

CUBASE

Audio Recording

Steinberg

Welcome to the Cubase Audio Recording on-line book!

Please use one of the methods described below to find the desired information as quickly as possible:

- Use the Table of Contents provided by the Acrobat Reader program.
- Use the Acrobat Reader Search function.
- Click on a cross-reference in the text (green text) to jump to the respective topic.

It is of course possible to print out this document or parts of it.

Additional information on how to use the Acrobat Reader program can be found in its Online Help.

Operation Manual Info

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1

Installation and Audio Setup

New Installation and Requirements!

When the “Getting Started” Book included in this package was written, Cubase and Cubase Score were not audio recording programs. Therefore, this chapter lists the new requirements and installation procedures that are specific to this audio recording version of Cubase.

About the various versions and Installations

Cubase and Cubase Score vs. Cubase Audio XT

Cubase and Cubase Score can now record and play back audio using regular PC audio cards, as described in this book.

Cubase Audio XT can also record audio using various other audio recording hardware. Details on each of these systems can be found in separate supplements.

Differences

If you use Cubase or Cubase Score, you need only read this book. Whenever something in this manual specifically concerns Cubase Audio XT users only, this will be indicated in the text.

If you use Cubase Audio XT, in some respects the program will be slightly different from what is described in this book. Please refer to the relevant supplement for more information.

Installation descriptions

- If you have purchased Cubase or Cubase Score, proceed with the installation chapter in this book.
- If you have purchased Cubase Audio XT, proceed to the supplement describing your particular audio recording system, and follow the installation instructions there.

Audio Requirements

Audio puts higher demands on your computer than MIDI sequencing. To be able to work with audio in Cubase, you will need the following equipment in addition to what is listed on page 2-6 in the Getting Started book:

- **The Computer must be a 486DX, 50MHz or better, with at least 8 MByte of RAM.**

This is the minimum requirements for audio work. For optimum performance and a higher number of audio channels, a Pentium processor and 16 MB RAM is recommended.

- **You need a Windows Multimedia System compatible audio card.**
By audio card we mean a card capable of recording and playing back digital audio using your hard disk as a storage medium.
- **You need a large and fast hard disk.**

About the Number of audio channels

The number of simultaneous audio channels you will be able to get depends on a number of factors, but one of the more crucial ones is the speed of the hard disk. See [page 240](#) in this book for details.

Installation

Preparations

First go through the following steps in the Getting Started book:

- Windows 95
- Getting the Computer ready
- About Printers
- Installing the Copy Protection key
- Installing the MIDI Interface/Synthesizer driver
- Connecting the MIDI Equipment

Installing the Audio Card

1. Install the audio card as described in the documentation that comes with the card.
2. Install the driver for the card, as described in the documentation that comes with it.

-
- There might be settings you have to make for Base Address and IRQ for the card. Make absolutely sure the settings you make are in accordance with the settings actually made on the card. Make sure no two cards in your computer use the same Base Address or IRQ settings!
-

Should you have an audio card, but no Windows Multimedia System driver, please ask your music or computer dealer for help.

Testing the Card

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

- **Use the software included with the audio card to make sure you can record and play back audio without problems.**
- **Use the MediaPlayer application (included with Windows and described in the Windows documentation) to play back audio.**

Make Settings for the card

1. If your audio card comes with a small setup application (“applet”) used to adjust levels and to make other settings for the card, launch it.
2. Set up the Input levels so that they match the equipment you intend to record. Set the Output levels so that they match the equipment you use for playing back (mixer or similar).
Please check the details in the documentation for the card.
3. If your card has a setting that allows it to route the audio input to the audio output for monitoring, you might want to activate this, since it will make it easier to set recording levels.
See [page 4-53](#) for more information on this subject.

Defragmenting the Hard Disk

If you plan to record audio on a hard disk where you have already stored other files, now is the time to *defragment* it. Defragmentation reorganizes the physical allocation of space on the hard disk in order to optimize its performance. It is done with a special defragmentation program. Defragmentation utilities are included with later versions of DOS and with Windows 95.

-
- It is crucial to the audio recording performance that your hard disk is optimized.
-

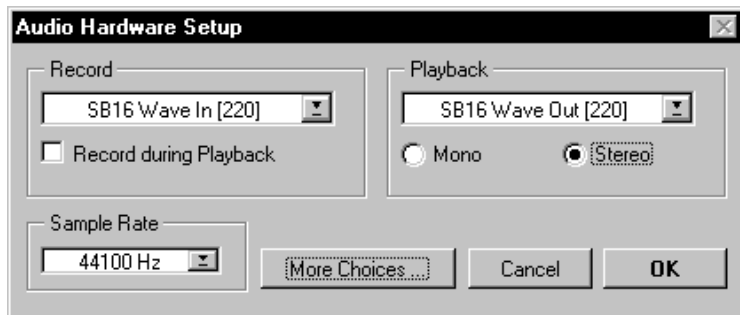
Installing the program

Now is the time to install the actual program. Look up the Installation chapter in the Getting Started Book again and perform the following steps:

- Installing the Software
- Start Cubase!
- Checking MIDI Interface Installation
- Saving the Settings

Making Audio Settings

1. In Cubase, select “Hardware Setup” from the Audio menu.



2. **Select your card from the Record and Playback pop-up menus.**
If you have several cards, this allows you to select one of them. We recommend you to use the same card for recording and playback.

3. If your card has the ability to record and play back at the same time, activate the **“Playback during Recording”** switch.

If you are unsure about your specific card’s ability, see [page 238](#) in the appendix “Optimizing Audio Performance”.

4. Decide if you want *playback* to be in mono or stereo, by clicking the relevant button in the Playback section.

In mono mode, all audio will come out of the Left channel on your audio card. Normally you will want stereo playback, but if you have a card that can only use “Playback during Recording”, if set to Mono, you might want to activate this switch. See [page 238](#) in the appendix “Optimizing Audio Performance”.

5. There are a number of additional settings “hidden” under the More Choices button. To learn about those, see [page 247](#) in the appendix “Optimizing Audio Performance”.

6. Close the dialog by clicking OK.

Once the settings are done, they are automatically saved together with the program.

Disable Screen Savers

We strongly recommend you to disable any screen saver utilities you have installed in your computer. This is because when the screen saver is activated, audio recording and playback is disrupted and the system will display a “System too slow...” message.

Optimizing Audio Settings

As mentioned above, there are a number of factors that determine how many audio channels you will get when recording audio using a regular PC audio card. See [the appendix “Optimizing Audio Performance”](#).

Where do I go next?

If you are completely new to Cubase, we suggest you start out with familiarizing yourself with the program by performing a few MIDI Recordings, as described in the Getting Started Book. After that, proceed to [the chapter “Getting Started”](#) in this audio book.

2

Getting Started

Preparations

This text assumes you are reasonably familiar with Cubase as a MIDI recorder. If not, check out the “Basic MIDI Recording” chapter in the beginning of the main Cubase manual. The text also assumes you have the Startup Song provided with the program loaded. Here goes:

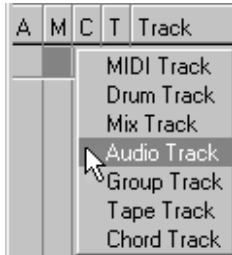
- 1. If you like, record a couple of MIDI Tracks to which you could overdub some “real” instrument or vocals.**

Make sure you have all your audio equipment connected and set up correctly, as described in the installation chapter. If you plan to record in mono, you can connect to the left input only, on the audio card. If you plan to record in stereo, you must connect to both inputs.

- 2. Open the Hardware Setup dialog (on the audio menu) and select a Sample Rate for the song.**

The higher the sample rate, the better the audio quality, but the more hard disk space are used for your recordings. Furthermore, all cards might not support all rates. 22050 and 44100Hz are pretty safe bets for any card. See [page 249](#) in the appendix “Optimizing Audio Performance” for details.

3. To record audio, you first have to create an Audio Track or select an existing one (Audio Tracks have a small sine wave symbol in the “C” column). If you want to create an Audio Track, double click below the existing Tracks in the list, press the mouse button in the “C” column for the new Track that appears, and select “Audio Track” from the Track Class pop-up menu that appears.



4. Set the Track to Channel 1 by changing the value in the Track’s “Chn” column to “1”.
It will now record and play back on audio channel 1.

5. Open the Inspector (if not already open).

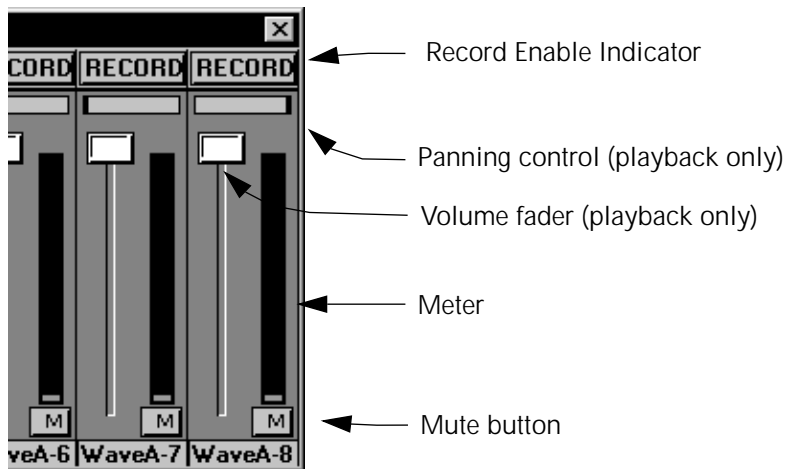


6. Decide if you want the recording to be stereo or mono by clicking the Mono/Stereo switch in the Inspector.

7. Click on the File name button. In the file dialog that appears, specify a name and location for the audio file and click OK.

The Filename button turns darker to indicate that the audio channel is ready for recording.

8. Bring up the Monitors window, by selecting Monitors from the Audio menu.



9. Adjust the level of the audio source, if needed.

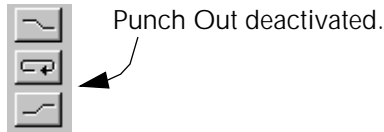
If you are using Cubase Audio XT, you may be able to use the monitor meters to check the level.

10. Play back the MIDI Tracks to rehearse the audio part, if you like.

11. When you are ready, set the Left Locator to the position where you want to commence recording.

12. As usual, Cubase will punch out at the Right Locator if Punch Out is activated on the Transport Bar.

You may want to turn this function off, by clicking on the button.



Record!

1. Activate recording, by clicking on the Record button or by pressing [*] on the computer keyboard.

2. Record as much as you like, and then press Stop.

An image of the audio file gets calculated. When this is done you should have a Part with a waveform in it. If not, select "Show Events" from the Part Appearance menu on the Options menu.



A recorded Part.

3. Play back the Arrangement to listen to what you did.

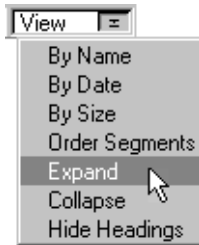
4. **If you want to redo the recording completely, simply select Undo, or delete the Part (select it and press [Backspace]).**
If you hold down [Control] while pressing [Backspace], the audio file you recorded will also be permanently deleted from the hard disk.
5. **If you want to punch in on this recording, do so, just as with MIDI Tracks. However, you can not “punch in on the fly” on audio Tracks.**
6. **You can also use Cycled recording with Audio Tracks.**
This doesn't work exactly as with MIDI, see [page 5-72](#) in this Audio recording book.
7. **When you are happy with the first Track, create a new Audio Track and set it to channel number 2.**
8. **Set up a recording file in the Inspector, and record on this Track as with the first.**
You will hear the first Track playing back while recording. If you want to pan it or adjust its playback level, use the controls in the Monitor Window.
9. **If you have more audio channels, feel free to record more Tracks.**
In fact, you can have many Tracks set to the same audio channel, for playback. But if two sounds “collide”, only one of them will play back. Each audio channel can only play back one sound file at a time.

- 10. If you wish, you can use all of the regular Tools in the Toolbox on your audio Parts, just as with MIDI Parts.**
Move them, duplicate, split them up, join them etc.

The Pool

Now it is time to examine what you actually did when you recorded.

- 1. Select Pool from the Audio menu.**
- 2. Use the View pop-up menu in the Pool window to select “Expand”.**



File Name	Disk	S/N	F	Insg	Length	Date	Time	Range
LEADW1K.WAV	D:	00	322452		13:02:96	09:32		
1 LEADW1K.WAV					00:03:21.49	00:03:21.49		
1 LEADW1K.2					00:03:21.49	00:01:00.06		
1 LEADW1K.3					00:03:21.49	00:02:00.59		
SPEACH.WAV	D:	00	393280		13:02:96	09:34		
1 SPEACH.W2					00:00:12.40	00:00:12.40		
1 SPEACH.W3					00:01:12.40	00:01:00.00		
1 SPEACH.W4					00:02:06.20	00:00:18.50		
1 SPEACH.W5					00:03:00.00	00:00:18.50		
BACKW1K.WAV	D:	00	333475		12:02:96	09:36		
1 BACKW1K.WAV					00:07:14.04	00:07:14.04		

What you see is a list of *files* and their *segments*. The audio files are in bold text and the segments are in plain.

A *file* is an actual recording on disk. A *segment* is a “cutout” from a file, a specification for a section of it. As you will note, if you have duplicated Parts or otherwise performed some editing in the Arrange window, one file can have a number of segments, all playing back different sections of the file.

For each file there is at least one segment, maybe more, depending on how much editing you have done.

3. You can display or hide headings for the file/segment columns.

This is done by selecting Hide/Show Headings from the View pop-up menu at the top of the window. You can also turn waveform display on and off by clicking the Waveform icon at the top of the window.

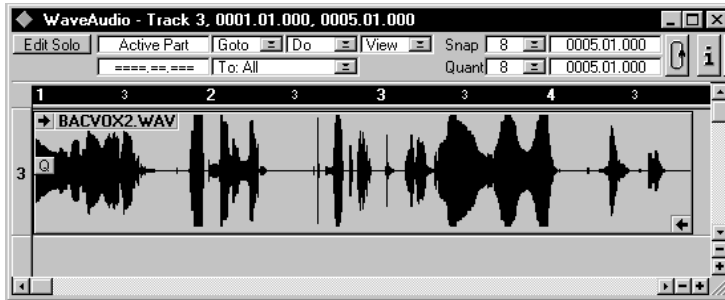
4. If you press the mouse over the speaker icon for a segment it will be played back.

There are a lot of other interesting things you can do with the Pool, like import audio files from other applications and perform editing on them, but we'll save that for later. Let's go into the editor.

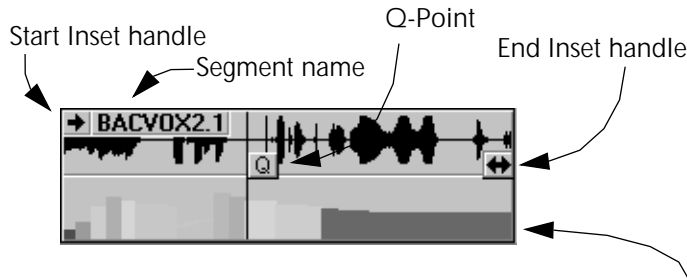
The Audio Editor

This is where you edit the individual Audio Events.

1. Click somewhere in the Arrange window so that it gets activated.
2. Find an Audio Part you'd like to examine closer, and double click on it. The Audio editor opens.



In this window you can see a number of *Events*. Each Event plays back one segment, and you can see the name of that segment in the Event. This editor has a Toolbox as all others. You can pretty much do with an audio Event what you can do with a MIDI note, and more. You can also customize the display by using the View pop-up menu on the Status bar. This is what can be shown in an Event:



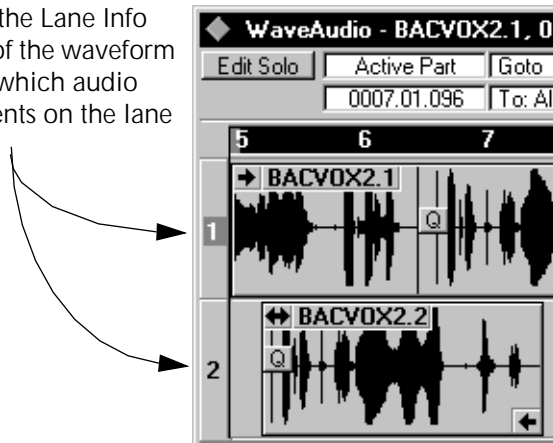
The lower part of the waveform display is used to display a Volume curve. This is created and edited individually for each Audio segment.

- **The Start and End Inset handles can be dragged to mask out portions of the file.**
- **The Q-point can be dragged, and when you move or Quantize, it is to this point that the Event snaps.**
If you have the speaker symbol on the Functions bar activated when you drag any of the handles, you will hear where you put it when you release the mouse.

3. **When you move Events you may find that you can drag them vertically as well as horizontally (make the window bigger first).**
We call the horizontal strips separated by lines, *lanes*. When you edit *one* Part, as now, it doesn't matter which lane you put an Event on.
4. **If you have the item “Volume” activated on the View pop-up, the bottom half of the Event will show a volume curve for the Event.**
You can create and edit volume curves using the Pencil tool. To add new points, hold down [Alternate] when clicking with the Pencil.
5. **When you have tried the functions above, and maybe even gone on your own excursions on the menus and using the Toolbox, you can Keep or Discard any changes (Press [Return] or [Esc]), as in all editors.**
6. **Next, in the Arrange window, select several Parts that play back on *different* audio channels.**
7. **Open the editor by double clicking on any of the selected Parts.**

- 8. Check that Lane Info is activated on the View pop-up menu.**
You will now see that each lane plays back on one audio channel.

The number in the Lane Info field to the left of the waveform display, shows which audio channel the Events on the lane play back on.



- 9. By moving an Event to another lane, you move it to another audio channel, and in this case also to another Part.**
- 10. When you are finished, close the editor.**
Save the Song if you wish to keep it. Make it a habit to put the Song in the same folder as your Audio or in its vicinity. And when you back up, don't forget to include the audio files...

This completes the guided tour of the audio part of Cubase. Hopefully you will have gained some understanding about the structure of the program, and realised that with this program, recording audio doesn't differ much from recording MIDI. Please refer to the rest of the text for details on each function.

3

Background Information and Terminology

Introduction

This chapter introduces you to some background theory and terminology used throughout this manual and in the audio parts of Cubase. Please take the time to read this, as it will aid you in using the program in the most effective way.

Channels vs Tracks

Many audio recording systems do not make a difference between audio channels and Tracks, which is the way a regular tape recorder works: one channel - one Track. Cubase however, has a much more flexible approach to handling audio, as we shall see. This is important to note, especially if you have previously been working with a system where Tracks and Channels are one and the same thing.

Audio Channels

An audio channel plays back one audio recording at a time.

In Cubase and Cubase Score, the number of audio channels you have access to is limited by your computer's processing power, the amount of free RAM and the speed of the hard disk, see [page 240](#) in the appendix "Optimizing Audio Performance".

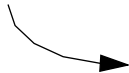
In Cubase Audio XT, the audio hardware you use determines the maximum number of audio channels you have access to. The Digidesign Session 8 hardware, for example, plays back 8 channels of audio at a time, whereas the Yamaha CBX-D3 plays back 4 channels.

The number of audio channels puts a limit to how many audio recordings can be played back at the same time. For example, in a four channel system, you could play back:

- One lead vocal recording (one channel), plus
- One backing vocal recording (one channel), plus
- One mono bass recording (one channel), plus
- One mono guitar recording (one channel)...

...all at the same time.

Four channels of audio



C	Track	Chn
+	vox 1	1
+	Backvox	2
+	Bass	3
+	Guitar	4

Mono/Stereo

In Cubase and Cubase Score, an audio channel can play back either mono or stereo files, it doesn't matter which. The same Track can play back a mono file in one section of the Song and a stereo file in another. In essence, this means the audio channels are all stereo.

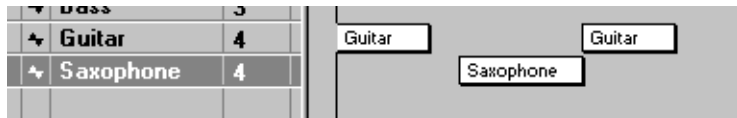
With most external hardware (as of this writing) this is not the case. Here, each audio channel is mono, which means playing back a stereo recording uses up two audio channels. If you use Cubase Audio XT, see the supplement describing your particular hardware setup, for details about stereo handling.

Tracks

An Arrangement can contain a virtually unlimited number of Tracks. In the “Chn” column, you set an Audio Track to play back on a certain audio channel, just like you set MIDI Channel for a MIDI Track.

Setting Two Tracks to the same Audio Channel

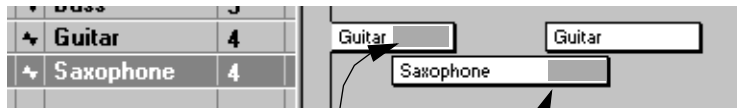
You can set things up so that two Tracks use the same audio channel. This is not a problem as long as there is no audio happening at the same time, on the two Tracks. For example like this:



Here, the Guitar Track plays through the verses and the saxophone Track plays in the chorus. Since the Parts don't overlap, both Tracks can have access to the same audio channel during playback.

However, if there is any overlap between the two – if, for example, the saxophone starts playing in the middle of the guitar, the two Tracks will compete for the single audio channel, and only one of them can use it at the same moment. In this case, the “latest” recording will always “steal” the audio channel, as described in the illustration below.

The guitar will play until the sax Part starts.
Then the sax will be heard instead.



These sections will not be heard!

Making One Track play back on Several Audio Channels

On the other hand, there will be situations where you want one Track to use more than one audio channel. See [the chapter “Multi and Cycled Recording”](#) for details.

Audio Files

When you record, your audio card (or external hardware) digitizes the audio signal coming from the microphone (or other sources) and stores the digital data as files on your hard disk.

One File per Channel

One file is always created for each audio channel you record on.

File Format

The file format used is dependant on the audio hardware. In Cubase and Cubase Score, Wave files (WAV) is the main format, but AIFF files can be imported and exported.

Practically all Windows audio processing programs read and write Wave or AIFF files which allows you to process your Cubase files in other programs, and import files that have been created elsewhere, into Cubase. See [page 6-113](#) for information about importing and exporting files.

Audio Files are big

Audio files are comparatively large, compared to Cubase Song files, MIDI files, or for example, word processor files. For each minute of recording at 44.1 kHz mono, you will use up 5 MBytes of hard disk storage per mono audio channel. This means that to record continuously on four channels for three minutes, you will need 60 Mbyte of free hard disk space ($5\text{MByte} * 4 \text{ channels} * 3 \text{ minutes} = 60\text{MByte}$).

Take good care of your Audio Files!

This can not be repeated too many times: Back up your files! Hard disk crashes are a well known fact in the computer industry, and the only way to insure yourself against any disasters is to maintain a meticulous back-up scheme. If you work professionally, we suggest you invest in an removable disk based, DAT based or other back-up system and that you keep multiple copies of all files.

Segments and Events - Non-Destructive Editing

Cubase is a random access based, non-destructive audio recording system – and even if that sounds like gibberish, you should be happy about it, as you will soon find out.

Non-destructive editing

Let's say you have recorded a couple of minutes of guitar. During the first verse, there happens to be a brilliant section that you would like to use again in all the other verses. As you may know, this is possible using the “Copy and Paste” techniques employed in most computer programs.

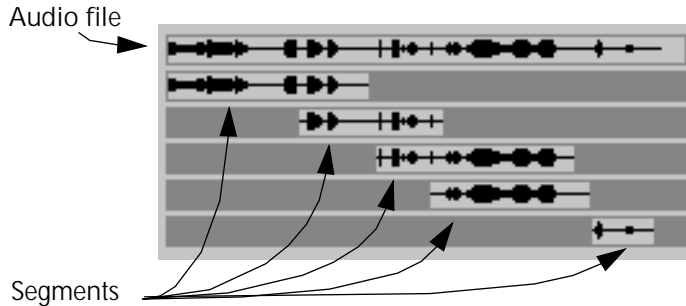
However, reusing material over and over again, normally wastes computer memory and/or hard disk space. With Cubase it doesn't!

