, be a completed Cubase S<sub>X</sub> Project. There is nothing to stop you saving audio or MIDI in a Template, although do remember that the Template will try to reference the audio files from their location at the time the Template was created. If you are organized enough to manage this then things will work just fine.



### Note

If you wish to load a default Project each time you load Cubase S<sub>X</sub>, then see page 27.

Templates are stored as separate files in the *Templates* folder that resides beneath the Cubase S<sub>X</sub> folder, by using *File/Save As Template* [No Default]. The files are named the same as the names that appear on the *New Project* list (with an suffix *.cpr*, the same as a Cubase S<sub>X</sub> Project ). There is no Template management available in Cubase S<sub>X</sub>, so to remove a Template you must go to the folder and delete it manually. If you wish to amend a Template, then the simplest way is to load it, amend it, and then overwrite it.

## Basic Preferences



### Info

If you use, say, F3 to open a window, then you can close it with F3, providing it has the focus. ESC and RETURN will close a lot of dialogs too.

Earlier, I suggested setting-up a Key Command of [ALT+P] to open the *File/Preferences* [No Default] window. You will find yourself in Preferences fairly frequently, especially in your early days with Cubase S<sub>X</sub>, so it is recommended that you assign a Key Command of your choice.

Most of the installation defaults are fine for starters, and these are noted in the text in the appropriate place. For a reference to where preferences are noted in the text see appendix D, page 149. It is important to understand that the *Preferences* you set are global. In other words they apply from the point that you make a change, both to the current Project, and then to all Projects that you

subsequently open or create. Preferences are not saved with a Project. This can be quite confusing, since some of the options could be better placed at Project level.

## Audio, Timestretch and Broadcast Wave tab

On the first tab, *Audio*, it is recommended that both *On Processing Shared Clips* and *On Import Audio File* are set to *Open Options Dialog*. By keeping to these options, you will be required to make a conscious decision on each audio file import, and audio processing action, regarding precisely what you want Cubase Sx to do with the result. It is recommended that you only change these settings for bulk file operations, and then change them back immediately. Once you are settled in with Cubase Sx then you may well decided on an another setting.

*Create Images During Record* determines whether Cubase Sx calculates and displays the waveform images during recording. This incurs a processing overhead during recording and may affect the performance of the recording operation. Whether you check *Create Images during Record* is a personal choice. It will be dictated by the way that you work (i.e. you can't wait for images to be created after recording) or by real-time image creation eating up too much processing power during recording a particular Project. It's easy to leave this option unchecked until you find that you require it.

*Snap to Zero Crossing* [Not available] ensures that all audio editing is performed at 0dB points in the waveform. This will reduce clicks due to amplitude differences between two audio segments. Best to leave it on. More on this topic when discussing *Crossfades* (see page ??).

*Cycle Record Mode* is discussed on page ??. Leave this set to *Create Events + Regions* for now. Leave the *Use additional level scan for Hit-point detection* option checked also. This last item is a bit of a mystery. It does indeed cause an extra scan to take place during hit-point detection, but to what end? Presumably it should give better results, but I couldn't spot the difference.

## Time Stretch Tool tab

For an explanation of the *Timestretch* options see pages ?? and ??. The settings on this tab allow you to configure the time-stretch *tool* available from the Project Window. There is also a time-stretch audio process that these options do not affect. Put simplistically, if you believe that you are going to use time-stretch mainly for drums loops, then set *algorithm* to *TB – Drums*, while if you believe that you'll be using it for melodic audio, then set it to the *MPEX Algorithm*. Once you start using time-stretch you'll probably want to revisit these settings. They are explained later.

## Broadcast Wave tab

The settings on the Broadcast Wave tab allow you to write personal data to Broadcast Wave audio files, should you choose to use them. The type of files



### Tip

Switch off *Create Images During Record* to save those important CPU cycles when recording.

that you create when working with a Project are determined by the *Record File Type* in *Project Set-up* [SHIFT+S]. See page ?? for more detail.

## Editing tab

These options (in the main) influence the way that the Project Window responds to some basic user actions, so it is mainly a matter of personal taste how you set them. Detailed explanations are available in *Cubase Sx Help*.

The default options are generally fine for most folk, with perhaps a change to one or two options. If the dragging and dropping of Events seems either too fast or too slow for you, then adjust the *Drag Delay* in the appropriate direction.

For folk who like to micro-manage their automation, set the *Automation Reduction Level* to *min*. Even at this level, some Events can be automatically removed by Cubase Sx. While this automatic reduction in automation Events feature can be useful, there have been occasions where it failed to recreate what was intended. In the absence of an *Off* switch for it, you'll have to make do with *min*.

*Delete Overlap* is not as dramatic as it sounds; nothing is deleted. As you will discover later, Events on the Event Display are "pointers" to the audio, so the deletion or adjustment of length to an Event is completely non destructive to any associated audio. If *Delete Overlaps* is checked, then when you drag and drop an Event so that it overlaps with another, the static Event will be shortened so that it doesn't overlap the dropped Event. If you later decide that you want to lengthen the Event, then that can be done.

*Link Editors* is worth a quick look. What linking editors boils down to is whether you have one *separate* editor window for every MIDI Part, Audio Part or Sample Editor, or one *shared* editor for all MIDI Parts, one for all Audio Parts and one shared Sample Editor. When using the shared editors you select an Event/Part on the Event Display to view the item in the open editor. Where this can come in very useful, other than for reducing screen clutter, is if you create a separate Window Layout for one or more of these editors. In this way you have your editor immediately available in another window, perhaps with other useful display items to hand.

## Tools Modifier tab

The *Tools Modifiers* can be left as is. Indeed, you may never need to change them at all. These option affect how some Tools change behavior when another key is simultaneously held. They are explained in the *Cubase Sx: Operations Manual* and noted in the appropriate sections.

## Event Display Tab

These options concern how items on the Event Display appear. Changing some of these items can have a impact on screen refresh rates, often getting worse

as the Project size grows, so take heed of the warnings below.

Ensure that Quick Zoom is switched on, since this will have a positive impact on zooming (and other screen movements) as the Project grows. *Quick zoom* switches off waveform displays when zooming at low zoom ratios (zoomed out). The effect is to stop redraws of the waveforms while zooming, thus making zooming in and out faster. As you zoom in, the waveforms will reappear and this switch has no effect. However, it is best left checked as it does improve zoom speeds overall.

*Colorize Event Background* determines whether Tracks that have been colored (see below) appear with a colored background or a colored waveform (or Events for MIDI and automation).

You can also make Events transparent (in their upper section), by setting *Preferences/Event Display Tab/Transparent Events*.

*Show data on small track heights* only affects Track sizes of one row or less, and does what it says.

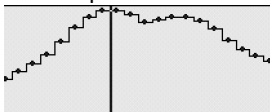
For more on coloring Events and Parts, see the following section *Adding Some Color* on page 33.

### Audio: Event Display tab

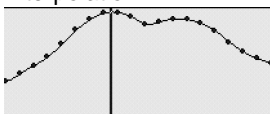
#### *Interpolate Audio Images*

This option applies to all editors. When the zoom level shows one sample per pixel or less, the appearance of the samples is determined by this setting.

- No interpolation.



- Interpolation



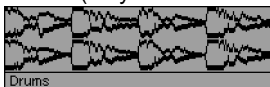
#### *Wave Image Style (Default = Solid)*

This option changes the way in which audio waveforms are displayed on the Event Display. The Choices are:

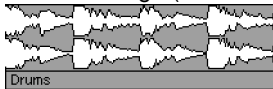
- Solid image (default)



- Frame (only the waveform outline is shown)



- Inverted Image (i.e. solid and framed)



Both the Framed and Inverted Image display styles are more CPU intensive and might slowdown your system.

#### *Show Event Volume Curves Always (Default = On)*

Determines whether Event volume curves are shown for all Events or only for Events when selected. These are the blue curves displayed on the Events themselves. (You can adjust fades and volumes for unselected Events when the curves are off, but since the handles are invisible, this can be tricky. The handles are only ever shown for selected Events.)

### **MIDI: Event Display tab**

The *Default Edit Action* determines which editor will be opened when you edit a MIDI Part (i.e. double-click, RETURN, CTRL+E). For Drum Parts, this can be overridden with the *Edit as drum when drum map assigned* option, so that the Drum Editor is always opened for Drum Parts.

*Part Data Mode* and *Show Controllers* are display options. The former lets you choose score notes, lines or drum notation, the latter whether MIDI control data is shown in the Part.

*Note Name Style* gives you various options for displaying the note information in the Info Line of the *Key Editor* [No Default], or in the *Browser* [CTRL+B], for example. *MIDI and Value* is a good start point, but if *DoReMi* is your thing, who am I to stop you.

### **Video: Event Display tab**

Not much to say... If *Show Video Thumbnails* is checked, then thumbnail frames of a video's content are shown on the Video Track. *Video Cache Size* determines how much memory is made available for video thumbnails.

### **MIDI Tab**

First off, *Snap Record Parts to Bars* does exactly that for both start and end points. It's best to leave this checked initially, since one tends to work with MIDI Parts in bars, making this option a logical choice.

Leave *MIDI Thru Active* checked unless you are sure you won't need it. Cubase Sx only passes thru MIDI messages on record enabled (or monitoring enabled) channels, so this is unlikely to cause any problems.

The three MIDI Reset options (on Record End, on Part End, and on Stop), will cause MIDI Reset messages to be sent on all channels. The Reset is sent to every non-muted MIDI Track. See page ?? for more.



You might want to check “*Note On*” *Priority*. The timing of notes is about as important as it gets in music, so by checking this option they get to ride up front. Be aware that this might impact the tonality of a patch due to a controller, or MIDI Clock, being delayed. Let your ears be the guide.

You may or may not want *Length Correction*. Consider two notes of the same pitch and on the same MIDI channel, the value of this spin control adjusts the length of the first note so that there is always a short time between the end of the first note and the start of second. A patch might have its sound affected by this parameter, so use it wisely. Be aware that it is there, and use it if you need it.

*Solo Record in Editors* is quite neat, and you might want to use it. If set, then when you open a MIDI Part, the corresponding Track will be record enabled exclusively (although audio Tracks will be unaffected). When you close the MIDI Part (or it loses focus), then record enable settings are returned as they were. Note that if other MIDI Tracks have monitoring active, then they will still playback any incoming MIDI data. Also note that the MIDI Track opened will still only receive incoming MIDI on its selected input port and channel.

Leave the next two tabs *Chase Events Filter* (page ??) and *Filter* (page ??) as they are for now.

## Scores tabs

Best to leave these as they are until you get into *Score*.

## Transport Tab

These options are described in detail in *Transport Preferences* on page ?. The default options are generally fine. However, consider checking *Locate When Clicked in Empty Space* and unchecking *Return to Start Position on Stop*. The former is useful for quickly locating the Cursor to a general area in the Project. This can often be sufficient in many cases, either on its own or quickly followed by another Transport key command. The latter is almost redundant, since the key command *Restart* [No Default] is available to perform a similar function that is sufficient in most instances.

## User Interface Tab

You can run Cubase Sx in English, French, German and Spanish; select from *Language*. Switching off *Tooltips* might give you a small performance improvement, but is best left on until you are familiar with Cubase Sx’s many graphic buttons that are not always as intuitive as the designer probably hoped. Leave *Maximum Undo* at ∞.

*Auto Save* seems like a commendable feature, but the trade-off is an unscheduled interrupt to operations periodically. This might occur in the middle of a great vocal take or similar, so you must consider the risk involved. Securing

good Project backups is extremely important, but it is perhaps better to control these by using *Save New Version* [CTRL+ALT+S].

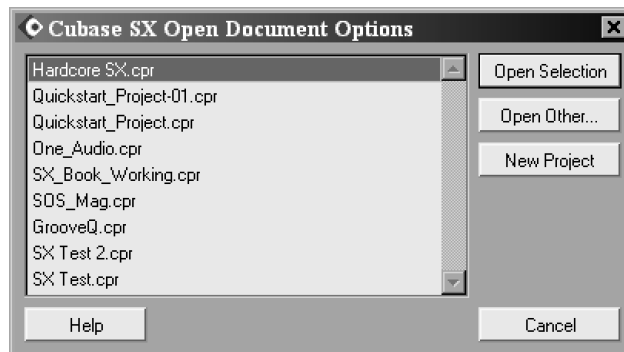
When the *Auto Save* checkbox is activated, Cubase SX will automatically save backup copies of all open Projects with unsaved changes every  $n$  minutes, where  $n$  is the value in *Auto Save Interval*. The backup files are named <Project Name>.bak, and are saved in the Project folder.

The same is true for Projects that have not yet been saved. In this case the backup copies are named #UntitledX.bak where  $X$  is an incremental number, allowing for multiple backup copies in the same Project folder.

Also on this tab is the option that determines the Project to be opened when you start-up Cubase SX.

The options available in *On Start-up* are:

- *Do Nothing*: This will leave you having to make a selection from the Cubase SX menus.
- *Open Last Project*: This will cause the last saved Project to be opened
- *Open Default Project*: Open the Project file default.npr from the Cubase SX application folder.
- *Show Open Dialog*: Displays the *Open* [CTRL+O] dialog from which you can locate, select and open a Project.
- *Show Template Dialog (Default)*: Opens the template dialog from which you can select a dialog to create a new Project.
- *Show Open Options Dialog (Recommended)*: This option is the most flexible. This dialog will also open if you press and hold down [Ctrl] while launching Cubase SX. The dialog lists the most recently used Cubase SX Projects. You can open one of these by selecting it and clicking *Open Selection*. To open a project not listed, click *Open Other*, when the *Open* dialog will be shown. Finally you can choose to create a new project from a template by clicking *New Project*.



Open Options Dialog

### Controls Tab (for knobs and sliders)

In many windows, most parameters are shown as knobs, sliders and buttons. For knobs and sliders, you can select the various ways in which these can be

adjusted.

**Knob Mode** can be set to the following:

- *Circular (Default)*: To move a knob, you click on it and drag it in a circular motion. You can get a finer controller of the knob by continuing to hold down the mouse-button and moving the mouse pointer away from the knob. From a distance it is easier to make small adjustments to the control. When you click inside the knob's edge, the knob will move to that position.
- *Relative Circular*: Similar to Circular, but clicking inside the knob does not change the setting to that point.
- *Linear*: To move a knob, click on it, hold the mouse-button down, then drag it up and down.

**Slider Mode** can be set to the following:

- *Jump (Default)*: Clicking on a slider makes it instantly jump to that position. Be careful, since a right-click also causes the slider to move.
- *Touch (Recommended)*: Here you must click on the slider handle to adjust the parameter. This significantly reduces the risk of accidentally moving a slider. Since there is no undo on the sliders in the *Track Mixer* [F3], this setting is highly recommended once you are mixing. It is far too easy to accidentally move a fader without realizing in Jump mode.
- *Ramp*: By clicking on a slider, but not on the slider handle, the handle will move smoothly up or down to the position of the mouse cursor.

The options for *Value Box/Time Control Mode* deserve some experimentation to determine which method you are most comfortable with. The easiest way to try out these options is to drop an audio Event on the Event Display and select it. Make sure the Event is placed three or four bars into the Project, to allow room for manoeuvre. Switch on the *Info Line* [CTRL+I]. You can now try out the three options. Note that different field types often behave in different ways (e.g. compare *Volume* with *Start* or *Length*).

- *Text input on left-click*  
When you click on a value field it will drop straight into text edit mode. Note that you can ALT+right-click on *Volume* to obtain a slider. Furthermore, you can point at the upper or lower edge of a numerical field value (or one of the segments within it) and click the small + (increment) or – (decrement) icons that appear. This is a bit fiddly, but can be a rapid way of accurately changing a value.
- *Increment/Decrement on Left/Right Click*  
First, you can double-click to enter a value in text mode. Take care with the double-click, as it is easy to adjust the value by mistake with slightly incorrect timing of the clicks. A left-click will decrease a value, and a right-click will increase a value. Note that different fields behave in different ways. For example: *Volume* changes in units of  $\pm 1\text{dB}$ ; *Length* will change in different units that depend on whether *Snap* is active and which *Display Mode* is being

used; *Start* can have each segment individually adjusted by clicking on the appropriate segment. Got all that?

- *Increment/Decrement on Left Click and Drag*

Oh boy, what a mouthful. This is, perhaps, the most useful of the modes. Here you can double-click to gain text entry. A single-click will highlight a field and then allow the value to be increased or decreased by moving the mouse up or down with the button held. As above, *Length* is affected by *Snap* and *Display Mode* settings.

## VST Tab

The VST Tab provides the following options:

### *Scrub Response (Speed)*

Sets the responsiveness of the *Scrub* function in the Project Window, Sample and Part editors.

### *Auto Monitoring*

Monitoring is the process of listening to the incoming audio during recording. This item provides a number of different choices of how this will operate. See more about this in chapter 14, page ??.

These *Auto Monitoring* options only apply when monitoring through Cubase Sx, or when using ASIO Direct Monitoring. When monitoring externally through a mixer, it is best to select the *Manual* option, and ensure that the Monitor buttons for all Tracks are turned off.

The following options are available:

- *Manual*: With this option you determine which Tracks are to be monitored thru Cubase Sx by switching on the Track List monitor button for each Track individually.
- *While Record Enabled*: Input monitoring only occurs for Tracks enabled for recording.
- *While Record Running*: Input monitoring only occurs for Tracks enabled for recording while recording is taking place.
- *Tape Machine Style*: Input monitoring occurs in stop mode and during recording, but does not take place during playback. This is similar in operation to how many tape machines operate.

### *VU-Meter Peak's Hold Time*

This item allows you to vary the Peak Hold Time for the meters in the *Track Mixer* [F3]. This is only of use if the *Meter Hold* option is also switched on in the *Track Mixer*. Right-click in the *Track Mixer* to switch *Meter Hold* on and off. A value can be set between 500 and 30000 ms.

### *Pre-load Waves Plug-ins on Start-up*

For those lucky enough to be using the Waves plug-ins, this option loads the `waveshell.dll` when Cubase Sx starts. The effect is to load the names of the

Waves plug-ins into Cubase S<sub>X</sub> so that they appear as VST plug-ins (the Waves plug-ins being DirectX). The cost for this is a small delay in the start-up time of Cubase S<sub>X</sub>.

## Window Layouts

It is quite possible to work within Cubase S<sub>X</sub> using a single view, or *Window Layout* as they are called in Cubase S<sub>X</sub>. Working in this way, you can simply open and close the windows you require (e.g. Pool, Browser, Track Mixer, and so on) as you need them and as you finish with them. You can also leave windows open and use **CTRL+TAB** to move between the open windows.

However, the availability of multiple views, a single key command away, is a useful feature. A *Window Layout* is simply a snapshot of the open windows at any particular time. Cubase S<sub>X</sub> is always operating in a *Window Layout*.

While each *Window Layout* is numbered, unfortunately this numbering is not shown on the screen. Note that when you move to another layout, then return to the original, that it is the snapshot that you will see and not the layout of the screen as you left it. There is no way around this. So, if you wish to quickly check something on another layout without disturbing your work, you are forced to open the appropriate windows or dialogs on the current layout. This seems a bizarre state of affairs, since *Window Layouts* should be a labor-saving feature.

The easiest way to demonstrate their use is to create one. So create a new Project, close all open windows and minimize the *Project Window*. It is not possible to close the *Project Window* in any *Window Layout*, but it can be minimized to get it out of the way. Now open the *Track Mixer* [F3] and edit to taste. Next do *Window Layout/New* [CTRL+Pad 0]. Name the layout *Track Mixer* and click *Ok*. Congrats, you've just created a *Window Layout*.

You can take a look at your shiny new creation, in context, with *Window Layout/Organize* [W]. This lists all layouts and provides options to create, delete and activate all layouts. Select #1 and click *Activate*. You are back at your original layout.

You can create as many *Window Layouts* as you wish, but there are only key commands for the first nine, *Window Layout/Layout 1* [ALT+Pad 1] (and similarly for 2 to 9).

A layout is not completely cast in stone, however. By way of demonstration, ALT+2 to your *Track Mixer* layout, and open, say, the *Browser* [CTRL+B]. Arrange it in the layout with the Track Mixer, then hit *Window Layout/Recapture* [ALT+Pad 0]. There is little point in renaming the layout on the dialog that appears, but you must hit RETURN twice to save the layout.

*Window Layout* operations are not included in the Edit History, so you can't accidentally remove a *Window Layout*, or other layout action, when applying Undo.



### Note

*Window Layouts* are global. Each one is available in every Project.

**The Windows' Dialog**

Opened from *Window/Windows...*, the *Windows' Dialog* provides a method of managing Cubase SX's open windows from one place. It's of very limited use, simply because it retains focus, it can't be resized, and you can't assign it a key command).

## 6 The Project Window and Tools

Available in *Cubase SX Complete*.





## **7 The Transport, Markers and Movin' Around**

Available in *Cubase SX Complete*.



## 8 The Project Browser

Available in *Cubase SX Complete*.



## 9 Audio: Understanding Audio Objects

Available in *Cubase SX Complete*.



# 10 Tempo and Time Signature

Available in *Cubase SX Complete*.





# 11 The Event Display

The Event Display is the heart of Cubase S<sub>X</sub>. It is where Cubase S<sub>X</sub>'s objects are manipulated and processed in a graphical manner. There are often multiple ways to achieve the same action, and knowing when and where to apply the appropriate technique will allow you to become very efficient at moving and processing Parts and Events around the Project. The by-product of being able to manipulate the Project at speed is that it aids creativity; it becomes very natural to try something speculatively, or respond to a client's whim without any pre-planning. By making use of incremental saves and Cubase S<sub>X</sub>'s Undo, you can just "go there" immediately, confident that you can return to a chosen spot.

As well as covering all of the ground of Event and Part editing, this chapter covers Range Editing, one of Cubase S<sub>X</sub>'s most powerful tools.

## Auto Scroll

*Auto-scroll* [F] is a viewing option. When switched on, the Event Display will scroll horizontally, in pages, as the Cursor reaches the edge of the viewing area. The Cursor is always visible. When *Preferences/Transport* tab *Stationary Cursors* is checked, the Cursor will settle in the middle of the viewing area and the Event Display will move "behind" it. *Stationary Cursors* is quite a processor intensive task, and should only be used on sufficiently powerful hardware.

Auto-scroll is present in all editors and is individually switchable in each.



Auto-scroll

## Snap to Zero Crossing

*Snap to Zero Crossing* [Not available] ensures that all audio editing is performed at 0dB points in the waveform. This will reduce the likelihood of clicks due to amplitude differences between two audio segments. Nevertheless, it is wise to examine these areas and apply a cross-fade if necessary, especially with stereo audio. *Snap to Zero Crossing* is a *Preferences/ Audio* tab option.

*Snap to Zero Crossing* is also available in the Sample Editor, where the global setting can be overridden temporarily.



Zero-crossing

## Basic Manipulation of Events

### Selecting Events/Parts

When you select an Event it obtains a red border, and red handles appear. The red handles are used for moving the edges of the Event. Audio Events, in

addition, have blue handles; these are used for creating and editing fades and changing the audio Event's volume.

Events are selected by clicking on them with the Object Select tool. To select multiple Events, hold **SHIFT** while clicking; alternatively you can lasso them.

You can navigate around Events with the cursor keys. Holding **SHIFT** will select multiple Events. The up and down cursor keys will move between Tracks. If you left cursor to the Track List, you can select a new Track without an Event being selected, then move up and down the Tracks.

There are Event/Part selection options in *Edit/Select* (menu, key commands and quick menu):

- *All* [**CTRL+A**]: Select all Events in the Project.
- *None* [**CTRL+SHIFT+A**]: Deselect all Events.
- *In Loop*: Select all Events between the Left and Right Locators (including those partially inside the loop, but not those touching it).
- *From Start to Cursor*: Select all Events that start left of the Project Cursor.
- *From Cursor to End*: Select all Events that end right of the Project Cursor.
- *All on Selected Tracks*: Select all Events on selected Tracks.

You can opt to automatically select all Events on all Tracks under the Project Cursor. For this you must check *Preferences/User Interface/Editing* tab *Auto Select Events under Cursor*. This option can come in handy when moving sections of a Project around. This very much depends on the way that you arrange and organize Parts and Events, so it is best to plan the use of this option, should you intend to use it.

## Renaming an Event/Part

It is good discipline to name Events as you create them. While it is often apparent from the Event Display what an Event's function might be, the same cannot be said when using the Browser. In the Browser there are no visual clues, so naming becomes the main guide to function (the same is true for Track names). It is surprising how quickly you can end up with many Events on the same, and different, Tracks sharing the same name, so think carefully about how you will manage these.

Every Event initially takes the name of its associated Clip. You rename an Event by editing the *Description* entry in the Info Line, or from the Browser. Be careful not to change the File entry in the Info Line, since this will rename the audio file on disk.

Event and Part *Names* and *Descriptions* are displayed on the objects themselves in the Event Display providing *Preferences/Event Display* tab *Show Event Names* is checked.

## Renaming all Events/Parts on a Track

This can be done by holding **SHIFT**, **CTRL** or **ALT** and renaming the Track. All the Events on that Track will take the same name as the Track.



### Tip

If you want to rename all Events on a Track, but want to keep the Track name, then start by copying the Track name to the Clipboard. After renaming the Events, simply paste the Track name back.

## Adding and Removing Events/Parts to a Track

Events can be added in a variety of ways. Most commonly, for Audio, this will be by recording, or by importing an audio file into the Pool and then inserting an Event representing it onto a Track, either by drag and drop, or by using the *Insert into Project* options. For a MIDI Part, recording is the most likely technique, or by drawing a Part and then inserting Events via the MIDI Editor. Automation Events, similar to MIDI, can be recorded or drawn. In all cases, Copy and Paste are available.

Events are deleted by selecting and pressing **DEL** or **BACKSPACE**, or using the *Erase* tool.

Other functions, such as *File/Import/Audio File* [No Default] and *File/Export/Audio Mixdown* [No Default] may also create Events, sometimes as an option. These are described in the appropriate sections.



### Info

If you have more than one Project open, then you can drag Parts and Events from one Project to another.

## Moving Events

Cubase Sx has a number of methods for manipulating Events and Parts. All selected Events and Parts are affected by these actions.

### *Dragging*

Cubase Sx provides a safety feature that avoids accidentally moving Events with the mouse. It is a slight delay that only allows movement after the delay period has been exceeded. The delay time is variable and is set in *Preferences/Editing* tab *Drag Delay*. Note that the delay doesn't apply to the handles and it is quite easy to accidentally move one of these without noticing.



### Note

If you hold down **CTRL** while dragging an Event or Part, then the movement of the Event/Part is restricted to the same Track (horizontally), or precisely the same time position on another Tracks (vertically). This key can be changed in *Preferences/Editing/Tool Modifiers*.

*Info Line*

Don't overlook the ease with which Events can be moved by simply editing the Start position in the Info Line. This only works for single Events, but is nevertheless fast and accurate in many cases.

*Nudging*

An Event can be nudged by setting-up the Key Commands: *Nudge/Left* [No Default] and *Nudge/Right* [No Default]. (CTRL+SHIFT+Left/Right Cursor are natural extensions to those already used.) Nudging will move the Event by the amount shown in the Snap dropdown (see page 62).

*Edit/Move To*

The very useful *Move to Cursor* [CTRL+L] aligns an Event/Part to the Cursor position. *Audio/To Origin* [No Default] (also *Edit/Move to Origin*) will move an Event according to the underlying Clip's *Origin Time*. Any offset in the Event is adhered to, so the absolute Origin Time of the Event is maintained with respect to the Clip.

## Cycling through overlapping or stacked Events

Overlapping audio Events will often have a crossfade applied to minimize the risk of an audio glitch at the crossover point. However, it might be that you wish to leave them as is, or stack them one on top of the other for a variety of reasons. When MIDI Parts are stacked, or overlapped, the stacked Parts playback everything in all Parts (unlike audio Events/Parts).



### Info

For the overlapping part of two or more audio Events, only the topmost Event will sound (unless a cross-fade is applied); for MIDI Parts all will sound.

To change the order of overlapping Events use *Edit/Front (Move to)* [No Default] and *Edit/Back (Move to)* [No Default].

## Duplicating an Event/Part

The two most common way of duplicating an Event are to hold ALT and drag, and *Edit/Duplicate* [CTRL+D]. Cut and Paste can also be used. Paste will create the Event with its Snap Point aligned to the Cursor.

The ALT key, used above, can be changed to an alternative in *Preferences/Editing/ Tool Modifiers*.

The standard *Copy* [CTRL+C] and *Paste* [CTRL+V] can, of course be used. This will copy the Event at the Cursor position. There is also *Paste at Origin* [ALT+V], which will paste the copied Event at the location from which it was copied.

Audio Events are always created as shared Events (indicated by the icon shown in the bottom-right corner of the Event). However, for audio and MIDI

Parts you must hold **SHIFT+ALT** to create a shared Part. Editing a shared Part will change all of the other shared copies. Try it on both MIDI and audio Parts.

The **SHIFT+ALT** key-combination can be changed to an alternative in *Preferences/Editing/Tool Modifiers*.

*Edit/Duplicate* [**CTRL+D**] also works on multiple items, and can be handy for duplicating sections of MIDI Events, within a Part, to create echo and arpeggiator-type effects. *Edit/Repeat* [**CTRL+K**] is similar, but you can input the number of duplicates and whether or not these should be shared. Finally, you can set the Locators and fill it with the selection by using *Edit/Fill Loop* [No Default]. Note that these functions ignore Snap Points.

## Resizing Events and Parts

Events and Parts are usually resized by dragging their red resize handles (this works with the Scrub tool as well as with the Select tool), although you can use Info Line fields. Multiple Events can be resized at the same time.

In fact, it isn't necessary to select an Event to resize it. The handles are available regardless. The same is the case for the fade and volume handles, so take care that you moving the right one if they are close together.

The left and right ends can also be adjusted by grid setting increments by the four *Nudge* commands *Nudge/Start Left* [**CTRL+Left**], *Nudge/Start Right* [**CTRL+Right**], *Nudge/End Left* [**ALT+Left**] and *Nudge/End Right* [**ALT+Right**].

If you have *Sizing Moves Contents* selected for the Select tool, then the content of the Event/Part (audio or MIDI) will move with the edge being resized. Snap is followed if active.

You can also resize an audio or MIDI Event/Part with the *Sizing Applies Time-Stretch* tool. See pages ?? and ??. Note that any automation associated with Events resized with Time-Stretch will not be affected by the resize.

## Slipping – Sliding the contents of an Event or Part

If you hold **CTRL+ALT** (or *Alt Gr*) and drag the contents of an Event/Part (it doesn't have to be selected and this works with MIDI too), then the content will move and the Event/Part's position will remain unchanged. In the case of an audio Event, you cannot slide past the start or end of its Clip.

## Splitting and joining (gluing) Events/Parts

There are three options for splitting an Event or Part:

- *Scissors tool*: Follows Snap, if active. Hold **ALT** to repeat the Split throughout the Event/Part. This key can be changed in *Preferences/Editing/Tool Modifiers*.
- *Edit/Split at Cursor* [**ALT+X**]: Splits all selected Events at the Cursor. If none are selected then splits all.



Shared icon

### Note

Hold **CTRL** to temporarily disable *Snap* while resizing an Event or Part.

### Tip

If you convert an Event to a Part, then you can slide it past its Clip endpoints.

### Note

The Slip Event tool-modifier **CTRL+ALT** can be changed in *Preferences/Editing/Tool Modifiers*.



Split tool

- *Edit/Split Loop* [No Default]: Splits all selected Events at the Left and Right Locators. If none are selected then splits all.

The result of splitting a MIDI Part during a MIDI Event (e.g. a note) is determined by *Preferences/MIDI/Function Parameters* tab *Split MIDI Events*. When unchecked, the split note(s) will remain in the Part in which it starts and its duration will not change (even though it now extends beyond the Part boundary). When checked a new note is created. The original note will end at the split point, and the new note will commence at the start of the new Part, and extend until the endpoint of the original note.



Glue tool

You can join one audio Event with the next by clicking it with the Glue tool. This will create a Part containing the two Events. Further Events and Parts can be glued thereafter.

## Muting Events/Parts and Tracks

Each Track has a *mute* [M] button; that does this job for a whole Track. Events and Parts can be muted in a number of ways:



Mute tool

- *Mute tool*
  - Click a single Event or lasso multiple Events. This will reverse the mute status of the Events.
  - Lasso Events while holding **SHIFT** will mute all unmuted Events. This key can be changed in *Preferences/Editing/Tool Modifiers*.
  - Lasso Events while holding **CTRL** will unmute all muted Events. This key can be changed in *Preferences/Editing/Tool Modifiers*.
  - Click on an Event and drag the mouse over other Events; all will take the state of the first changed Event.
- *Edit/Mute* [**SHIFT+M**], *Edit/Unmute* [**SHIFT+U**] and *Edit/Mute toggle* [**ALT+M**]
- Info Line for a single selected Event/Part

Muted Events/Parts change to a lighter shade to indicate their status. A muted audio Event in a Part will be shown, but in its lighter form. A muted MIDI Event will not be visible when viewed from the Event Display; it will be shown in the MIDI Editor.

## Locking Events and Tracks

Locking Events and Tracks is a safety measure. Locking a Track is simply a matter of activating its Lock (padlock) icon in the Track List or Inspector. This will disable all editing for the Track.

The Lock options for a Part or Event can be viewed in the Info Line. The dropdown allows a selection to be made. Items that can be locked are:

- Position
- Size
- Other (which means all editing)

The *Editing/Lock* [CTRL+SHIFT+L] function will apply the lock settings specified in *Preferences/Editing* tab *Lock Event Attributes* to the selected items. If you perform *Editing/Lock* on a locked object, then a window will open with checkboxes for each lock option. Unlock an object via *Edit/Unlock* [CTRL+SHIFT+U] or by selecting the blank entry in the Info Line.

## Creating Regions from Events and vice versa

A Region is a section of a Clip (see chapter 9). Regions are most easily viewed in the Pool. On the Event Display we have two Region manipulation functions available to us, both found on the Audio menu.

- *Event as Region*: Creates a Region (or Regions) in the Clip(s) that mirrors the size and position in the Clips(s) of the corresponding Event(s). This also works on multiple Events (even if the Events refer to different Clips).
- *Events from Regions*: Replaces an Event with new Event(s), positioned and sized, to match the Region(s) in the underlying Clip that are within the original Event's boundaries.

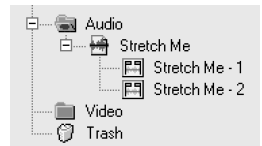
An example will hopefully make these two functions clearer. Consider the following Clip (in the Pool) and its associate Events.



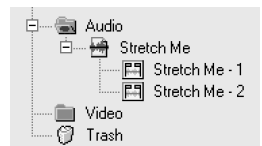
Now let's shorten both Events; taking the start from the first, and the end from the second. If we now select the two altered Events and perform *Audio/Event as Region*, then the result in the Pool is two Regions representing the altered Events.



The reverse process should now be apparent. Let's create a new Track and place one Event corresponding to the whole Clip on it.



If we now perform *Audio/Events from Regions* on the Event, the Event is altered to



## Snap Points

The purpose of *Snap* [J] and *Snap Points* are to make editing fast and accurate. Every Event Display object has a Snap Point; for Parts it is fixed at the left-hand edge, while for an audio Event the Snap Point can be graphically moved in the Sample Editor and adjusted in the Info Line.



Snap settings

The Snap value and type forces Events and Parts to be aligned in a particular, pre-defined way when being moved in the Event Display. A Snap Point is a marker within an audio Event that is used by Snap to align the Event when moved. A large number of other operations are affected by Snap (e.g. Project Cursor, split, range selection, sizing, etc.).

When editing music you will most likely find yourself aligning audio Events to a bar or a beat (though smaller segments will, no doubt, be used). The procedure for aligning audio Events is to identify an appropriate Snap Point in the audio (perhaps a downbeat), and position the Snap Point at that point within the Sample Editor. Next select the appropriate Event display format from the Ruler (in the Project Window), and select the Snap value (e.g. bar, beat, or second, etc.). Now drag the Event to its location.

The Snap Point is visible in the Sample Editor as a vertical line marked with the letter 'S'. It is also visible on the Event in the Event Display as a blue vertical line, providing the Snap Point is not at the start of the Event (its default).



### Note

Hold **CTRL** to temporarily disable *Snap* while resizing an Event or Part.

## Snap when moving Events and Parts

Snap assists in the precise location of Parts and Events when moving them in the Event Display. The Snap setting defines an invisible grid to which Events are aligned by restricting their placement to these points

Snap can be turned on and off by way of the toolbar button shown. When switched off, Events can be placed in an unrestricted fashion.

The Snap grid is determined by the display format selected from the Ruler together with the Snap value (selected from the dropdown in the Toolbar). For example, if the display format is Bars + Beats then the following Snap values are available: Bar, Beat, or Use Quantize (when the Quantize dropdown determines the grid). If the display format is Seconds, then the Snap values are: 1000ms, 100ms, 10ms, 1ms.

The grid is only one part of Snap, the other factor that determines the outcome is the Snap mode:

### Grid

This is the default mode for most folk. Events will be positioned along the grid defined by the display format and Snap value. (e.g. Bars+Beats and Use Quantize at 1/8 Note)



Snap

- ✓ Grid
- Events
- Shuffle
- Magnetic Cursor
- Grid + Cursor
- Events + Cursor
- Events + Grid + Cursor

Snap modes



### Events

The effect of this mode can appear quite confusing when you drag an Event along a Track of a populated Project. What happens is that the start, end and Snap Points of other Events become the snap points for the Event being positioned (and the dragged Event will be positioned around its Snap Point). Do examine this option, it makes sync'ing two or more Events very easy. Markers are affected by Snap, so the Events mode can be used to rapidly position them.

### Shuffle

The effect of shuffle depends on which direction you move the Event, and the spacing between the Events. It is useful for swapping two adjacent Events, especially when there is little or no space between the Events. The dragged Event will always end up touching its associated Event. If an Event is dragged from left to right, and over other Events, then the Events will be shifted left to fill the vacated space.

### Magnetic Cursor

The Project Cursor becomes the snap point. The same function can be achieved via *Edit/Cursor (Move to)* [CTRL+L].

### Grid + Cursor, Events + Cursor, Events + Grid + Cursor

These three modes are simple combinations of the above.

### Snap Points

When an Event is created, its Snap Point is positioned at the start of the Event. To adjust the Snap Point in the Sample Editor, open it by double-clicking the Event and locate the Event (SHIFT+E will Zoom to the Event, and it will be clearer if you have the Event markers showing). See page ?? for *Snap Point* positions when recording.

The Snap Point is shown by the letter **S** in a box at the start of the Event (unless it has already been moved). This box can now be dragged to position the Snap Point.

The Snap Point can be set in the Project Window. This is extremely useful. For example, say you have carefully nudged an audio Event into a very precise position in the Event Display. If you want to use the same Event elsewhere, you will want to preserve this positioning. In this case you will need to use the following method to accurately set the Snap Point.

To set the Snap Point from the Event Display, first select the Event and position the Cursor where you want the Snap Point. Now select *Audio/Snap Point to Cursor* [No Default]. The Snap Point is moved to the position of the Cursor; indicated by a blue line in the Event (you will need to move the Cursor to see this).

One word of caution: When you move an Event's Snap Point in the Sample Editor, the Event is not automatically realigned to the Snap setting; you must return to the Event Display and reposition the Event for Snap to take effect.



### Note

A Clip also has a Snap Point. This can be adjusted by opening the Sample Editor for the Clip from the Pool. It is used (providing Snap is active) when dragging the Clip onto the Event Display to create a new Event.



Snap Point



### Note

Every Event has its own unique Snap Point.