If you “cut out” a section of audio, and paste it in, over and over again in the song, you are simply instructing the program to use the same portion of the audio file in many places, without actually copying the file. This is made possible via Cubase's use of *segments*.

Segments

A segment is a specification for a section of an audio file. The segment contains information about where in the audio file to start playing and where to stop. It might be that the segment plays the entire file, or it could also be that it just plays a couple of seconds somewhere in the middle of the file.

You can create as many segments as you like, from the same file, as the example below shows.

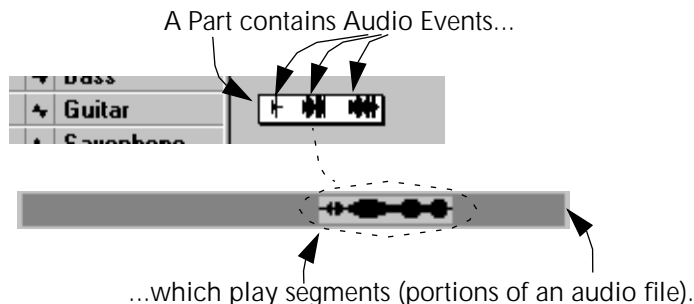


Audio Events

To actually play back a segment in your Song, you need to place an *Audio Event* in the Song. Each Audio Event plays a certain segment.

Audio Events and segments are of course automatically created as you record, but you can also manually create events and segments when you are editing or assembling recorded material.

In many cases, you will not “feel” any difference between handling Audio Events and segments, but there is one. For example, an Audio Event specifies where to start playing some audio, but the segment specifies the duration of playback. Also, you might delete Audio Events and still have access to the segment it played, so that some other Audio Event can play back the same segment in another part of the song. When there is an important difference between these two, this manual will tell you.



The Various Windows

Audio files, segments and Events are handled in various windows in the program which you will learn more about in the following chapters:

The Arrange Window

This is where you will spend most of your time recording and doing major restructuring of your recordings.

The Audio Editor

This is the window you use for detailed editing of the audio material.

The Pool

This is a bit like a “database” of all your audio files and segments. It can be used for “house keeping chores” like importing audio files, exporting, preparing archives and performing some detailed editing to segments.

The Pool also allows you to perform DSP (Digital Signal Processing) on the files, like reverse, time stretch, pitch shift etc.

External Wave Editor

Cubase can “interact” with an external wave editing program of your choice. This program will most likely make permanent changes to the recordings (as opposed to the non-destructive editing in Cubase). Included with Cubase is Wavelab Lite, a special version of Steinberg’s state-of-the-art audio editing software Wavelab. See [the chapter “Using an External Wave Editor”](#) and [the appendix “WaveLab Lite”](#) for more information.

4

Basic Recording and Playback

Introduction

This chapter introduces you to basic one Track, one channel audio recording, monitoring and playback. In the next chapter you will learn about multi-track recording.

-
- Multi-track recording can only be performed with Cubase Audio XT, not with Cubase or Cubase Score!
-

Preparations

Selecting a Sample Rate

Before you can start recording you have to set the sample rate for the Song:

1. **Open the “Hardware Setup” dialog (on the Audio menu).**
 2. **Select a Sample Rate.**
Some cards might only support some of the alternatives. See the card’s documentation for details.
-
- This setting is done once and for all, for the whole Song. You can not make some recordings at one sample rate and others at some other sample rate. See [page 249](#) in the appendix “Optimizing Audio Performance”.
-

3. Close the dialog by clicking OK.

Once the settings are done, they are automatically saved together with the program.

Connecting the Audio

-
- All references to connections, signal levels and monitoring are only valid for Cubase and Cubase Score. If you use Cubase Audio XT, see the relevant Appendix for details.
-

Mono/Stereo

- If you plan to record in mono, connect the source you want to record to the left input on your audio card.
- If you plan to record in stereo, connect the source to both inputs on the card.

Signal levels

There are no recording level settings or meters in Cubase, since these settings are unique to each manufacturer's audio card. There are mainly two possible ways to control the recording level:

- By adjusting the level of the signal you are feeding to the card (on the output of a mixer for example).
- By using software that came with the card.

Before recording, please use the software that came with the audio card to set and check your recording levels. See the documentation that came with the card, for details.

Preparing a Track

Next step is to prepare a Track for recording. Proceed as follows:

1. If you don't already have a Track to record on, create it using the Create Track item on the Structure menu.
2. Name the Track.
See the Basic MIDI Recording chapter in the Getting Started book.
3. If the Track isn't already an Audio Track, pull down the pop-up menu in the Track list's "C" (Track Class) column, and select "Audio Track".



4. Select the Track and open the Inspector.

This is done by clicking on the Inspector icon below the Track list. Check the Track name at the top, to make sure the Inspector shows the setting for the desired Track.



5. Set the Track to the desired channel, using the Inspector's "Chan" setting.

You should probably avoid using a channel already occupied by a Track, as described on [page 3-36](#).

Preparing Files and choosing stereo/mono

You set up a recording file from the Inspector. You also use the Inspector to specify if the recording should be mono or stereo.

Setting up the file

1. **Decide if you want the recording to be mono or stereo by using the Mono/Stereo switch in the Inspector.**
2. **Click on the Filename button.**
3. **In the standard file dialog box that appears, select where you want the file located and type in a name. Click OK.**

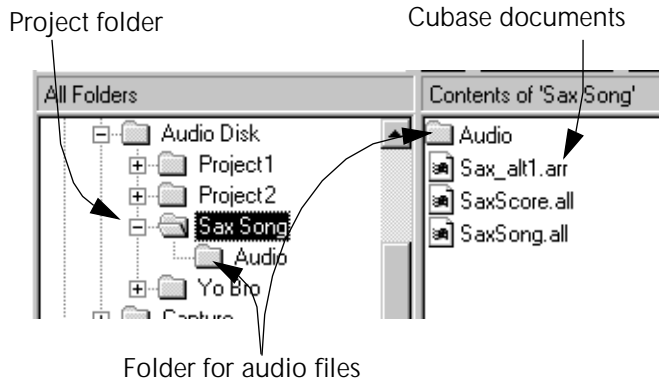
The Filename button turns darker to indicate that this audio channel and file are now ready for recording.



An Audio file set up for recording.

Where is the best place to put my Files?

- If you have the choice, we recommend you to put your audio files on a separate hard disk. You can also store your Cubase documents (like Song and Arrangement files) on this hard disk, together with the audio files, since this simplifies archiving and backing up. We recommend you to reserve your startup hard disk for applications, system files etc.
- We recommend that you make one folder for each project. In this folder you can put your Cubase documents and other documents related to the project. We have also found it convenient to create an “Audio” folder *inside* the Project folder for the actual audio files.



The “Free Space” indication

The Free Space indication in the Inspector shows you the longest recording you can make with the available disk space.

Monitoring

Cubase or Cubase Score in itself does not handle monitoring when used with audio cards, that is it has no controls for how the audio passes through the card (since many cards are different in this respect).

However, with some audio cards, the accessory application(s) that come with the card will allow you to turn on and off Monitoring.

If your card has this ability, we recommend you to activate monitoring, since it will (among other things) facilitate setting recording levels with greater ease.

Using Monitoring to check levels

If monitoring is activated, the audio signal will pass through the card's "analog to digital" and "digital to analog" convertors. You can then simply check the recording levels by listening to the output of the card. To obtain an optimal recording level, raise the level of the input signal until you hear distortion, and then lower the input level a bit.

About Digital Recording and Levels

Digital recording (as in Cubase) is different from analog recording when it comes to recording levels. Whereas with analog recording it is often perfectly acceptable to let the "needle hit the red" (record at levels actually higher than the system can reproduce accurately), this is *not* true when it comes to digital recording.

The term used here is *headroom*. The headroom is the difference in level between the signal you record and the maximum level the system can handle. When the level of the signal increases, the headroom diminishes towards 0 dB (decibels).

When the signal is stronger than the system can handle - when you exceed the available “headroom” - in a digital recording system, *hard clipping* occurs, which results in clearly audible and very unpleasant distortion.

To avoid this, you should always give yourself an extra bit of headroom in your recordings in Cubase.

About Tempo

Cubase does have facilities for matching tempo to “freely” recorded music, “after the fact”. But if you have the possibility to record to a predefined guide track or metronome to start with, this will save you time at a later stage. So, if possible, record at the correct tempo from the beginning.

- 1. Record a simple MIDI guide Track if needed, or set up the Metronome as desired.**
- 2. If your song uses tempo changes, use the Master Track editor to set up these (and activate Master on the Transport Bar).**
If not, deactivate Master on the Transport Bar and simply set the tempo directly on the Transport Bar.

3. If you use the Metronome (rather than a MIDI guide Track), activate Click on the Transport Bar.

Recording From a Specific Point

Now that you're all set, with a Track, a recording file and proper recording levels, it is time to actually record!

1. **Set up the Left Locator to where you want the recording to start.**

If you are making a new recording, it might be a good idea not to start from the very first bar (position 1.1.0). If you instead start at, say, position 5.1.0, there is sufficient room before the start for audio trigger pre-delay, initial MIDI program changes and sysex dumps etc.

2. **Make sure that Punch In, Punch Out and Cycle are all deactivated.**



Punch In, Cycle and Punch Out deactivated on the Transport Bar.

3. **Click the Record button.**
4. **After the count-in, start performing.**

5. When you are done, press Stop.

The program will now calculate an image file so that a waveform can be displayed in the program. Depending on the length of your recording, this may take a few seconds, during which a dialog box shows the progress of the calculation.

Disabling Waveforms

If you don't need waveforms, you can speed up all graphic procedures by unchecking "Use Waveforms" on the Audio menu. If you later need Waveforms, for example for editing, you can create them in the Pool, see [page 6-97](#).

Redoing the Recording

There are three ways you can redo a recording that you are not satisfied with:

Recording again over the existing Part

If you simply record again on the Track, you will get a new Part which overlaps the previous. The Track will play back fine, but you will be wasting hard disk space with unused recordings.

Using Undo

If you press Undo after Recording, the Part you just created will disappear and you can record again. However, the audio file still resides on the hard disk and there is a segment for it in the Pool (see [page 6-81](#) for details). You can always later delete unused segments, so this is nothing to worry about.

Deleting the Part

The final option is to manually delete the Part and then record again on the Track.

- **If you delete the Part as you would with a MIDI Part, it disappears, but the segment and the audio file are not deleted (just as when you use Undo, see above).**

- **If you select the Part, hold down [Control] and press [Backspace], a dialog appears, asking you if you also want to delete the audio file. To do this, click OK.**

This is the method to choose if you are sure you permanently want to delete the recording.

Recording more on the same Track

To record more on the same Track, proceed as follows:

- 1. Move the Left Locator to the next position you want to start recording.**
This can be at a “free” area on the Track, or at some place where something is already recorded, as described below.
 - 2. Activate recording just as you did the first time on the Track.**
A new file is automatically created for you, as described below.
-
- Please note that the same audio channel can play back a mono file on one section of the Track and a stereo file on another. There are no restrictions in Cubase and Cubase Score (if you are using Cubase Audio XT, stereo/mono handling may be restricted, depending on the audio hardware).
-

About overlap

When you record again, where something has already been recorded on the Track, you will get a new Part which overlaps the previous one(s). When you play back, only the Parts that you can *see* are played back. Let's say the Track contains a long Part, and a shorter Part is recorded "on top of" and in the middle of the longer one. When the Track is played back, you will hear the first Part (the longer one) up until the start of the shorter Part. The short Part will then be played until its end and then you will hear the end of the longer Part.



During the "riff" Part, the "guitar" Part is silenced.

About File Names

As described on [page 51 in this chapter](#), you have to specify a file name before you start recording on a Track. This is done by clicking on the Filename box in the Inspector, and using the file dialog that appears.

You can also change the names of files, *after* recording. This should be done from the Pool, as described on [page 6-90](#).

-
- Do not change the names of audio files from "outside" Cubase, for reasons described on [page 6-90](#).
-

Recording the Next Track - Overdubbing

Recording the next Track is done just as with the first. Here follows a brief list of steps:

1. **Create a new audio Track and set it to the correct channel.**
2. **Prepare an audio file as described on [page 51 in this chapter](#).**
3. **Adjust the recording levels.**

If you are using Cubase or Cubase Score, the level is either set at the sound source itself (your connected mixer, instrument, etc) or in the Windows software that is included with your audio card. If you're using Cubase Audio XT, see the appropriate audio hardware supplement.

4. **Set up the Left Locator and activate recording.**

Now, the previously recorded Tracks will play back and you are able to record the new Track as an overdub.

Punch In and Out

Automatic Punch In and Out

Automatic Punch In and Out is performed just as with MIDI Tracks (see the chapter Punch In and Out in the Getting Started book). Here are the basic steps:

1. Set up the Track for recording just as when activating recording from "Stop mode".
2. Activate Punch In and if so desired, Punch Out.
3. Set up the Left Locator (the Punch In point) and if appropriate, the Right Locator (the Punch Out point).
4. Set the Song position to some point before the Left Locator and activate playback.
5. Wait for the Song Position to reach the Left Locator, at which point recording is automatically activated.
6. Either Stop recording when you are finished, or if you have Punch Out activated, wait until the Song Position reaches the Right Locator, and recording is automatically deactivated.

Manual Punch In and Out

Manual punch in/out is not supported with Cubase and Cubase Score. However, it *is* supported with some external audio hardware in Cubase Audio XT. See the relevant supplement for details.

About Prerecord and preserving “attacks”

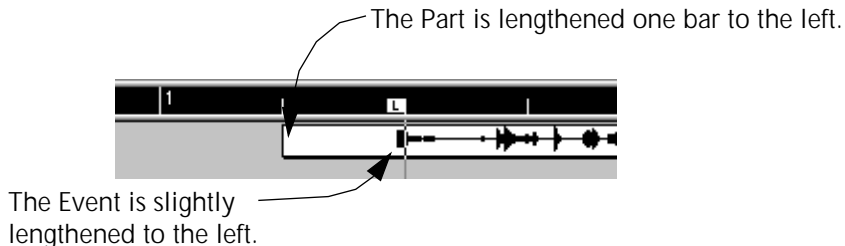
As described earlier, you can activate recording from Play mode, either using Punch In or by using the Preroll function. When you do, the *Prerecord* feature in the Metronome dialog box has a slightly different meaning than it has for MIDI Tracks:

- **If Prerecord is activated, Cubase will start recording slightly *before* the Left Locator.**

This is to ensure that any attack in the sound, perhaps occurring just before the downbeat, is preserved. You will note that the *Event* will begin slightly before the “punch point”.

- **Furthermore, to simplify handling and editing, the recorded *Part* is lengthened one bar to the left.**

See the illustration below.

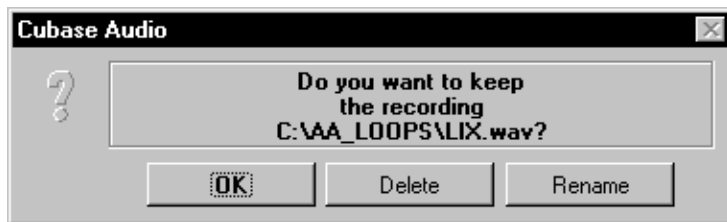


You can check if the Prerecord feature is activated by examining a new Part after punching in – it will be extended one bar to the left of where you started recording.

Using Confirm Record

The “Confirm Record” option on the audio menu allows you to select how the program should behave each time you have finished a recording pass:

- If Confirm Record is *deactivated*, each audio recording is automatically kept, just as with MIDI recordings.
- If Confirm Record is *activated* you are presented with a dialog with the following options:



Option:	Description
OK	The recording is kept and a Part for it is added to the Arrange window.
Rename	As above, but first you are allowed to change the name of the audio file, in a dialog.
Delete	The recording is deleted.

Playback and Transport Controls

Playback of audio Tracks is no different from handling MIDI Tracks (see the Getting Started book). Please note the following two facts:

- It takes slightly longer for audio Tracks to “catch up” when you rewind or fast forward in the middle of playback.
- Cueing does not playback audio Tracks.

Playing Audio in Background

If you activate the Play in background “Audio” checkbox in the Preference dialog, Cubase will continue audio playback even if you switch to another active program or to the desktop.

Changing the Track Channel Settings

You can change the channel settings for a Track at any time, should you wish. This allows you to “re-allocate” the audio channels you have available.

You can set two Tracks to the same channel, but remember that each physical audio channel in your system is monophonic and therefore only one recording can be played back by any channel at a given moment.

If you for example have one Track that only plays during the verses and another that only plays during the chorus, these can be set to the same audio channel without problems.



In the above situation you will hear all the audio.



In this situation, the top Track will be cut off by the “guitar” Part.

Using the “Any” Channel setting

The “Any” channel setting is used for audio Tracks just as for MIDI Tracks, that is to assemble recordings on multiple channels. However, for audio Tracks it does not make sense to *record* on a Track set to channel “Any”.

Here’s an example of how an “Any” Track can be used practically:

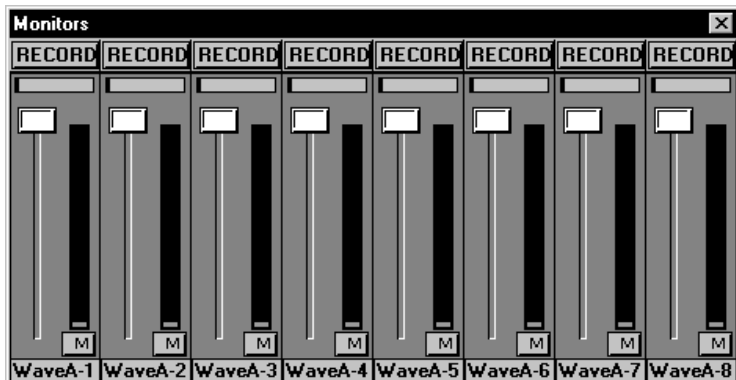
1. Record a number of Tracks, on one channel each, that belong naturally together (for example a brass ensemble).
2. Use the Mixdown feature (see [page 9-196](#) for details) to “merge” the Tracks into one single Track, and set this to “Any”.

Now, the recordings are assembled into *one* Part which has a number of advantages, for example:

- Editing this Part in the Arrange window is the same as editing all recordings in the same way.
- Double clicking this Part opens *all* the recordings in one Audio editor window, which gives you a better overview of the “ensemble”.

More About the Monitor Window

The Monitor Window has been briefly described previously. Below follows a detailed description of all the controls in this window.



Meters

The meters show playback level during playback. If you adjust the playback level, this is reflected in the meter.

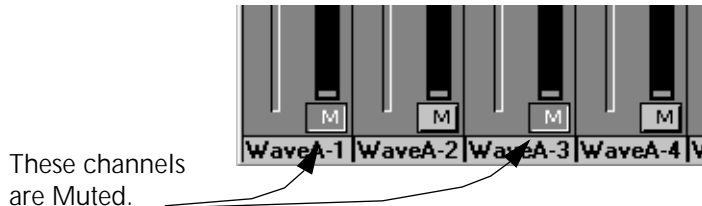
-
- If you are using Cubase Audio XT, the meters may also indicate levels during monitoring and recording, depending on the audio hardware you use.
-

Volume Faders and Pan Controls

These can be used to adjust the *playback* volume for each channel and to adjust its position in the stereo image. Use these faders to set up a static level balance for mixdown.

- **If you hold down [Alt] while moving a fader, all faders in the window will move accordingly.**
Use this feature to globally raise or lower the audio level, for example to create master fade ins and fade outs.

Mute Buttons



These channels
are Muted.

To temporarily silence an audio channel, click on its Mute button.

5

Multi and Cycled Recording

Introduction

This chapter describes some more advanced recording techniques:

- Cycled Recording of Audio.
- Recording Audio and MIDI at the same time.

And, for Cubase Audio XT users only:

- Recording on more than one Track at a time (Multi Track Recording).

This chapter assumes you are familiar with basic one-track recording as described in the previous chapter.

Cycled Recording

Cycled Recording of Audio is different from Cycled Recording of MIDI:

- **Your existing Tracks Cycle as usual. But for the Track you record on, only one long Audio file and a Part for it is created, like if Cycle had been turned off for that Track only. However, it is an easy task to use the Arrangement or Audio Editor Scissors tools to split the recording up into a number of Segments (one for each lap). You can then use this feature for example to assemble a “perfect” take from the different snippets, see below.**
- **None of the Cycle modes and Functions used when recording MIDI have any relevance to audio recording.**

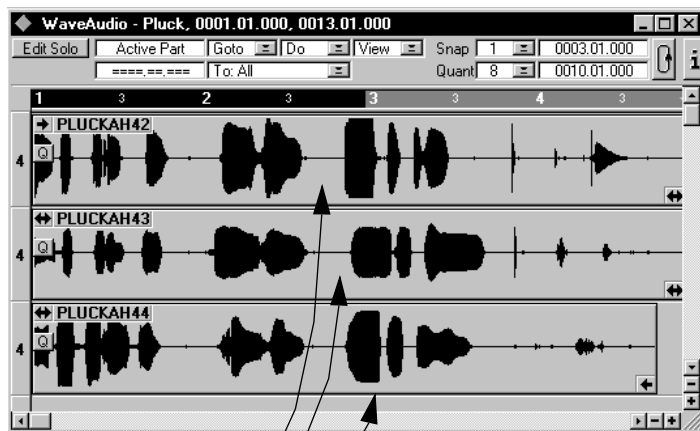
Using Cycled Recording for assembling a “perfect” take.

Let's say you have a chorus and you want to record a few different takes of vocals for it, to later assemble snippets from each take into one “perfect” recording. The description below assumes you are reasonably familiar with the Audio Editor. If you are not yet, save this description for later.

Proceed as follows:

1. **Set up the Left and Right Locator to encompass the section you want to record.**
2. **Activate Cycle on the Transport Bar.**
3. **Activate Recording from “Stop Mode”.**
4. **Record for as many laps as you desire.**
5. **Stop recording.**
6. **Open the Track in the Audio Editor.**
7. **Use the scissors to cut up the long event you have, into shorter snippets, each with a length of the Cycle.**

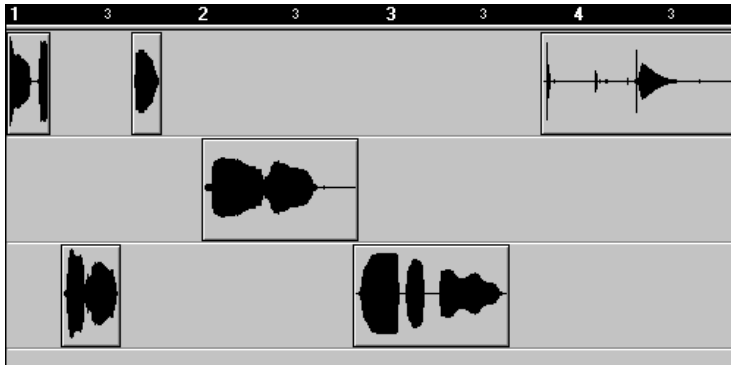
8. Drag-move the events onto one lane each, and position them so that they all start at the beginning of the Cycle.



3 takes (cycle laps).

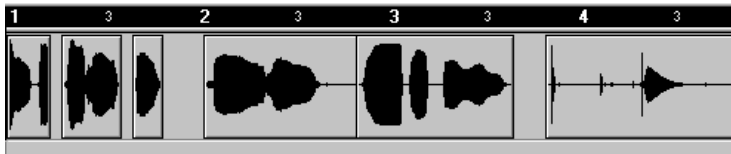
You will now have all the takes stacked above each other. Since the Track plays back on one channel only you will only hear one of them at a time. But, you can consecutively mute each one to find which pieces you want to keep from each.

9. Use the Masking, Splitting, Muting and Delete functions to assemble one single take out of all the ones you originally had.
See the Audio editor chapter for details.



The same recording, after having split the Audio Events at appropriate places and deleted the unused sections.

- To view the reassembled recording as it is played back, pull down the View pop-up menu and select By Output.
This will show all Events on the same lane.



Multi Track Recording

-
- This section is only of any relevance to Cubase Audio XT users, that is users of external audio hardware, not regular audio cards!
-

Some of the external audio hardware the Cubase Audio XT supports allows you to record on multiple Tracks, at the same time. In some cases, this is the only way to perform a stereo recording (that is if the system itself is conceptually a mono system – please refer to the supplement describing the specific hardware for details). Proceed as follows:

- 1. Activate Multi Recording from the Options menu.**

A new “R” column appears in the Track List. For details on Multi Record mode, see the Multi Track Recording chapter in the main Cubase manual.

- 2. If you are only recording Audio, select Multi Record Merge mode.**
- 3. Create as many Audio Tracks as desired and set them all to different channels.**
- 4. Click in the “R” column for each Track, to set them up for recording.**
- 5. Prepare audio files for each Track, using the File Name boxes in the Inspector.**

6. Activate recording in any way you like, as described in the previous chapter.

The audio channels will now be recorded on one Track each.

Options related to Multi Track Recording

Using the Mixdown feature on the Structure menu you can merge a Multi Track recording into one Track set to channel “Any”. This can also be a handy way to assemble several separate recordings (e.g. the different voices in a backing vocal arrangement) into one easily handled unit in the Arrange window. See [page 9-196](#) for more information.

Recording MIDI and Audio at the Same Time

When Multi Record is activated you can record on MIDI and Audio Tracks at the same time.

Multi Recording of MIDI Tracks is described in the main Cubase manual, and Multi Track Audio recording is described above. There’s only one special thing to note:

- **You can only activate Multi Recording on up to three MIDI Tracks simultaneously.**

6

The Audio Pool

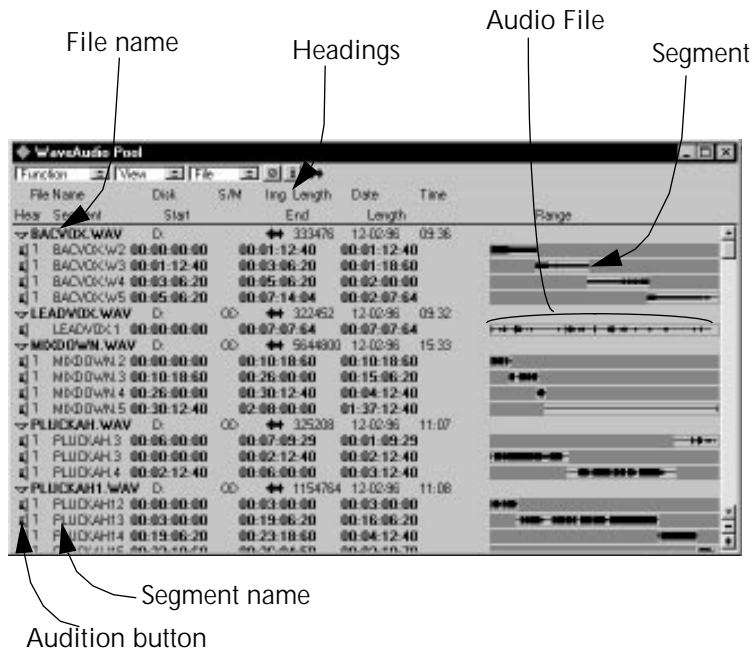
Introduction

Just as you use the File Manager/Explorer to manage your files and folders, you use the Pool to manage your audio segments and files.

Opening the Pool Window

The Pool is opened by selecting “Pool...” from the Audio menu or by pressing [Control]-[F].

Overview of the Window



The Pool lists all the audio files in the Song. Please note that this means it shows the files for all Arrange windows that belong to the Song.

Files

Each file is represented by a line in bold text, preceded by a triangle. For each file there are a number of settings and information, plus a waveform image on the right side.

The files in the Pool each represent an audio file on one of your hard disks that is (or have been) used in the Song.

Files are never used directly in the Song. Instead it is the *segments* that are played back from the Tracks.

Segments

For each file you have one or more segments. Segments are specifications for a section of a file. An introduction to the concept of segments can be found on [page 3-41](#).

Segments are mainly created when you record audio and when you edit in the Audio editor.

Displaying Segments

For one File

To display/hide the segments belonging to one file, click on the triangle preceding the file.

For all Files

- To Show all segments for all files, select **Expand** from the pop-up **View** menu.
- To Hide all segments for all files, select **Collapse** from the same menu.
- To toggle between showing and hiding all segments for all files, hold down **[Alt]** and click on one of the triangles preceding the files.

The Headings and Columns

For each file/segment you have a number of information and setting fields. The names for these are displayed in two rows of headings at the top of the window.

File Name	Disk	S/M	Img	Length	Date	Time	
Hear	Segment	Start		End	Length		Range
▼ BACVOX.WAV	D:	00	↔	333476	12-02-96	09:36	

The file headings and their corresponding fields in the Pool window.

Hear	Segment	Start	End	Length	Range
▼ BACVOX.WAV	D:	00	↔	333476	12-02-96 09:36
1 BACVOX.W2	00:00:00:00	00:01:12:40	00:01:12:40		

The segment headings and their corresponding fields.

Below follows a brief description of each entry in the headers. Many of these are used in various operations described later in this chapter.

File Heading	Explanation
File Name	The name of the file, on disk.
Disk	The Disk the file resides on. If the file can't be found, three question marks are shown instead (see page 94 in this chapter). Clicking on the letter in this column lets you replace an audio file, as described on page 93 in this chapter .
S/M	If the audio file is stereo, two intersecting circles are shown under this heading.
Img	This shows you the status of the waveform image for the file, see below.
Length	This shows the size of the file in kilobytes.
Date and Time	This shows the date and time the file was created.

Segment Heading	Explanation
Hear	To play the segment, click in this column (on the speaker symbol) and hold down the mouse button.
Segment (name)	The name of the segment.
Start	The segment's Start Inset in the file. Displayed in samples or as time code, depending on the selected format (as described on page 87 in this chapter). This can be changed, see below.
End	The segment's End Inset in the file. Can be changed.
Length	The length of the segment. Can not be changed.
SRate	The Sample Rate of the file (only shown if you're using Cubase Audio XT). Can be changed with some external audio hardware.
Range	An overview of the segment in the file.

Customizing the View

Hiding Headings

If you don't need the Headings at the top of the window you can hide them using the "Hide/Show Headings" item on the pop-up View menu.

Turning on and off Information

If you don't need all the information fields for the files and segments, you can deactivate these by clicking the "i" icon at the top of the window.

Turning on and off Waveforms

If you don't need to see the waveforms for the segments, you can hide them by clicking on the waveform icon at the top of the window.

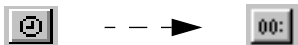
Zooming and setting Sizes of the Waveforms

If you change the width of the window, the waveforms are scaled accordingly. That is, the bigger you make the window the more detailed view of the waveform you will have.

By clicking the Plus/Minus buttons you can set the vertical size of each line, to get a better overview of the waveforms.

Selecting Time Formats

You can set whether the Start, End and Length values should be displayed in samples or as time code values, by clicking the Time Format button at the top of the window.



Sample format Time code format

The Time format button indicates which format is currently selected.

- **If you select samples, the values are shown as numbers of samples.**
How many samples there are to a second, depends on the sample rate (48000 samples per second at 48kHz for example).
- **If you select time code format, the values are shown in the format “minutes:seconds:frames:subframes”.**
How many frames there are to a second depends on the Time code Frame rate setting in the Synchronization dialog (typically 30 or 25).

Setting File and Segment Order

File Order

On the View menu, you can determine in which order the files should be displayed:

Option	Description
By Name	Files are shown alphabetically.
By Date	Files are shown chronologically according to the time they were created, with the newest file on top.
By Size	Files are shown in size order, with the largest one on top.

Segment Order

By selecting “Order Segments” from the pop-up View menu, you re-arrange the segments so that they are shown in the order they appear in the file.

Finding Out how a Segment is used in the Song

One segment can be used in more than one place in a Song. There are a number of situations where you will want to find out where a segment is used, for example:

- So that you can tell that a segment isn't used anywhere and possibly delete it.
- If you want to know if a segment is used in more than one place, so that you can decide how editing the segment affects the Song.

Next to the speaker icon for each segment, you will see a number telling how many times in the Song this segment is used. A segment without numbers is not used anywhere.

File Operations

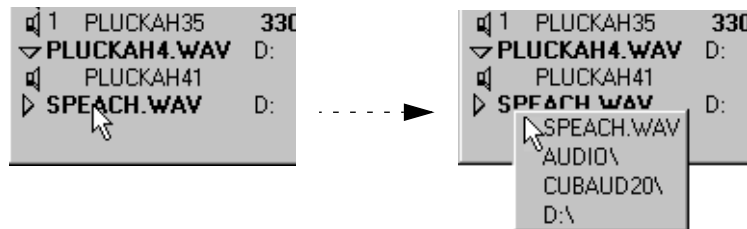
Renaming a File

To rename a file, proceed as follows:

1. **Double click on the existing name, or select the file and press [Alt]-[Ctrl]-[N].**
 2. **Enter a new name or edit the existing one.**
 3. **Click outside the box or press [Return].**
-
- Renaming a file this way is much preferred to renaming it in the File Manager or Explorer. This way, Cubase “knows” about the change and will not lose track of the file the next time you open the Song. See [page 6-94](#) for details about lost files.
-

Locating a File on the Hard Disk

To find out where on the hard disk a certain file is located, hold down [Control] and [Alt] and click on the file. A pop-up showing you the file location appears.



Deleting Files

Removing from Pool

If you want to remove one or more files from the Pool without actually deleting them from the hard disk, proceed as follows:

1. **Select the file(s).**

Selecting more than one is done just as with any other object in Cubase, by clicking in combination with the [Shift] key.

2. **Select “Delete” from the Edit menu or press [Backspace].**

- **If you try to delete a file that is used by one or more Parts, the program will ask you if you also want to delete those Parts.**
Cancelling this operation means that neither the file nor the Parts are deleted.

Removing from the Pool and deleting from Hard Disk

If you want to remove the file from the Pool and also delete the file permanently from the hard disk, proceed as follows:

- 1. Select the files.**
- 2. Hold down [Control] and press [Backspace].**
A dialog box asks you if you are sure you want to follow through. Remember that this operation can not be undone!

Creating a Segment

You can create a “default” segment for the file, that is one that plays the entire file.

- 1. Select the file.**
- 2. Select Duplicate Segment from the Do pop-up menu or press [Alt]-[D].**
The new segment can be edited to play any part of the file (see [page 6-100](#)).

Replacing a File in the Pool

There are situations when you may want to replace an audio file in the Pool with another, but keep all segments that are in use. As an example, consider the following situation:

You have used an external Wave Editor (see [the chapter “Using an External Wave Editor”](#)) to perform some dynamic or spectral editing on an audio file. To be on the safe side, you save the edited audio file under another name than the original. When you return to Cubase, you will want to be able to replace the original file, so that all segments reference to the new, edited audio file instead, and preferably be able to switch back if you change your mind. Proceed as follows:

- 1. Click on the letter in the Disk column for the file.**

A dialog appears, asking if you want to “Re-find” the file. Click “Yes”.

- 2. In the file dialog that appears, select the audio file that should replace the existing file in the Pool.**

In our example above, this would be the edited version of the audio file.

- 3. Another dialog will ask you if you are sure. Click “Sure”.**

The audio file in the Pool is now replaced with the one you selected in the file dialog. The segments keep their names and, if possible, their start and end in-set positions. If you later want to switch back to the original file, just repeat the operation.

-
- Please note that the replacing audio file must be of the same length as the original file, for the segment start and end insets to be relevant! If you perform any editing that involves changing the length of the file (such as time stretch, truncating, etc), this method does not work, since you will have to create new segments.
-

Handling “Missing Files”

When you open a Song, you may get a warning that one or more files are “missing”. If you click Ignore, the Song will open anyway, without the missing files. In the Pool you can check which files are considered missing. This is indicated by three question marks in the Disk column.

File is missing

▶ SPEACH.WAV	???	1?	358280	12-02-96	09:3
▶ BACVOX.WAV	D:	+	333476	12-02-96	09:3

File is found

A file is considered missing under one of the following conditions:

- The file has been moved to another folder or renamed in the File Manager/Explorer since the last time you changed the Song *and* you ignored the Missing files dialog when you opened the Song.
- You have used the File Manager/Explorer to move, rename or change properties such as date for the file since you started the program this time.

Locating a missing file

1. Click on the question marks.
2. In the dialog that appears, decide if you want the program to try to find the file for you (Auto) or if you want to do it yourself (Manual).

Auto

If you choose Auto, the program scans all your hard disks for a file with the proper name and creation date.

If Auto doesn't work

Please note that Cubase is quite strict about identifying the files you use. Cubase retains information on the Name, Size and Creation Date of every file saved in a Song. If these values are changed by you, or a program you may be using, you will not be able to rely on Cubase's "auto-find" function. In this case you will have to use the "Manual" option and "over-ride" the subsequent warnings.

Manual

If you choose Manual, the program will display a file dialog allowing you to locate the file manually.




When you have found the file, click OK to replace the missing file in the Pool. If the name or date is not identical to the missing one, the program will warn you but let you proceed. The next time during this session that the program attempts to search for a missing file, it will first look at the position of the last found file.

Creating Wave Images and Keeping them up to date

With each audio file goes an image, a picture of the waveform for display in various places in Cubase. The wave images are very useful, especially in the Audio editor when you are editing your files. A wave image is stored in a separate file with the same name as the audio file, but with the extension “WIF”.

Wave images are created after you have completed recording, in a process that may take a few seconds. If you don’t want to wait for this to happen when you stop recording, this function can be turned off. See “Use Waveforms” on [page 14-224](#).

In addition, a wave image can get “out of sync” with the file it belongs too. The three states of the wave image are indicated like this:

Icon:	Description:
	The image is OK.
	The image might need updating (“out of sync”).
	The file has no image.

Updating the Wave Image

To update the wave image for one file, click on its icon or select “Make Image” from the Do pop-up menu.

Segment Operations

The Pool allows you to create new segments, slightly or drastically different from those you already have in your Song, and drag and drop these in the Audio editor, the Wave editor or the Arrange window.

Auditioning a Segment

From the Beginning

To audition a segment from its beginning, press and hold the mouse button with the pointer over the speaker icon to the left of the segment name.

From any Position

To start playback from any position in the segment, click with the mouse pointer in the waveform to the right. Playback will start from the position you click on.

Renaming a Segment

To rename a segment, proceed as follows:

1. Double click on the existing name or select the segment and press [Alt]-[Ctrl]-[N].

2. Enter a new name or edit the existing one.
3. Click outside the box or press [Return].

Duplicating Segments

To create a copy of a segment, proceed as follows:

1. Select the segment by clicking on it.
2. Select **Duplicate Segment** from **Do** pop-up menu or press [Alt]-[D].
The new segment appears in the Pool.

Deleting segments

Deleting one or several segments from the Pool

1. Select the segment(s).
Selecting more than one segment is done just as with any other object in Cu-base, by clicking in combination with the [Shift] key.
2. Select **Delete** from the **Edit** menu or press [Delete] or [Backspace].

- **If you try to delete a segment that is used by one or more Parts, the program will ask you if you also want to delete those Parts.**
Cancelling this operation means that neither the segments nor the Parts are deleted.

You can tell how many times a segment is used in a Song by checking the number next to the speaker icon.

Deleting all Segments not used in the Song (Purge)

To automatically delete all segments that are currently not used in the Song, select Purge Segments from the Do pop-up menu.

Changing Start and End Insets

You can change the Start and End points of the segment. This allows you to change what part of the audio file the segment plays (this can also be done in the Audio editor, see [page 7-149](#)).

-
- Please note that this change will affect all places in the song where this segment is used.
-

You can adjust the Start and End Inset values by regular value editing. See [page 6-87](#) for a description of the different time formats.

Deleting Unused Portions of Audio Files (Erase Unused)

“Erase Unused” allows you to “trim” down your Audio files so that they only contain the sections actually referenced by that file’s segment. This helps you maintain as much free space on the hard disk(s) as possible.

The idea behind this is that hard disk space is most often precious, and recorded silence (for example) takes up as much hard disk space as recorded “noise”. When you adjust Start and End Points in segments to “hide” the sections of audio you don’t want to hear, you are still using up valuable disk space for those unheard bits. To “fix” this, use Erase Unused.

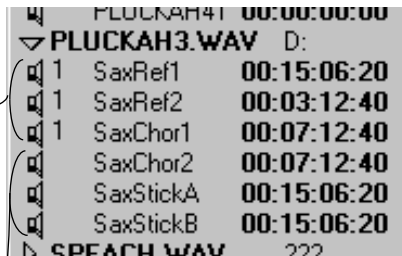
Which Parts of the Files are considered Unused?

Unused portions of a file are the sections not played back by any segment in the *Pool*.

This means that even if the segment isn't used anywhere in the Song (which you can tell by looking at the speaker icon beside the segment – unused segments have no number) the section of the file that the segment plays *is* considered to be in use. To avoid keeping a lot of unnecessary audio sections, the program therefore automatically performs a “Purge Segments” (see [page 100 in this chapter](#)) before the actual “Erase Unused” operation.

These segments are each used in one place in the Song.

These segments are not used in the Song but will automatically be purged (deleted).



PLUCKAH41	00:00:00:00
▼ PLUCKAH3.WAV	D:
1 SaxRef1	00:15:06:20
1 SaxRef2	00:03:12:40
1 SaxChor1	00:07:12:40
SaxChor2	00:07:12:40
SaxStickA	00:15:06:20
SaxStickB	00:15:06:20
▶ SPEECH.WAV	???

Applying Erase Unused

- Erase Unused changes the contents of one selected audio file. If you use the file in another Song, or if you want to be able to go back to the original recording, make sure you have a copy of the file before you begin!

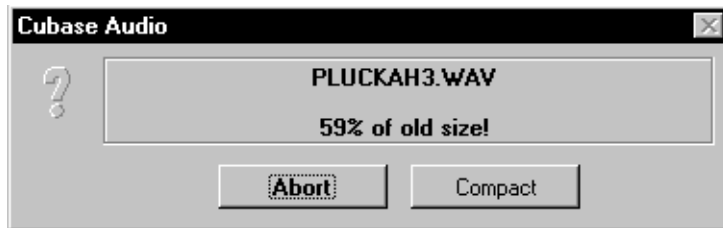
1. Select either the file or one of it's segments.

This command works on *one sound file at a time*. For this function to work, two criteria have to be fulfilled:

- The audio file must be used by at least one Event somewhere in the Song.
- There must be some section of the audio file that isn't used by any Segment (otherwise there's nothing to erase, right?).

2. Select the “Erase Unused” command from the pop-up menu.

A dialog box will display how much of the original audio file will be kept, and ask you if you want to go on.



3. Click Compact.

First the unused Segments are deleted. Then the unused sections of the file are deleted and the remaining parts “joined together” with only a short section of silence in between. The segments are adjusted accordingly.

Erasing all Unused Audio in a Song

To permanently erase all unused Audio in a Song, simply select all files in the Pool and select Erase Unused.

Processing Files and Segments

The Pool contains seven audio processing functions: Normalize, Reverse, Varispeed, Time Correction, Pitch Shift, Create Stereo and Create Mono.

How Processing is applied

Creating a New File

1. Select the File or Segment to be processed.
2. Select the desired processing option from the Do pop-up menu.
3. If the processing option you have selected requires you to fill out a dialog, do so and click OK.

A new processed file and a Segment for it appears in the Pool.

Replacing an Existing File

If the original file was already used somewhere in the Song, you might want to replace the original file with a new processed one.

-
- Beware, you can not Undo this operation! All Segments playing this section of the file will be affected by the processing!
-

1. Select the *file* to be processed.

This does not work if a Segment is selected.

2. Hold down [Alt] and select the desired processing option.

3. If the processing option you have selected puts up a dialog, fill it out and click OK.

The file is now replaced with the processed one.

Normalize

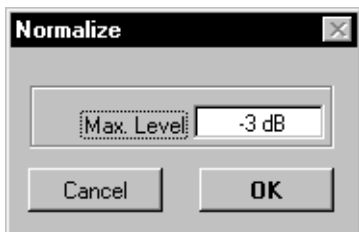
This lets you increase the level of a recording that was made at too low a level:

1. Select Normalize from the Pool's Do pop-up menu.

The program scans the file to find the maximum amplitude.

2. A dialog appears, allowing you to set the resulting level.

The program will compare the current maximum amplitude with the level you have set, and raise the level of the entire recording until the maximum amplitude matches your set level. The highest level you can set is 0 dB.



In this example, the loudest signal in the resulting file will have a level 3 dB below maximum.

3. Click OK.

-
- Please note that the level of any background noise is raised just as much as the rest of the signal. If you have the option to re-record the file with correct level settings, this is in many cases a better option than using Normalize.
-

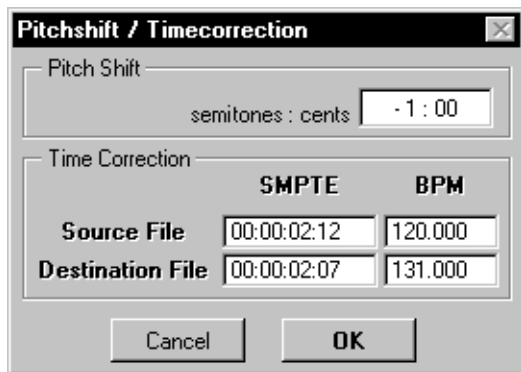
Reverse

This turns a recording backwards, just as when you turn a tape on a reel-to-reel recorder backwards.

Pitch Shift/Time Correction

This menu item opens a dialog that lets you change the pitch of a recording without affecting the length, or change the length without affecting the pitch. You can even do both at the same time!

1. Select Pitchshift/Timecorrection from the Pool's Do pop-up menu.



The Pitch Shift/Time Correction dialog.

2. If you want Pitch Shift, specify the amount by adjusting the semi tones: cents (hundreds of a semitone) values.
The maximum change is +/- one octave (12 semitones).
3. If you don't want Pitch Shift, make sure this value is set to "+0:00".

4. If you want Time Correction, you can either specify a new audio file length (in SMPTE format; hours:minutes:seconds:frames) or define a new tempo:
- The program displays the current file length in the *Source File* SMPTE field, as a guideline. If you know what you want the *new* length of the file to be, enter this value in the *Destination File* SMPTE Field.
 - If you know the *current* tempo of the music in the file and want the program to adapt the file to a *new* tempo, enter these two values in the Source File BPM and Destination File BPM fields, respectively.
To get *exactly* the new tempo you desire, you must know the exact tempo of the original file.
5. Click OK.

About Audio Quality

In order to get the best possible audio quality when you pitch shift or time correct an audio file, please follow these rules:

- The smaller the change, the better the resulting sound quality.
- The amount of change that can be applied varies drastically with the complexity of the audio material.
For example, pitch shifting a complete stereo mix one octave up or making it twice as long will most certainly make it sound unnatural.
- If you have the possibility to process individual files rather than a bounce ("audio mixdown", see [page 11-212](#)) of a number of files, this is preferable.

Varispeed

This allows you to change the pitch of a file, in a way that affects its length, just as when you adjust the playback speed on a tape recorder.

1. **Select Varispeed from the Pool's Do pop-up menu.**

A dialog, similar to the Pitch Shift/Time Correction dialog, opens up.

2. **Specify the pitch change factor in one of three ways:**

- By setting a Transposition value, as with Pitch Shift (see above).
- By setting a new length for the file as a time code value in the *Destination File* SMPTE field. The program displays the current length in the *Source File* SMPTE field, as a guideline.
- By specifying the current and desired tempo of the music in the file. See Time Correction, above.

3. **Click OK.**

Create Stereo

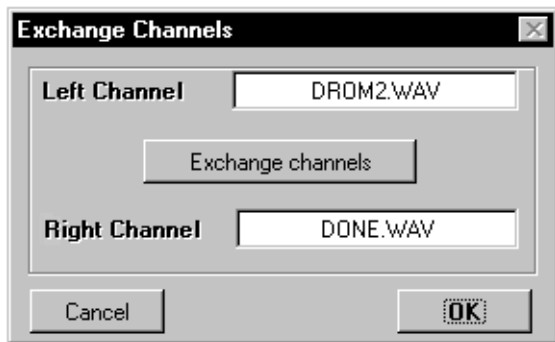
This function allows you to create a stereo audio file out of two mono files or segments. Some versions of Cubase do not incorporate stereo files as such, but uses two grouped mono audio files for stereo recording and playback. If you work with audio material created with such a version of Cubase, the Create Stereo version lets you convert the two mono files into one stereo file, thereby saving audio channels:

1. Select two segments or audio files.

To select more than one object in the Pool, hold down [Shift] as usual.