## Range Editing



Range tool

The Range Selection tool allows you to draw a rectangle over the Event Display and then select the contents of that area for processing. The main difference between Range Editing and Event/Part Editing is that a selected range ignores Event and Part boundaries. You can, therefore, select any rectangular portion of a Project and simply copy it to another part of the Project. This is a very powerful feature. It is also possible to remove Tracks from a selection.

### Range Selection

- *Range Selecting an Event:* To select an Event double-click on it with the Range tool. Multiple Events can be selected by holding **SHIFT**, when the range will enlarge to encompass the Events and everything in between.
- *Range Selecting a Track:* When in Range Edit mode, it is possible to use the Track List quick-menu function *Select All Events*. This will create a Range Edit area that covers the Track from the start of the Project until the end of the last Event.
- *Range Selecting using the Marker Track:* When you double-click between two Markers with the Range tool, then a range selection is made across all Tracks between the two Markers.
- *Range Selection Menu Options:* There are a number of predefined *Edit/ Select* options including All, None, In Loop, From Start to Cursor, From Cursor to End, and Left and Right Selection Side to Cursor.
- *Resizing a Range Selection:* Once you have selected a Range you can resize it in the following ways:
  - Dragging its horizontal and vertical edges.
  - Adjusting values on the Info Line.
- *Adding and Removing a Track from a Ranges Selection:* Once a Range Selection has been made a Track can be added or removed by **CTRL**+clicking the Track.



### Tip

When using *Select All Events* on a Track in Range Edit mode, automation Events are selected as a Range.

### Range: Move and Copy

This is identical to moving Events, except that the Events/Parts will split at the edge of the Range Selection. Note that *Edit/Duplicate* [**CTRL**+**D**] and *Edit/Repeat* [**CTRL**+**K**] also work.



### Info

When performing a Range Selection *Repeat*, you might get unexpected results if you have both time and tempo based Tracks in the selection. In this case, the time base Tracks will always take precedence.

### Range: Cut and Paste

Regular Edit/Copy, Cut and Paste work as expected, but there are two additional functions:

- *Cut Time*: As an Edit/Cut, but Events to the right are shifted to fill the space left by the Cut selection.
- *Paste Time*: Inserts the Clipboard content at the Cursor position, shifting existing Events to the right to make way for the inserted Events.

#### Other Range editing functions

For completeness here are the other Range Edit functions:

- *Delete Time*: As Cut Time, but the selection is not moved to the Clipboard.
- *Paste Time at Origin*: As Paste Time, but the Paste occurs at the original position of the selection and not at the Cursor.
- *Split*: Splits all Events and Parts along the edges of the selection.
- *Crop*: Easily explained with a couple of diagrams:



A very neat way of tidying up Events in the Project. Events and Parts partially within the selection range are split, and the remainder, outside the selection, discarded.

- *Insert Silence*: The Range Selection is replaced by silence. Events are moved to the right to make way for it.



#### Note

*Delete Time* and *Insert Silence* are also available when the *Range Tool* is not in use. In this case, the range is indicated by the *locators*. Both of these functions will move automation Events with their Events/Parts, even when the automation Tracks are closed.



## 12 MIDI: Recording and Editing

Available in *Cubase SX Complete*.



# 13 MIDI Processing

Available in *Cubase SX Complete*.





# 14 Audio: Recording and Editing

Available in *Cubase SX Complete*.



## 15 Audio: The Pool and Clips

Available in *Cubase SX Complete*.



## 16 Audio: Processing and Effects

Available in *Cubase SX Complete*.



# 17 Mixing and Audio Control

Mixing is a subject of infinite complexity. The seemingly simple process of bringing all of the audio in a Project together and creating the final product is, in practice, a lot trickier than it appears. Voluminous tomes have been written on the subject, and much mystique and magic surrounds many of its techniques and protagonists. However, the *art* of mixing is not what we are about here. Cubase S<sub>X</sub> is but a tool in the process, albeit one that can smooth the path in all manner of ways.

Most folk will mix entirely within Cubase S<sub>X</sub>, producing a 2-Track master by way of the Audio Mixdown facility. However, with appropriate equipment, it is quite simple to mix externally, with Cubase S<sub>X</sub> acting as a digital “tape machine”.

## Routing Audio

To best use the tools available for mixing in Cubase S<sub>X</sub> it is necessary to understand the way that audio flows, or routes, through it from Track to output port. MIDI routing is considered separately (see chapter 13, page 69).

### Main routing path

Here are the basic routings:

- Each Track (audio, Group, Rewire or VSTi) is associated with a *Track Mixer* [F3] Channel .
- Each Channel routes to a *VST Output Bus* [F4], or a *Group* Channel.
- Each *Output Bus* connects to a physical port on a soundcard.

One of the *Output Buses* is called the *Master Bus*. The *Master Bus* is fixed as the leftmost bus shown in the *VST Outputs* window, however it can be routed to any available physical output port. It is not a requirement to route anything through the *Master Bus* (but remember that many of Cubase S<sub>X</sub>'s audition functions use the *Master Bus*). If you wish to mix externally, then you may well decide not to use the *Master Bus* for mixing. However, if you mix within Cubase S<sub>X</sub>, then it is the *Master Bus* that will be recorded when using *File/Export Audio Mixdown* [No Default].

As you can see, Cubase S<sub>X</sub>'s basic routing is simple, yet effective. There is, however, a routing restriction that occurs in the *Track Mixer* worth noting: when



#### Note

MIDI sound sources (except VSTi's) are generally best recorded as audio if you wish to mix them.

routing a Group Channel to another Group Channel, it can only be routed to a Group Channel to its right (in the Track Mixer), or below it (in the Track List).

### Channel effects routing

Each Channel can feed any of the eight *auxiliary buses*. Steinberg call these *Send Buses*, *Send Channels* or *Sends*, but this can be confusing since there are both *Send Buses* and *Send Effects*. I'll use the term *Send Bus* to distinguish it from an effect. By default the *Send Buses* are routed to the *Send Effects*, but they can be routed elsewhere. Each *Send Bus* can be routed to a:



#### Note

To check the number of input and out buses for a plug-in effect, take a look in *Devices/Plug-in Information* [No Default].

- *Send Effect*: This is a *mono* send only. Stereo channels are summed to mono before being sent. The return is stereo (so, for example, a mono source can be auto-panned).
- *Group*: A Group channel is always stereo. You can send a stereo channel to a stereo Group, or a mono channel to a Group's left or right channel. (See below for more on *Groups*.)
- *VST Output Bus*: A stereo channel will route to a (physical) stereo output bus, and a mono channel to either the left or right channel of a physical output bus. (See below for more on *VST Output buses*.)
- *Left or Right Master Bus*: In these cases, a stereo channel will be summed to mono before being sent. A mono channel is routed unchanged.

### Send Effect Bus routing

There are eight *VST Send Effects* [F6] slots available. These are available to every non-MIDI Channel in the Project. They are mono input and stereo output. Each Send Effect can be routed to a physical *Output Bus*. (A level control is available for each effect slot, and each effect can be individually defeated.)

### Insert Effect Bus routing

Each Channel can route through up to eight *Insert Buses*. For stereo channels the Insert buses are stereo. If, however, the Insert effect has a *mono* input, then *only the left-hand channel* is passed to the effect for processing, and only the left-hand channel is returned. The right-hand channel is passed through unchanged.

On mono channels the Insert bus is mono. For a mono input to stereo output plug-in (try the supplied *Autopan* plug-in), *S<sub>x</sub>* will only take the left channel from the Insert effect's output; the right channel is discarded. For a stereo-to-stereo effect, both inputs are supplied equally, but only the left channel from the Insert effect's output is returned; the right channel is discarded.



#### SL Info

Only five Insert slots are available in SL.



#### SL Info

Only four Master bus slots and one post-Master gain slot are available in SL.

### Master Bus Effects routing

The Master Bus has eight Insert effects slots; the first six are pre-fader, the last two post-fader.



## Groups (or Group Channels)

Groups are created by *Add Track/Group Channel* [No Default] and appear in the *Track List* and *Track Mixer*. Groups are useful for sub-mixes and as *effects racks*. For example, if you have a number of vocal tracks that you wish to apply the same effects to (e.g. compression, EQ, reverb, etc.), then it is both simpler, and less processor intensive, to route all the appropriate vocal channels to a Group containing the effects. The balance of the sub-mix can still be changed from the original channels, but now it can be adjusted as one also.

If you *solo* a Track that is routed to a Group, then the Group is soloed also. This is not the case when a Track is *muted*. This makes sense, since other Tracks might be routed to the Group, and you want to listen to them. However, if you solo or mute a Group, then all Tracks routed to the Group are soloed and muted.

### Routing Send Channels to Groups

As an alternative to using *Send Effects*, consider placing each effect on a Group channel and using the *Send Buses* in the same manner as you would for *Send Effects*. In this set-up, the Group fader becomes, in effect, the wet/dry mix control.

Using Groups affords a greater degree of flexibility than using *Send Effects*. For one, you can route the Group to a further Group, and not just to a VST Output as with a *Send Effect*. You can also have multiple effects in the Group channel, creating a virtual effects rack.

Here are some of the benefits:

- The most obvious advantage is that effects can be *chained* (as Insert effects) in a Group (This cannot be achieved with the current Send Effects routing in Cubase SX.)
- The Group fader, EQ, solo and mute switches can be used creatively.
- The Group can be automated.
- Send Effects are mono in only. Groups are stereo, and so are the Insert buses.

One final point: if you use this method, and Solo your Channel, then the Group will be muted. To circumvent this, remember to **ALT+click** the Group's Solo button to defeat solo.



#### Note

A Group can be Muted and Soloed, but only from the *Inspector* [ALT+I] or *Track Mixer* [F3]; strangely the *Mute* [M] and *Solo* [S] key commands do not work from the Project Window.



#### Note

The *Mute* button on a Group Track's *Track List* entry is for muting automation.



#### Info

There will be latency associated with the Group Channel (the same as there is for the Send Channels, but not for Inserts) and you may need to take measures to tackle this (see chapter 20, page 107).

## VST Output buses (F4)

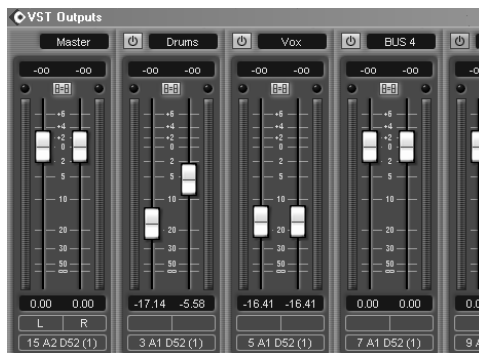


### Note

You can rename the VST Outputs.

Each *VST Output Bus* [F4] is associated with a physical output on your soundcard, and each can be adjusted individually for level. Stereo fader pairs can be unlocked (with the on/off toggle immediately above the faders), and left and right channels given different gain settings. This can also be done by holding **ALT** and moving a fader when the fader pair is locked.

The total number of output buses available is dependent on your soundcard. The *Master Bus* (far left) is always active, but the other outputs must be activated for use with the on/off toggle at top of each bus. Default physical outputs are assigned to the buses, but these can be changed in the dropdown selector at the bottom of each channel strip. *VST Outputs* are automated via the *Add Track/Master Automation* [No Default] Track.



VST Outputs

## The Track Mixer



### Note

*VST Output Bus* settings are saved with the Project, but if you change soundcards the settings will be lost.

The *Devices/Track Mixer* [F3] is the hub of the mixing world in Cubase SX. This is where you can adjust levels, EQ, panning, apply effects, etc. Every audio, MIDI, and Group Track in the Project Window will have a channel strip that is uniquely associated with it in the *Track Mixer*. And for each loaded VSTi and Rewire application, a channel will be created for each active output. There is no practical limit to the number of audio channels available. Channels are always displayed in the Track Mixer in the following order: (a) Audio and MIDI (ordered as in the Track List), (b) Rewire, (c) VSTi's, (d) Groups.

There are, in fact, two Track Mixers available; the other is *Devices/Track Mixer 2* [No Default]. Since the Track Mixer is configurable, it is well-worth creating a key command for it. If you don't use *Devices/Video* [F8] very often then you might consider reassigning the [F8] key.

While the Track Mixer is an excellent place to manipulate channels, there are very few functions provided here that cannot be performed from the Inspector.

Figure 17.1 shows the basic *Track Mixer*. There are three distinct sections to the mixer.

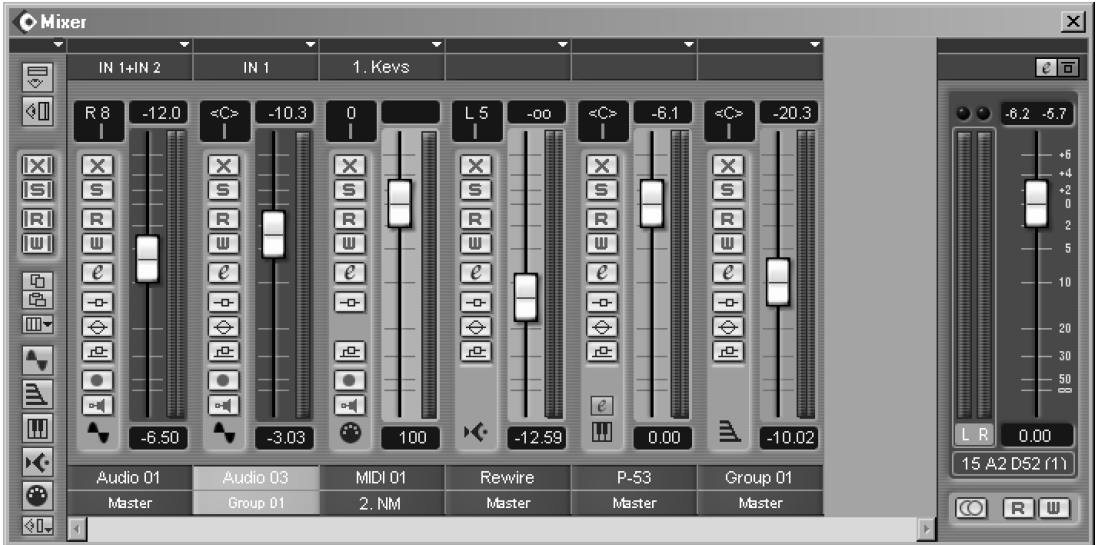


Fig. 17.1: The Track Mixer

- The *Common Panel* – the column of buttons far left
- The *Master Channel* – to the far right (activated in the *Common Panel*)
- The *Channel Strips* – with a single fader each

By clicking the top-left button in the *Common Panel* you can open the mixer's extended view. The extended view provides an additional strip of controls above each channel strip. Each channel can be individually configured to display either the insert, EQ (not MIDI) or send settings for each channel. Selection is made via the dropdown between the normal Track Mixer and the extended view.

### Track Mixer configuration

As well as the extended view, noted above, there are a number of useful configuration features available to both Track Mixers. Some of these are described below in the *Common Panel* section.

The list shown in the margin is from the dropdown above the *Common Panel*. As well as being able to switch between normal and expanded views, it allows you to view all *visible* channels in their wide or narrow forms. This will permanently override the channel's own setting.

In the lower section are toggles that allow you to hide individual channel *types* (e.g. audio, MIDI, etc.) from view. These toggles are the same as the *Common Panel* buttons. The *hideable* option allows you to hide all channels set to *hideable* in their dropdown.

You can save *Channel View Sets* by clicking the button right at the bottom of the *Common Panel*. These sets save the narrow/wide, extended view and



Master Channel toggle



Extended view

SL SL Info

The extended view is not available in SL.

✓ Normal  
Expanded

Narrow  
Wide

✓ Disk  
✓ Groups  
✓ VSTi  
✓ ReWire  
✓ MIDI  
✓ Hideable

Common Panel dropdown

hideable settings for each channel. Also saved are the hide/view channel type toggles and the Master Channel toggle. The sets are saved with the Project. (Try using *Channel View Sets* to view, say, used VSTi channels only. Perhaps save a default *View All (Wide)*.)

If you right-click on the Track Mixer you will find that there are more options for saving mixer settings (including Insert, Sends and VSTi's). These are described later in this chapter (see page 90 onward).



### Common Panel

Top to bottom, on the Common Panel we have:

- o *Extended view* toggle (see above)
- o *Master Channel* toggle (see page 82)
- o Mute: all off
- o Solo: all off
- o *Global automation switches* (see page ??)
- o Copy selected Channel's settings (see page 91)
- o Paste selected Channel's settings (see page 91)
- o Channel select dropdown
- o Channel-type toggles for audio, Group, VSTi, Rewire and MIDI (see above).
- o *Channel View Sets* dropdown (see above)

The main items of interest here (that are not covered elsewhere) are the global mute and solo buttons, and the Channel select. Switching off *all* muted or soloed Tracks can often be a lot quicker than doing so by hand; these are the buttons for those tasks. A quick [F3] and click does the job.

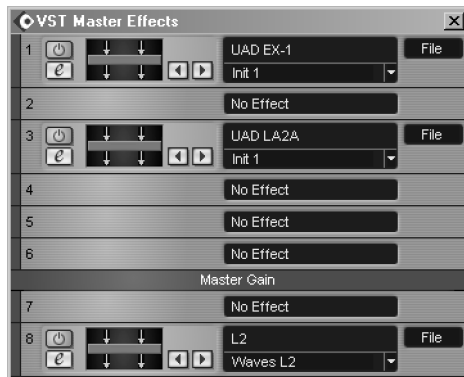
The Common Panel

### SL SL Info

Only four Master bus slots, and one post Master gain slot, are available in SL.

### The Master Channel and Master Effects (F7)

The *Master Channel* controls the behavior of the Master bus. This bus is used for many Cubase Sx audition functions and is also the bus used for *File/Export Audio Mixdown* [No Default]. *Master effects* are muted when auditioning, but you can switch them back on manually, if you wish.



Master effects

There are eight *Master Channel Effects* [F7] slots – six are pre-Master Fader, and the final two are post-Master Fader. Take care when using mono input effects in the *Master Effects* chain, since no warning is given if you do this.

You can bypass all *Master Effects* using the switch at the top of the Master Channel in the Track Mixer. Each effect also has an on/off switch in the Master effects rack.

The *Master Channel* is displayed by activating the *Show Master Channel* button on the Track Mixer. If the *Mono/Stereo* button is colored orange, then all output on the Master bus will be mono.

The numbering on the Master fader applies to the fader only; it shows a maximum of 6dB gain. The numbers *do not* apply to the meter. The meters will peak at 0B FS. The same is true for the Channel meters.

**Tip**

Dithering should always be applied post (after the) master-fader.

**Note**

The Master bus fader and Master Effect levels can be automated on the *Master Automation Track*.

**Note**

It is important that you avoid lighting the Master Channel Clip Indicator (and all other VST Output buses). While there is generally no problem in lighting the Channel clip lights (due to the enormous headroom provided by the internal 32-bit FP summing bus), this is not the case with the VST Outputs. Clipping these buses will almost always result in audible clipping, and that is rarely a desirable occurrence.

## Channel Strip

An example of each of the channel-types is shown in the *Track Mixer* figure above. The buttons are the same as those used in the *Track List* and *Inspector*, and were described in chapter 6, page 45 onward.

The Group, Rewire and VSTi Channels are very similar to the audio Channel Strip, but they lack the input bus and record controls. The VSTi Channel gains a button to open the VSTi for editing. Audio and MIDI Tracks can have their input channels selected here.

**Info**

In general, dragging a control with **SHIFT** held will allow you to move the control in smaller/finer increments.

## The Fader and Pan Controls

All channel-types have *Level* and *Pan* controls. The manner in which the *Fader* operates is determined by *Preferences/User Interface/Controls* tab *Slider Mode* (see chapter 5, page 41). The precise value of the *Fader* control is shown in the field below the fader as changes are made (and similarly above the *Pan* control). To reset either the *Fader* to 0dB, or *Pan* to center, use **CTRL+click**. You can get fine control of both handles by dragging while holding **SHIFT**.

Pan and velocity will only work on MIDI instruments configured to receive these MIDI messages. Most modern devices will respond.