2. Pull down the Do pop-up menu and select “Create Stereo”.

A dialog opens:



3. If needed, use the “Exchange channels” button to switch sides in the stereo file for the two mono recordings. Click OK.

4. In the file dialog that appears, select a name and location for the stereo file to be created, and click OK.

The stereo file is created.

Create Mono

This function lets you “divide” a stereo audio file or segment into two mono files, one for each side in the stereo recording. If you want to transfer audio material created with this version of Cubase to another program version, that does not support regular stereo files, you can use the Create Mono feature to get mono files that can be handled by the other program version:

- 1. Select a stereo segment or file.**
- 2. Pull down the Do pop-up menu and select “Create Mono”.**
The program checks that the selected segment or file really is a stereo recording. If not, an alert message is shown.
- 3. In the file dialog that appears, enter name and location for the left channel destination audio file. Click OK.**
- 4. Enter name and location for the right channel destination file in the same way, and click OK.**
Two mono audio files (one for each side in the original stereo recording) are created.

Opening Audio Files in an External Wave Editor

If you want to process an audio file further, you can use an external Wave Editor program, and the item “Edit Audio File” on the Do pop-up menu. See [the chapter “Using an External Wave Editor”](#) for more information.

Importing Audio Files into the Pool

From the Pool you can import files created by other programs, or files you have created in another Cubase Song.

File Formats

Files in the following formats can be imported:

- Wave (WAV) or Audio IFF (AIFF).
 - Mono or Stereo.
 - The Sample Rate currently used in your Song.
-
- If you import files with another sample rate than the one used in the Song, they may most probably play back at the wrong speed and pitch, depending on your audio hardware - see [page 249](#) in this book.
-

Proceed like this:

1. **Pull down the File pop-up menu and select Import Audio File.**

A file dialog appears.

2. **Use the pop-up in the lower left corner of the file dialog to select file format.**

You can choose between Wave files (extension .WAV) and AIFF files (extension .AIF).

3. **Find the file you want to import, using the standard file and folder lists, and click Open.**

The file is imported into the Pool.

Exporting Files and Segments

You can export segments or audio files from the Pool, for use in other applications:

- 1. Select the segment or file you wish to export.**
- 2. Select “Export Audio File” from the File pop-up menu.**
A file dialog appears.
- 3. Use the pop-up in the lower left corner of the file dialog to select format for the file to be created.**
You can choose between Wave files (extension .WAV) and AIFF files (extension .AIF).
- 4. Use the file dialog to find a location and name for the file.**
- 5. Click Save.**

Dragging Segments into Other Windows

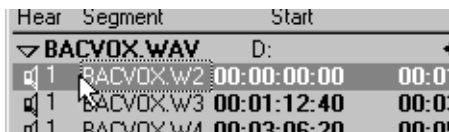
Introduction

To move segments into other windows, Cubase uses drag and drop techniques. You can do the following:

- Drag a segment into the Arrange window for use on any audio Track.
- Drag a segment into the Audio editor for detailed positioning on a Track.

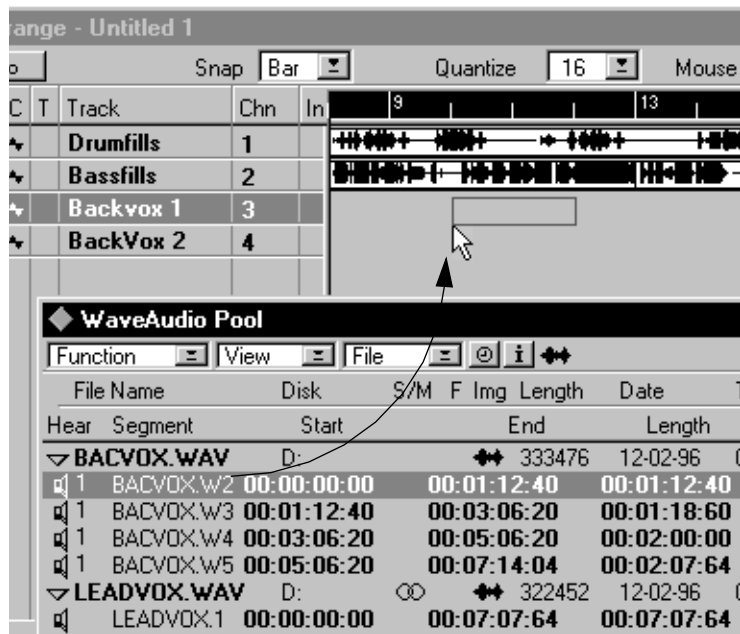
General Procedure

1. Arrange the windows so that as much as possible of the window you want to drag the segment into (Arrangement or Audio editor) is visible, when you have the Pool window active.
2. Position the mouse button over the name of the segment and press the mouse button.

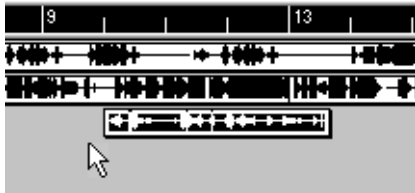


A dotted rectangle appears around the name of the segment.

3. Drag the segment out of the Pool window and release it somewhere on top of the other window.



In this example the segment is dragged to the Arrange window. A new Part is then created, containing an Event which plays the segment you dragged.



Dragging into the Arrange Window

When you drag into the Arrange window, you must release the segment on an Audio Track. When you do this, you get the following:

- A new Part, beginning at the position you pointed at when you released the mouse button. The Snap value applies as with all editing in the Arrange window.
 - Inside this Part is one Audio Event which plays the segment.
- For more information on Audio Events and their relation to segments, see [page 3-40](#).

Dragging into the Audio editor

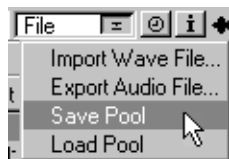
When you drag into the Audio editor there are a few things you should be aware of:

- The mouse position in the Audio editor shows you where you are about to “drop” the segment. The Snap value applies as always.
- If the Track is set to channel “Any”, or if you are editing several Parts, it matters very much which “lane” you put the segment on, since each lane uses its own audio channel, as described on [page 7-126](#).
- When you “drop” the segment in the Audio editor, an Audio Event that plays the segment is created and appears in the window.

For more information on lanes, audio events and other Audio editor concepts, see [page 7-124](#).

Saving and Loading the Pool

The Pool is automatically saved with the Song. However, by using the Load and Save Pool commands on the pop-up File menu, you can freely save Pools and load them into Songs.



Saving

1. Select Save Pool from the File Pop-up menu.
 2. In the dialog box that appears, specify if you want to save all files and segments, or just the selected ones.
 3. In the standard dialog box that appears, specify a name and a location for the file.
-
- The audio files themselves are not saved in the Pool file, only a reference to them. You should probably not move any audio file(s) until next time you want to use the Pool. You should definitely not delete them!
-

Loading

A Pool file is opened (loaded) just like any other file. When you load a Pool file, the files in it are *added* to the current Pool.

7

The Audio Editor

Introduction

The Audio editor is your main environment for editing, trimming and assembling audio recordings into finished Tracks.

Many of the techniques described below are common to the Arrange window and the MIDI editors (mainly Key Edit). Examples of such operations are moving, duplicating, using Tools etc. Therefore this chapter assumes that you are reasonably familiar with such basic operations and does not always describe all the details involved.

Opening the Audio editor

The Audio editor is opened just like any other MIDI editor. You can edit Parts from several Tracks at the same time, if desired.

You can only have one Audio editor window open at a time.

About Events, Lanes and Segments

-
- Please take the time to read this section and familiarize yourself with the terminology and concepts of the Audio editor. This will help you work as quickly and effectively as possible. Bear with us, we'll try to be as brief as possible in this theoretical section:
-

Audio Events and Segments

Audio Events appear as boxes, with waveforms in them. You can have a virtually unlimited number of Events in the Audio editor at one time; they do not consume more memory than MIDI Events.

Audio Events can be arranged in any way, with gaps between them, overlapping each other, etc.

An Event plays a Segment (for an introduction to Segments, see [page 3-41](#)). The Audio Event specifies where the Segment should start. The Segment in turn specifies what part of the audio file should be played, and therefore effectively governs the length of the Audio Event.

- **If you want two Events to play the same segment, you can use ghost copies.**

A ghost copied Event will play the same segment as the original Event. See [the chapter "Making the Most of the Event/Segment Relationship"](#).

Lanes

When you first open the Audio editor you will note that it is divided horizontally into something we call *Lanes*.

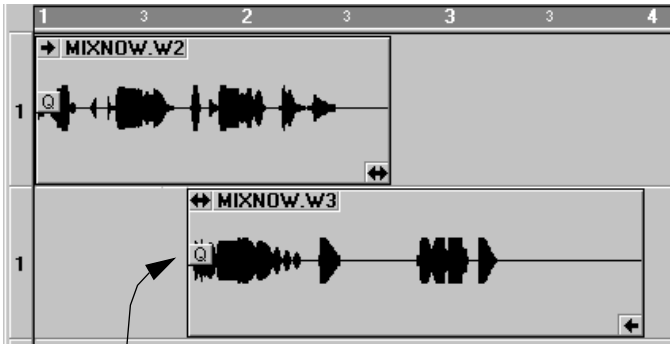
Lanes bear some resemblance to Tracks in the Arrange window. On each Lane you can have as many Audio Events as you like. You might think of your Audio Events as “hangers” for the recordings you have made. In this analogy, the Lanes would be the “rails” on which the hangers are positioned.

When Editing A Single Channel Track

If the Track is set to play back on one specific audio channel, in the Arrange window (as opposed to being set to channel “Any”), the Lanes all have equal value.

You can move the Events between the Lanes as you like, and add new Events on any Lane. Playback is not affected by which lane an Event is on. The only reason for you to use more than one Lane when editing a single channel Track is if you find that it gives you a better overview of what is going on.

Remember that in a single channel Track, all Events “compete” about one single (monophonic) audio channel. That is, if they overlap timewise, they will cut each other off during playback, even if they are on different Lanes.



When the lower Event starts, the sound of the upper Event will be cut off.

When Editing a Multi Channel Track

If you are editing a Track set to channel “Any”, each Lane will represent one of the available audio channels. Which audio channel each Lane “uses” is indicated by a number on the left side of the window.

Events on this lane play back on channel 1.

Events on this lane play back on channel 2.



If you set your view so that you see many Lanes (see Customizing the view, below), you will note that the channel numbers start repeating as you move down the window. For example, in a four channel system, the first four Lanes are numbered 1 to 4, then next four Lanes are again numbered 1 to 4 and so on.

As with a single channel Track, all Lanes that use the same channel have “equal value”. It does not matter which of them you put your Audio Events on.

By moving an Event between Lanes with different channel numbers, you change which audio channel the Event is played back on.

When Editing Several Tracks

If you open several Parts on different Tracks at the same time in the Audio editor you will also get Lanes with multiple audio channels. How many different channels and exactly which ones, depends on what audio channels the Tracks are set to.



Editing Parts on three Tracks with different audio channels.

As you will learn later on in this chapter, the Audio editor Lanes can be used as a means of moving Events between audio channels and even between Tracks!

Which Audio Events will I Hear?

If any two Events in your Arrangement try to play back on the same audio channel at the same time, only one of them will be heard. This is shown in the pictures below:



The "1st Part" Event is cut off by the "2nd Part" Event.



The "MainBeat" Event is cut off by the "Fill-in" Event. After the end of this shorter Event, the "MainBeat" Event will be heard again.

Finding Out How Events compete about Audio Channels

In case there is one recording that doesn't play back as intended, you may want to check whether several Events "compete" about an audio channel. Proceed as follows:

1. Select all the Parts you think might compete about audio channels.

This may very well mean selecting Parts on several Tracks.

2. Open the Audio editor, displaying the selected Parts.

3. Select “By Output” from the View pop-up menu in the Audio editor.

Now, all Events that play back on the same audio channel are put on the same Lane, regardless if they are on different Tracks or on the same Track.

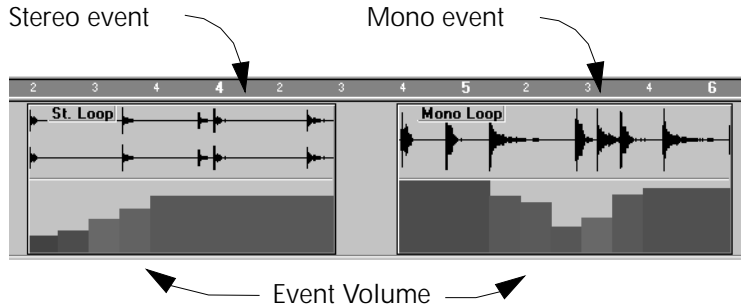
4. Check for overlapping Events along the Lanes.

If there are any, some audio will be cut off at those points.

-
- Often it is *desired* to have overlapping Events, for example when you have performed a punch in on a Track, to for example correct a mistake in a vocal part or similar (the punch in recording overlaps and therefore hides the original, faulty recording). But then again you might accidentally get overlapping Parts, and this feature helps you find those points.
-

Stereo handling

- Mono and stereo recordings can appear on the same Track. Stereo recordings are indicated by double waveforms, as displayed below.
- Volume is common to both audio channels. That is, a stereo event has only one volume curve, common to both channels.



-
- The stereo handling may differ depending on which audio hardware you are using. Please refer to the corresponding supplement if you are using Cubase Audio XT.
-

About Q-points

All Audio Events have a Q-point which aids you in positioning them in a sensible way and which makes it possible to use Quantizing on the positions of Audio Events.

For example, if you have the Prerecord feature activated, as discussed on [page 4-64](#), you will note that your Audio Events actually begin before the point where you activated recording. For example the Q-point might be exactly on a downbeat but the Event extends a little bit to its left.

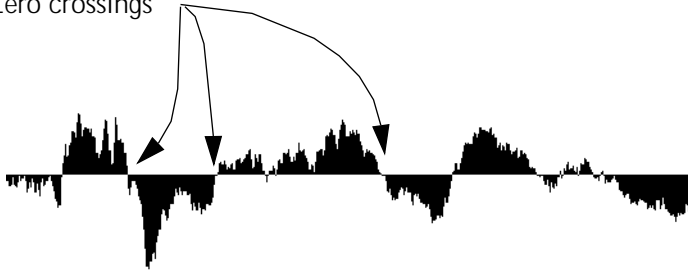
Q-points are very valuable to audio editing. On [page 154](#) in this chapter you will learn all about how they facilitate your work in the Audio editor.

About Zero Crossings

If you are familiar with audio editing from other digital systems you will know that splicing two audio files together might create a “click” just at the split point. This is because the two signals happen to have a different amplitude (level) at this point which creates a transient (a sudden and dramatic change in signal level).

One way to avoid this is to always make all edits at *zero crossings*.

Zero crossings



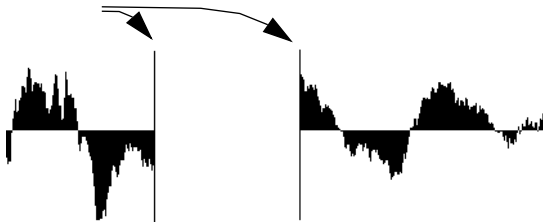
An analog waveform is a voltage rising and falling around a centre axis. This centre axis is considered “zero” voltage. As indicated in the picture, a zero crossing is when the signal passes through this centre axis.

To automatically make all edits happen at the closest zero crossing, activate Snap To Zero on the Audio menu. When Snap To Zero is activated, the following operations always occur at the closest zero crossing:

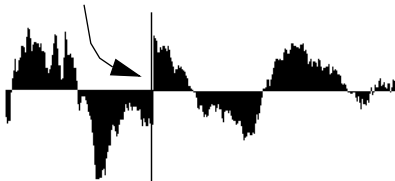
- Changing Start and End Insets.
- Splitting Event in the Audio editor.
- Splitting Parts in the Arrangement (the Events in the Parts are split at zero crossings).

- Using Snip Loop (in the Audio editor).

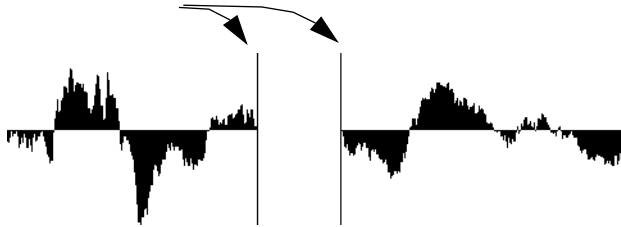
Here, an Event has been split in two places, with Snap to Zero off. When the two sections are moved together...



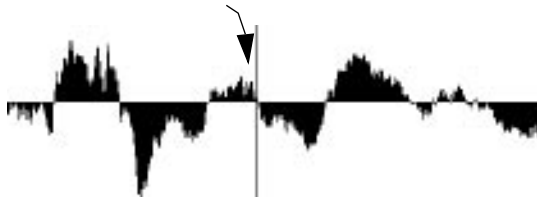
...the result will be a transient, probably causing a "click" or other undesired sound.



Here, an Event has been split in two places, with Snap to Zero activated. When the two sections are moved together...



...a fairly seamless splice is created.



-
- It may happen that it will take a while to find the closest zero crossing. If this is the case the program will ask you if you want to continue the search or cancel it.
-

Customizing the View

There are a number of features you can use to tailor the Audio editor view to your liking:

The View Menu

The View pop-up menu allows you to select what will be displayed in the Events and on the Lanes:



Waveforms

This turns the display of waveforms on and off in the editor. Deactivating this speeds up screen redraws.

Names

This turns the display of Segment names in the Events on and off.

Handles

This allows you to decide if you want to see the Start, End and Q-point handles in the Events. See below.

By Output

By selecting this item you sort your Events so that all Events that play back on the same audio channel are put on the same Lane. See [page 124 in this chapter](#) for details.

Lane Info

This shows/hides the display to the left of each Lane that tells what audio channel the Events on the Lane play back on.

Volume

If this is activated, the lower half of each Event displays volume data, much like the Controller Display in Key Edit. See [page 172 in this chapter](#).

Magnification

The Plus/Minus signs on the scroll bar can be used to set the amount of detail, both horizontally and vertically.

- Zooming in horizontally will help you fine-tune editing such as cutting, moving the Insets, etc.
- Zooming in vertically makes the Lanes “higher”. This is convenient for example for detailed editing of Volume.

Time/Meter Scale and Ruler and Position Formats

Time/Meter Scale

By clicking the Meter Scale button you can decide if the display and the ruler should show time or meter linearly:



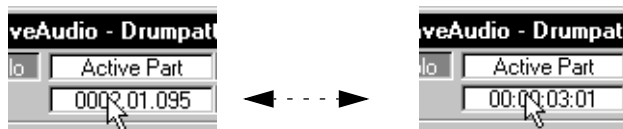
- In a time linear display, each “second” on the screen occupies equal amount of space, horizontally. This is convenient if you are working with time related material, such as for example narration or sound effects to be matched to video.



- In a meter linear display, each bar on the screen occupies equal amount of space, horizontally. This the mode to use if you are working with musically related material.

Ruler and Position Formats

By clicking on the mouse box you can determine whether the rulers and the mouse position box should be displayed in time code (SMPTE) format or as bars and beats, as in the Arrange window and some of the MIDI editors (see the Basic Methods chapter in the Getting Started book).



- **Normally, you would match the Time Meter Scale and Ruler formats so that they are both set to Time or Meter positions.**
- **If you set the display to Time Scale and the Ruler to Meter positions, the ruler will not be linear.**
That is, if you have tempo changes, there will not be equal spacing between the measures. This is natural, since if the measures are played at different tempo, they occupy different amounts of “real time” (minutes, seconds etc.)
- **If you set the display to Meter Scale and the ruler to Time positions, the same phenomenon occurs, that is if you have tempo changes, the ruler will not be “linear”.**

Using Color in the Audio Editor

The Events in the Audio editor can be displayed in color to help you distinguish between audio channels, etc. This is done by using the color palette pop-up menu.



There are three options on this menu:

No Color

Select this option if you don't want any color for the Events.

Colorize by Parts

If you select Colorize by Part, the Events in the editor will get the color that you have selected for their respective Parts in the Arrange Window. This allows you to distinguish Events from different Parts on the same audio channel, even if View by Output is selected on the View pop-up menu.

Colorize by Channels

If you select Colorize by Channels, Events on different audio channels will get different colors. This is useful if for example you are editing a Track with channel “Any”, and viewing several Events by Output.

- **When Colorize by Channels is selected, the Color pop-up menu is automatically expanded to include an item called “Channel Colors...”.**
Select this to edit which color goes with which audio channel.

Recording in the Audio editor

Recording from within the Audio editor is no different from recording in the Arrange window. If you are editing several Tracks at the same time, you will be recording into the *active Track*.

- **The active Track is indicated by the inverted number in the Lane Info field.** To activate another Track, click in the Lane Info field for that Track, or pull down the Active Part pop-up menu and select one of the Parts listed.



Importing and Dragging Audio into the Editor

Dragging Audio From the Pool

As described on [page 6-116](#) you can drag Segments from the Pool window into the Audio editor. This creates an Audio Event in the Part that plays back the dragged Segment. Here are some points to keep in mind:

- The mouse position in the Audio editor shows you where you are about to “drop” the Segment. The Snap value applies as always, using the Q-Point in the Event as position reference.
- If the Track is set to channel “Any”, it matters very much which “Lane” you put the Segment on, since it determines which audio channel the Event will play back on.
- If the Segment is already used (as indicated by the number beside the speaker symbol in the Pool), the created Audio Event will be a Ghost Event (see the chapter Making the Most out of the Event/Segment/File Relation).

Importing Audio Files

You can import files created by other programs. You can also import files you have created in another Cubase Song.

File Formats

Files in the following formats can be imported:

- Wave (WAV) or Audio IFF (AIFF).
 - The Sample Rate currently used in your Song (if you import files with another sample rate, they will play back at the wrong speed and pitch).
 - Mono or Stereo.
-
- If you are using Cubase Audio XT, the choice of file formats is determined by the audio hardware - see the corresponding supplement.
-

Importing the File

- 1. Set the Snap value as desired.**
As always, the Snap value restricts what positions you can put the file on.
- 2. Select the Pencil from the Toolbox.**
- 3. If you have a multi channel Track, select the lane on which you want to put the Event, since this determines which channel the Event will play back on.**
- 4. Find the position where you want the start of the Event.**
- 5. Click at this position.**

You can click somewhere on an existing Event, which means the two Events will overlap.

The only place where you should avoid to click is in another Event's volume graph, since this will change the graph rather than import an Event.

6. In the file dialog that appears, use the pop-up in the lower left corner to select the type of file to import.

Choose between Wave files (extension .WAV) and AIFF files (extension .AIF).

7. Find the audio file and click "Open".

A new Event is inserted in the Audio Part. If you check the Pool, you will find that the imported audio file has been added, together with a segment that plays the full file.

Auditioning

There are a number of techniques for monitoring Events, to aid you in finding positions for editing operations:

Auditioning

This allows you to play back an Event from any position, at its “normal speed”:

1. **Select the Magnifying Glass from the Toolbox.**
2. **Click on an Event.**
 - The Event is played back from that point as long as you hold the mouse button down. **The monitored audio is always routed via the monitor mixer on channel 1.**

You can use the fader for channel 1 to set the auditioning volume.

Monitoring Settings

If the Speaker icon is activated, certain operations will give you audible feedback, namely:

- Changing Start and End Insets.
- Setting Q-points.

If you perform one of the above actions with the Speaker icon activated, a short section of the segment will be played back, allowing you to monitor your edits. If you move the Start Inset, you will hear a short section from the Start Inset and onwards. If you move the End Inset you will hear a short section up until the End Inset.

To set the desired length of the played section, proceed like this:

1. **Hold down [Control] on the computer keyboard.**
2. **Click on the Speaker icon.**

A small pop-up menu appears.



3. **Select one of the options on the menu.**

Editing on the Info Line

Like other editors, Audio Edit has an Info Line.