**Tip**

Use the mouse-wheel to adjust faders, knobs and other controls. This works well for *Pan*, in particular.

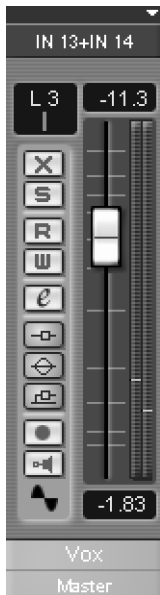
## Pan Law

The finer points of Pan Law are outside the scope of this book. Nevertheless, let's tackle the outline, since the principle is important when mixing. When a sound source is panned across the stereo field, so that its location apparently moves from, say, left to right, what in fact occurs is an increase in the audio signal from the right-hand speaker and a decrease in the left-hand speaker. The rate at which these levels change, as the fader is moved, is determined by the *Stereo Pan Law*.

The *Stereo Pan Law* is set in *Project Set-up* [SHIFT+S]. The three Pan Laws available in Cubase SX are: 0dB, -3dB and -6dB. The figure represents the attenuation in a stereo audio signal, at both speakers, when the sound is positioned dead center for each particular Pan Law. So, for a Stereo Pan Law of -3dB we have:

	Left Channel	Right Channel
Pan hard-left	0dB	$\infty$ dB
Pan dead center	-3dB	-3dB
Pan hard-right	$\infty$ dB	0dB

The attenuation curves, however, are not linear. The -3dB Pan Law is ideal for stereo, but a problem occurs when summed to mono, as the dead-center position will now be 3dB above the hard-left and right positions. This can be removed by using the -6dB Pan Law, but then there is a -3dB drop dead center when in stereo. Some systems do provide a -4.5dB setting by way of compromise, but this is not available in Cubase SX. The 0dB Pan Law is used by some for music making.



A Channel Strip

## Level Meters and Clipping

On playback, the Level Meter will show the output level, unless either the Record or Monitor buttons are active. In these cases, the meter will show the monitored input level (for MIDI this is velocity). The maximum reading on each meter is 0dB FS.

Peak levels are displayed above the level meter. The peak value is held until the fader for that channel is moved. This is odd, since one would expect it to follow the *Preferences/VST* tab *VU-meter peak hold-time*.

The meters have a couple of options available to them, accessed by right-clicking on the *Track Mixer*:

- o *VU-meter fast*: which increase the meter's response time.
- o *VU-meter hold*: which creates peak indicators on the level meters. These are held for the amount of time set in *Preferences/VST* tab *VU-meter peak hold-time*.

For input signals, if the value rises to, or above, 0dB, then you should attenuate your input signal to avoid clipping.

For output signals, a 0dB reading is not a problem (providing you are not routing any of the clipping buses outside Cubase SX). This applies to the audio, Rewire, VSTi and Group channels only, not to the Master Channel. Clipping the Master Channel is a serious problem. The reason for there being no problem is the 32-bit floating point bus that Cubase SX uses. This provides a very large amount of headroom for the 16 and 24-bit (and 32-bit FP) audio. MIDI outputs can't clip.

## Solo

Multiple Tracks can be soloed simultaneously. You can force a single Track to be soloed by using **CTRL+click** on its Solo button. This is handy when you have many Tracks soloed, and quickly want to get back to a single soloed Track. You can also clear all soloed Tracks with the *Deactivate all Solos* button in the *Common Panel* of the Track Mixer. If a Channel is routed to a Group, then the Group will be soloed along with the Channel.

You can defeat Solo on any channel by **ALT+click** on its Solo button (in the Track Mixer and Track List). The Solo button will then remain active, even though no other channels are muted. The Channel will subsequently remain unmuted when another Channel is soloed. If Solo defeat is used on a Channel routed to a Group, then the Group will also need to be solo defeated for the Channel to sound when any other Track is soloed.

## Selecting Channels

A Channel is *selected* by clicking its name field. The lower section becomes a lighter shade to indicate that it is selected. When selected the Channel will be visible in the *Channel Settings* window and active in the dropdown selection list on the Track Mixer. Multiple Channels can be selected by holding **SHIFT**.

The Channel associate with a Track selected in the Track List can be automatically selected in the Track Mixer by checking *Preferences/Editing* tab *Mixer Selection Follows Project*. This is actually a two-way thing; select a Track in the Track List, and it will be selected in the Track Mixer; select a Channel in the Track Mixer, and it will be selected in the Track List.

## Channel Settings and effects

Clicking the *Edit* button in the Track Mixer, Track List or Inspector, opens the *Channel Settings* window. This is the same window that is available from the *Track List* and the *Inspector*. The *Channel Settings* for audio, Rewire, VSTi's and Groups are identical. For MIDI channels, *Channel Settings* shows the Channel Strip, and the Inserts and Sends. It is described in chapter ??, page ??.



### Note

When one or more channels are selected, the up and down cursor keys adjust the faders on all selected channels.



Edit button



Fig. 17.2: Channel Settings

You can select another Channel from here via the *Selected Channel* dropdown, or by using the left and right cursor keys. To open another *Channel Settings* window, click another *Edit* button while holding **ALT**.

Virtually everything available on this window, and accessible from it (such as Insert and Send effects), can be controlled via automation. You can also copy one Channel's setting to another by using the Copy and Paste buttons on the Common Panel. A Channel reset can be found at the bottom left corner.

The *Channel Settings* window can be divided into five vertical divisions. These are (left to right):

- Common Panel
- Channel Strip
- Channel Inserts
- EQ
- Aux buses (Channel Sends)

### The Common Panel

All but one of the functions here are on the Track Mixer *Common Panel* (see above). The unique function being *Initialize Channel*, which is found in the bottom left corner. It is useful to remember that you can change the Channel being viewed with the *Selected Channel* dropdown. Alternatively, you can cycle through the Channels using the left and right cursor keys.



## The Channel Strip

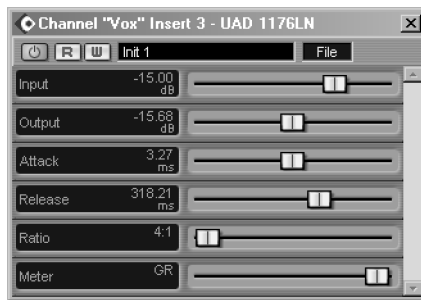
This is identical to the Track Mixer *Channel Strip*.

## Channel Inserts

Each Channel can be routed through up to eight Insert Buses. Audio is routed through them from top to bottom. Inserts are pre-fader. Click on the name field, which by default reads: *No Effect*, to select a plug-in, which will be activated and its interface displayed.

If you select an effect while holding **CTRL**, then that effect will be loaded into the same slot on all channels. Similarly, if you hold **CTRL** and switch an Insert on or off, then all Inserts in that slot for all channels will be similarly switched.

The Edit button on an Insert slot will open an Insert effect's interface. If you hold **CTRL+SHIFT** while clicking the Edit button (or while loading an effect), then the standard control panel for the effect will be displayed, rather than any graphical interface. This function does not work with DirectX effects.



## SL SL Info

Only five Insert slots are available in SL.

Wot, no graphics?

For stereo channels the Insert buses are stereo. If, however, the Insert effect has a *mono* input, then *only the left-hand channel* is passed to the effect for processing and only the left-hand channel is returned. The right-hand channel is passed through unchanged.

On mono channels the Insert bus is mono. For a mono input to stereo output plug-in (try the supplied *Autopan* plug-in), **S<sub>X</sub>** will only take the left channel from the Insert effect's output; the right channel is discarded. For a stereo-to-stereo effect, both inputs are supplied equally, but only the left channel from the Insert effect's output is returned; the right channel is discarded.

All Inserts for a Channel can be bypassed by clicking the *Bypass Inserts* button, not only here in Channel Setting, but also on the Track Mixer, Track List and Inspector.

## EQ

There are four bands of EQ available.

- Gain is  $\pm 24$ dB all bands
- Frequency is 20Hz to 20kHz on all bands

- o Q is 0 to 12 (with additional Low Shelving and High Pass on the left-hand band, and High Shelving and Low Pass on the right-hand band).

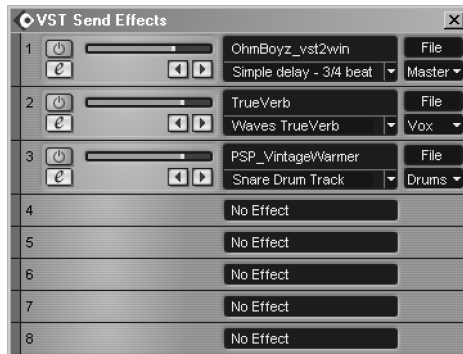
You can activate a band by switching it on, or clicking and dragging in the graphic display. When a band is activated, a point (numbered 1 to 4) appears in the graphical representation of the EQ curve. You can use the knobs to adjust frequency, gain and Q (frequency and gain share the same knob). You can also click on a field and enter numeric values, and you can drag the points in the graph, where holding **ALT** changes frequency only; **SHIFT** changes Q only; and **CTRL** changes gain only.

There is a dropdown (bottom center) that allows you to select EQ presets. Presets can also be stored and deleted here. Rename by clicking on the name field and editing.

**CTRL+click** on any control will reset it to its default value. There is a reset all button to the left of the preset selector. Bypass from the channel strip.

### Channel Sends and Effects (F6)

There are eight *Send Effects* [F6] slots and eight *Channel Sends* for each channel. It is important to understand that while the only way to route to the *Send Effects* is via the *Channel Sends*, the two are not permanently linked.



Channel Sends

The Channel Sends can be routed to:

1. any Group
2. any active *VST Outputs*
3. the left or right Master Channel
4. any of the active *Send Effects*.

To activate a *Send Effect* in *Devices/VST Send Effect* [F6], simply click on the dropdown for a slot and select the required plug-in. The effect is switched on by default, but can be switched off from here. The other controls allow you to route to an active output bus; to load a preset bank or effect into the plug-in; to open the effect's editor; and a slider to adjust the input level to the effect. You will also notice a text line beneath the name of the plug-in on an active *Send Effect* slot. This will contain the name of the current preset being used

by that effect. The dropdown, also available on this line, will give you access to any further presets that are available. Presets can also be loaded from the effects window, opened by pressing the *Edit* button (though sometimes a plug-in will manage its own presets and not use the VST method).

The *Send Effects* can only be routed to an active VST output bus. They are mono in and stereo out, so stereo sources are summed to mono before being passed to the effect. The *Channel Sends* are either stereo or mono depending on the Track.

To use a *Channel Send*, click on the text field on one of the eight instances in *Channel Settings*, the *Extended view*, or in the *Inspector*, by default the setting will read *No Effect*. Now select the required routing destination from the list. By default, the *Channel Send* is activated. You will then need to set a send level with the knob or slider before anything can be heard. Set to taste.

The *Channel Sends* can be set pre-fader, by clicking the *Pre/Post Fader* button for the Send. This option allows you to route the signal from the Channel directly to the Send without being affected by any fader level or subsequent fader movement.

All *Channel Sends* can be bypassed in the usual way from the *Channel Strip*, or they can be switched off individually. *Send Effects* cannot be bypassed, only switched off from the *Send Effects* window.

## Naming and saving Effects settings

Many plug-ins will load with a bank of default presets. These can be accessed from the dropdown at the top of the effect. Some plug-ins may not have a dropdown, in which case you can only load and save effects one at a time.

When you edit an effect (by using the controls), the settings are stored with the current Project without any action on your part.

You can edit effects, rename them, then save them either individually (*Save Effect*) or as a group/bank (*Save Bank*). The number of effects in a bank is determined by the plug-in. Many plug-ins are supplied with a number of effects banks.

Some DirectX (and, indeed a few VST) plug-ins implement their own effects' bank and preset handling. Refer to your plug-in documentation if there is any confusion.

It is well worth saving effects settings in your own library (and perhaps with your Projects). One method is to store all effects banks and presets in a single folder hierarchy, with a folder for each plug-in. This ensures that effects can easily be located and provides a convenient location for storing new settings. See below for saving complete Channels with all effects' settings, and also saving all Track Mixer settings.



### Info

An effect's settings, or a bank of settings, can be saved, and loaded, from the effects edit window.

### Tempo Sync for effects (VST effects and VSTi's)

The VST Plug-in specification makes it possible for plug-ins to receive MIDI messages from the host application. The most useful applications for this are for automation data (see chapter 18, page 103) and MIDI Clock (i.e. tempo) to be passed to a VST plug-in. Note that these features are not available for *DirectX* plug-ins.

Clock information is particularly useful in the case of temporal effects, such as delays, and also for the LFOs and delay effects in VSTi's. Many such plug-ins and VSTi's exist that make use of this feature (including a number of the plug-ins supplied with Cubase Sx (e.g. Double Delay)). There are many older plug-ins that will not respond automatically to tempo, so check with your plug-in documentation if things are not working out as you expect.

In Cubase Sx, MIDI Timing information is automatically provided to any VST 2.0 (or greater) plug-in that requires it. No action is required by the user to make use of this feature.

### Track Mixer Utilities

Link Channels Unlink Channels
Save Selected Channels Load Selected Channels
Save VST Master, Sends and VSTi Load VST Master, Sends and VSTi
Save VST Master Fx Load VST Master Fx
Save All Mixer Settings Load All Mixer Settings
✓ VU-Meter Fast ✓ VU-Meter Hold

Track Mixer utilities

The Track Mixer has a number of useful functions available from its right-click, quick-menu. These functions are mainly for saving mixer settings in a variety of ways, but functions are also available to link channels, so that the linked channels can be changed in the same way simultaneously.

It can be useful to save the Track Mixer settings for a variety of reasons. For example, saving the Master effects settings will be of use if you frequently use the same plug-ins for processing your 2-Track mix. Rather than having to load each plug-in and adjust settings for each, you can simply load in what amounts to a preset of multiple effects. This technique might also prove useful for comparing one set of effects with another.

An obvious use is to use these functions as a back-up, or security aid, especially when mixing. It is not always convenient to restore a complete Project when trying alternative mixes, and these functions allow you to save all the relevant information without disturbing the audio, MIDI and automation data in the Project Window.

You can also save channels one at a time. This can be useful with VSTi's, in particular, when you can save an instrument setting and its associated Insert effects all in one place – a simple way of storing hybrid patches. Furthermore, if you discipline yourself to using Send slots for specific effects (e.g. Send 1 is always Reverb, etc.), then the Sends can be usefully saved also.

### Linked Channels

Linking channels in the Track Mixer allows you to make changes on a number of channels in a single operation. Hold **SHIFT** to select multiple channels. You can defeat Channel linking by adjusting a control while holding **ALT**.

When linked, the connected items are:

- Select
- Faders (ganged, relative dB level is maintained)
- Solo and Mute
- Monitor and Record enable (providing input ports are different)
- EQ (and bypass)
- Send Effects (levels, on/off, pre-fader, bypass) (not MIDI)
- Insert effect-bypass only (not MIDI)

The following are not connected:

- Pan
- Insert effects (excluding bypass)
- Read and Write automation
- Automation Events
- Input and output buses
- Time/tempo toggle

While you can add a Channel to a set of linked Channels, you cannot remove a single Channel. To Unlink a channel, select one of the set and ensure that all the Select buttons are lit; select Unlink Channels; now **SHIFT+click** the Channel to be removed and select Link Channels.



### Note

For the following functions, note that MIDI channels are *not* saved.

## Loading Mixer Settings

The general point to note when loading channels is that they will need to exist in the Project prior to loading a saved setting. The act of loading will not create absent audio Tracks or Groups. If you need to use a particular Project set-up on a regular basis, then the best way is to use Templates (see chapter 5, page 34).

## Save/Load Selected Channels

Only those channels selected in the Track Mixer will be saved. All parameters are saved, including any Send effects' settings, but the Send effect itself will not be saved (i.e. the actual loading of the Send plug-in into a Send slot), since this could obviously cause an existing Send effect to be overwritten.

The Track number, or position, is not saved. Thus if you save three Tracks, say Tracks 2, 4 and 8, then these will simply be saved as three Tracks, in the order that they appear in the Track Mixer from left to right.

When loading, the receiving Tracks must exist to receive the saved information. The channels changed are those selected in the Track Mixer. The Tracks



### Note

Remember that you can copy and paste channels settings from the *Common Panel* in both the *Track Mixer* and *Channel Settings* windows.

are changed in the same order that they are shown (left to right) in the Track Mixer. If you select more Channels than were present in the saved file, then the remainder of the Channels will be unchanged after the load.

### **Save/Load Master, Sends and VSTi**

Saves the following:

- All Master effects settings
- All Send effects settings
- All VSTi settings
- Master set-up (e.g. level, bus, mono/stereo)
- *VST Output bus* [F4] levels and active status

When loading, this behaves as you would expect: All Master, VSTi, Send effects and settings in the Project are overwritten by the contents of the file being loaded.

### **Save Master FX**

All Master effects and their settings are saved. Note that the Master Set-up (e.g. level, bus, etc.) is not saved.

When loading, this behaves as you would expect: All Master effects in the Project are overwritten by the contents of the file being loaded.

### **Save All Mixer Settings**

The effect of this option is the same as a combination of *Save Selected Channels* with all channels selected plus *Save Master and Sends*.

When loading, the effect is the same as applying *Load Selected Channels* for all channels plus *Load Master and Sends*. See above.

## **Audio Mixdown**

### **Introduction**

An audio mixdown is the final process in producing a Project's 2-Track master (or 6-Track for surround). A variety of file formats are available (see page 95) in which to save the mix (including Broadcast Wave and AIFF, as well as the Internet friendly MP3 and RealAudio). Resolution is available to 32-bit float and 96kHz, with all intermediate stages up to these dizzy heights (and resulting file sizes). Mixes can be saved with or without automation, and with or without effects.

In reality you will have a good idea of the required mix format before you start a Project. Most Projects are mixed to 16-bit/44.1kHz, in preparation for burning to CD. However, many folk prefer to master outside of Cubase Sx (for

example in Wavelab, CoolEdit or Sound Forge). In this case you will want to produce an intermediate file (the output from mixdown) at the highest resolution that your mastering tool can accept. (If you are taking your mixes to a mastering house, then you will need to ask them which format they prefer, and take their guidance.)



### Note

You can use Audio Mixdown to create bounces of sections of your Project (very useful for VSTi's, for example). Any Tracks that are muted will not be included, so this method can be used to replicate entire sections of a Project in a complete or edited form. When doing this, it is recommended that you create a 32-bit float file.

Due to the effects of bit depth reduction, it is best, where possible, to output a 32-bit float mixdown from Cubase S<sub>X</sub>, since this is the size of Cubase S<sub>X</sub>'s internal bus. This will ensure that no bit depth reduction is performed within Cubase S<sub>X</sub>.

If you do perform bit depth reduction from within Cubase S<sub>X</sub>, then ensure that the Master Bus has a dithering stage as the absolutely final plug-in, post Master gain, on the Master Effects bus (see figure 17.3). This can either be one of the supplied dither plug-ins (i.e. UV22 (16-bit output only) or UV22HR), or a high-quality plug-in (such as Waves L2-Ultramaximizer, or similar).

While the internal mixdown process is extremely simple to use, it is not the only mixing method. Given Cubase S<sub>X</sub>'s routing options, it is quite possible to route to external buses and mix using an external mixer. Indeed, for those with appropriate equipment, this is often the method of choice. See below (*Mixing Externally*, page 96) for further discussion on this topic.

### SL SL Info

The UV22HR dither plug-in is not available in SL.

## Mixing Down within Cubase S<sub>X</sub>

To mixdown a whole Project (audio Tracks and VSTi's with all effects and au-

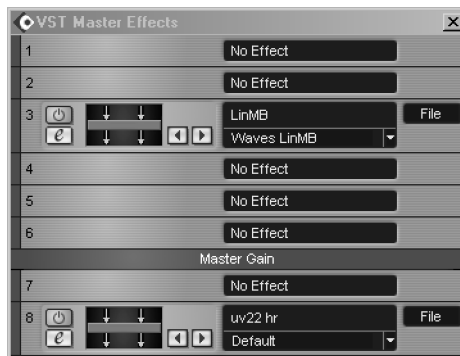


Fig. 17.3: Dithering post Master Gain



### Note

MIDI Tracks (excluding VSTi's) must be bounced to audio if you wish to use them during an audio mixdown.

tomation), start by performing a *Select All* [CTRL+A] followed by *Locators To Selection* [P]. This will set the left and right locators to the very start and end of all Events and Parts in the Project.



### Note

*Audio Mixdown* mixes all non-muted Tracks between the locators. It can be used for *bouncing* any Tracks in any section of a Project.

You now need to ensure that the right locator is in an appropriate position to capture any decaying effects at the end of the project. Pay particular attention to reverb tails and other effects.

Note that muted Tracks will not be included in the mixdown. Essentially, the mix will contain precisely what you would hear if you played the Project from the left to the right locator.

To perform the mixdown, select *File/Export/Audio Mixdown* [No Default]. This window provides you with all the options available at mixdown.

There are three basic decisions to be made:

1. The file-type, name and destination of the resulting audio file.
2. Whether you require automation and/or effects to be included in the mix.
3. Whether to import the mix back into the Project, once it is completed.

The *Import To* section (available only for Broadcast Wave, Wave and AIFF file-types) allows you to choose whether to automatically import the mix into the Pool on completion, and whether to insert an Event for it on a new Track. This is very useful when using *Audio Mixdown* to bounce a section of the Project. The *Include* (all file-types) section gives you the choice of including or excluding automation and effects (i.e. Insert, Send and Master).

The serious business is in deciding the appropriate file type. The file type will determine what options you have available. For example, 6-channel Surround



### Tip

Free CPU and disk resources by bouncing a Track, and then disabling it and bypassing its effects.

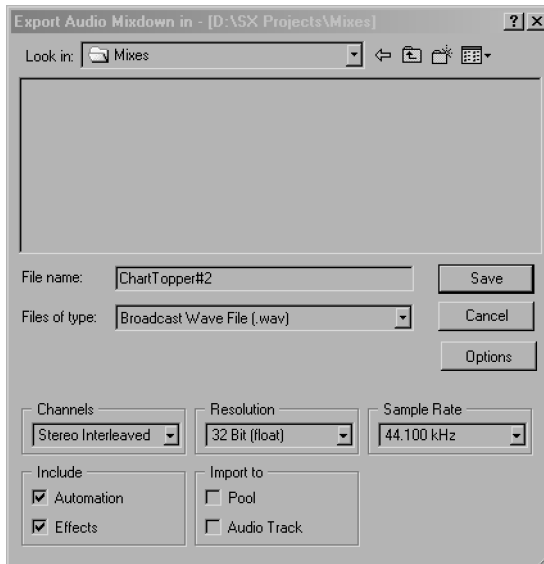


Fig. 17.4: Audio Mixdown dialog



mixes can only be achieved with Broadcast Wave, Wave and AIFF file-types. See the next section for a discussion on available file-types. These decisions having been made, click Save and let Cubase S<sub>X</sub> do all the work.

## Mixdown output file-types

The main mix files-types in Cubase S<sub>X</sub> are: Wave, Broadcast Wave and AIFF. These are the only choices for 6-channel surround output or for 32-bit float output (usually required for mastering outside of Cubase S<sub>X</sub>). The full range of sample rates, bit depths (word lengths) and encoding options are available for these types. All three share the following attributes:

- *Channels*: Mono, Stereo Split, Stereo Interleaved 6 channel split, 6 channel interleaved
- *Resolution (bits)*: 8, 16, 24, 32 float
- *Sample Rate*: 8kHz through 96kHz

*Wave files* have additional *Coding* options available, providing that the appropriate codecs are installed in Windows Audio Compression Manager (ACM). (See Windows Control Panel/Sounds and Multimedia/Hardware/Audio Codecs.) Options available will depend on the selected codec. The default coding is PCM/Uncompressed Waves, and it is recommended for normal use.

*Broadcast Wave files* are stamped with the information accessed via the *Options* button (the data portion can be preset in *Preferences/Audio/Broadcast Wave*). Note that the current date and time are stamped in the file. Also, most importantly, a Broadcast Wave file is stamped with an SMPTE timecode that would be shown as its *Origin Time* in the Pool, should it be imported into a Project. The default Timecode is that of the left locator at the time of export.

The other mix file-types available are all compressed file formats. None of these formats can be recommended over the formats above for their audio quality. However, they have uses for Internet distribution and streaming. The available formats are:

- *MP3 Layer 3*: Compression is via the *Fraunhofer* algorithm. Output is available from 8kbits/11kHz to 128kbits/44.1kHz at 3 quality depths. A dialog is available to add ID3 tag information to the output (e.g. title, artist, genre, etc.).
- *Ogg Vorbis*: Output is available with Sample Rates from 8kHz through 96kHz at 3 quality depths. A dialog is available to add ID3 tag information as with MP3 files.
- *RealAudio (V5 and G2)*: Output is available from 5kbps voice to 80kbps stereo (V5) and 20kbps to 450kbps (G2). Internet download options are configurable. Track information can be embedded into the output.
- *WMA*: Output is available from 6.5 Voice to 128 CD Quality. A dialog is available to add title, author and copyright information.



### Tip

Step through the available output *Files of type* to become familiar with options available.

### S<sub>L</sub> SL Info

MP3 use is limited to 20 exports in S<sub>L</sub>. An upgrade for unlimited use is available (see the *Cubase S<sub>X</sub>: Operations Manual*).

## Mixing externally

Cubase Sx's *Audio Mixdown* will be sufficient for many folk wanting to produce a mix. Providing you have every piece of audio within the Project, then this is certainly the simplest and least error-prone method of producing a final 2-Track (or surround) mix. For a number of other folk, *Audio Mixdown* will be not be adequate. But fear not, mixing outside of Cubase Sx is simple, providing you have the appropriate equipment.

There are many reasons why someone may wish to mix outside of Cubase Sx. For example: real-time recording of a hardware MIDI device; the use of external effects, thus avoiding latency issues; ease of control via a hardware mixer; off-loading some of the computer's processing load (e.g. EQ) to a mixer; a preference for using an analogue mixer for the color that it imparts to the sound of the mix; and more.

The key to external mixing is the routing of the various Channels to appropriate outputs. These then converge on a mixing desk. This, clearly, presupposes that you have sufficient output ports on your soundcard, and sufficient D/A converters to support this activity, or more commonly nowadays, a digital mixing desk.

There is no fundamental difference in routing from Cubase Sx to either a digital mixing desk, or an analogue mixing desk. If you are mixing in analogue, however, you will need sufficient D/A converters to feed the mixing desk. A digital mixing desk is often supplied from ADAT outputs from the soundcard. For example an *RME Hammerfall* soundcard has 3 ADAT input and 3 ADAT output ports (plus an S/PDIF input/output that can also be set as AES/EBU). This makes available 24 channels of digital i/o. These can be connected directly to, say, a Spirit 328 digital mixing desk. If one wished to feed an analogue desk, then you would have to place D/A converters between the RME Hammerfall and the mixing desk, plus a whole bunch of analogue cables, of course.

VST Channels, Sends, Groups and VSTi's (and Rewire channels) can all be assigned VST output buses. The Master Bus, in effect, becomes redundant. But, since *Bus 1* is fixed to the Master, it is useful if you can route this to an output that won't be used; much depends on your routing options. If you do have to use the Master Bus, then take care over its fade setting and effects chain. Remember that Cubase Sx uses the Master Bus for auditioning, so you will probably want to route it somewhere that can be monitored.

When mixing externally, it is important not to clip the channels that are routed to VST output buses. While this is permissible when mixing within Cubase Sx (due the headroom afforded by the internal mix bus) this is not the case when routing the digital signals to output ports. Also remain aware of any bit-depth reductions conversion that might be occurring. If you are sending 24-bit audio from Cubase Sx to a 16-bit receiving device, then you will, in all probability, want to apply dither at some point in the conversion process.

Providing you have routed the channels successfully to your mixer, then you will undoubtedly want to record the output. Again there are many options, and

the available equipment will dictate your choice. It is possible to route the mix directly back into Cubase Sx and record it there; some folk choose to do this on another computer. The choice is yours.

## Mixing tips and tricks

### Effects' routing example

This is a practical example of effects' routing that uses most of Cubase Sx's effects' routing options.

Let's say we have three vocal Tracks. We want to apply reverb to these track, but we also want to create a delayed version of the three tracks and apply reverb to that also.

We start with three audio Tracks and a reverb loaded in a Send slot. Next we link the channels. This is done in the Track Mixer, where we select the three audio Tracks by holding **SHIFT** while clicking on the three vox channels. Now, right-click on the Track Mixer and select *Link Channels*. Note that settings can later be made to an individual channel by holding **ALT**.

Now, adjust one of the vox channels to send a signal to the reverb. Since the channels are linked, all vox tracks will be equally affected.

We now add a Group Track and put the delay on its Insert path. Name it *Delay*. We also activate the reverb on the Group Track's Send path and open it up a little.

If we now open Channel Settings for one of the audio Tracks, we can route a Send to the newly created effects Group. To select the Group as a Send channel, click on the name field in the Channel Settings Sends block; a dropdown list will appear. Select the appropriate Group. We're done.

This is a powerful routing option and avoids endeavors to chain groups and other bus routing techniques. These can sometimes be found to be limiting when a change is required to the routing or another effect added. Nevertheless, remain aware of the latency issues of this chain (which have little consequence in this example).

### Narrowing the stereo image

Cubase Sx does not have stereo pan controls that allow you to pan the left and right channels independently and narrow or widen a stereo signal. Thankfully, the excellent, and right-priced plug-in called *Stereo Pan* addresses this problem. It is available from

<http://home.netcom.com/~jhewes/StereoPan.html>

### Re-leveling a bounced Track

It is often useful to bounce a Track that is consuming a lot of resources through its plug-ins, so that you can use the resources for other things. However, this

leaves the problem of precisely matching its level against the existing Track.

The easiest way to do this is to place a phase reverse plug-in insert on the bounced Track. The plug-in mentioned above, *Stereo Pan*, will do this.

Now, solo the two tracks of interest and invert the phase of the plug-in. Also make sure that you set the pan of the bounced Track to match the original Track. Now start playback and adjust the bounced Track's fader, holding **SHIFT** where necessary, until the two Tracks cancel.

A byproduct of this process is that the new Track is free of automation, thus making level adjustment (trim) straightforward.

## Recording audio at within Cubase Sx

It can be extremely useful to record audio from any point within Sx's audio path. Enter *Silverspike's Tapelt* plug-in. This plug-in will output to an audio file whatever is passing through during playback. The audio also passes through unchanged. Thus, you can record audio wherever you can place a plug-in.

The plug-in is available from  
<http://www.silverspike.com/PlugIns/Tapelt/tapeit.html>

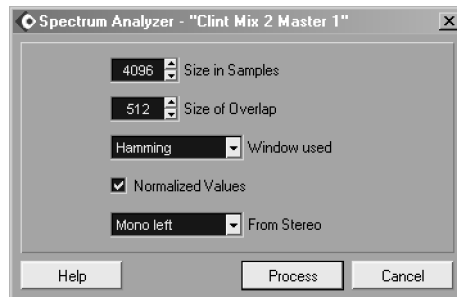
## Audio analysis tools

### Spectrum Analyzer

#### SL SL Info

The *Spectrum Analyzer* is not available in SL.

The *Audio/Spectrum Analyzer* [No Default] (found under *Analyze* in the *Key Commands Editor*) is a graphical spectrum analyzer with a fair degree of flexibility. It computes and displays the average level of each frequency, within the specified range.



The Spectrum Analyzer

Note that the current selection (whether range, Event or Clip) is analyzed. If you analyze a Part, then a result window will open for each Event within the Part.

The *Size of Samples* value will dictate the frequency resolution of the graph; a higher value gives the highest resolution (approx 5Hz best to 350Hz lowest). For stereo audio, two lines will appear in the resulting graph (Left is white, Right is yellow). There are various display options on the results window that allow you to change the scaling and size of the two axes. The *Active* option, when

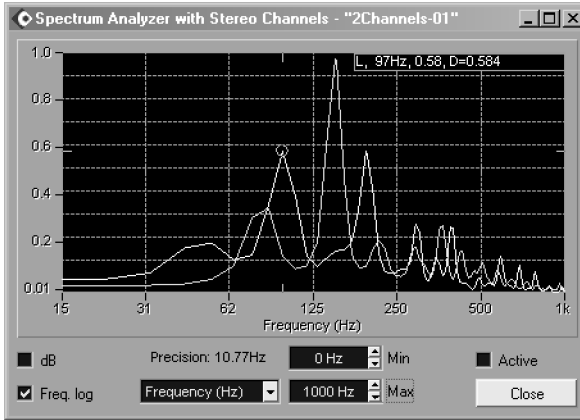


Fig. 17.5: Spectrum analyzer showing results

checked, allows you to reuse the current window for further analysis rather than open a new window.

By moving the mouse over the graph, a cursor will appear in the window, and the level and frequency of its position will be displayed. If the graph is stereo, the channel will also be displayed. To move between left and right channels, hold [Shift] and drag the cursor to the other line. The “D” value being displayed is a delta value. This allows you to find the difference in level between two frequencies. To reset the delta field, right-click on one of the frequencies of interest. As you move the cursor, the level difference between that frequency, and the one the cursor is over will be displayed.

## The Audio Statistics function

*Audio/Statistics* [No Default] (found under *Analyze* in the *Key Commands Editor*) displays a whole bunch of data on the selected audio. The window is shown here, and what you see is what you get.

Most values displayed are self explanatory, but the *Estimated Resolution* seems a surprise, especially as Cubase S<sub>X</sub> knows the resolution of the audio. What in fact happens is that Cubase S<sub>X</sub> checks the smallest level difference between two samples and bases the *Estimated Resolution* on that value.

S<sub>L</sub> SL Info

No *Audio Statistics* for S<sub>L</sub> owners. Drag, huh?

Audio Statistics

Channel	L	R
Min. Sample Value:	-1.000 0.00 dB	-0.555 -5.11 dB
Max. Sample Value:	0.962 -0.33 dB	1.000 0.00 dB
Peak Amplitude:	0.00 dB	0.00 dB
DC Offset:	0.19 % -76.82 dB	3.13 % -51.00 dB
Estimated Resolution:	16 Bit	16 Bit
SampleRate:	44.100 kHz	44.100 kHz
Min. RMS Power:	-31.91 dB	-28.88 dB
Max. RMS Power:	-11.31 dB	-11.69 dB
Average:	-18.63 dB	-18.08 dB

## Surround Sound

This section is a simple background to *Surround Sound* and the features that Cubase SX supports. You select a surround format via *Devices/VST Master Set-up* [No Default]. The detail on operation is covered in the *Cubase SX: Operations Manual*. Even so, Surround Sound is a very large field in its own right, and anyone wishing to tackle it will, no doubt, be reading quite broadly before incurring the expense of a Surround Sound mixing set-up.

Surround Sound is a generic name given to a variety of ways in which audio can be mixed and played back, most frequently with more than two speakers (often up to eight). The extra speakers allow for the audio to be placed on a larger

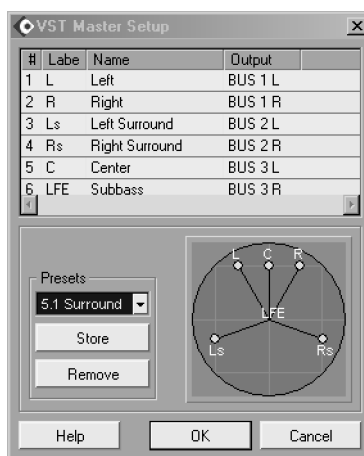


Fig. 17.6: VST Master Set-up

sound-stage than is possible with stereo, facilitating all manner of dramatic effects that lend themselves to cinema, in particular. Speakers will commonly be placed behind the listener, as well as in front.

Before contemplating experimentation with Surround Sound, you will need appropriate hardware. At a minimum you will need a soundcard with sufficient outputs to cater for the number of channels that you wish to mix. For a typical 5.1 Surround mix this will be 6 channels (Left, Right, Left Surround, Right Surround, Centre and Sub-Bass). You will also need a mixer (or other routing device) that supports the mixing of these channels. A standard mixer outputs on two channels, but can often be configured to handle a surround mix by using the auxiliary outputs. Nevertheless, you will still require extra amplification equipment and speakers.



### Note

It is well worth experimenting with surround sound even if you only have limited equipment.

## Surround Mixing with Cubase Sx

Setting up Surround mixing in Cubase Sx is surprisingly straightforward. The basic steps are:

1. Select a preset surround type from *Devices/VST Master Set-up* [No Default] (see figure 17.6). The routing of a surround channel to an output is fixed. They are assigned, from top to bottom in the VST Master Set-up list, to the active *VST Output* [F4] slots.
2. In the VST Mixer, route each Track either to the *Surround Panner*, or directly to an output channel.
3. Position the audio for each channel in the surround field via the *Surround Pan* control (unless channel is routed to an output).
4. At mixdown, select appropriate output file settings. For example, 6 channel split or interleaved.

The main item of note is that all of the above are included with Cubase Sx. You can mix surround right out of the box. The only surround effects supplied with Cubase Sx, however, are the *Mix6to2* surround level mixer and the *UV22 HR* dither plug-in, so you will need to supply your own surround effects. The Surround Panner is available on Groups, but not Send channels.

## Supported Surround Formats

The following surround formats have presets in Cubase Sx. It is not possible to edit these in any useful way, although naming labels can be edited.

Stereo	Standard stereo
Quadro	The original Quadraphonic music format. Designed to be used with 4 speakers, one in each corner of a room.
LRCS	LRCS = Left, Right, Center and Surround. This was the format used for Dolby Stereo in the cinema, and later as Dolby ProLogic in home cinemas.
Standard 3/2	As 5.1 but without the LFE channel.
5.1 Surround	6 speakers: a single center speaker (mainly for directional speech) and four surround speakers. An optional Low Frequency Emitter (LFE) sub-channel can be used for non-directional low frequency output. This is currently the most popular choice for both cinema and DVD. There are a various encoding implementations (e.g. DTS, Dolby Digital, and AC-3).
5.1 SMPTE/ITU and 5.1 Film Alternative	Versions of 5.1 Surround with different speakers orders.



# 18 Automation

Available in *Cubase SX Complete*.



# 19 Synchronization and Remote Control

Available in *Cubase SX Complete*.



## 20 Latency

Available in *Cubase SX Complete*.



## 21 Score: In Brief

Available in *Cubase SX Complete*.





## **22 Project Maintenance and Archiving**

Available in *Cubase SX Complete*.



## 23 Recommended Reading and Web-sites

The Internet is a vast resource of information. One needs to take care over advice offered and what you read, since there is a lot of misinformation out there. In general, it is probably wise to locate a reliable source of information via one of the many Web communities and take pointers from there, rather than trawl the Web for information.