1. Select one, and only one, Event.
2. Adjust the values as described in the table below:





Heading:	Description:
Start	Start Position. Adjusting this moves the Event.
End	End Inset. Adjusting this shortens or lengthens the Event.
QPoint	Q-point. Adjusting this moves the Q-point. See page 154 in this chapter .
Segment	Segment name. If you change this, this is reflected in all Events that play the Event, and in the Pool.
File	File name. This can be changed on the Info Line.
Chn	The audio channel the Event plays on. This can not be changed on the Info Line.

Changing Start and End Insets

Each Event has a Start and End Inset which represent the Segment start point in the audio file, and its length. Handles for adjusting these are visible in the upper and the lower corners (respectively) of the Events if Handles is ticked on the pop-up View menu.

Checking if the File Plays from the beginning

The shape of the handle indicates what the Event actually plays:

Symbol:	Description:
	If this symbol appears at the beginning of the Event, it means that the Event plays the audio file from the beginning.
	If this symbol appears at the beginning of the Event, it means that the Event plays the file from some point later than the absolute beginning of the file. The Start Inset has already been adjusted.
	If this symbol appears at the end of the Event, it means that the Event plays the audio file to its end.
	If this symbol appears at the end of the Event, it means that the Event does not play the file to its absolute end. The End Inset has already been adjusted.

- The handles do not actually have to be shown for you to move the Insets. It is sufficient to click and drag in the upper left and lower right corner, respectively.

If the Event doesn't fit in the Window

Even if the Event doesn't begin or end inside the window, the Start and End Inset symbols will be visible at the edges of the window. If you have long Events, this allows you to see the “status” of the Insets (as described above) without scrolling the view.



The Start and End Inset symbols are shown even if the Event extends across the window boundaries.

About the Inset settings

- The Inset value is in *ticks*. There are 384 ticks for each beat (quarter note) which means that when you change the Insets this is the resolution you are using for the position value. However, if you need sample accurate editing of Segment Insets, you can perform this in the Pool, see [page 6-100](#).
- The Insets do *not* “snap” to the closest snap value.

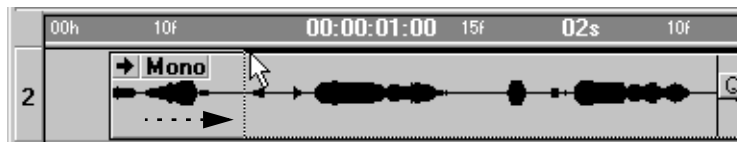
Changing the Start Inset

The Start Inset is adjusted by dragging in the *upper left corner* of the waveform part of the Segment. Usually, you will point at the handle, click and drag, but the handle does not actually have to be shown (hide/show it with the View pop-up menu, if you like).

Position the pointer in the upper left corner of the waveform...



...and drag the Inset left or right.

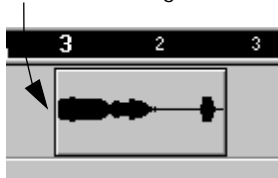


The Start Inset can also be changed numerically from the Info Line.

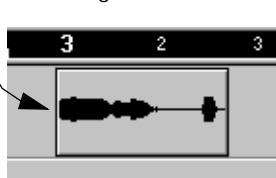
What happens when you Change the Start Inset?

Changing the Start Inset adjusts from which point in the file the Segment plays; it “hides” more or less of the beginning of the file. It does not *move* the audio in the Song. Note the difference between changing the Start Inset and moving the Event:

Before moving the Event



Before moving the Start Inset



After moving the Event



After moving the Start Inset

Changing the End Inset

This is done just as changing the Start Inset, only you click or drag in the *lower right corner* of the waveform. Changing the End Inset adjusts the Length of the Event; that is, it hides more or less of the end of the file.

The End Inset can also be set numerically on the Info Line.

Changing the Insets with a single click

If you click somewhere along the very top edge of the segment (though not on the segment name) the Start Inset will immediately be set to that position. Likewise, clicking at the bottom edge of the segment moves the End Inset.

About Snap to Zero

If the option “Snap To Zero” in the Audio menu is enabled, all offset adjustment will be followed by an automatic “search for a zero crossing”. This option will always make the resulting Segment very slightly smaller than it was when you released the mouse button. If there is absolute silence, and therefore no zero crossings in the sample for some time, Cubase will ask whether it should continue the search. For more info on Zero Crossings, see [page 132 in this chapter](#).

The length of the section played back can be set using the Speaker pop-up as described on [page 146 in this chapter](#).

Working with Q-Points

Introduction

Why Q-points?

Each Event has a Q-point that is used for snapping the Event to musical positions.

The concept behind this is that with audio, as opposed to MIDI, the beginning of the Event might not occur at a musical position at all, there might for example be a significant amount of silence at the beginning of the recording.

This means that snapping the beginning of the Event to a musical position normally doesn't make much sense. Hence Q-points. These allow you to specify a position in the Segment which is to be taken as it's first "musically significant position", the first down-beat for instance.

When are Q-Points used?

The program uses Q-Points in the following operations:

- When moving Audio Events (the Q-Point is snapped to the closest Snap value).
- When Quantizing (see [page 165 in this chapter](#)).

Displaying and Hiding Q-Points

The “Q” handle in an Event is only visible if “Handles” are ticked on the pop-up View menu.

Adjusting Q-points

Manually

- Snapping does normally not apply to “Q” handles, they can be put at arbitrary positions within the Segment (however it must be within the first 65000 samples).
- If you specifically want the Q-Point position to snap to the closest Snap value, hold down [Alt] while dragging it.
- You can edit the Q-Point position on the Info line. The value is in ticks counting from the Start Inset.

If you turn on the Speaker icon, a short section of the Segment, from the Q-point and onwards will play whenever you move the Q-point. This auditioning takes place at full volume. You can set the length of the section to be played back, as described on [page 146 in this chapter](#).

Automatically

For newly created Events the Q-point is set automatically as follows:

When you do this:	The Q-point is set at:
Record with Prerecord turned on (see the Basic MIDI Recording chapter in the main Cubase manual).	Exactly the point you specified for the recording to start at. However, the actual recording starts slightly early to preserve the attack (in case the performer started slightly early). See page 4-64 for details.
Record with Prerecord off.	The nearest sensible bar or beat position.
Punch in manually.	The closest beat.

Moving Audio Events

By Dragging

Audio Events are moved just like other objects in Cubase:

1. **Select the Arrow Tool.**
2. **Select all Events you want to move.**
3. **Press and hold the mouse with the arrow pointer over one of the selected Events (not in the handles) and move the mouse.**
The mouse box shows you where the Q-point of the first selected and dragged Event will wind up when you release the button.
4. **If you want to restrict movement to horizontal or vertical only, hold down [Shift] while dragging.**
5. **Release the mouse button, and the selected Events are moved to the new position.**

The Snap function applies, positioning the Event so that its Q-point gets aligned with the closest Snap value.

Between Lanes

- **If you are editing a single-channel Track, moving the Event to another Lane has no effect on playback. Still, you might want to organize your view of the Events, by moving Events between Lanes.**
- **If you are editing one Track set to channel “Any” you can use this feature to set which channel an Event plays back on.**
Check the channel indicator on the left side of the window to find out which channel each Lane plays back on.
- **If you are editing a number of single channel Tracks simultaneously, moving Events between Lanes means you are moving the Events between Tracks.**
You can identify the Tracks by which channel they each are set to, as described in the previous paragraph.
- **If you hold down [Shift] while dragging, moving is restricted to vertically or horizontally only (depending on in which direction you dragged first).**
This allows you to move the sound to another Lane without affecting Start position. See [page 157 in this chapter](#) for an introduction to this.

Moving By “Kicking”

You can “Kick” an Event one Snap value at a time, forward or backwards in time.

1. Select the hand from the Toolbox.



2. Set the Snap value to the distance you want to move the Event, with each “kick”.
3. Position the pointer over the Event you want to move.
4. To move the Event forward, click on its first half. To move the Event backwards, click on the second half.

Duplicating and Repeating Events

Duplicating

There are two slightly different ways of creating new Events:

- Creating a “real copy” also creates a new Segment, which means the two Events are totally independent. That is, if you for example change the Start In-set of one of them (in the Editor or in the Pool), the other is not affected.
- A “ghost copy” uses the same Segment as the Event it was created from. More details follow below and in separate chapters:

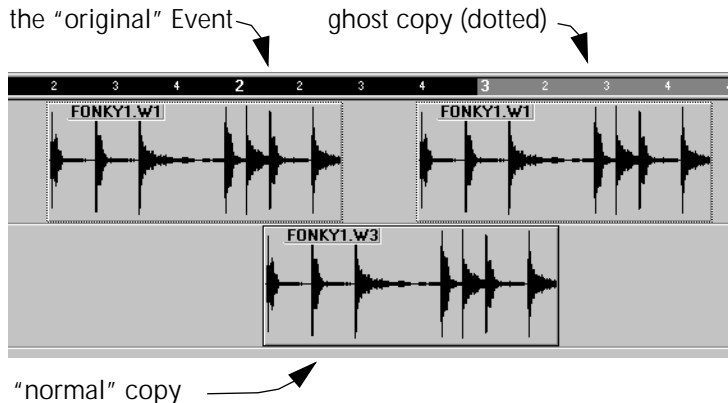
Creating Real Copies (New Segments)

1. **Select the Event(s) you want to duplicate.**
2. **Hold down [Alt] and drag to the new position.**
Everything else is as when moving, see above.
3. **Preferably rename the new Segment, to avoid confusion in the Pool (see [page 148 in this chapter](#)).**

Creating Ghost Copies (No new Segments)

1. Select the Event(s) you want to duplicate.
2. Hold down [Control] and drag to the new position.
Everything else is as when moving, see above.

The fact that the new Event is a “ghost” copy, is indicated by a dotted outline.



About Editing Ghost Events

- **All ghost copies, that are playing the same Segment have dotted outlines.** The program doesn't differentiate between the “original” and the ghost, they are all considered ghost copies of each other.

- If you make any changes to the Segment in the Pool, this will equally affect all Ghost Events that play this Segment.
 - However, if you make changes to the Start and End Insets of one of the ghost Events in the editor, this Event will be turned into a real Event, and a new Segment will be created for it.
 - If you specifically want to make Start and End Inset Changes that will affect all the Ghosts that play the same Segment, hold down the [Control] key while editing any of those Events.
-
- Read more about working with Ghost copies in [the chapter “Making the Most of the Event/Segment Relationship”](#).
-

Repeating Events

To repeat Audio Events, use the Repeat command on the pop-up Do menu. This works just as the Repeat command in any of the MIDI Editors, see the chapter “The MIDI Editors - General Information” in the main Cubase manual.

Repeating Any Section of Audio

By combining a few commands in the Audio editor, you can repeat any section of audio:

1. **Set up the Loop so that it plays the section to be repeated.**
2. **Use Snip Loop (on the pop-up Do menu) so that the Events that fall inside the Loop are split at the Loop Start and End points.**
3. **Select the Events to be repeated (those inside the Loop).**
4. **If you want to delete the snippets of audio outside the loop, select Keep from the pop-up Do menu.**
Only the selected Events are kept.
5. **Select Repeat from the Do pop-up menu to repeat the selected Events.**
You may repeat Events to fill the Cycle, to the end of the Part etc., depending on what the situation requires.

Using Cut, Copy and Paste

Cut, Copy and Paste can be used to move and duplicate Events just as in any MIDI Editor. See the Basic Methods chapter in the main Cubase manual for details. However, since Pasting in a Cubase Editor always adds Events to the active Part, there is one additional thing to keep in mind if you are editing several Parts at the same time:

- To determine which Part to Paste into, click in the Lane Info field for the Part or select one of the Parts on the Active Part pop-up menu.



Clicking here...



...activates the Part.

The currently Active Part is indicated in the Editor's window title and by a black rectangle in the Lane Info fields.

Quantizing Audio Events

Quantizing Audio Parts allows you to adjust the positions of your events, just like you adjust the positions of MIDI notes.

There is one big difference between quantizing Audio Event positions, compare to MIDI events: It is not the *start point* of each Event that is used to decide what the new position should be, but the *Q-point*. Note that quantizing moves the whole event; it does not affect the timing of the recording within the file. Quantizing the start of a long Audio Event might therefore be pretty pointless. To make quantization affect positions within the recording, split it into several shorter Events with the Scissors tool before you perform the quantization.:

Over Quantize

This is the only quantization method available for audio. It moves the Events in the selected Parts, so that their Q-points line up with the selected Quantize value. See [page 132](#) in this audio recording book.



Over Quantizing an Audio Part :
with a Quantize value of 8. ▼



Undo Quantize

The Undo Quantize item on the Functions menu does *not* apply to Audio. However, you can Undo the last Quantize operation, as with any other operation, by using Undo on the Edit menu.

Deleting Events

Audio Events are deleted just as Parts in the Arrange window or Events in a MIDI Editor.

-
- Deleting an Event does not delete its Segment from the Audio Pool.
-

Using the Eraser to Delete Events

Clicking on an Event with the Eraser tool will delete it.

Using Keep to Delete Events

To delete all Events but the ones selected, proceed as follows:

- 1. Select the Events you want to keep.**
As in the MIDI editors, the To pop-up menu determines which Events will be affected. If you want to be sure only those Events will be kept, that you have selected, the To pop-up menu should show “All”.
- 2. Select “Keep” from the pop-up Do menu.**
All Events are deleted, except those indicated by the To pop-up menu and your selection.

Using the Menu or Keyboard to Delete Events

1. Select the Events.
2. Press [Delete] or [Backspace] or select Delete Events on the Edit menu.

Permanently deleting an Audio File

To delete an Event and its audio file from disk, hold down [Control] and press [Backspace].

-
- This operation will permanently delete the referenced audio file from your hard disk, and can not be undone.
-

Muting Events



The Mute Tool

Using the Mute tool in the Toolbox you can mute an Event. This silences it until you unmute it again or close the Audio Editor.



This Event is muted

Splitting Events

Using the Scissors Tool

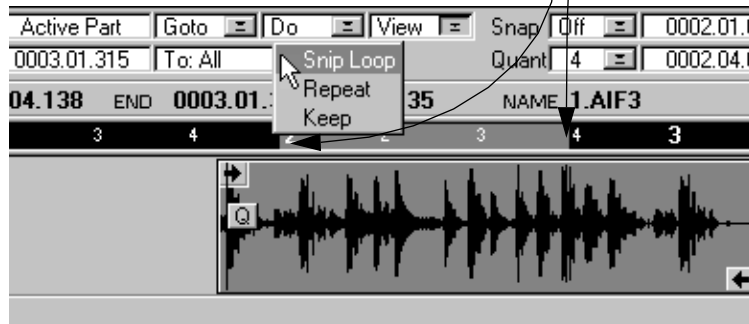
To split one Event up into more, proceed as follows:

- 1. Decide if you want the split to happen on a zero crossing or not by checking or unchecking “Snap to Zero” on the Audio menu.**
See [page 132 in this chapter](#) for details.
- 2. Set the Snap value as desired.**
As always, this determines the “smallest” note value where you can apply the split.
- 3. Select the Scissors from the Toolbox.**
- 4. Click on the Event.**
The Event is split into two.

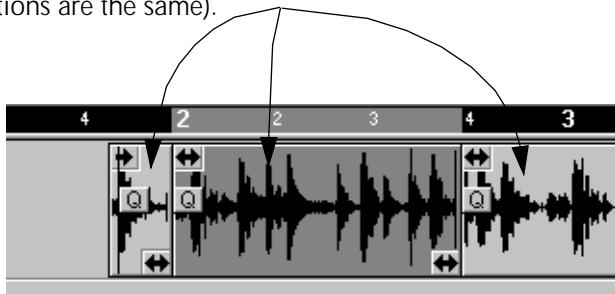
Using Snip Loop

This command, on the Do pop-up menu, splits all Events at the positions of the Left and Right Loop position. If you want to split several Events in one place only, set the Loop End point to the same position as the Loop Start.

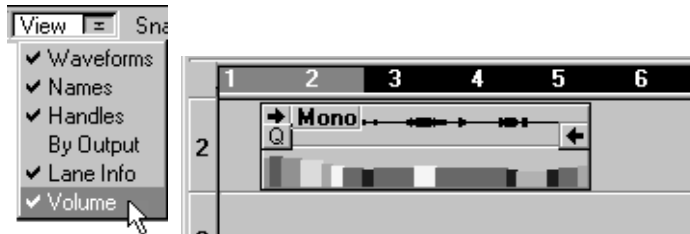
The Loop positions indicate where the Event(s) will be split.



The Event(s) will be split into three (or two if the Left and Right Loop positions are the same).



Event Volume



If you activate Volume on the View pop-up menu, the lower half of each Event is used to display a volume curve individual to the segment. The volume you put in for a segment and the volume controlled from the Monitor window are added, as described on [page 11-210](#).

You put in new volume “Events” and edit existing, just as in the Controller display in Key and Drum Edit. Exactly how this is done can be read in the chapters about the editors in the main Cubase manual, but here is a quick rundown:

- To edit existing Events, use the Pencil tool (or the Line tool, to create ramps).
- To create new Events, hold down [Alt] and use the Pencil or the Line tool.
- New Events are always put in at the closest Quantize value.
- Delete Events by clicking on them with the Eraser tool.

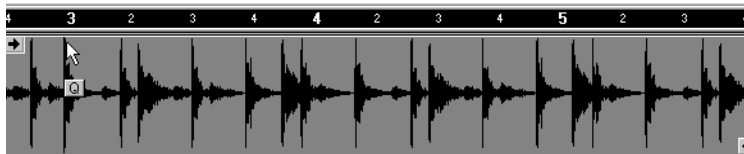
- **Volume Events cannot be put in denser than with a 1/64th note triplet spacing.**
The Quantize menu will prevent you from selecting a higher value than this. Generally, don't make the curve denser than it has to be.
- **If two consecutive volume Events have the same value, the later is automatically deleted.**

Match Tempo

You can very easily match Cubase's tempo to some recorded audio material. This is done by dragging on the Position bar, stretching a given number of bars and beats to match the length of a section of audio. Proceed as follows:

1. **If you plan to use the Master Track, make sure it is activated.**
2. **Go into the editor and find an Event that contains material at the tempo you require Cubase to match.**
Select that Event, using the mouse or cursor keys.
3. **Set the Q-point of the Event exactly to a point in the Segment where a bar begins or which represents a musically significant moment.**

4. Move the Event so that the Q-point is lined up with some sensible musical point in your song (for example the downbeat of a bar).



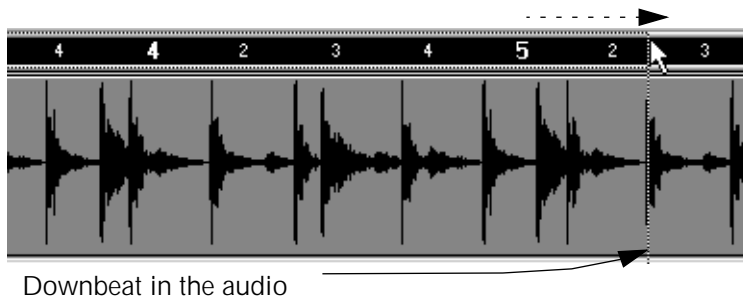
5. Hold down [Shift] and find a bar position on the bar scale, further on in the Song, that corresponds musically to the length of the audio section you are matching.

In the example above we have the Q-point of the event at 3.1.0. The event is 2 bars long, so we grabbed 5.1.0, see below.

6. A dotted box appears in the scale area, extending from that Event's Q-Point to the point where you clicked.

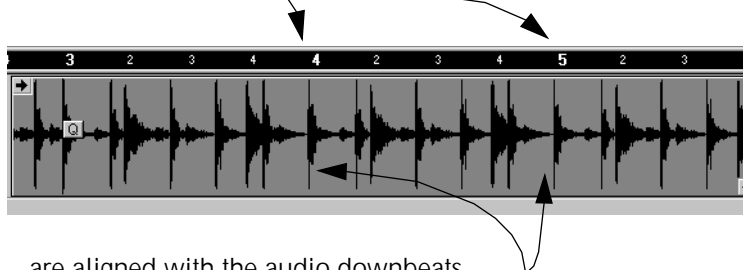
You can stretch and shrink the box by dragging your mouse to the right and left.

7. Drag the bar position you picked up so that it becomes aligned with the end of the section of audio you are matching.



8. Release the mouse.

The starts of the bars...



...are aligned with the audio downbeats.

If the Master Track was off, you now get a new tempo on the Transport bar which matches that of the section of audio you selected.
If the Master Track was turned on, the most recent tempo change will be adjusted.

- If the Master Track is off, and no Event is selected, the range goes all the way back to the beginning of the Song.
 - When the Master Track is on, then the range is determined by either the most recent tempo change (by the selected Event's Q-Point) or the beginning of the Song, in that order.
9. If you need to insert a tempo change into the Master Track, you can hold down [Shift] and [Alt] and click on the Position Bar, and an Event will get inserted where you clicked.

We recommend you to put in the tempo change slightly before the Q-point of the Event you are using to match tempo. Try putting it where the audio Event starts, since this is normally slightly before the Q-point.

You can very quickly and easily build tempo maps for entire songs in this manner. We recommend that you work very strictly from "left" to "right" when doing so, as earlier tempo adjustments will always displace later tempo values with respect to the recorded material.

Making an Event Play another Segment

You can set which Segment an Event plays. Use this to make an already positioned Event play back another sound.

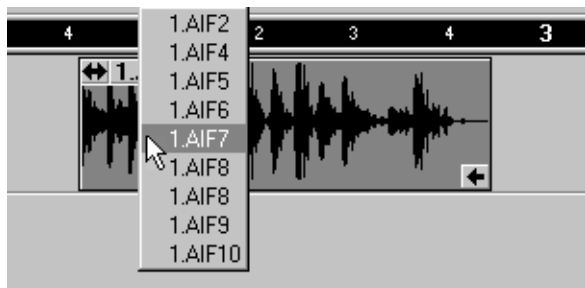
Please note that you are restricted to selecting segments from within the same file as the Event now plays.

With any type of Event

To make any one Event play another segment, proceed as follows:

1. Hold down [Control] and [Alt] and click on an Event.

A pop-up menu shows a list of all the available Segments in the audio file, with the one now used by the Event highlighted.



2. Select any Segment from the list.

If the Segment you select is already played by an Event, the Event you are working with will become a Ghost Event (shown with a dotted outline).

With Ghost Events

To make *all* Ghost Events that play the *same* segment play another segment instead, proceed as follows:

- 1. Hold down [Control], [Shift] and [Alt] and click on an Event.**
- 2. Select any Segment from the list.**

8

Using an External Wave Editor

What is a Wave Editor?

In this context, the word Wave editor indicates any program that allows you to perform editing on your audio *files*. This may include cutting and pasting real audio data, applying DSP (Digital Signal Processing) functions, etc. In other words, it provides more direct control over the audio files than the Audio editor does. Cubase allows you to open a Wave Editor of your choice from inside the Pool or the Audio Editor, process an audio file and return to Cubase, without any hassle.

- **Included with Cubase comes WaveLab Lite, a special version of Steinberg's WaveLab audio processing software.**

Read more in the WaveLab Lite appendix in this book and in the online help.

Precautions

In contrast to working inside Cubase, e.g. in the Audio editor, a Wave editor makes permanent changes to your audio *files*, (sometimes called “destructive editing”). When you for example Paste in the Wave editor, this alters the file on disk directly, rather than just adding new segments or Events.

Many Wave Editors allow you to Undo your last action. However, it may be safest to use the Export Audio File item on the File pop-up menu in the Pool to make a backup of your audio file before editing it in an external Wave editor.

Setting which Wave Editor to use

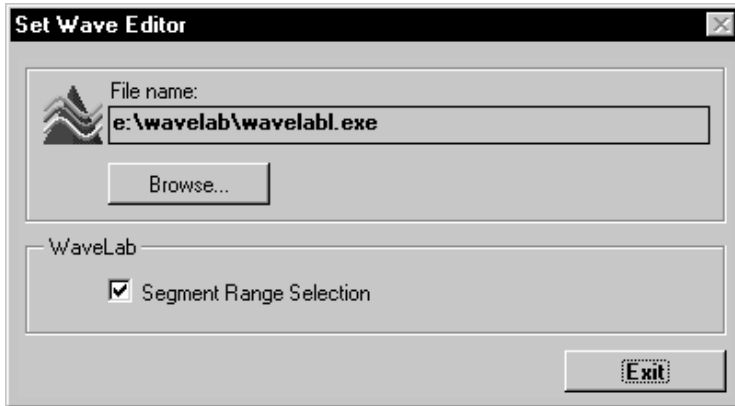
Included with Cubase comes WaveLab Lite, a special version of Steinberg's state-of-the-art audio processing software, WaveLab. While not containing all functions available in the full-blown program version, it is still a powerful tool for editing your audio files. WaveLab Lite can be accessed from inside Cubase simply by double-clicking an Audio Event. You may also use other programs as Wave editors, provided they meet the following criterium:

- **The program must be able to launch and open a ".WAV"-file for editing, by receiving a DOS command line with the path and name of the file as argument.**

If you are uncertain whether your programs meet this criterium or not, follow the instructions below and try it.

To select which program to use for Wave editor, proceed like this:

1. Pull down the Audio menu and select “Set Wave Editor...”.
A dialog opens.



2. Click on the Browse button.

A regular file dialog opens. Find and select the Wave editor file you want to use, and click OK.

The path and name of the selected Wave editor file (WaveLab Lite or other) is displayed in the dialog, together with its program icon.

3. If you are using WaveLab Lite or WaveLab, and want to make use of the segment start and end insets when editing the audio file, activate “Segment Range Selection”.

See below.

4. Click Exit.

Editing in the selected Wave Editor

Once you have selected a Wave editor using the procedure on the previous page, you can access it from inside the Pool or the Audio Editor.

-
- Remember that any processing you perform on this audio file will be reflected in all its segments throughout the Song. If you don't want this, use the Export Audio File command in the Pool to create a copy of the audio file to edit instead.
-

Opening the Wave Editor from the Audio Editor

1. Open the Audio Editor.
2. In the Audio Editor, double click on the Audio Event whose file you want to edit, or select “Edit Audio File” from the Do pop-up menu.
This automatically opens the file in the set Wave editor.

-
- If you are using WaveLab Lite or WaveLab, and you have activated the option “Segment Range Selection” in the Set Wave Editor dialog, the segment range in the audio file will be *selected* when you open it in the editor. Furthermore, if you are using WaveLab (the full-featured version), *Markers* will be inserted in the audio file, at the start and end inset positions.
-

3. Perform whatever processing you want.

This may include shortening or lengthening the file, applying DSP effects, etc. See the documentation for the Wave editor in question for more details. Steinberg WaveLab Lite includes printed installation instructions (in the WaveLab Lite appendix in this book) and extensive on-line help.

4. Save the audio file and close it.

Nothing stops you from keeping the Wave editor running, just remember to close the audio file.

5. Return to Cubase.

If you have applied any processing to the audio file, an alert box will appear, telling you that the file contents have been changed, and the Pool and Arranger windows will be updated to reflect the changes.

- **If you have shortened the audio file in the Wave editor, the length of its segments in Cubase will automatically be adjusted if needed (since a segment cannot be longer than its audio file).**

- If you have lengthened the audio file, the length and start point of its segments will not be affected.

Opening the Wave Editor from the Pool

1. Select the segment or audio file you want to edit.

As already mentioned, it may be wise to make a copy of the file using the Export Audio File item on the File pop-up menu before editing it.

2. Pull down the Do pop-up menu and select “Edit Audio File”.

The set Wave Editor opens.

3. Perform the editing and return to Cubase as described above.

-
- If you created a copy of the audio file before editing it, and then performed editing to the audio file that didn't change its length (e.g. dynamic or spectral editing), you can switch between the original and the edited file without having to adjust or make new segments. See [page 6-93](#).
-

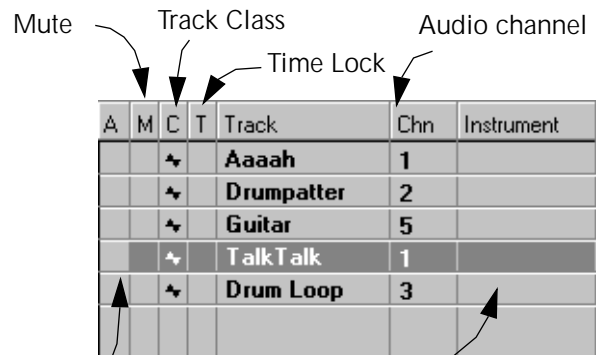
9

Editing Audio in the Arrange window

Introduction

Handling Parts with Audio Events is very much the same as handling Parts with MIDI. Therefore this chapter only briefly describes the general editing operations and the differences to editing MIDI data:

Track Columns



				Track	Chn	Instrument
A	M	C	T			
		↕		Aaaah	1	
		↕		Drumpatter	2	
		↕		Guitar	5	
		↕		TalkTalk	1	
		↕		Drum Loop	3	

Not used for
Audio Tracks

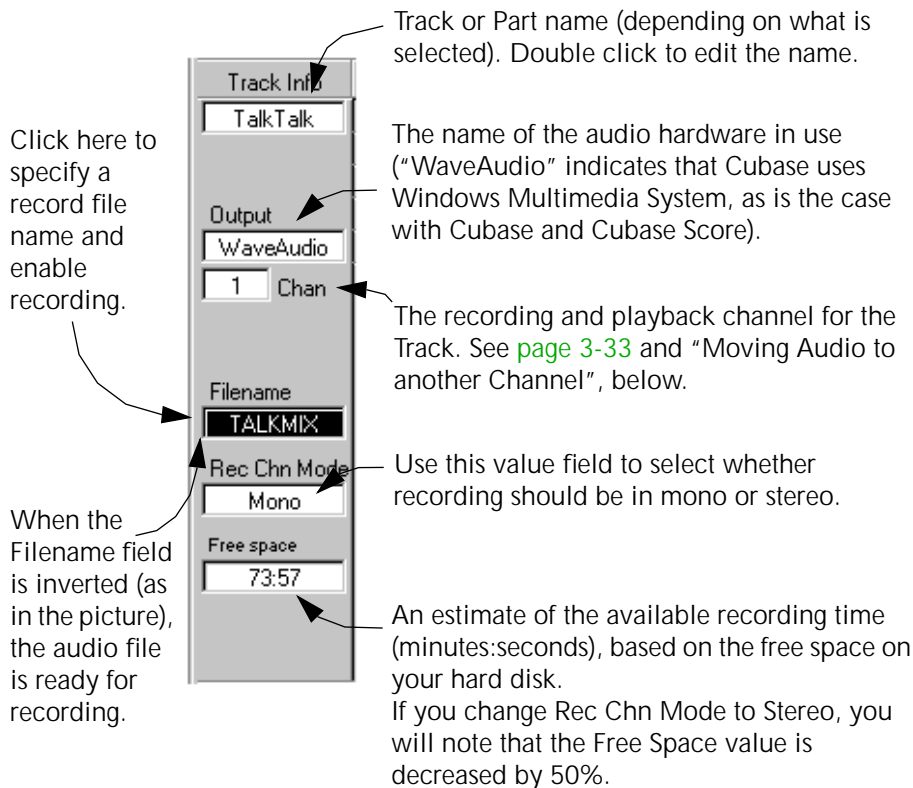
The Activity column is not used for Audio Tracks.

Using Time Locked Audio Tracks

You can Time Lock an Audio Track (see the chapter Time Locked Tracks in the main Cubase manual). This is very useful when you work with Cubase locked to time code coming for example from a video. You may use Audio Tracks to for example record dialog or sound effects. If you keep these recordings on Time Locked Tracks, you can still work freely with tempo based material (music) on other Tracks, with the audio Events on the Time Locked Tracks keeping their position with respect to the incoming time code.

Inspector

Audio Tracks have slightly different Inspector parameters. For descriptions of the items common to other Tracks, see the chapter “The Track Columns and the Inspector” in the Getting Started book.



Moving Audio to another Channel

On a single channel Track

You can change the channel settings for a Track at any time, should you wish. This can be done either from the Track list or from the Inspector. This allows you to “re-allocate” the audio channels you have available.

You can set two or more Tracks to the same channel, but remember that only one recording can be played back by any channel at a given moment.

On an “Any” Channel Track

1. Open the Track in the Audio Editor.

As described in the Audio Editor chapter, the Events on different audio channels are put on different lanes.

2. Pull down the View pop-up menu and make sure the options “Lane Info” and “By Output” are both activated.

The “Lane Info” option displays the audio channel number to the left of each lane, and the “By Output” option displays all Events that play back on the same audio channel, on the same lane.

- 3. Select all Events on the lane with the channel number you want to change.**

This is easiest done by holding down [Control] and clicking on an Event on the lane.

- 4. Press and hold down the mouse button with the pointer over one of the Events, and press [Shift] on the computer keyboard.**

This is to avoid moving the Events sideways.

- 5. With [Shift] pressed, drag the Events to a lane with the new audio channel number.**

This will make the Events play back on the new audio channel.

Part Operations

For general information about Part operations, see the chapter “The Arrangement - More on what you can do with Parts and Tracks” in the main Cubase manual. Below follows only the points specific to audio Parts:

Moving, Duplicating and Creating Ghosts

Moving, Snap and Prerecord

When you move an Audio Part, it snaps to the Snap value as usual. Just remember, that if you have recorded the Part with the Prerecord feature activated (see the Basic Recording chapter in this audio recording book), the Part starts one snap value before the actual recording.

Ghost Parts and Segments

You can create Ghost-copies of Audio Parts, just as with MIDI Parts. See [the chapter “Making the Most of the Event/Segment Relationship”](#) for more info.

Moving Parts Between Tracks

If you move a Part from one Track to another, make sure you are aware of how the Channel setting for the Track affects playback. See [page 3-33](#).

Cut and Paste

Cutting, Copying or Pasting an Audio Part is done just as with MIDI Parts.

Sizing Parts with the Pencil

Sizing the Part to make it shorter means masking out audio, so that the audio doesn't play longer than the Event. This is *not* the same as with MIDI Parts.

Deleting Parts

Deleting the Part Only

If you delete a Part with the Eraser or via the keyboard, the Part is removed from the Arrange window, but it's segments remain in the Pool, and the file is of course left on disk.

Deleting the Part and the File

If you wish to also delete all segments and the files referenced by the Part, proceed as follows:

1. Select the Part.
2. Hold down [Control] and press [Backspace].

3. Click OK in the dialog that appears.

Splitting Parts

Splitting (done with the Scissors or using Global Cut) works as with MIDI Parts, with the following exceptions:

- When you Split a Part in two you also split the Events at that position and thereby create new segments.
- If Snap to Zero is turned on, on the Audio menu, the splitting of the audio will occur at the closest zero crossing. See [page 7-132](#) in this audio recording book for details.

Monitoring Audio

By clicking on a Part with the Magnifying glass you can play back the Event at that position. This is slightly different from MIDI Parts since it only plays one Event at a time (even with Tracks set to channel “Any”) and dragging the mouse back and forth has no effect on playback.

Quantizing

Quantizing Audio Parts allows you to adjust the positions of your Events, just like you adjust the positions of MIDI notes. This is described in detail in the Audio Editor chapter.

When you apply quantizing from the Arrange window you Quantize all Events in the Part. In the Audio Editor you can selectively Quantize individual Events.

Just as in the Audio editor, there is only one Quantize method that can be applied to audio: Over Quantize. See [page 7-165](#).

The Undo Quantize item on the Functions menu does not apply to Audio. However, you can Undo the last Quantization you just performed, as with any other operation, by using Undo on the Edit menu.

Mixdown

This function mixes down Audio Events, just as it does with MIDI notes. This means that it moves Audio Events from several Tracks into one Track. It should not be confused with the Mix Audio command on the Audio menu, which works directly on audio (as described on [page 11-212](#)).

When do I need Mixdown?

This function mixes down audio *Events*, just as it does with MIDI notes. This means that it moves audio Events from several Tracks into one Track. It is not to be confused with mixing of audio.

If you record a number of Tracks from the Arrange window, you wind up with one recording per Track. Using Mixdown on the Structure menu allows you to pack all the Events on these Tracks into a Part on one Track. Then, setting this track to channel "Any" will make it play back as before the mixdown.

The benefit of this operation is that when you edit the mixdown Track, all the audio channels are put above each other on one lane each.

Performing the Mixdown

The Mixdown is mainly done as with MIDI Tracks (see the Arrangement chapter in the main Cubase manual). The big difference is that you select an Audio Track as a destination, and thereby tell the program that it is audio you want Mixed down, not MIDI.

1. Mute all the Audio Tracks that you want excluded from the Mixdown.
2. Select an (empty) Audio Track where you want the mixdown to appear.
3. Set the Left and Right Locators to encompass the section of the Arrangement you want to mix down.
4. Select Mixdown from the Structure menu.
5. Check the Part you get, by setting it to channel “Any”, so that all Events in it play back on their original channels.
When you play back the Mixdown Part, also make sure all the original Tracks are muted so that they don't compete for audio channels.

Remix

You may want to split up a Track set to “Any” and which contain Events on several channels, into one Track for each channel. This is done using Remix on the Structure menu. The procedure is very much as with MIDI Tracks, see the chapter “The Arrangement - More on what you can do with Parts and Tracks” in the main manual.

1. Select an Audio Track to be Remixed.
2. Set up the Left and Right Locators as boundaries for the operation.
All audio between the Locators will be Remixed.

3. Select Remix Track from the Structure menu.

New Tracks are created, as many as needed. New Parts with Events on one channel each are created on those Tracks, between the Left and Right Locators. Each Track is set to the Channel the Events in it are stored on.

Groups

Audio Parts can not be put into Groups.

10

Making the Most of the Event/ Segment Relationship

What is an Event really?

An Audio Event is an item in Cubase that contains three pieces of information:

- A reference to a segment.
- A start point, relative to the Part the Event resides in.
- A Q-Point (see [page 7-132](#)).

Everything else that you see when you edit an Event in the Audio Editor, is really in the segment!

What is a Segment really?

A segment is an item that contains the following information:

- A reference to an audio file on your hard disk. By reference we mean that the segment doesn't contain any audio in itself; it only "points" to a file on disk.
- A start and end inset, to determine which section of the file that the segment plays.
- A name.
- A volume curve (if you have created one).

Copying Audio Events

There are two principal ways of copying Audio Events in Cubase: “normal” copying and Ghost copying. These two methods are fundamentally different, which is important to understand.

Making “Normal” Copies of Audio Events

When you copy Events in any “normal” way, new segments are automatically created. This means that if you edit the segment in a copied Event, the original segment is unaffected.

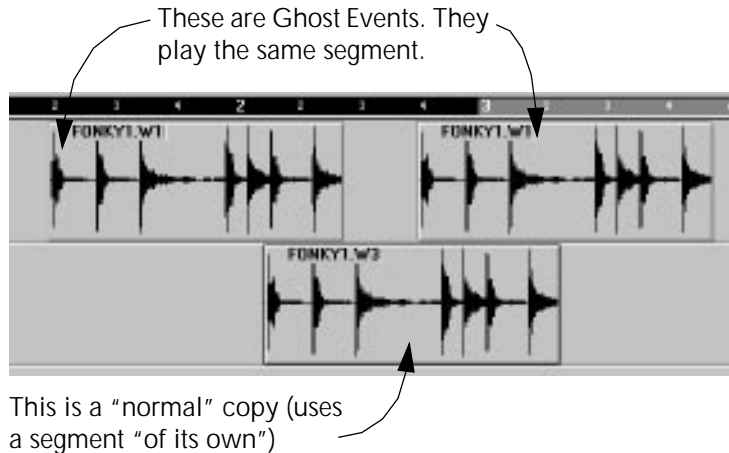
When should I use “normal” copies?

There are a number of situations where this is exactly what you want. You may want to add a volume curve to one of the copied Events, but not to the others, or shorten one of the copied Events, to “make room” for another Event on the same audio channel, etc.

Making Ghost Copies of Audio Events

A Ghost Event is any Audio Event that plays the same segment as another Event. This means that there are no “original” Events; all Events that play the same segment are considered Ghosts.

Ghost Events are shown with dotted outlines in the audio editor.



When are Ghost Events created?

Ghost Events are created when you perform the following operations:

- **When you ghost copy an Event in the Audio editor.**
This is done by holding down [Control] and dragging the Event to a new position in the Part.

- **When you drag a segment from the Pool into the Audio editor or the Arrange window, and that segment is already played by another Event.**
As soon as two or more Events play the same segment, the Events are Ghost Events.
- **When you make a Ghost Copy of an Audio Part.**
- **In the Audio editor, when you hold down [Alt] and [Control] and select a new segment for an Event, and the segment you select is already in use.**

When should I use Ghost Events?

If you edit a segment, the changes you make are reflected in all Events that play the segment. Therefore, you may use Ghost Events if you want any editing you do to apply *every time that segment* is used. This includes:

- **The start and end insets (when you edit them *in the Pool* - see below).**
Allows you to for example fine-tune the length of a drum loop and use it repeatedly in your Arrangement.
- **The volume curve.**
Lets you for example smooth out the volume in an “uneven” segment.
- **The name of the segment.**

The following editing is *not* copied to Ghost Events:

- **Changing the position of the Q-Points.**

These are part of the Events, not the segments.

- **Changing the start and end insets *in the Audio editor*.**

This will instead automatically create a new segment. However, if you hold down [Control] while you are changing the insets, all Ghost Events will be affected and no new segment will be created.

Converting a Ghost Event to a “normal” Event

If you find that you want to edit one Event without affecting its Ghost Copies, you have to convert it to a “normal” Event first:

- 1. Open the Pool and select the segment that the Event plays.**
- 2. Pull down the Do pop-up menu and select Duplicate Segment.**
A new segment with the same name is created. If you want to, you may change the name of the new segment to avoid confusion.
- 3. Return to the Audio Editor and select the Event in question.**
- 4. Hold down [Alt] and [Control] and click on the Event.**
A pop-up menu opens, containing all segments “belonging to” the same audio file.
- 5. Select the segment you created in the Pool.**
Now, the Event is no longer a Ghost Event, and you can edit it without affecting any other Events.

About Audio Ghost Parts

You can create Ghost-copies of Audio Parts, by using the Pencil tool, the Repeat command or by [Ctrl]-[Alt] dragging. The audio Ghost Parts behave just like MIDI Ghost Parts.

11

Mixing

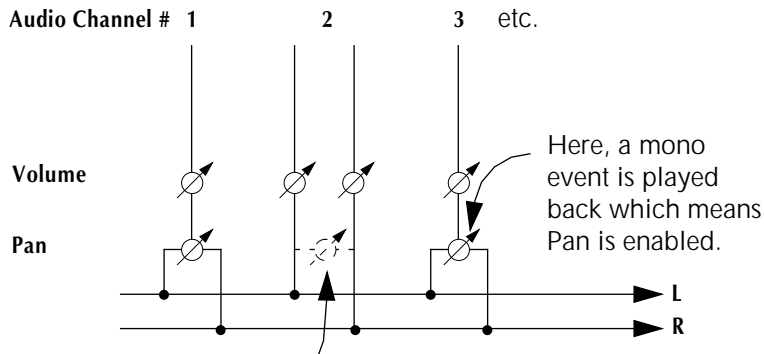
Introduction

This chapter describes the general procedures of handling levels and pan to create a final, fully automated (if you like), stereo mix. It also describes how to bounce several Tracks to one Track, to make dynamic changes and effects a permanent part of a recording.

What this chapter *doesn't* contain, is detailed descriptions of how to handle each part of Cubase that is involved in the Mixing process. For details, see the chapters describing the respective windows (Audio Editor, etc).

-
- Please note that Cubase Audio XT makes use of the mixing facilities in the respective audio hardware device. See the corresponding supplements for details.
-

Signal Path



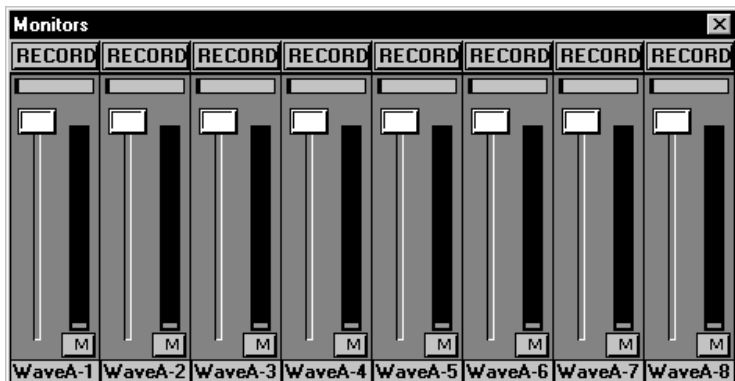
For this channel, a stereo event is played so the Pan setting has no effect.

The picture above shows the audio signal path in Cubase when used with an audio card. In this example, channels 1 and 3 currently play mono events and channel 2 plays a stereo event. After the Pan controls, the signals are mixed and sent to the stereo outputs.

Volume

On mixdown, the output level of each audio channel is controlled in two ways: with the faders in the Monitor Mixer and with the Dynamic Volume Events in the Audio Editor.

Monitor Mixer



In the Monitor Mixer, each audio channel has a fader for volume control. You can also use the Mute (M) buttons to silence one or several audio channels.

You can use the Monitor and Master faders to set up a volume balance between the audio channels and perform a manual mix, by moving the faders and other controls while playing back.

Dynamic Events

As described in the Audio Editor chapter, you can create a Volume curve for each Audio Event, and thereby get automatic volume changes. The Volume values created by this curve are added to the volume fader values in the Monitor Mixer, so you can combine the two ways of controlling volume.

Panning

The Pan controls in the Monitor mixer pans the sound between the left and right side of the stereo output (see the diagram at the beginning of this chapter). For stereo events, the Pan controls have no effect.

Monitor control lag time

When you adjust volumes and panning in the Monitor window, it will take a short while for the changes to take effect on the audio card. To some extent you can control this “lag time” by changing the “System Performance” setting in the Hardware Setup dialog. See [page 252](#) in the appendix “Optimizing Audio Performance”.

Distortion on playback?

If you hear “crackles” or distortion, try opening the Monitor window and reduce the volumes on all channels a bit. This is easiest done by holding down [Alt] on the computer keyboard and lowering one of the faders in the window. The others will move accordingly.

Bouncing (Audio Mixdown)

It might happen that you want to record the output of one or more Tracks onto a new Track. There are mainly two reasons for doing this:

- You are running out of audio channels and decide to “merge” for example a number of vocal overdubs into one mono or stereo recording, instead of keeping each overdub on a separate audio channel.
- You have set up some volume changes that you want to make a permanent part of a new file.

Performing the Audio Mixdown

The Mix Audio function (on the Audio menu) takes all the audio between the Left and Right Locator and mixes it down to a new sound file, just as with any conventional audio mixdown. This can be used to mix a number of Tracks into one stereo file, or alternatively a stereo file into a mono one.

1. Set up the Tracks to play as intended.

Please note the following:

- Muted Tracks will not be included in the Mix.
- The Event Volume in the audio editor (see [page 7-172](#)) will be used for the Mix.
- The Volume settings in the Monitor window will also be used as main levels for the entire mix.

- If you create a stereo file (see below), the panning in the Monitor window will be used.
- 2. Create an empty Audio Track, where you want the mixdown to wind up.**
If the Mix Audio will be in stereo, set the “Rec Chn Mode” parameter in the Inspector for the Track to “Stereo”.
 - 3. Select Mix Audio from the Audio menu.**
 - 4. A second dialog box asks you for a new file name.**

When the processing is done, a new Part is created which contains the file with the mixed audio. You can then for example mute the original Tracks and only use the mix.

Audio mixdown can be used practically and creatively. Below follow a few tips:

- **Set up a fade between two recordings and do a Mix of the two into a new audio file.**
- **Set up a fade or other volume change effect on one audio file only. Mix it down to a new file to make the change permanent.**

12

Synchronization

Introduction

This chapter describes additional Synchronization considerations related to digital audio. It assumes you are familiar with general Synchronization procedures, as described in the Synchronization chapter in the main Cubase manual.