### Usenet

RAP: [rec.audio.pro](mailto:rec.audio.pro)  
Cubase [alt.steinberg.cubase](mailto:alt.steinberg.cubase)  
4-Track: [alt.music.4-Track](mailto:alt.music.4-Track)

### Web-sites

Cubase SX forums: [forum.cubase.net](http://forum.cubase.net)  
Steinberg main site [www.steinberg.net](http://www.steinberg.net)

### Communities

Yahoo Groups: [groups.yahoo.com](http://groups.yahoo.com)

### Background Reference

#### *Studio Covers*

[www.studiocovers.com/articles.htm](http://www.studiocovers.com/articles.htm)

#### *Digital Domain*

[www.digido.com](http://www.digido.com)

#### *ProRec*

[www.prorec.com](http://www.prorec.com)

#### *Others*

[www.prosoundweb.com/recpit](http://www.prosoundweb.com/recpit)

[www.phys.tue.nl/people/etimmerman/RecordingFAQ.html](http://www.phys.tue.nl/people/etimmerman/RecordingFAQ.html)

### General

All Music Guide (reference) [www.allmusic.com](http://www.allmusic.com)  
Future Music [www.futuremusic.co.uk](http://www.futuremusic.co.uk)  
Sound on Sound (magazine) [www.sospubs.co.uk](http://www.sospubs.co.uk)

## **Books**

### **Digital Audio**

*Principles of Digital Audio*, Ken Pohlmann (Howard Sams, 1985)

### **Mic Technique**

*Microphone Manual*, David Miles Huber (Howard Sams, 1988)

### **MIDI**

*Midi for The Professional*, Paul Lehrman and Tim Tully (Amsco, 1993)

*The MIDI Files (2nd Ed.)*, Rob Young (Prentice Hall, 2001)

*Handbook of MIDI Sequencing*, Dave Clackett (PC Publishing, 1996)

### **Music in Film**

*Music in Film & Video Productions*, Dan Carlin (Focal Press, 1991)

### **Mixing**

*The Mixing Engineer's Handbook*, Bobby Owsinski (MIX Books, 1999)

### **Production**

*The Audio Pro Home Recording Course (Volumes I, II and III)*, Bill Gibson (MIX Books, 1999)

*Recording Techniques for Small Studios*, David Mellor (PC Publishing, 1993)

*Practical Recording Techniques (2nd Ed.)*, Bruce and Jenny Bartlett (Focal Press, 1998)

*The Art of Recording*, William Moylan (Van Nostrand Reinhold, 1992)

*How to become a Record Producer*, David Mellor (PC Publishing, 1998)

# Glossary

## **ADAT Optical**

8 channel optical unidirectional interface for interconnecting digital audio devices with fibre-optic cable.

## **ADC (Analogue to Digital Converter)**

An electronic device that converts an analogue input signal to a digital output signal. (See DAC.)

## **AES (Audio Engineering Society)**

International organization that manages the audio industry's standards

## **AES/EBU**

A type of digital-to-digital interface that usually runs over XLR terminated cables. (See S/PDIF).

## **AIFF**

Digital audio file format used mainly on the Mac.

## **Aliasing**

Aliasing is a form of distortion occurring in a digital waveform. It results from conversion anomalies in the higher frequencies when the signal was converted from analogue to digital. These frequencies are usually removed by using an anti-aliasing filter in the ADC.

## **Amplitude**

The "quantity" of a signal; usually the level or volume of an audio signal.

## **Analogue**

An electronic signal whose waveform resembles that of the original sound.

## **ASIO (Audio Stream Input Output)**

Steinberg's proprietary soundcard driver format (more correctly ASIO is the API and drivers are written to this API). Most hardware manufacturers support ASIO on their soundcards. An ASIO driver allows direct communication between an audio program and the audio card, with little interaction with the the operating system. As a result, these drivers can provide lower latency times. The ASIO specification also provides facilities for hardware manufacturers to exploit other functionality that can be useful in an audio environment (e.g. ASIO Direct Monitoring and sample accurate synchronization).

**Asynchronous**

An engineering term indicating that a data stream that there is only one-way communication between two devices. Hence, there is no acknowledgement made by the receiving device that it has received the information sent to it. The result of this is that data can go missing without an error being indicated. MIDI is an example of an asynchronous protocol.

**Attenuation**

Reduction in level of a signal measured in dB.

**Bit**

A single binary digit that can only represent 1 or zero.

**Bit Depth, Bit resolution, Word Length, Sample Resolution**

The number of bits used to record each digital sample. (See Dynamic Range and Sample Rate.) Typical bit depths are 16-bit and 24-bit.

**Bouncing**

Mixing two or more Tracks into one, or permanently adding effects to a Track.

**BPM (Beat per Minute)**

An expression of musical tempo.

**Buffer**

An intermediate storage area for digital data. In general, the data is only passed on when the buffer is full. Buffer sizes can often have their size changed, making them smaller or larger. The effect of making them smaller speeds the data flow, but might result in problems downstream if the receiving device cannot cope with the increased amount of data being received.

**Clipping**

Distortion (often digital) caused by overloading a signal.

**Comp'ing (Compiling)**

Building a good take or Track from several others. Frequently used on vocals.

**Crossfade**

Fading out one signal and gradually fading in another to replace it.

**Cycle**

A periodic quantity.

**DAC (Digital to Analogue Converter)**

An electronic device that converts a digital input signal to an analogue output signal. (See ADC.) Essential for audio playback from a DAW such as Cubase Sx.

**DAT (Digital Audio Tape)**

The digital equivalent of the cassette. Format is 16-bit and 44.1kHz or 48kHz.

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**DAW (Digital Audio Workstation)**

A program such as Cubase SX or Pro Tools used for recording, mixing and playback of digital audio.

**DC Offset**

This can be viewed in an editor by the waveform being off-center. It is caused by a direct current being added to the signal at some point in the audio chain.

**Decibel (dB)**

A measure of relative intensity. An important point to note is that doubling of the amplitude of an audio signal is represented by a gain of 6dB. Subsequently, each additional bit in the bit-depth of a digital signal represents a 6dB increase in the dynamic range of that digital signal. Hence, an 8-bit digital audio will have a theoretical dynamic range of  $8 * 6 = 48\text{dB}$ ; 16-bit  $16 * 6 = 96\text{dB}$ ; 24-bit  $24 * 6 = 144\text{dB}$ . Note: In practice, these figures are not attainable for a variety of reasons (e.g. dither, conversion imperfections).

**Digital**

A method of manipulating audio signals as sets of numbers. (See Analogue.) Its advantage is low noise and low distortion, and instantaneous access.

**Dither**

The addition of low-level noise in order to reduce quantization distortion in a digital signal. Quantization distortion occurs when a digital signal is reduced in bit-depth, say, from 24-bits to 16-bits. The distortion appears as a number of unwanted harmonics in the signal. The addition of dither, prior to truncation, removes quantization distortion and, while it raises the noise-floor by a small amount, nevertheless retains audible information below the noise-floor.

**Driver**

A driver is a piece of software that provides a communication link between a piece of hardware and a piece of software, usually the operating system. The loading of the driver will often boot (or initialize) the hardware device.

**Duplex**

Full duplex is the simultaneous input and output of signals to and from a device. Frequently used to describe a soundcard's operation. Half duplex describes a device or driver that can only perform one of these operations at a time.

**Dynamic Range**

The range within which volume can fluctuate measured in decibels.

**EBU (European Broadcasting Union)**

Organization that manages the audio and broadcasting industry's standards in Europe.

**EQ (Equalizer)**

An audio manipulation tool that enables alterations to the frequency balance of a sound.

**Full Duplex**

Simultaneous 2-way communication between two devices. Often ascribed to a soundcard's ability to record and playback at the same time. This is an essential requirement for using a DAW, such as Cubase SX.

**Gain**

For audio: the increase in level of a signal in dB. (In the analogue world, gain is the ratio of the output load power and the input load power. It can equally be applied elsewhere.)

**Harmonic**

A frequency that is an integer multiple of the fundamental frequency.

**Headroom**

The difference between an audio signal's level and the maximum level available. In digital audio there is an absolute maximum level ceiling; this is called 0dB FS (Full Scale). When an incoming audio signal is at too high a level it will reach this limit and information will be lost; a process called clipping. In an analogue environment, headroom is the amount that a signal can be increased above the current level before overload distortion occurs.

**Hertz (Hz) or Cycles/Second**

The unit of measurement for frequency. Most often used in relation to the pitch of a sound. The higher the frequency, the higher the pitch. Human hearing has a range of approximately 20Hz to 20kHz.

**I/O**

Shorthand for input/output.

**Impedance**

Measurement of the restriction of flow of an alternating current.

**Latency**

The delay between generating a sound and its output, whether audible or recorded.

**MIDI (Musical Instrument Digital Interface)**

A standard serial, asynchronous communication protocol defined in the MIDI Specification that is used to exchange musical information, such as: note pitch and velocity, tempo, etc.

**MIDI Clock**

A tempo-based MIDI Message. MIDI Clock messages are sent at the rate of 24 per 1/4-note. Used to synchronize devices to a song's tempo. Note that VSTi's now (since v2.0) receive MIDI Clock automatically.

**MIDI Controller (or CC - Continuous Controllers)**

A type of MIDI message that has a predefined role, such as adjusting Pan, Volume or Pitch-bend. A complete list is given in Appendix 5: MIDI Controllers List.



**MIDI Event**

A recorded MIDI message.

**MIDI Interface**

A piece of hardware that plugs into a computer with a number of MIDI inputs and outputs allowing MIDI messages to be routed between the external devices and the computer. The interface usually connects to a USB, serial or parallel port on the computer.

**MMC (MIDI Machine Control)**

MIDI messages that allow the transports of external devices (such as ADATs or hard disk recorders) to be controlled from a DAW.

**MIDI Message**

Formatted data that is passed from one MIDI device to another. For example: MIDI Clock, Note On, Note Off, Program Change.

**MTC (MIDI Time Code)**

A time-based synchronization protocol that functions over MIDI. It is analogous to SMPTE (timecode), and converters exist from one to the other.

**Phase Shift**

The displacement of a wave in time. When two signals with similar content are mixed and one is phase shifted, then cancelation can occur.

**Plug-ins**

Software audio effects.

**Punch In**

A technique for overwriting a small section of an audio take. Often used to correct a small error or fault in a take.

**Quantize**

A process whereby MIDI events (and sometimes audio events) are aligned in a defined manner. Most simply, events would be aligned on some fraction of a bar (i.e. 1/4 beat, 1/16th, etc.). It can be use both for "correcting" a section of MIDI or creatively to generate movement, or other effects.

**Root Mean Square (RMS)**

The square root of the mean value of the squares of the instantaneous values of a varying quantity over some period of time (often over one period of a periodic function).

**Routing**

The path a signal takes through devices or components.

**Sample Rate**

The number of times per second that samples are taken when converting an analogue signal to digital. Typically this would be at rates of 44.1kHz or 48kHz.

If the recorded audio is played back at a different sample rate than when recorded, then it will be both pitch-shifted and of a different duration.

**Serial (communication protocol)**

The sending device only sends one message at a time. The alternative is a parallel protocol, where multiple messages are sent at the same time. MIDI, for example, is a serial protocol. Thus, even if you have two MIDI notes with the same start position going to the same MIDI port, they will nevertheless be sent to the receiving device at different times, one after the other.

**Signal to Noise Ratio (SNR)**

The ratio of the magnitude of the audio signal level to the noise floor measured in decibels (dB). Hence, a larger SNR indicates less noise. There are a variety of SNR's (e.g. measured instantaneously or over time).

**SMF (Standard MIDI File)**

Files of a standard format (there are in fact a variety of formats) that enable streams of MIDI events to be move from one software application or piece of hardware to another.

**SMPTE (Society of Motion Picture and TV Engineers)**

[pron: simpty] 1. US-based film and audio standards organization. 2. A format of timecode that is audio-based.

**S/PDIF (Sony/Philips Digital Interface)**

A type of digital-to-digital interface that usually runs over RCA terminated cables. (See AES/EBU).

**SYSEX (System Exclusive)**

MIDI message type that enables almost free format communication between MIDI devices. Typically a device will send SYSEX, which is recorded for later playback to the same device. An example of use would be the dumping of a device's patch information to a DAW, so that the DAW could automatically load the patch at playback. As digital storage and memory has become larger, faster and cheaper, the need for SYSEX has declined.

**Timecode**

A time-based synchronization reference signal either recorded as audio (e.g. SMPTE), or sent as messages (e.g. MTC). A timecode message is formatted as follows: Hours : Minutes : Seconds : Frames : Sub-Frames The number of frames is varied for different timecode formats (between 24 and 30). There are 80 sub-frames to a frame.

**USB (Universal Serial Bus)**

Computer interface for external devices (e.g. MIDI Interface).

**Word Clock**

Sample rate frequency synchronization signal for digital devices. A high quality master word clock is an essential item in a digital studio.

# Appendix A

## FAQ by Laurence Payne

### How to record MIDI tracks to audio tracks

...so that you can mix and apply effects in the Mixer.

First, the really easy one. If it's a MIDI track allocated to a VST Instrument, it's essentially an audio track already. Probably you can leave it as it is. You can apply effects and automation to it like any other audio track. Why does it need to become a .wav file? Leave it alone until the final mixdown. But if you're short of resources, or have other reasons for wanting to render it as a .wav, solo the track and use *File/Export/Audio Mixdown [No Default]*.

But maybe it's a MIDI track controlling an external MIDI module, or the MIDI synth on your soundcard. When you want separate audio files, you must record your MIDI tracks to audio one at a time. If the tracks are using a MIDI synth built into your soundcard, then you probably have a *Record Source* selector in the soundcard control panel. This allows you to loop the source directly into Cubase S<sub>X</sub>. If the MIDI track is using an external keyboard or sound module, then you need to connect the audio output to your soundcard's input. Whichever way you require, you must route that audio into your soundcard.

Now, mute everything, except the MIDI track you want to record, and select an audio track to record on. Play the song. On the audio track, active the *Record Enable* button in the *Track List*. You should see the signal on the meter. Now all you have to do is set the cursor position and press Record on the Transport. Repeat for each MIDI track.

Now all your MIDI tracks are in Cubase S<sub>X</sub> as separate audio tracks, you can use the full mixing and effects facilities of the Cubase S<sub>X</sub> audio mixer.

There is a more simple method. If you have built up a song and are quite happy with how it sounds, then you can record the whole lot to audio in one go. Depending on the complexity of your set-up this may require some external mixing, or it may be as simple as selecting "What You Hear" (SoundBlaster cards), or "Audio Input 2" (Yamaha SWG1000), as the record source. But, if you want to use the Cubase S<sub>X</sub> effects on your tracks, then you'll need to keep them separate.

Also see:

- *Audio Mixdown doesn't include everything I want*
- Steinberg's knowledge base
- More links

## About Latency

When it matters and when you can work round it

When Cubase S<sub>X</sub>, or any other audio recorder, plays audio, it uses buffering. The data is read from disk. It goes into a holding area of memory. When a suitable size chunk of data has arrived, it is passed to the part of the program that manipulates it (adds effects, fades it in and out, mixes it with other audio – all the things that we bought Cubase S<sub>X</sub> in order to be able to do). This takes time.

Also, the data may not come off the disk absolutely smoothly, or Windows (or any OS) may need to break off for an instant to do some other necessary function. So, we need buffering. A dedicated computer (i.e. an external effects box) may be able to get away with minimal buffering and work in real time, near enough. But a program running on a multitasking computer (with all the advantages it brings) will need more. Fast computers, better-designed soundcards and drivers, a better interface with the operating system (WDM drivers can be more efficient); all of these can reduce latency. But it isn't going to go away completely. Not yet, anyhow.

When Cubase S<sub>X</sub> plays back, latency doesn't matter. The program knows how long audio takes to pass through the system, and can pre-fetch it from disk just in time to be output correctly, and aligned with MIDI data (which is essentially real-time). The problem arises when you want to monitor the audio being recorded *alongside* previously-recorded material. There's no way to pre-fetch live input, so, if you monitor through Cubase S<sub>X</sub>'s audio engine, it's going to be heard late.

Fortunately, that's a big *if*. The basic answer to latency, while monitoring an input is: *Don't monitor through Cubase S<sub>X</sub>*. Don't click the *Monitor* button on the relevant channels. Instead, route the audio input back to your ears some other way. Your sound card will almost certainly have a mixer applet sitting in the System tray. This will probably have routing options. If you have a card with ASIO2 drivers, then you can do this switching conveniently from within Cubase S<sub>X</sub>.

Small problem: Effects. You can't record effects. Cubase S<sub>X</sub> applies them on playback. Audio input is recorded dry. It would be nice if you could use a plug-in compressor to prevent digital overload while recording, but, until we achieve time travel, you can't. Since the audio is already inside Cubase S<sub>X</sub> when it hits the compressor, then if it was going to overload, it's already done it. So you need an outboard compressor for the job. But singers like to hear a bit of reverb in their cans. Sorry, if you're on a high-latency system, Cubase S<sub>X</sub> isn't going

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to provide it. Dig out that old MIDIVerb box and patch it through some external mixing.

Big Problem: VST Instruments. These are in effect *Insert Effects* in an audio channel. If you want to play a VSTi live, then you're going to hear it delayed, by the latency of your soundcard's buffer.

## What can I do about Latency?

First, what you *can't* do. Adjusting `MaxFileCache` in Windows *Virtual Memory*, or any other system setting, won't do anything. A faster processor, or more installed memory, won't directly change it either.

Now, what you can do. If your card has ASIO drivers, then use them. Today's quality cards can achieve single-figure (sub 10ms) latency. The buffer size will probably be adjustable in *Devices/Device Setup* [No Default] *VST Multitrack* tab, or via the card's own supplied software. This is practically as near to zero as makes very little difference. Try a VSTi in real time. Turn Monitoring back on and hear your vocals through all of Cubase Sx's effects. Rejoice!

Can't get quite that low? Just because the card offers a 2ms setting doesn't guarantee that your system will support it. Or that there's anything wrong if it doesn't. There's always a trade-off involving the power of your computer and the number of effects you want to use. (More memory gives more audio tracks, more processor power gives more effects.) You don't need to stick to one latency setting throughout a project. Tweak it low to record your VSTi. You get audio glitches or you have to turn off some plug-ins? So what? Once the VSTi is laid down, increase the buffer size and use your available power for something more sensible than minimizing latency.

Stuck with a card without ASIO or WDM drivers? Tough, really. You're not going to get latency low enough. If you want to play VSTi's, spend some money on a better card. Sorry.

## Audio Mixdown doesn't include everything I want

*Files/Export/Audio Mixdown* [No Default] acts on material that is:

- On an Audio Track. (This includes VSTi's. See *How to record MIDI tracks to audio tracks* above.)
- Between the L and R locators
- Routed to the *Master* audio output bus.

## Windows XP and ACPI



### Note

I'm going to suggest things here that usually work, and have worked for me. But there are possibilities for messing up your system. Particularly if it's a branded computer, using its own shortcuts in hardware, drivers, etc. Back up any irreplaceable data first, just as you would before an operating system upgrade, a re-partitioning with *Partition Magic*, doing anything clever in the *Registry*, etc.

XP (and Windows 2000) does a rather nasty thing to audio users, it piles a lot of PCI devices onto a single IRQ. There is argument as to exactly how this works, and whether it *should* make a difference to audio performance. But many people have practical experience that getting the audio card onto a unique IRQ is highly desirable.



### Note

Note that ACPI is not APIC. We're seeing a new generation of motherboards that use APIC to give an additional 16 IRQs. This is a whole new ball-game.

Is your audio playback glitch-free? No pops and crackles? Good. It ain't broken. Don't fix it. Otherwise, I suggest the following:

- o Go to Device Manager.
  - Is DMA turned on for all your IDE hard drives? In XP, this is done under Properties for the Primary and Secondary IDE controllers. DMA If Available is the setting you want.
- o Now go to *Control Panel/System/Advanced/Performance*. Turn off all pretty display effects by selecting *Maximum Performance*. Now go to the *Advanced* tab and select *Scheduling: Background Processes* and *Memory: Programs*. The one that really matters is *Scheduling*. Your soundcard drivers are a *Background Process*. This can make a lot of difference.
- o Boot in Safe Mode. (Hold F8 while booting.)
  - Look in *Device Manager*. Are there entries for hardware you used to have, but which are no longer installed? Are there multiple entries for hardware that you *do* have? It's quite common for drives, ports, PCI cards to be shown twice or even more. Don't mess with anything in *System Devices* unless you're an expert. But anything else shown doubled up, when you know there's only one, remove *all* instances. The right one will re-install next boot. Have your disks handy.

Better? Good. If not, it's maybe time to kill ACPI. Go to *Start Menu /Programs /Accessories /System Tools /System Information*. Look at *Hardware Resources/IRQ*. Are a lot of things, including your sound card, sharing an IRQ, probably IRQ9? While ACPI is installed you're not going to be able to change this. So it's time to lose it.

If you'd known this while installing XP, you could have caught the (brief) opportunity to *Install third-party SCSI drivers*. You're invited to press F6. Press F7 instead, and choose to install a *Standard Computer*. Too late now. Never mind. There's another way. In *Device Manager*, you can change the *driver* for

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*Device: Computer* from *ACPI Computer* to *Standard Computer*. Next boot, all the hardware in your computer will be reinstalled. You'll end up with a non-ACPI box. (Auto power-off will stop working when you shut down.)