Synchronizing digital audio material with the “real world” raises many issues which are not immediately apparent when using MIDI only systems. This is a big subject, and we will only be able to touch upon it here.

-
- Please note that Cubase Audio XT makes use of special Synchronization functionality in the respective audio hardware devices. See the corresponding supplement for details.
-

Audio playback vs MIDI Playback

One of the important things to understand about a digital audio/MIDI setup is that there are several different *clocks* in the system, that control the playback speed of different parts of the system.

- When you set Cubase to play back at 120 Beats Per Minute, the actual length of a minute is derived from the *computer's internal clock*.

- If you synchronize Cubase to MIDI Clock or Time Code (SMPTE) coming in from another device, it is *that device's* idea of how long a minute is, that governs the actual tempo.
- Audio playback on the other hand, is always clocked from the *audio card itself*. The clock in your computer, and any sync signal that the program receives has no effect whatsoever on the speed of the *audio* playback.

How Cubase stays in Sync with the Audio Card

In Cubase, this problem of different clocks in one system has been solved by making the MIDI playback automatically synchronize to the clock *on the audio card*. This ensures that your MIDI recordings don't drift out of time with the audio.

Using Cubase as a Master

To avoid drift between audio and MIDI we recommend you to not synchronize Cubase externally *at all*, if possible. However, you might very well use Cubase as a *master* for other systems. Using MIDI Time Code or MIDI Clock generated by Cubase (for transmission to other devices) will ensure sync with the audio.

Using External Synchronization

If you *have* to synchronize Cubase to an external source please note the following:

- The audio files will still start at the correct positions, but if they are long, you might note that after a while they drift out of time with the MIDI playback.
- Use the same type of synchronization through the entire “production”. Do not switch from internal sync to external after you have recorded digital audio.

MIDI/Audio Sync Settings

As described on [page 250](#) in the appendix “Optimizing Audio Performance”, there are a number of settings which affect the relation between audio and MIDI.

13

File Handling

Saving

Songs

When you save a Song, the following is saved:

- All the items saved in a “non-audio” Cubase Song (see the File Handling chapter in the main manual).
- All Audio Parts, Events and segments, and references to their respective audio files.
- The Pool.
- The settings in the Monitor window.

Arrangements

When you save an Arrangement, only the regular “non-audio” items are saved. The audio files are stored in the Pool, and the Pool is not part of the Arrangement, but the Song! This means that if you only save an Arrangement, there will be no audio files for them to reference to! Therefore:

-
- When doing audio work with Cubase we recommend that you always save complete Songs!
-

The Pool

Using the File pop-up menu in the Pool, you can Save or Load Pools. Please note:

- When you save the Pool, you get the choice of either saving the references to all Files and their Segments (the whole Pool) or only the selected ones.
- When you load a new Pool, it doesn't replace the current Pool. Instead, its contents are added to what is currently in the Pool window.
- The Pool is also saved as part of the Song and is common to all open Arrangements. We recommend that you always save complete Songs.

Audio File Formats

- The audio files created by Cubase are Wave (.WAV) files with 16 bits resolution.
- Using the Import Audio command in the Pool, you can load audio files in Wave or AIFF format. When you do this, the program expects the imported file to have the same sample rate as rest of the files in the Song. If not, it will not play back normally.
- With each audio file goes an *image file*, which is used to display the waveform on screen. These image files are automatically created, and are given the same name as audio file they correspond to, but with the extension ".WIF". Losing the ".WIF" files for a set of audio file is no catastrophe, you can regenerate new ones in the Pool, see [page 6-97](#).

Opening files from other versions of Cubase

This version of Cubase is “upwards compatible” with older versions of the program. Opening an old file is more or less transparent, but please note that any feature dependant on special hardware will be ignored when a file is opened in a version that does not support that hardware.

Backing Up

Needless to say, it is essential that you back up your data regularly, preferably on other media.

14

Menu and Dialog Reference

Main Audio Menu

Monitors

Brings up the Monitor window. See [page 4-69](#) in this Audio recording book for a detailed explanation.

Pool

Select this item or press [Control]-[F] to bring up the Audio Pool (see the Audio Pool chapter in this audio recording book).

Snap To Zero

This affects the following operations:

- Changing Start and End Insets.
- Using the Scissors in the Audio Editor.
- Using Snip Loop.
- Splitting Parts in the Arrange window.

When Snap To Zero is ticked, the program automatically searches for the closest zero crossing and performs the operation at that point. If Cubase cannot find a Zero Crossing point in the recording quickly it will pause and ask if you wish it to continue the search.

Use Waveforms

When this is ticked, waveforms will be created and used for each new recording. Leaving this unticked may make some operations slightly faster. Even if you don't create waveforms when recording (Use Waveforms unticked) you can create waveforms for any recording afterwards. See the Audio Pool chapter.

Confirm Record

If this option is activated (ticked), the following dialog will appear each time you exit recording audio:



The options allow you to cancel the recording, keep it or save it under another name.

Set Wave Editor...

Opens a dialog where you can select a Wave editor program for processing your audio files. As described on [page 8-181](#), a version of Steinberg's WaveLab Lite audio processing software is included, but you may also select any other Wave editor if you like.

This command only sets which Wave editor to use. To actually open an audio file in the selected Wave editor, double click on an Audio Event in the Audio editor.

Mixdown

This takes all unmuted audio between the Left and Right Locator and mixes it down to a new sound file. This can be used to make a number of Tracks into a stereo file, etc. See [page 11-212](#) for details.

Hardware Setup

Opens a dialog where you can make settings for the audio hardware you use. See [the appendix “Optimizing Audio Performance”](#).

Audio Editor

Active Part

If you edit several Parts at once in the Audio editor, this pop-up menu will contain the names of the Parts. To make one of the Parts active, pull down the pop-up menu and select the Part. The black rectangle in the Lane Info field to the left will move to indicate the active Part.

View

This pop-up menu is used to determine how the Audio Events should be showed in the editor, and with which attributes. The options are described in the Audio Editor chapter in this audio recording book.

Goto and To

These two pop-up menus work exactly like the Goto and To pop-ups in the MIDI editors (see the chapter MIDI Editors - General Information in the main Cubase manual).

Do

The items on this pop-up are described in the Audio Editor chapter. Below follows a brief description of each menu item:

Snip Loop

Splits the Events in the editor at the position of the Left and Right Loop points. See [page 7-171](#).

Repeat

Repeats a section of the audio in the edited Part to fill out the whole Part. Which section is repeated is determined by the To pop-up menu, your selection, the Loop and/or the Cycle. See [page 7-163](#).

Keep

This item keeps the selected Event(s) and deletes all others. Which Events are kept depends on the To pop-up menu, your selection, the Loop and/or the Cycle. See [page 7-167](#).

-
- If you use the Loop or Cycle to select Events to keep, the *start* of the Event(s) must be within the Loop/Cycle.
-

Edit Audio File

Opens the audio file of the selected Event in an external Wave Editor, as described in the chapter “Using an External Wave Editor”.

Pool

Do

The options on this pop-up menu are described in more detail in the Audio Pool chapter. Below follows a brief description of each item.

Duplicate Segment

Creates a copy of a selected segment, or if a file is selected, a new segment that plays the entire file. See [page 6-99](#).

Purge Segments

Automatically deletes all segments that are currently not used in the Song. See [page 6-100](#).

Make Image

Use this item if you need a new Wave Image for the selected file or segment (for example if it is missing or “out of sync”). See [page 6-97](#).

Erase Unused

Selecting this item will make the program look at one selected audio file and erase all material in the file that is not used by any segment in the Pool. See [page 6-101](#).

Normalize, Reverse, Pitch shift/Time correction, Varispeed, Create Stereo and Create Mono

These items apply processing functions to the selected audio file. The procedures and functionality of the processing items are described on [page 6-105](#).

Edit Audio File

Opens the selected audio file in an external Wave Editor, as described in [the chapter “Using an External Wave Editor”](#).

File

Import Audio File

Allows you to import an audio file from disk into the Pool.

Export Audio File

Exports an audio file from the Pool to disk.

Save Pool

Saves the contents of the Pool as a Pool document, which can later be loaded into this or other Songs.

Load Pool

Loads the contents of a Pool document on disk into the Pool. The loaded files and segments do not replace the contents of the Pool but is added.

View

This pop-up menu determines how the files and segments should be displayed, as described on [page 6-86](#).

By Name, By Date, By Size

Three options for in which order the files should be displayed.

Order Segments

This lists the segments in the order they appear in the audio file.

Expand

Select this item to display all segments.

Collapse

Select this item to display the audio files only.

Hide/Show Headings

Hides and shows the column headings.

Appendix A

Optimizing Audio Performance

About Audio Cards

Which cards will work?

Cubase works with any audio card that meets the following demands:

- 16-bit wave file recording and playback.
 - Comes with a Windows driver.
-
- If you have a 486 processor, we recommend that you don't use an audio card which requires "Single Mode DMA" settings". "Single Mode DMA" is sometimes required if the audio card uses DMA channels 0, 1 or 3. "Single Mode DMA" may slow down the computer by 30 to 60% (which in turn will strongly limit the number of channel that can be played back simultaneously, see [page 240](#) in this chapter).
-

Sample rates

Cubase can record and play back at five sampling rates, 11025Hz (11kHz), 22050Hz (22kHz), 32000Hz (32kHz), 44100Hz (44.1kHz) and 48000Hz (48kHz).

The choice of sample rate is made in the Hardware Setup dialog as described on [page 249 in this appendix](#).

Most audio cards support 11, 22 and 44.1kHz. Many cards do not support 48kHz and some don't support 32kHz.

Audio Quality

The audio quality you get from your recordings (the amount of distortion, the amount of background noise etc.) is solely dependant on your audio card and your other audio equipment, not on Cubase.

Number of Audio Channels

The number of audio channels does not depend on the audio card at all (except for the “single mode DMA warning” earlier in this chapter). More on this later in this chapter.

Timing

Cubase uses a part of Windows called Windows Multimedia System. When you activate playback or recording, Cubase “asks” Windows Multimedia System to in turn “ask” the audio card to start playback/recording.

How long this actually takes depends on a few factors, but the most important is the card and its driver. If one particular card is slower than another there will be a longer delay between Cubase's playback command and the moment the audio actually starts playing back.

To compensate for this, there are two Offset settings in the Hardware Setup dialog, one for recording and one for playback. See [page 250 in this appendix](#).

Stereo/Mono

All 16-bit audio cards can record and play back in stereo or mono.

- In Cubase you can decide before each recording which it should be, stereo or mono. This is done in the Inspector as described on [page 4-51](#) in this supplement.
- Playback can also be switched to stereo/mono, as described on [page 248 in this appendix](#).

Simultaneous Recording and Playback

On a regular multi track recorder you often perform something called overdubbing. This is when you listen to one Track and at the same time record on another.

You can of course overdub in Cubase, but there are a few things you have to be aware of.

For a PC audio card to allow simultaneous recording and playback, the card must support something called *Full Duplex*. Many PC audio cards do *not* have the ability to record and play back at the same time. This means that as soon as you enter record mode, you will *not* hear your previously recorded audio Tracks. This is not a limitation of Cubase, but of the cards themselves.

If your card *does* have the ability to record and play back at the same time you should activate this function in Cubase's Hardware Setup dialog, see [page 248 in this appendix](#).

It is of course a great benefit to have this ability, since it allows you to match your current performance to the previous audio recordings, for example when adding vocal harmonies, one by one.

Some cards, like the Roland RAP-10, have the ability to use one channel for playback and the other for recording, which means that you *can* record and play back audio at the same time, but only if playback is limited to mono in the Hardware Setup dialog.

On the next page is a list of some cards that have the ability to record and playback at the same time. Contact your dealer for information about other cards' abilities.

Card	Playback while Record
Turtle Beach Tahiti	Yes
Turtle Beach MultiSound	Yes
Turtle Beach Tropez	Yes
Turtle Beach Monterey	Yes
Digital Audio Labs CardD (all models)	Yes
Ensoniq Soundscape	Only with Windows 95
Ensoniq Soundscape S2000	Yes
Ensoniq Soundscape Elite	Only with Windows 95
Roland RAP-10	Yes, but in mono only
Terratec Maestro 32	Yes
Terratec Maestro 32/96	Yes

Computer Performance and Audio Channels

The number of audio channels you can get from your system depends on a number of factors. These factors are all related to the amount of data that has to be transferred within the system. When you record, data is collected by the audio card and transferred via the computer's processor to the hard disk. When you play back, this process is reversed. On the way there are a number of bottlenecks to pass, which we will try to outline on the following pages. Please also refer to the Read Me files in your Cubase directory which may contain late information on how to optimize your system.

How do I know how many channels I can get?

There are two ways to do this:

- Use the included "Performance Tester" program, to test your computer's performance. See [page 253](#) in this chapter.
- Record and play back channel by channel, until Cubase informs you that there is not enough capacity to play back all the Tracks at the same time.

Computer architecture and processor speed

In all audio operations, the computer's processor is involved, which means that the processor speed will limit the amount of audio that can be handled at any given moment.

Memory access

During playback, data is read from the hard disk and output via the audio card. During this process the data has to pass via the computer's internal memory (RAM). It is very hard to determine exactly how fast any computer is in this respect, but if you are using a 486 or a Pentium computer, a "256 kByte 2nd level cache" will improve performance considerably.

Hard disk caching and access

If you are using Windows 3.1, we recommend you to use SmartDrive (or similar) to increase the hard disk performance.

If you are using Windows for Workgroups (Windows 3.11), we strongly recommend you to activate "32-bit file access" if your system supports it.

Disk Controller Card

The controller card for the hard disk is the next possible bottleneck:

- If you have an IDE or E-IDE drive, preferably use an “Enhanced IDE” (E-IDE) controller card.
- We recommend that you use a controller card connected to your computer's VESA local bus, PCI bus (if it has one) or EISA, rather than to the ISA bus. A VESA or PCI card can transfer data considerably faster than an ISA card.

Hard Disk Speed

The speed of the hard disk is probably the biggest limiting factor.

One unit of measure for a hard disk's speed is the Average Access Time. This should be as low as possible, and the more Tracks you plan to record on the drive, the lower it has be. For eight stereo Tracks, you need an Average Access Time of 20 ms or less.

Many manufacturers do not specify the Average Access Time. You will then have to check out a number of other parameters:

- Average Seek Time. This should be as low as possible.
For eight stereo channels at 44.1 kHz, you need an Average Seek Time of 9ms or less.

- Rotation Speed. Sometimes indicated as Rotation Latency. The Rotation *Speed* should be as high as possible, which in turn makes the Rotation *La-tency* as small as possible.
For eight stereo Tracks you need a Rotation Speed of 5400rps or above, which equals a Rotation Latency of 5.6 ms or less.
- Sustained Data Transfer Rate. This should be as high as possible.
For eight stereo Tracks you need at least 5Megabytes/second.

SCSI or E-IDE?

- In general, SCSI disks are better suited for hard disk recording than IDE drives, for various technical reasons. However, a fast E-IDE drive is better than a slow SCSI one.
- If you decide not to use SCSI, try to get an “Enhanced IDE” (E-IDE) drive rather than a regular IDE one.
- If you use a SCSI or E-IDE drive, make sure it has a built in cache of at least 256 kByte, preferably 512 kByte.

Other hard disk considerations

- Make sure the hard disk does not have automatic “thermal recalibration”. Or, at least use a hard disk that only performs thermal recalibration when the hard disk is not in operation. Some manufacturers sell special “A/V” (Audio/Video) drives, claimed to be specifically suitable for hard disk recording. This usually means (among other things) that the drive doesn't have automatic thermal recalibration.
- Try to get as large a disk as you can. We recommend 500 MByte and up. You will get 1 minute of mono audio for each 5 MByte on the hard disk, per Track, at 44.1kHz sample rate. This means that if you for example record two stereo Tracks, you will use up 20 MByte per minute.
- We recommend that you save your audio files together with your Song documents on a separate drive, leaving the main drive of your computer to hold Windows, program files and the like.

Using the Stereo/Mono and Sample Rate settings to gain more channels

If your computer system limits the number of channels, you should try recording with a lower sample rate and/or mono recording.

This will considerably reduce the amount of data that needs to be transferred from the hard disk to the audio card. A 44100Hz stereo recording creates four times as much data as 22050Hz mono!

An example

A setup consisting of...

- a Pentium 100 with a 256kB 2nd level cache and 24 MBytes of RAM...
- a VESA or PCI local bus E-IDE or SCSI hard disk interface with a data transfer speed of 10 MBytes/second or more...
- an E-IDE or SCSI hard disk with an average seek time of 9ms or better, 512k onboard cache, 5400/7200 RPM rotation speed, 5MBytes/second minimum sustained data transfer rate (or better)...

...should be able to provide eight *stereo* channels at 44.1KHz sample rate.

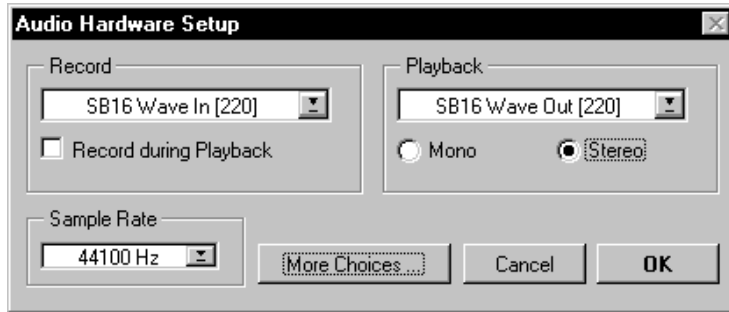
A setup consisting of...

- a 486DX 100MHz, CPU with a 256kB 2nd level cache and 16MBytes of RAM...
- a VESA or PCI local bus E-IDE or SCSI hard disk interface with a data transfer speed of 5 MBytes/second or more...
- an E-IDE or SCSI hard disk with an average seek time of 10ms or better, 512k onboard cache, 5400 RPM rotation speed, 3MBytes/second minimum sustained data transfer rate (or better)...

...should be able to provide eight *mono* channels at 44.1KHz sample rate.

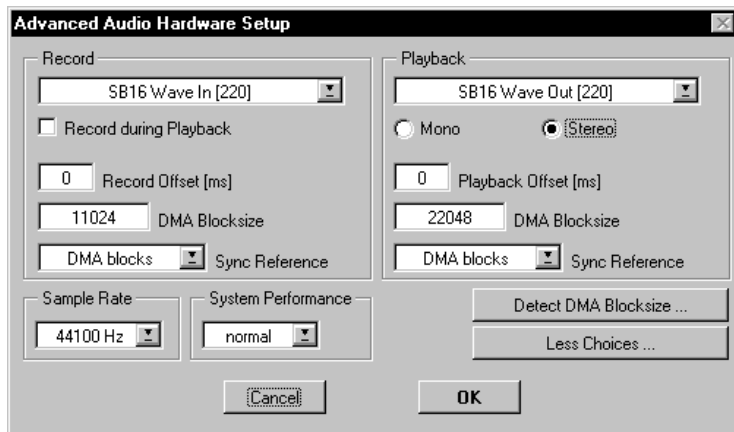
The Hardware Setup Dialog

Introduction



This dialog is opened from the Audio menu and is used for a number of overall settings for audio recording and playback.

More/Less Choices



The Hardware Setup dialog after clicking the More Choices... button

This dialog actually appears in two guises. To switch between these, use the More Choices/Less Choices buttons. All settings that appear in the Less Choices mode also appear in the More Choices mode.

Card Selection

There are two pop-ups in the upper part of the dialog. These allow you to select an audio card to use, should you have more than one.

We recommend you to use the same card for recording and playback. You *can* use two different cards, but you should be aware that if the two cards play back at slightly different Sample Rates, the playback speed and pitch might not match the actual recording speed and pitch.

Playback during Recording

When this switch is activated, Cubase will play back audio Tracks while recording new ones. It is of course a great benefit to have this ability, since it allows you to hear previously recorded audio Tracks when recording overdubs.

However, not all audio cards support this feature. Only activate this switch if:

- Your card is in the list on [page 238 in this appendix](#).
- You know you have a card that supports this feature even though it is not in the list mentioned above.
- You use two separate cards for recording and playback.

Playback in Mono/Stereo

- **When Stereo is activated, stereo recordings will play back in stereo and mono recordings can be positioned in the stereo image with the Pan control in the Monitor window.**

- When Mono is activated, only the left channel audio output on your card will be used for playback. When you play back stereo recordings in this mode, you will only hear the left channel.

The main reason for using mono is if you have a card that supports Playback during Recording, but only when mono is used. See [page 238 in this appendix](#).

Sample Rate

This setting determines the audio quality of your recordings. The higher the value, the better the quality, but when you raise the value, each recording also uses up more disk space and computer processing power.

Changing the Sample Rate

You should not change the Sample Rate setting if you already have files in the Pool (which you will have if you have made any audio recordings at all in this Song).

If you try to do this, a dialog box will appear informing you that if you proceed, the files you have already recorded will play back at the wrong speed. Recordings you make *after* the change will play back normally.

Record and Playback Offsets

If you find that your audio recordings play back late in relation to your MIDI card, you probably have an audio card with a slow response time.

To compensate for this you can adjust the Record and Playback Offsets.

- **When you raise the Playback Offset value, the audio *playback* will be ahead of (earlier than) the MIDI playback.**
- **When you adjust the Record Offset value, and start recording, the audio will be *recorded* ahead of the MIDI, in the same manner as with Playback Offset.**

The delay for most audio cards is in the range of 0 to 20 milliseconds. Normally you would adjust the Playback value only. However, if very large adjustments are needed, you might try with a combination of Record and Playback Offsets.

Sync Reference

This setting is used to switch between two methods of “synchronizing” the MIDI playback to the audio (see [the chapter “Synchronization”](#)). Which one to choose depends on your system.

Normally, the recording and playback sections should be set to the same value.

Sample Position

This is the preferred setting if your card supports it. In this mode the number of samples played are reported from the card to Cubase and this number is used for synchronizing the MIDI playback. This is equivalent to synchronizing to a sample accurate external clock.

Unfortunately, not all audio cards support this method. When you select it, Cubase will check if your particular card and driver does. If not, a warning is issued and the DMA Blocksize option (see below) is selected instead.

DMA Blocks

In this mode, the reference between audio and MIDI is determined by the size of the data blocks being transferred by Direct Memory Access (DMA) to the audio card during recording and playback (yes, this is a heavy technical explanation, but this is a very technical issue!).

For this mode to work properly, the DMA Blocksize setting must be in accordance with the real blocksize used in the system. See below.

-
- If the card does not support the “Sample Position” method, and the “Detect DMA Blocksize” function (see below) doesn’t work, you unfortunately have an audio card not suitable for this application. With such a card we cannot guarantee synchronization between the MIDI and audio material.
-

DMA Blocksize and Detect DMA Blocksize

The DMA Blocksize settings are only of any relevance if “DMA Blocks” is selected as Sync reference. If you use “Sample Position” it doesn’t matter at all how these fields are set.

Normally you do not set the DMA Blocksize yourself. Instead, click the Detect DMA Blocksize, and let Cubase Audio detect it and set it for you.

System Performance

This parameter is used to set a balance between the following two things:

- The time it takes for the program to react to volume and pan changes in the Monitor window and to “redrawings” of the Event Volume curve in the editor.
- The number of playback channels.

Setting:	Description:
High	Changes in the Monitor window (Volume and Pan) will take effect quickly. On the other hand, if you do not have a very fast computer, you may encounter problems with playing back many audio Tracks in this mode (the “System too slow...” message appears).
Medium	This is an intermediate balance between volume and pan updates on one hand and audio playback on the other.
Normal	In this mode, most of the system resources are devoted to audio playback. This is the safest mode for playing back as many audio Tracks as possible.

Using the Performance Tester Program

Included with Cubase you will find a small application called “Performance Tester” (PFMCHKDA.EXE) that runs “benchmarks tests” on your computer system and informs you of how many audio channels it can provide. Please check the ReadMe file included in the Cubase Program Group for information on how to use this application.

Maintaining the Hard Disk

Defragment!

Always make sure your hard disk is defragmented. Fragmentation affects the performance of any hard disk severely.

A defragmentation utility is included with later versions of DOS and Windows 95. See your computer manuals for details.