Once you're free of ACPI, you've got a bit of room to manoeuvre with IRQ allocation. You probably won't be able to change the IRQ of specific devices in *Device Manager*, as was sometimes possible in Windows 9.x. You'll have to open the box and physically change what goes in each slot. (Watch out, the PCI slot next to the AGP one is often hard-wired to share an IRQ with it. *Not* a good idea.)

Maybe you can do some IRQ allocations in BIOS. These settings have an effect, but, in my experience, rarely a predictable one. Big point: You won't get things onto their own IRQ if there isn't one available. Are you actually using COM1 and COM2 (the serial ports on the back of your computer)? If not, disable them in BIOS. There's a couple of free IRQs already.

Looking ahead – Cubase S<sub>X</sub> will use a USB dongle. Maybe you can disable the parallel (printer) port too. If you're crammed full of devices – network card, scsi card, whatever – you may be in trouble. Have you got a motherboard with an extra pair of IDE ports, maybe for a form of RAID? They won't actually work perceptibly better than the standard IDE ports for audio work, and they tend to share with a PCI slot. Why not lose them in BIOS as well?

At the end of all this, I hope your soundcard is sitting happily on a unique IRQ, sharing only with maybe a *IRQ steering* which is fine. How's the audio performance? If there are still problems, I give up for now! Not really, but I guess you need to post details of your system at [alt.steinberg.cubase](http://alt.steinberg.cubase) and let us have a go at it. We usually win in the end!

There are links to useful resources on this subject listed in More links. In particular the [pcAudioLabs](#) page.

## Dual monitors?

Cubase S<sub>X</sub> works very well on dual-monitor systems using e.g. a *Matrox* dual-head AGP card. You just drag the main S<sub>X</sub> window over both screens.

Comments from a user:

- Radeon Dual Head cards work great.
- Several dual-head cards have software which must be configured to actually *activate* the second monitor. For example, on my Radeon, after I installed it, I mistakenly thought it wasn't working, simply because I did not go into *Properties* and activate the second monitor.

## Emulated MIDI ports in Cubase S<sub>X</sub>

This is what Steinberg say:

### MIDI port filter - Important note regarding MIDI Interfaces

Cubase S<sub>X</sub> version 1.02 or higher has a function to filter out redundant MIDI ports provided by the MIDI interface driver. For instance if the MIDI interface driver installs both Windows MIDI ports and DirectMusic ports, these ports used to both show up in former Cubase S<sub>X</sub> versions. Since DirectMusic mirrors the Windows MIDI ports as *emulated* DirectMusic ports by itself, it was possible that the MIDI ports showed up even 3 times in the MIDI device list in Cubase S<sub>X</sub>. These multiple appearances of the MIDI ports were actually *multiple versions* of the same physical MIDI port.

To avoid this, Cubase S<sub>X</sub> 1.02 and higher provides an option to remove these redundant entries utilizing the MIDI port filter. However, in some cases the non-filtered, left over MIDI ports that will show up in the MIDI device list of Cubase S<sub>X</sub> can be the ones that actually do not work as the MIDI interface driver doesn't support the DirectMusic architecture as Cubase S<sub>X</sub> would expect.

These cases were for example found with the following MIDI Interfaces:

- o MIDIMAN MIDIspport 8x8
- o MOTU MIDITimepieceAV

In this case, you can re-enable the filtered MIDI ports by proceeding as follows:

- o Browse to the Cubase S<sub>X</sub> application folder  
(usually C:/Program Files/Steinberg/Cubase SX)  
and locate the folder MIDI Port Enabler
- o Open this folder
- o Pick the file `ignoreportfilter` and move it into the Cubase S<sub>X</sub> application folder (one directory up)
- o Start Cubase S<sub>X</sub>

Now all available MIDI ports provided by the MIDI interface driver will appear in the MIDI device list of Cubase S<sub>X</sub>. Please be aware that the MIDI ports now can show up 2 or 3 times in the list. If you're used to manage your MIDI IN by setting *All MIDI Inputs* in the MIDI IN selector, you should go to *Devices/Device Setup/All [No Default] MIDI Inputs* tab and disable the unwanted ports. If you don't do this, then you will record MIDI from multiple ports, which results in double MIDI notes.

## Corrupt fonts in Score Edit

If the note symbols in *Score Edit* appear as a load of "Chinese squiggles" do this:

- o Go to *emphControl Panel/Fonts*
- o Press CTRL-A to *Select All*
- o Close the window.

That's it!



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## Can I use Cubase Sx as an *Effects box*?

Certainly. First, turn off *Direct Monitoring*, since it bypasses Cubase Sx's mixer, allowing zero-latency monitoring of an input. You want to monitor through the Sx mixer, effects, latency and all. Here's how to do it. In *File/Preferences* [No Default] *VST* tab, set *Auto Monitoring* to *Manual*. In *Devices/Device Set-up* [No Default] *VST Multitrack* tab, untick *Direct Monitoring*. Set-up the required effects on the appropriate channel in the *Mixer* [F3]. Click the *Monitor* icon (the little loudspeaker.)

## Punch-in & Punch-out

On tape systems, we developed techniques of accurate punch-in and punch-out. We were recording over the top of existing material, destroying it as we went. In Cubase Sx, and similar programs, recording is non-destructive. New material is recorded alongside the old (even if it is displayed on top, the old audio is still there underneath). So, punch-in early, punch-out late. You can do your trimming afterwards.

Don't care if you hear the old take or not? Just record into the same track. Would hearing the last version put you off? Or do you want to monitor the old take in whole or in part? Snip (or split and mute) the old track, so that you hear just what you want to hear. (You can always change or reverse this.) Record into a temporary new track. Move the new take onto the main track when you're happy with it.

## More Links

Steinberg's help on recording MIDI tracks as audio

The alt.music.midi newsgroup FAQ has plenty of background on midi. Also recording midi to .wav in non-Cubase Sx ways.

Steinberg's Cubase Sx site.

Steinberg's FTP for downloading updates.

pcAudioLabs: A site with lots of advice on setting up a computer for music.

fbinternet: A page about setting Windows up for various purposes, including music.

Tascam's page on XP

Read what Microsoft have to say about ACPI

They don't recommend anything except a reinstall of XP. But they tell you what to do if the *Device Manager* route goes wrong.



## Appendix B

# Cubase Sx's Plug-ins and VSTi's

Out of the box, Cubase Sx comes with a large number of VST audio effects plug-ins and seven VSTi's. As well as these audio plug-ins, fourteen MIDI effects plug-ins are provided.

The MIDI Effects are described in the chapter *MIDI realtime parameters and effects* of the *Cubase Sx: Operations Manual*. The audio plug-ins are described in detail in a number of PDF manuals provided with Cubase Sx which follow:

1. *Cubase5 Instruments*
2. *Cubase5 Plug-Ins*
3. *Earlier Plug-Ins*
4. *Effects Parameters*
5. *Cubase Sx: Operations Manual*

These numbers will be used in the tables below to indicate in which manual you can find the appropriate detailed description.

The plug-ins are listed here by type with a brief subjective view on their suitability for their intended task.

A list of all the plug-ins and VSTi's available to Cubase Sx, along with a variety of information about them. This can be viewed by opening the *Devices/ Plug-in Information* window (see figure B.1).

Of particular interest are the columns showing:

- Number of inputs and outputs
- VST version (tempo sync requires v2.0 and greater)
- Delay in samples (which is compensated for automatically on Insert channels, but not on Groups or Sends)

Name	Nb I/O	Category	Vendor	VST Ver.	Delay	Nb Params	Nb Programs	Modified	Folder
MidEq2	8/2	SurroundFX	Steinberg Mec	2.2	0	35	18	12/04/02 13:51	C:\AUDIO\CUBASE Sx\VstPlugins\Surround
Reverb A	2/2	RoomFX	Spectral Desig	2.2	0	6	9	23/04/02 10:13	C:\AUDIO\CUBASE Sx\VstPlugins\Reverb
Reverb B	2/2	RoomFX	Spectral Desig	2.2	0	5	8	23/04/02 10:13	C:\AUDIO\CUBASE Sx\VstPlugins\Reverb
SurroundPan	2/8	Specializer	Steinberg Mec	2.2	0	22	1	20/04/02 15:46	C:\AUDIO\CUBASE Sx\VstPlugins\Surround
DeEsser	2/2	Mastering	Spectral Desig	2.2	0	3	4	12/04/02 11:06	C:\AUDIO\CUBASE Sx\VstPlugins\Dynamics
TrueTape	1/2	Mastering	Spectral Desig	2.2	30	9	4	26/04/02 15:31	C:\AUDIO\CUBASE Sx\VstPlugins\Other
uv22	2/2	Mastering	Spectral Desig	2.2	0	3	4	26/04/02 16:06	C:\AUDIO\CUBASE Sx\VstPlugins\Other
uv22 hr	2/2	Mastering	Spectral Desig	2.2	0	3	4	22/04/02 11:42	C:\AUDIO\CUBASE Sx\VstPlugins\Other
a1	0/2	Synth	Waldorf	2.2	0	99	128	06/05/02 17:39	C:\AUDIO\CUBASE Sx\VstPlugins\Synths
Crystal	0/2	Synth	Green Oak Sc	2.2	0	581	128	26/06/02 08:10	C:\VstPlugins\VSTi
cs40	0/2	Synth	Steinberg	2.2	0	25	16	16/10/01 12:09	C:\AUDIO\CUBASE Sx\VstPlugins\Cubase 5 Instruments
JX16	0/2	Synth	moam digital	2.0	0	40	64	22/10/01 12:46	C:\AUDIO\CUBASE Sx\VstPlugins\Cubase 5 Instruments
lm-7	0/2	Synth	Steinberg	2.2	0	38	3	23/04/02 17:05	C:\AUDIO\CUBASE Sx\VstPlugins\Drums
LM-9	0/2	Synth	Steinberg	2.2	0	19	2	15/08/01 10:55	C:\AUDIO\CUBASE Sx\VstPlugins\Cubase 5 Instruments
Neon	0/2	Synth	Steinberg	2.2	0	14	16	15/08/01 10:56	C:\AUDIO\CUBASE Sx\VstPlugins\Cubase 5 Instruments
vb-1	0/2	Synth	Steinberg	2.2	0	6	16	16/04/02 17:57	C:\AUDIO\CUBASE Sx\VstPlugins\Synths
BitCrusher	2/2	Effect	Steinberg Mec	2.2	0	5	9	18/04/02 17:45	C:\AUDIO\CUBASE Sx\VstPlugins\Other
Chopper	2/2	Effect	Steinberg Mec	2.2	0	8	9	24/04/02 15:09	C:\AUDIO\CUBASE Sx\VstPlugins\Other
Chorus	2/2	Effect	Spectral Desig	2.2	0	5	9	18/04/02 13:12	C:\AUDIO\CUBASE Sx\VstPlugins\Modulation
DoubleDelay	2/2	Effect	Spectral Desig	2.2	0	12	8	12/04/02 09:59	C:\AUDIO\CUBASE Sx\VstPlugins\Delay
Dynamics	2/2	Effect	Spectral Desig	2.2	0	25	8	24/04/02 16:56	C:\AUDIO\CUBASE Sx\VstPlugins\Dynamics
Flanger	2/2	Effect	Spectral Desig	2.2	0	11	8	12/04/02 09:43	C:\AUDIO\CUBASE Sx\VstPlugins\Modulation
Metalizer	2/2	Effect	Steinberg Mec	2.2	0	9	9	24/04/02 13:00	C:\AUDIO\CUBASE Sx\VstPlugins\Modulation
ModDelay	2/2	Effect	Spectral Desig	2.2	0	7	8	12/04/02 09:42	C:\AUDIO\CUBASE Sx\VstPlugins\Delay
Overdrive	2/2	Effect	Spectral Desig	2.2	0	8	8	12/04/02 09:47	C:\AUDIO\CUBASE Sx\VstPlugins\Distortion
Phaser	2/2	Effect	Spectral Desig	2.2	0	8	8	12/04/02 09:44	C:\AUDIO\CUBASE Sx\VstPlugins\Modulation

Fig. B.1: Plug-in Information

## Sharing Cubase Sx Plug-ins

Below is a list of all of the plug-ins supplied with Cubase Sx with an indication of whether they can be shared with other applications or not. As you can see, very few of your plug-ins can be used elsewhere.

Sharable plug-ins	Sx only VSTi's	Sharable VSTi's
Autopan (3)	A1 (5, ch. 9)	LM-9 (1)
Chorus (3)	CS40 (1)	Neon (1)
Chorus2 (3)	JX16 (1)	VB-1 (1)
Espacial (3)	LM-7 (1)	
Fuzz Box (3)		
Grunelizer (4)		
Karlette (2)		
Scopion (3)		
Stereo Echo (3)		
Stereo Wizard (3)		
Wunderverb3 (3)		

## Cubase Sx only plug-ins

Autopole (2)	MIDI Gate (4)	Rotary (4)
BitCrusher (4)	Mix6to2 (4)	SMPTE Generator (4)
Chopper (4)	ModDelay (4)	Step Filter (4)
Chopper2 (2)	Mysterizer (2)	subBass (2)
Chorus (4)	Overdrive (4)	Surround Panner
Da Tube (4)	Phaser (4)	Symphonic (4)
DeEsser (4)	PhatSync (2)	Tranceformer (4)
Distortion (2)	Quadrafuzz (4)	Tranceformer2 (2)
Double Delay (4)	Reverb (2)	TrueTape (5, ch. 2)
Dynamics (4)	Reverb32 (2)	UV22 (5, ch. 8)
Flanger (4)	Reverb A (4)	UV22HR (5, ch. 8)
Metalizer (4)	Reverb B (4)	Vocoder (4)
Metalizer2 (2)	Ring Mod (2)	VST Dynamics (4)
MIDIComb (2)	Ring Modulator (4)	VST DX (n/a)

**Supplied Audio Effects Plug-ins****Delay**

DoubleDelay	Flexible and useful dual delay with tempo sync
Karlette	4-tap delay with tempo sync
ModDelay	Simple delay with pitch modulation and tempo sync
Stereo Echo	Separate left and right channel delays

**Distortion**

Datube	Tube amp simulator
Distortion	Versatile distortion with selective LP filter
Fuzz Box	Aggressive distortion pedal
Overdrive	Guitar amp simulation
Quadrafuzz	Excellent multi-band distortion. Drums, drums,...

**Dither**

UV22 HR	8, 16, 20 and 24-bit dither
UV22	16-bit only dither

**Dynamics and Pan**

Autopan	Simple auto-pan without tempo sync
DeEsser	Sibilance reducer
Dynamics	Gate compressor and limiter
MIDI Gate	MIDI activated gate
Stereo Wizard	Stereo width enhancer
VST Dynamics	Gate compressor and limiter with auto-level and soft-clip

**Filter**

Autopole	Dual Filter (LP, HP, BP and Notch) with LFO tempo sync
PhatSync	Pattern controlled filter (LP, BP, HP) with tempo sync
StepFilter	Pattern controlled filter (LP, BP, HP) with tempo sync

**Modulation**

Choirus	Chorus plus flanger (updated by Choirus2)
Choirus2	Chorus plus flanger
Chorus	Standard chorus
Flanger	Standard flanger with tempo sync
Metalizer/2	BP filter with variable frequency and width with tempo sync
MIDIComb	MIDI activated comb filter
Phaser	Standard phaser with tempo sync
Ring Mod	Standard Ring Mod
Ringmodulator	Ring Mod with LFO tempo sync
Rotary	Classic Leslie effect with MIDI control of speed
Symphonic	Auto-pan, chorus/flange, and stereo enhance in one
Tranceformer	Dual oscillator ring mod with tempo sync
Tranceformer2	Dual oscillator ring mod with tempo sync

**Other**

Bitcrusher	Distortion by bit reduction. Decimate your sound.
Chopper	Combined tremolo and auto-pan with tempo sync
Chopper2	Combined tremolo and auto-pan with tempo sync
Grungelizer	Lo-fi noise and static generator
Mysterizer	Interactive multi-effect
subBass	Pitch-tracking low freq generator
TrueTape	Tape emulation (for use during recording only)
Vocoder	Flexible vocoder with optional MIDI control of internal carrier

**Reverb**

Espacial	Reverb effect
Reverb	Simple reverb
Reverb32	Simple reverb with LP and HP filters
Reverb A	Simple reverb with LP and HP filters
Reverb B	Simple reverb
Wunderverb3	Cheap and cheerful reverb

**Surround**

Mix6To2	6 channel to 2 channel surround mixer
Surround Panner	Surround positioning panner

**Tools**

Scopion	Single channel oscilloscope
SMPTE Generator	Sends SMPTE time code to audio output

**Supplied VSTi's**

A1	Dual osc synth with FM and PWM, single sync'd LFO, filter (4 types), chorus/flanger
CS40	Dual osc synth, single sync'd LFO, and LP filter
JX16	Dual osc synth with PWM, single sync'd LFO, filter (LP, BP, HP) and chorus
LM-7	Simple 12 sound drum machine
LM-9	Simple 9 sound drum machine
Neon	I'm sure someone loves it!
VB-1	Virtual bass, based on physical modelling

**Supplied MIDI Effects**

The MIDI Effects are described in chapter *MIDI realtime parameters and effects* of the *Cubase SX: Operations Manual*. (See appendix E, page 153 for a complete list of MIDI Controllers CC). The use of MIDI effects, along with more detailed descriptions, can be found in chapter 13, page 69.

**MIDI Effects**

Arpache	Straightforward MIDI arpeggiator
AutoPan	An LFO for MIDI controllers
Chorder	1. Assign any chord to any single note 2. Assign one chord and the note transposes it
Compress	Compressor-like control of MIDI velocities
Control	Slider control of up to 8 MIDI controllers
Density	Randomly reduces or adds new notes. Effective.
Micro Tuner	Use alternative tunings
MIDI Echo	Flexible MIDI echo with pitch variation, quantize, length and rate control
Notes to CC	MIDI Controller generator from notes
Quantizer	Does exactly what it says on the tin
Step Designer	Pattern sequencer (does not use MIDI input)
Track Controls	GS and XG control panel
Track FX	Duplicates Track Parameters with added functions
Transformer	Real-time version of the Logical Editor (see page ??)





# Appendix C

## Key Commands

Below is a full list of Cubase Sx's default Key Commands. The *Process Plug-in* section is not included, since this will differ for each user. Remember that you can assign a Key Command for any plug-in, since this can be a big time-saver. The Key Commands for *Score* are provided in a second list that follows the main list. These lists are handy references, so please feel free to photocopy and use as you wish.

One way to keep your Key Commands selection handy is take a photo-copy then cover the paper in clear plastic film and anchor it under your keyboard. Another suggestion is to skim through the list once a month, just to remind yourself of the available Key Commands.

Where a Key Command is used in a lot of places, such as *Devices/Set-up*, then the term *Many* has been used. Common operating commands, such as Cut and Paste, are labeled *Common*.

Nudge top and bottom can be used to assign additional keys to the up and down cursors.

Command	Key	Page
<b>Add Track</b>		
Audio		??
Folder		??
Group Channel		??
MIDI		??
Marker		??
Master Automation		??
Multiple		??
Video		??
<b>Analyze</b>		
Spectrum Analyzer		98
Statistics		98
<b>Audio</b>		
Adjust Fades to Range	A	??
Bounce		??
Close Gaps		??