Delete Unused Files!

Audio files require a lot of disk space. If you don’t delete unused files, your hard disk will soon fill up.

When you use Purge Segments in the Pool, it will be evident which files are no longer used in a Song (the files not used will have no Segments at all). This gives you a way of finding out which files can be deleted. But please remember that an audio file can be used in more than one Song.

Back Up!

It can't be said too often. Disk crashes are a well known phenomenon. Without a regular backup scheme you risk to lose valuable recordings!

Multitasking

Cubase of course supports Windows multitasking. However, note that audio playback may be temporarily interrupted if you switch between programs or keep the mouse button down for a long time. We recommend that you don't switch between programs while playing back audio.

Appendix B

WaveLab Lite

About this Appendix

As described in [the chapter “Using an External Wave Editor”](#), Cubase comes with WaveLab Lite, a special version of Steinberg’s state-of-the-art audio processing software WaveLab. This appendix contains the following information:

- Information about the program, the manual and the on-line help.
- Computer requirements.
- Installation instructions.
- A tutorial.

If you want detailed information about WaveLab Lite features and techniques, please use the extensive on-line Windows Help. This is described on [page 285 in this appendix](#).

About the Program

WaveLab Lite is a scaled-down version of Steinberg’s WaveLab, a pro-level audio processing program. Although some of WaveLab’s advanced functions are not included, WaveLab Lite retains the powerful basic aspects of its big brother:

- WaveLab Lite is a native Windows 95/NT program. It takes full advantage of these operating systems’ new features, such as 32 bit memory handling.
- WaveLab Lite puts no limitation on the length of the files you can work on and does not require vast system resources to handle long files. Furthermore, basic editing operations are equally fast, whether the file is five seconds or one hour long!

- WaveLab Lite uses true multitasking which among other things allows you to edit and apply processing while the program is playing!
- WaveLab Lite has unlimited Undo and Redo!
- All internal audio processing is carried out with 32/64-bit resolution which ensures pristine audio quality.

This is what you need...

To use WaveLab Lite you need the following:

- **A PC computer with Windows 95 or Windows NT 3.51 (or later) installed and ready.**

For more information on computer requirements, see below.

- **Cubase installed.**

WaveLab Lite will only run on a computer on which you run Cubase.

- **Some kind of audio card.**

This should be a Windows Multimedia System compatible 16-bit audio card. If you are using Cubase or Cubase Score, you will already have a suitable audio card, since this is required for audio work. Cubase Audio XT users, who use an external audio device for audio recording, should refer to [page 259 in this appendix](#) for audio card information.

About the Computer Requirements

Processing Power

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

- **The screen updates**
Scrolling, editing and manipulating objects is simply “snappier” on a faster machine.
- **Some Processing tasks**
Some processing which puts heavy demands on the computer will finish quicker on a faster machine.

RAM

WaveLab Lite requires you to have at least 8MB of RAM in your computer. Since WaveLab Lite is disk based, the amount of RAM does not limit the size of audio files you can work with. Even with moderate amounts of RAM, you can have many files open at the same time.

Math Coprocessor

A separate math co-processor or a processor with one built in (486*DX* or Pentium), is recommended. This will speed up many of the processing functions.

Cubase Audio XT Users - About Audio cards

Although you use an external audio hardware device for audio recording and playback in Cubase, WaveLab Lite still requires a Windows audio card for playback of your edited audio files. Any Windows Multimedia System compatible card will work, but the audio quality varies dramatically between cards. For serious work with WaveLab Lite, we recommend you get a card with the highest possible specifications. For example, it should definitely be "16 bit" and support "44.1 kHz sampling frequency".

However, if you only use WaveLab Lite to edit your audio files, any loss in audio quality that you experience when listening to the files in WaveLab Lite (due to deficiencies in the audio card) will not affect the final audio files in any way.

Checking the Audio Card

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

- **Use the software included with the audio card to make sure you can record and play back without problems.**
- **Use the Media Player application (included with Windows and described in the Windows documentation) to record and play back audio.**

Installation

Setting Up The Computer

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

- Windows.
- Cubase.
- The audio card and its driver.

You should also be reasonably familiar with operating the computer.

Colors

At this point you might want to check and possibly change the number of colors you use on your computer screen. See your Windows documentation for instructions on how to do this.

- WaveLab Lite operates best in 256 color mode.
- On some systems 16 colors is slightly slower than 256 colors, and doesn't let you take full advantage of WaveLab Lite's color capabilities.
- Thousands of colors (or more) is not advised since it will make WaveLab Lite run slower and consume more memory than in the other modes.

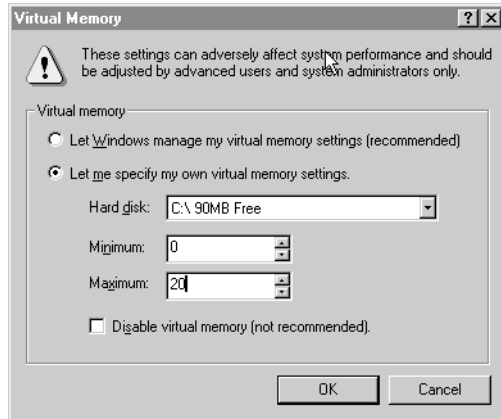
Windows 95 Virtual Memory Settings

If you use Windows 95 it is important that your virtual memory settings are correct, in order to optimize the speed of various operations in WaveLab Lite.

- 1. Make sure no programs are running.**
- 2. Click on the Start button on the Taskbar and select the Control Panel.**
- 3. In the Control Panel window, double click on System.**
- 4. Click the Performance tab.**
- 5. Click the Virtual memory button.**
- 6. Click on the button “Let me specify my own virtual memory settings”.**

7. Specify 20 (MegaBytes) as Minimum, and between 20 and 40 as Maximum.

The Maximum setting depends on how much hard disk space you can “afford” to devote to this and how much RAM you have. The less RAM, the larger the file should be. The optimum figure is two and a half times the amount of RAM you have.



8. Click OK, Yes, Close and Yes in the dialogs that appear.

The computer will be restarted.

Installing the Software

- Before proceeding, read the Software Licensing Contract included in this package. By opening the disk pack or sending back the registration card, you are declaring yourself to be in agreement with the conditions in the contract.

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

1. Insert the WaveLab Lite disk in the drive.
2. Launch the Explorer or open the “My Computer” window.
3. Double click on the drive symbol for the floppy drive.
4. Double click on the “setup” symbol.



setup.exe

The WaveLab Lite “setup” icon.

5. Follow the instructions on screen.

When the installation is finished, the program is found among your other programs on the Start menu (Windows 95) or in the Program Manager (Windows NT).

This completes the installation of your WaveLab Lite program! But, you’re not really done yet...

Program Settings

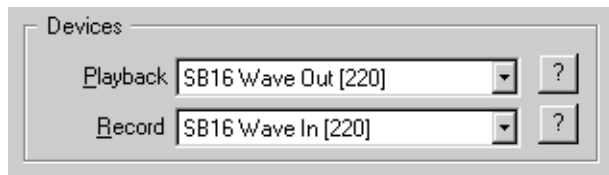
Some settings should be made in the program before you start working. So, launch WaveLab Lite and perform the following operations.

Audio Card Settings

You need to “inform” WaveLab Lite of the audio card you intend to use:

1. Select “Preferences” from the Options menu.
2. Click on the “General” tab.
3. Select the audio card you want to use for recording and playback, from the Devices pop-ups.

If you only have one audio card you can possibly also select the “Microsoft Sound Mapper” options, (the sound mapper is a “virtual audio card” which “maps” all audio to your real card). However this does not let you take full advantage of the card’s driver when recording audio and is therefore not recommended.



In this example, a Sound Blaster 16 card has been selected.

Temporary File

You also need to specify where WaveLab Lite should store its temporary files. Temporary files are used for certain operations, such as WaveLab Lite's extensive Undo function (see [page 280 in this appendix](#)).

- 1. Create a separate folder in which to store your "temp" files.**

This is done from the Desktop, using the Explorer or the File Manager (depending on what Windows version you are using).

-
- This folder should be on your fastest hard disk and you should make sure you have plenty of room available on that hard disk (or partition).
-

- 2. In the Preferences dialog, click the File tab.**

- 3. Either type in the path to the directory or click the Browse button to locate and select the folder.**

Save the Preferences

To make permanent the settings you just made, proceed as follows:

- 1. Click on the General tab in the Preferences dialog.**
- 2. Make sure that "Save preferences on exit" is activated.**
- 3. Close the Preferences dialog.**

Installation done! Where do I go next?

There are basically three things we suggest you do:

- Go through the tutorial on the following pages to try out the techniques and features in WaveLab Lite.
- Examine your WaveLab Lite directory and possibly other disks included in this package for files that might be useful (or even essential) to you.
- If you have problems, check the Troubleshooting section in the on-line help.

Getting Started with WaveLab Lite

What you will learn in this section

If you follow this quick guided tour, you will learn how to:

- Open and save files
- Play back
- Make Selections
- Cut and Paste
- Create new Files using Drag and Drop
- Use Processing
- Make the most of WaveLab Lite's Undo function

For many of the operations described below, we only suggest one way of performing them. In fact there are short-cuts and alternative options for many of these operations. These are described in the on-line help.

-
- In this tutorial, WaveLab Lite is used as a stand-alone program. For information about how to open WaveLab Lite from inside Cubase, see [the chapter "Using an External Wave Editor"](#) in this book.
-

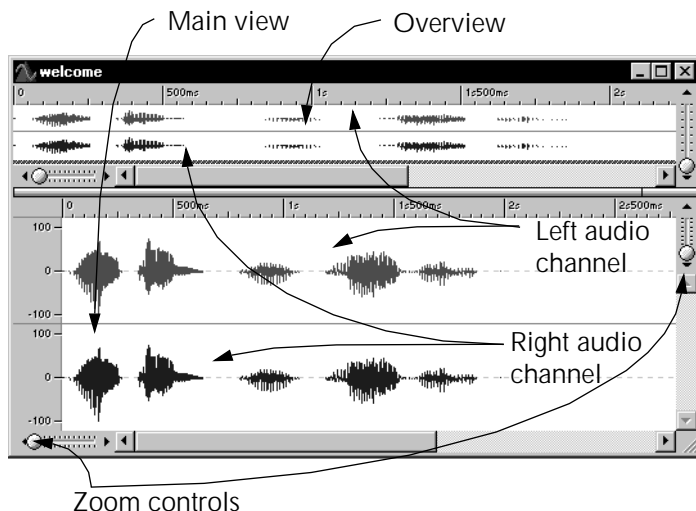
Launching the Program

If WaveLab Lite isn't already running, launch it.

-
- Each time you launch the program a useful tip will appear in a Help window. To deactivate this feature, deselect "Tip of the day" from the Help menu.
-

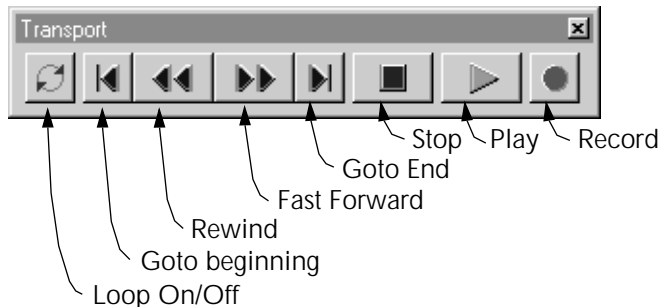
Opening the Demo File

1. Pull down the File menu and select Open.
2. In the standard Windows 95 dialog that appears, locate the file “WELCOME” in your WaveLab Lite folder.
This file was installed with the program. It is a spoken sentence recorded in stereo.
3. Click on the file to select it and click Open.
The file opens in a new window.



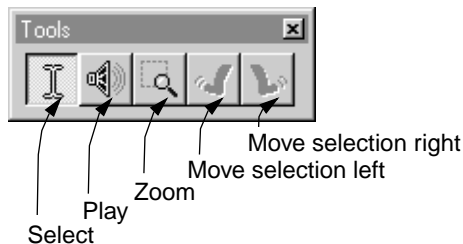
Getting the Transport up on screen

- If you don't see the Transport, select Transport from the Windows menu.
- If the Transport obscures your view of the waveform, drag it by its title bar to another position on the screen.



Getting the Toolbox up on screen

- If you don't see the Toolbox, select it from the Windows menu, as with the Transport.



Playback

Playing the entire file

The Transport works much as the controls on a regular tape recorder.

1. Click on **Goto Beginning** to move the wave cursor to the beginning of the file.
2. Click **Play** to play back from the beginning.
3. **Try out the other controls on the Transport, but don't click Record.**
Please note that clicking the Stop button when the program is stopped moves the wave cursor to the beginning of the file (if you have a *selection*, see below, this button moves the position to the beginning of that instead).




Playing from any position

1. **Select the Play Tool from the Toolbox.**
2. **Point anywhere in the waveform and press and hold the mouse button.**
Playback starts from the position at which you click and continues as long as the mouse button is down.

Making a selection

Now let's isolate the word "To" for a cut and paste operation. This is done by selecting that part of the wave.

1. **Play back the wave until you have a reasonable idea of where in the wave the word "To" occurs.**
2. **Select the selection tool from the Toolbox.**
3. **Move the cursor into the waveform area. Do not press the mouse button yet, but drag the cursor up and down over the waveform and note how its appearance changes with the vertical position:**

Position	Pointer Shape	Explanation
Upper half of left channel		Only the left channel will be selected.
Middle area		Both channels will be selected.
Lower half of right channel		Only the right channel will be selected.

4. **Position the arrow pointer in the middle, and at the beginning of the word "To".**

5. **Press the mouse button and drag the mouse to the right until the entire word (and no more) is selected, then release the mouse button.**

Don't worry if you don't get it exactly right the first time, you can adjust the selection later as you will see. However, if you want to redo the operation completely, click once somewhere outside the selection (or press [Esc]) and try again.



The word "To" selected.

6. **Check the selection by clicking the Play button on the Transport.**

As you will note, the wave cursor has moved to the beginning of the selection so that you can play from there to check that the start of the selection is as intended. If the cursor is not at the beginning of the selection, press [1] on the numeric key pad.

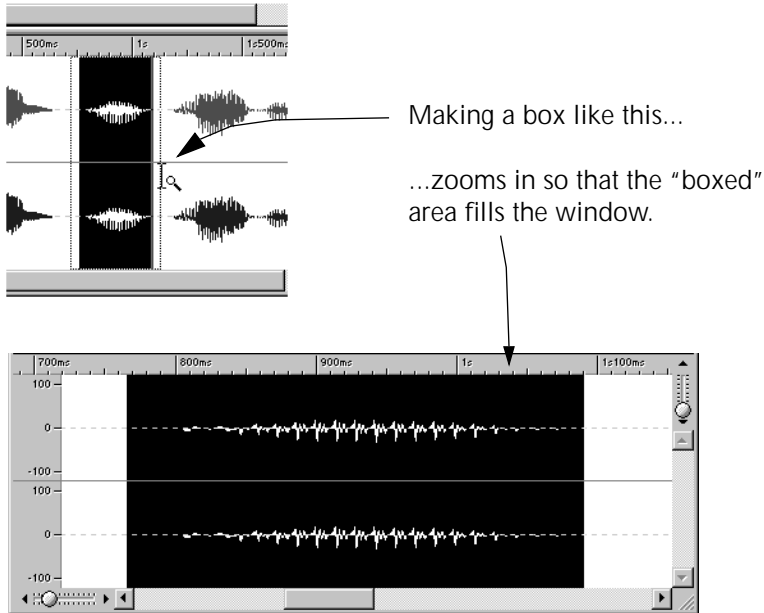
7. Let the program play to the end of the file. Then click the Stop button once (don't double click!) and the wave cursor will move back to the beginning of the selection so you can play the same section again.
8. Press the right mouse button with the pointer in the waveform display. Select "Play Selection".

This allows you to check if the selection ends at the right place.

If you need to adjust the selection, proceed as follows:

9. Select the magnifying glass from the Toolbox.

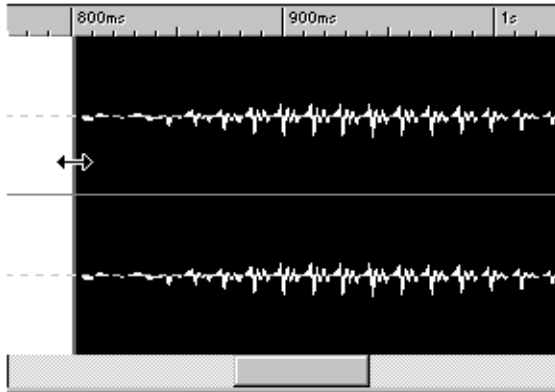
- 10. Move the pointer into the waveform area and drag from left to right to make up a box that is slightly larger than the selection.**
The program zooms in so that the selection almost fills up the entire window.



- 11. Select the selection tool.**

12.Position the pointer close to the beginning or end of the selection.
It turns into a double arrow.

13.Press the mouse button and drag left or right to extend or contract the selection.



Adjusting the selection start point.

14.Press [J] to zoom out all the way.

If this doesn't work, it is because the wave window isn't the active window.
Click once in the wave window to make it active and try again.

15.Use "Play selection" to check.

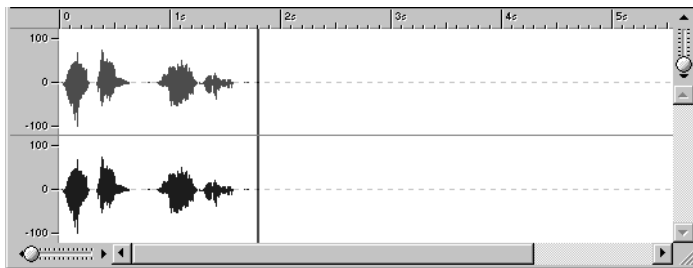
Cutting and Pasting

Now let's change the order of the words in the sentence.

1. **With the selection encompassing the word "To", select Cut from the Edit menu.**

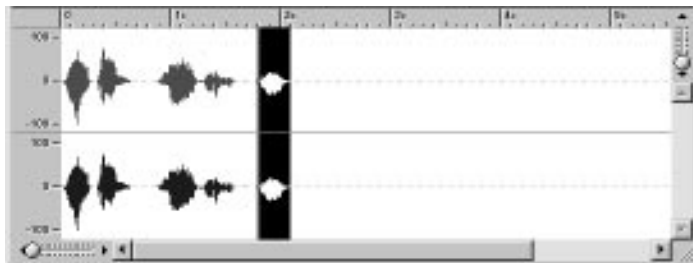
The word "To" is removed from the waveform.

2. **Click Stop to move the Song position to the beginning of the file and play back to hear the change.**
3. **Use the selection tool to click after the "Wavelab" to move the flashing wave cursor there. Make sure you click somewhere in the middle so that you get a cursor flashing across both channels!**



4. Select Paste from the Edit menu.

The audio you previously Cut is inserted at the wave cursor.



5. Click Stop to move the cursor to the beginning, and play back to check.

OK, the sentence doesn't make much sense, but that's not the point. The important thing is: You have now performed your first real audio edit with WaveLab Lite – congratulations!

About the Control Bar



The Control bar has short-cuts for many operations, including Cut and Paste and Undo and Redo (see below). Clicking one of the buttons on the Control Bar performs the same action as the corresponding menu item.

Control Bar Help (Show tips)

To find out what a certain button on the Control Bar does, position the arrow pointer over it, without pressing the mouse button. After a short while, a text appears informing you of the name of the button.



This text tells you what the button does.

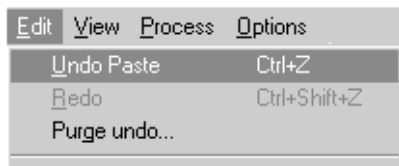
This function can be turned off by deactivating “Show Tips”, in the Toolbars/Status Bar part of the Preferences dialog.

Using Multiple Undo

So maybe you decide that the edit wasn't so great after all, and you wish you could go back to the original. With WaveLab Lite you can!

1. **Check the Edit menu. The first item is called “Undo Paste”.**

This is because the last thing you did was Paste something in.



2. **Select “Undo Paste” from the Edit menu or press [Control]-[Z].**

The Pasted audio now “disappears” from the wave file.

3. **Check the Edit menu again. It now says “Undo Cut”, since this was the last thing you did *before* pasting.**

4. **Select this item to also undo the Cut.**

The wave is now back to its original state!

WaveLab Lite also features a Redo feature, allowing you to “Undo the Undo”. This menu item is located just below Undo. If you wish, experiment with Undo and Redo to get a feeling for how these two interact.

Dragging a selection to a new file

Now let's create a completely new file out of a selection.

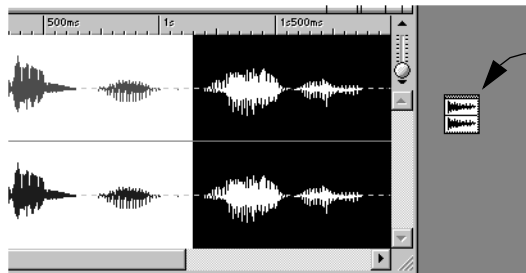
1. **Make sure you can see some of WaveLab Lite's "Desktop" (the area behind the document windows).**

If not you can click the Cascade Windows icon the Control Bar (see above for instructions to find out which button does what).

2. **Use the selection tool to select the word "WaveLab".**

3. **Position the pointer over the selection, press the mouse button, and drag out of the window.**

The pointer turns into a "new window" icon which also indicates whether the new wave will be mono or stereo.



Dragging the
selection out of
the window.

4. Release the mouse button.

The new window appears.

5. Play back to check.

Saving the new file

If you close this new window now, without saving, the file will be lost forever. To save the new file permanently, proceed as follows:

1. Pull down the File menu and select “Save As”.

A standard File dialog appears.

2. Specify a name and location for the file.

3. To specify whether the file should be saved in “Wave” (.WAV) or “AIFF” (.AIF) format, either add an extension when typing the name or use the pop-up at the bottom of the dialog.

Wave files are the most common format on the PC.

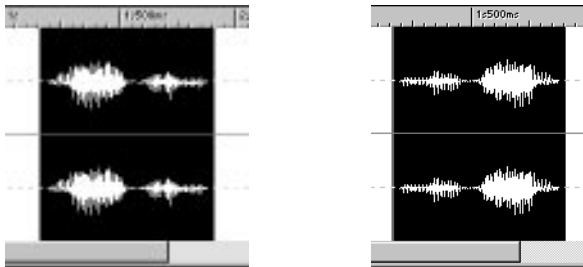
4. Click Save.

Applying Processing - Reverse

Finally, let's apply some simple processing to a selection.

1. Click in the original window, to bring it forward.
2. Make a selection of some word, as before.
3. Select Reverse from the Process menu.

The selection is now turned backwards.



Before and after reversing the word "WaveLab".

4. Play back the entire wave to listen to the result.
5. If desired, experiment with other types of processing, using the options on the Process menu.

6. When you have finished, select Close All Windows from the Windows menu.

The dialog that appears allows you to save the file as it is now, overwriting the original ("Yes") or close the file without saving any of the changes you have made ("No"). You decide!

Congratulations! This finishes this quick tour of WaveLab Lite. Hopefully you have gained some understanding of the nature of the program. To learn all the details, experiment with the program and use the on-line help (as described on the next page)!

Getting more information - the On-line Help

WaveLab Lite supports the on-line Windows Help system. Use this if you want information about features and functions in the program. There are a number of ways to invoke the Help system:

- **By selecting “Topics” from the Help menu.**

This takes you to the Help system’s “Table Of Contents”. From there you can move to the Index and Find tabs.

- **By pressing [F1].**

This gives you context-sensitive help. If a window is active, you will get help on that window. If a dialog box is open, this dialog is described. If a menu item is selected, the program will explain it.

-
- Please note that help on menu items only works under Windows 95.
-

- **By clicking on a Help button in a dialog.**

This displays general information about that dialog.

- **By clicking the question mark icon in a dialog’s title bar and then moving the mouse over an item.**

A pop-up appears, describing that item.

- **By clicking with the right mouse button on an item in a dialog and then clicking on the “What’s This?” pop-up.**

This is the same as using the question mark option. Note though, that this does not work on all items.

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