Command	Key	Page
Create Regions		??
Crossfade	X	??
Detect Silence		??
Dissolve Part		??
Event as Region		??
Events from Regions		??
Events to Part		??
Find Selected in Pool	Ctrl+F	??
Freeze Edits		??
Minimize File		??
Open Fade Editors		??
Open Process History		??
Remove Fades		??
Snap Point To Cursor		63
To Origin		??
<b>Devices</b>		
Generic Remote		??
MIDI Device Manager		??
Mixer	F3	80
Mixer 2		80
Plug-in Information		??
Set-up		Many
Show Panel		??
Time Display		??
TrueTape		??
VST Inputs	F5	??
VST Instruments	F11	??
VST Master Effects	F7	82
VST Master Set-up		100
VST Outputs	F4	80
VST Performance	F12	??
VST Send Effects	F6	78
Video	F8	??
<b>Edit</b>		
Auto-scroll	F	55
Back (Move to)		58
Copy	Ctrl+C	Common
Crop Range		65
Cursor (Move to)	Ctrl+L	58
Cut	Ctrl+X	Common
Cut Time	Ctrl+Shift+X	65
Delete	Del/Back	Common
Delete Time	Shift+Back	65

Command	Key	Page
Duplicate	Ctrl+D	58
Fill Loop		58
Front (Move to)		58
History		??
Insert Silence (Range)	Ctrl+Shift+E	??
Left Selection Side to Cursor	E	??
Lock	Ctrl+Shift+L	60
Move Insert Cursor To Part Start		??
Mute	M	60
Mute Events	Shift+M	60
Mute/Unmute Objects	Alt+M	60
Open (Editor)	Ctrl+E	38
Open Drum Editor		??
Open Key Editor		??
Open List Editor	Ctrl+G	??
Open Scores	Ctrl+R	??
Open/Close Editor	Return	Many
Paste	Ctrl+V	Common
Paste Time	Ctrl+Shift+V	??
Paste Time at Origin		65
Paste at Origin	Alt+V	58
Record Enable	R	20
Redo	Ctrl+Shift+Z	??
Repeat	Ctrl+K	58
Right Selection Side to Cursor	D	??
Select All	Ctrl+A	56
Select All on Tracks		56
Select Event		??
Select None	Ctrl+Shift+A	56
Select from Cursor to End		56
Select from Start to Cursor		56
Select in Loop		56
Snap On/Off	J	62
Solo	S	20
Split Loop		60
Split Range	Shift+X	??
Split At Cursor	Alt+X	59
To Real Copy		??
Undo	Ctrl+Z	??
Unlock	Ctrl+Shift+U	60
Unmute Objects	Shift+U	60

Command	Key	Page
<b>Editors</b>		
Show/Hide Infoview	Ctrl+I	??
Show/Hide Inspector	Alt+I	??
Show/Hide Overview	Alt+O	??
<b>File</b>		
Cleanup		??
Close	Ctrl+W	Common
Export Audio Mixdown		92
Export MIDI File		??
Export Pool		??
Import Audio file		??
Import Audio from Video		Bug
Import Cubase Arrangement		??
Import Cubase Part		??
Import Cubase Song		??
Import MIDI File		??
Import Pool		??
Import Video file		??
Import from Audio CD		??
Key Commands		31
New	Ctrl+N	28
Open	Ctrl+O	Common
Page Set-up		Common
Preferences		34
Print		Common
Quit	Ctrl+Q	Common
Revert		27
Save	Ctrl+S	27
Save As	Ctrl+Shift+S	27
Save New Version	Ctrl+Alt+S	27
Save Project to New Folder		??
Save As Template		34
<b>Hitpoints</b>		
Calculate		??
Create Audio Slices		??
Create Groove Quantize		??
Divide Audio Events		??
<b>Media</b>		
Conform Files		??
Convert Files		??
Create Folder		??
Empty Trash		??
Find		??

Command	Key	Page
Find Missing Files		??
Import Medium		??
Insert into Project at Origin		??
Insert into Project at Cursor		??
Insert into Project at Timecode		??
New Version		??
Prepare Archive		??
Reconstruct		??
Remove Missing Files		??
Remove Unused Media		??
Select In Project		??
Set Record Folder		??
Update Origin		??
<b>MIDI</b>		
Delete Controllers		??
Delete Doubles		??
Delete Notes		??
Delete Overlaps (mono)		??
Delete Overlaps (poly)		??
Dissolve Part		??
Drum Map Set-up		??
Fixed Lengths		??
Fixed Velocity		??
Freeze Quantize		??
Iterative Quantize		??
Legato		??
Logical Editor		??
Merge Midi in Loop		??
O-Note Conversion		??
Pedals To Note Length		??
Quantize	Q	??
Quantize Ends		??
Quantize Lengths		??
Quantize Set-up		??
Reset		??
Restrict Polyphony		??
Reverse		??
Toggle MIDI Input		??
Toggle Step Input	0	??
Transpose		??
Undo Quantize		??
Velocity		??

Command	Key	Page
<b>MIDI Quantize</b>		
Auto Quantize On/Off		??
Set Quantize to 1th		??
Set Quantize to 2th		??
Set Quantize to 4th		??
Set Quantize to 8th		??
Set Quantize to 16th		??
Set Quantize to 32th		??
Set Quantize to 64th		??
Set Quantize to 128th		??
Toggle Quantize Triplet		??
Toggle Quantize Dotted		??
Select Next Quantize		??
Select Previous Quantize		??
<b>Navigate</b>		
Left	Left Cursor	Common
Right	Right Cursor	Common
Up	Up Cursor	Common
Down	Down Cursor	Common
Add Left	Shift+Left Cursor	??
Add Right	Shift+Right Cursor	??
Add Up	Shift+Up Cursor	??
Add Down	Shift+Down Cursor	??
<b>Nudge</b>		
Start Left	Ctrl+Left Cursor	59
Start Right	Ctrl+Right Cursor	59
End Left	Alt+Left Cursor	59
End Right	Alt+Right Cursor	59
Left		58
Right		58
Top		See note.
Bottom		See note.
Graphical Left		Score
Graphical Right		Score
Graphical Top		Score
Graphical Bottom		Score
<b>Process</b>		
Envelope		??
Fade In		??
Fade Out		??
Gain		??
Merge Clipboard		??
Noise Gate		??

Command	Key	Page
Normalize		??
Phase Reverse		??
Pitch Shift		??
Remove DC Offset		??
Reverse		??
Silence		??
Stereo Flip		??
Time Stretch		??
<b>Process Plug-ins</b>		
All VST & DirectX plug-ins can be assigned key commands.		
<b>Project</b>		
Auto Fades Settings		??
Beat Calculator		??
Bring To Front		??
Hide All Automation		??
Notepad		??
Open Browser	Ctrl+B	49
Open Markers	Ctrl+M	??
Open Master/Tempo Track	Ctrl+T	??
Open Pool	Ctrl+P	73
Remove Track		??
Set-up	Shift+S	??
Show Used Automation		??
<b>Score</b>		
Available Key Commands follow in a separate list.		
<b>Set Insert Length</b>		
1/1		??
1/2		??
1/4		??
1/8		??
1/16		??
1/32		??
1/64		??
1/128		??
Toggle Dotted		??
Toggle Triple		??
<b>Tool</b>		
Next Tool	F10	??
Previous Tool	F9	??
Select Tool	1	??
Range Tool	2	??
Split Tool	3	??
Glue Tool	4	??

Command	Key	Page
Delete Tool	5	??
Zoom Tool	6	??
Mute Tool	7	??
Draw Tool	8	??
Play Tool	9	??
Drumstick Tool		??
Hitpoint Tool		??
Scrub Tool		??
Tool 1		??
Tool 2		??
Tool 3		??
Tool 4		??
Tool 5		??
Tool 6		??
Tool 7		??
Tool 8		??
Tool 9		??
Tool 10		??
<b>Transport</b>		
Panel	F2	47
Start	Enter	??
Stop	Pad 0	??
Start/Stop	Space	??
Record	Pad *	??
Rewind	Pad -	??
Forward	Pad +	??
Cycle	Pad /	??
Loop Selection	Shift+G	??
Locate Selection	L	??
Locators to Selection	P	??
Return to Zero	Pad . (point) , (comma)	20
Goto End		??
Restart		39
Play to Next Marker		??
Play from Selection Start		??
Play from Selection End		??
Play to Selection Start		??
Play to Selection End		??
Play Selection Range	Alt+Space	??
Nudge Up	Ctrl+Pad +	??
Nudge Down	Ctrl+Pad -	??
To Left Locator	Pad 1/Shift+1	??



Command	Key	Page
To Right Locator	Pad 2/Shift+2	??
To Marker 3	Pad 3/Shift+3	??
To Marker 4	Pad 4/Shift+4	??
To Marker 5	Pad 5/Shift+5	??
To Marker 6	Pad 6/Shift+6	??
To Marker 7	Pad 7/Shift+7	??
To Marker 8	Pad 8/Shift+8	??
To Marker 9	Pad 9/Shift+9	??
Locate Next Event	N	??
Locate Previous Event	B	??
Locate Next Marker	Shift+N	??
Locate Previous Marker	Shift+B	??
Set Left Locator	Ctrl+Pad 1/Ctrl+1	??
Set Right Locator	Ctrl+Pad 2/Ctrl+2	??
Set Marker 3	Ctrl+Pad 3/Ctrl+3	??
Set Marker 4	Ctrl+Pad 4/Ctrl+4	??
Set Marker 5	Ctrl+Pad 5/Ctrl+5	??
Set Marker 6	Ctrl+Pad 6/Ctrl+6	??
Set Marker 7	Ctrl+Pad 7/Ctrl+7	??
Set Marker 8	Ctrl+Pad 8/Ctrl+8	??
Set Marker 9	Ctrl+Pad 9/Ctrl+9	??
Recall Cycle Marker 1	Shift+Pad1	??
Recall Cycle Marker 2	Shift+Pad2	??
Recall Cycle Marker 3	Shift+Pad3	??
Recall Cycle Marker 4	Shift+Pad4	??
Recall Cycle Marker 5	Shift+Pad5	??
Recall Cycle Marker 6	Shift+Pad6	??
Recall Cycle Marker 7	Shift+Pad7	??
Recall Cycle Marker 8	Shift+Pad8	??
Recall Cycle Marker 9	Shift+Pad9	??
Insert Marker	Insert	??
Input Position	Shift+P	??
Input Left Locator	Shift+L	??
Input Right Locator	Shift+R	??
AutoPunch In	I	??
AutoPunch Out	O	??
Metronome Set-up		??
Metronome On	C	??
Sync Online	T	??
Sync Set-up		??
Mastertrack On/Off		??
Start Record at Left Locator		??
Use Pre/Post-Roll		??

Command	Key	Page
Start/Stop Preview		??
<b>Window Layout</b>		
New	Ctrl+Pad0	43
Recapture	Alt+Pad0	43
Organize	W	43
Layout 1	Alt+Pad1	43
Layout 2	Alt+Pad2	43
Layout 3	Alt+Pad3	43
Layout 4	Alt+Pad4	43
Layout 5	Alt+Pad5	43
Layout 6	Alt+Pad6	43
Layout 7	Alt+Pad7	43
Layout 8	Alt+Pad8	43
Layout 9	Alt+Pad9	43
<b>Zoom</b>		
Zoom In	H	??
Zoom Out	G	??
Zoom to Selection	Alt+S	??
Zoom to Event	Shift+E	??
Zoom Full	Shift+F	??
Zoom Preset 1		??
Zoom Preset 2		??
Zoom Preset 3		??
Zoom Preset 4		??
Zoom Preset 5		??
Zoom In Vertical		??
Zoom Out Vertical		??
Zoom In Tracks	Alt+Down Cursor	??
Zoom Out Tracks	Alt+Up Cursor	??
	Ctrl+Up Cursor	
Zoom Tracks Exclusive	Z	??
	Ctrl+Down Cursor	
Zoom Tracks 1 Row		??
Zoom Tracks 2 Rows		??
Zoom Tracks 3 Rows		??
Zoom Tracks N Rows		??
Zoom Tracks Minimal		??
Zoom Tracks Full		??
Zoom 4 Tracks		??
Zoom 8 Tracks		??
Zoom N Tracks		??

---

Command	Key
---------	-----

---

**Score Align Elements**

Bottom  
 Center Horizontal  
 Center Vertical  
 Dynamics  
 Left  
 Right  
 Top

**Score Functions**

Auto-group Notes  
 Build N-tuplet  
 Build Trill  
 Clean-up Layout  
 Enharm Shift #  
 Enharm Shift ##  
 Enharm Shift ()  
 Enharm Shift ?  
 Enharm Shift b  
 Enharm Shift bb  
 Enharm Shift no  
 Enharm Shift off  
 Explode  
 Export Scores  
 Extract voices  
 Grace Note  
 Hide Empty Staves  
 Insert Slur  
 Make Guitar Symbols  
 Marker Track to Form  
 Merge All Staves  
 Move All Bars  
 Move All Staves  
 Move Bars  
 Move Staves  
 Multi Insert  
 Number of Bars  
 Optimize All  
 Paste Note Attributes  
 Score Notes to MIDI  
 Select Range  
 Show  
 Show Marker Track  
 Spacer and Hidden to Layout

Command	Key
Spread all Pages	
Spread Page	
String 1	
String 2	
String 3	
String 4	
String 5	
String 6	
Tools: + (1 up)	
Tools: + (1 down)	
Tools: Auto-layout	
Tools: Flip	
Tools: Force Update	
Tools: Get Info	
Tools: Group	
Tools: Hide	
Tools: Make Chord	
Tools: Position Panel	
Voice 1	
Voice 2	
Voice 3	
Voice 4	
Voice 5	
Voice 6	
Voice 7	
Voice 8	
<b>Score Meter Scale</b>	
Zoom 50%	
Zoom 75%	
Zoom 100%	
Zoom 120%	
Zoom 200%	
Zoom 300%	
Zoom 400%	
Zoom 600%	
Edit Mode 50%	
Edit Mode 80%	
Edit Mode 100%	
Fit Page	
Fit Width	
Hide Unused	
Ruler Off	
Ruler cm	

Command	Key
Ruler inches	
Ruler pt	
<b>Score Symbol Palettes</b>	
Clef, etc.	
Custom	
Dynamics	
Global Symbols	
Graphics	
Layouts	
Line/Trill	
Note Symbols	
Others	
Words	
<b>Scores</b>	
Accidentals	
Chord Symbols	
Drum Map	
Edit/Page Mode	
Export	
Find and Replace	
Guitar Library	
Import	
Move to Next Page	
Move to Previous Page	
Notation Style	
Set Font	
Set-up Layout	
Show Layout List	
Spacings	
Staff Set-up	
Text	
<b>Scores Status-bar</b>	
Toggle Filter Bar Handles	
Toggle Filter Cut Flag	
Toggle Filter Grouping	
Toggle Filter Hidden Notes	
Toggle Filter Hide	
Toggle Filter Layout Tool	
Toggle Filter Quantize	
Toggle Filter Split Rests	
Toggle Filter Stems/Beams	



# Appendix D

## Preferences

Below is a full list of Cubase SX's default Preferences.

Option	Page
<b>Audio</b>	
Create images during record	35
On processing shared clips	35, ??, ??
Snap to zero crossing	35
On import audio files	35, ??, ??
Cycle record mode	??
Use additional level scan for hit-point detection	35
<b>Audio/Time Stretch Tool</b>	
Algorithm	35
Rhythm	35
Accuracy	35
Always use drum mode for close gaps	??
<b>Audio/Broadcast Waves</b>	
Description	??
Author	??
Reference	??
<b>Editing</b>	
Enable record on selected track	??
Mixer selection follows project	85
Auto select events under cursor	56
Plug-ins receive key commands	??
Delete overlaps	36
Link editors	36, ??
Lock event attributes	61
Automation reduction level	36
Drag delay	36
<b>Editing/Tool Modifiers</b>	
Drag & drop – Constrain direction/Copy/Shared copy	36
Erase tool – Delete later events	36
Mute tool – Rubberband mute and unmute	36

Option	Page
Select tool – Slip event	36
Size object –Disable snapping	36
Split tool – Split repeated	36
<b>Event Display</b>	
Colorize background	34
Quick zoom	37
Transparent events	37
Show data on small track heights	37
Show event names	56
<b>Event Display/Audio</b>	
Interpolate audio images	37
Wave image style	37
Show event volume curves always	38
<b>Event Display/MIDI</b>	
Default edit action	38
Part data mode	38
Show controllers	38
Edit as drum when drum map assigned	38
Note name style	38
<b>Event Display/Video</b>	
Show video thumbnails	38
Video cache size	38
<b>MIDI</b>	
Snap record parts to bars	38
MIDI thru active	??
Reset on record end	??
Reset on part end	??
Reset on stop	??
Note On priority	??
Length correction	??
Solo record in editors	??
Record catch range in ms	??
<b>MIDI/Function parameters</b>	
Legato overlap	??
Split MIDI events	??
<b>MIDI/Chase events filter</b>	
Selection of seven MIDI data types	??
<b>MIDI/Filter Filter</b>	
Record and Thru of seven MIDI data types by channel	??
<b>Scores</b>	
Thirteen on/off options	n/a
Number of bars per staff	??



Option	Page
<b>Scores/Event Layer</b>	
Assignment of fourteen score objects to one of three layers	
<b>Transport</b>	
Stationary cursors	??
Locate when clicked in empty space	??
Zoom while locating in time scale	??
Cursor width	??
Return to start position on stop	??
Deactivate Punch In on stop	??
Stop after automatic Punch Out	??
Always use MIDI clock start	??
Show timecode sub-frames	??
<b>User Interface</b>	
Auto-save	39
Auto-save interval	39
Show tips	9
Maximum undo	??
On start-up (Project selection)	40
Language	39
<b>User Interface/Controls</b>	
Knob mode	41
Slider mode	41
Value box/Time control mod	41
<b>VST</b>	
Scrub response speed	42
Auto monitoring	42
VU-meter peak hold time	42, 84
Pre-load Waves plug-ins on start-up	42



# Appendix E

## MIDI Controllers List

A complete list of all MIDI Controllers.

0	Bank Select MSB	32	Bank Select LSB
1	Modulation wheel	33	Modulation LSB
2	Breath controller	34	Breath LSB
3	—	35	—
4	Foot controller	36	Foot LSB
5	Portamento time	37	Porta LSB
6	Data Entry MSB	38	Data Entry LSB
7	Main Volume MSB	39	Main Volume LSB
8	Balance	40	Balance LSB
9	—	41	—
10	Pan	42	Pan LSB
11	Expression	43	Expression LSB
12	Effect Type Selector 1	44	Effect Type Selector 1 LSB
13	Effect Type Selector 2	45	Effect Type Selector 2 LSB
14	—	46	—
15	—	47	—
16	General Purpose 1	48	General Purpose 1 LSB
17	General Purpose 2	49	General Purpose 2 LSB
18	General Purpose 3	50	General Purpose 3 LSB
19	General Purpose 4	51	General Purpose 4 LSB
20	—	52	—
21	—	53	—
22	—	54	—
23	—	55	—
24	—	56	—
25	—	57	—
26	—	58	—
27	—	59	—
28	—	60	—
29	—	61	—
30	—	62	—
31	—	63	—

---

64	Damper/Sustain Pedal	96	Data Increment
65	Portamento On/Off	97	Data Decrement
66	Sostenuto Pedal	98	NRPN LSB
67	Soft Pedal	99	NRPN MSB
68	Legato Pedal	100	RPN LSB
69	Hold 2	101	RPN MSB
70	Sound Variation/Exciter	102	—
71	Harmonic Content/Compressor	103	—
72	Release Time/Distortion	104	—
73	Attack Time/EQ	105	—
74	Brightness/Expander/Gate	106	—
75	—/Reverb	107	—
76	—/Delay	108	—
77	—/Pitch Transposer	109	—
78	—/Flange and Chorus	110	—
79	—/Special FX	111	—
80	General Purpose 5	112	—
81	General Purpose 6	113	—
82	General Purpose 7	114	—
83	General Purpose 8	115	—
84	Portamento Control	116	—
85	—	117	—
86	—	118	—
87	—	119	—
88	—	120	All Sound Off
89	—	121	Reset All Controllers
90	—	122	Local Control
91	FX1 Reverb Depth	123	All Notes Off
92	FX2 Tremelo Depth	124	Omni Mode Off
93	FX3 Chorus Depth	125	Omni Mode On
94	FX4 Celeste Depth (detune)	126	Mono Mode On
95	FX5 Phaser Depth	127	Poly Mode On

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