
CUBASE

audio

for the Apple Macintosh

Version 2.0
Operation Manual

Steinberg

Operation Manual by Ernst Nathorst-Böös.

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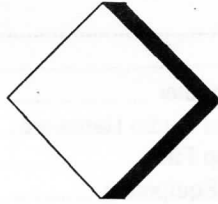


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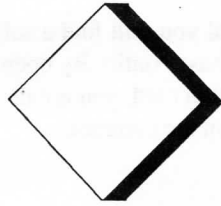
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Read This!

Read This!

There are some pitfalls we want you to make sure to avoid, and some advice we want to give, before you start to work with Cubase Audio.

Software Licensing

At the back of this manual you will find a software licensing contract. Read this before you install Cubase Audio. By opening the sealed pack of disks or sending back the registration card, you are declaring yourself to be in agreement with the conditions in the contract.

Installation

The program should be installed using the Installer program, which automatically puts all files in their right places. For more info, see the chapter Installation.

Registration card

Send in the registration card! That's the only way for us to know that you exist. And we do want to know, believe us. If we receive the registration you will be informed of upgrades of the program. There may be other direct benefits as well, printed on the card.

Computer

This program runs on any Apple Macintosh computer with a hard disk, at least 8 megabytes of RAM (we recommend 12 or more) and System 7.0 or later. Further requirements on the computer are stipulated by the Digidesign hardware you plan to use with it.

The more RAM, the more MIDI you will be able to record. If you have a large screen or more than one screen, the program will use up more RAM as described in the Installation chapter.

The bigger the hard disk(s) you have the more audio you will be able to record. Different audio recording systems put different requirements on the hard disk(s). Please consult the documentation that came with the audio recording hardware.

Virtual Memory

Cubase Audio is Virtual Memory *compatible*. This means you can use Cubase Audio with Virtual Memory turned on, but it will not let itself be moved or swapped out to disk.

MIDI Interface

You can use any standard MIDI Interfaces, connected to the Modem Port, Printer Port or one to each. You can also use the MIDI Time Piece from Mark of the Unicorn or the Opcode Studio 4 or 5 in "MIDI Time Piece emulation mode". You can even have four MTPs connected at the same time, for a total of 512 MIDI channels.

Apple MIDI Manager

Cubase Audio supports the Apple MIDI Manager, but we do not recommend you to use it. Read more about this on page 2-11, page 2-2 and Appendix 3, page 1.

Copy Protection

The Master Disk is copy protected. This disk is the verification to that you have purchased the program. Take good care of it. After installation, write protect it and put it in a safe place.

Installation

The program comes on three disks. A special "Installer program" helps you put all the files you need onto your hard disk. Please refer to the Installation chapter.

Defragmentation

When you create many files on your hard disk (as you do with audio recording) it will eventually become *fragmented*. This will degrade its performance to a point where you will not be able to record audio properly. Therefore, you should regularly use a special program to defragment the hard disks where you put your audio files. For recommendations on which defragmentation program to use, contact your Apple dealer.

If possible, keep the System and program files on one disk, and your audio and song files on a separate disk.

Saving

Program crashes are a well known fact in the computer industry, and a major crash will probably result in that the material resident in memory is lost forever. The only way to insure yourself against disasters is to save regularly while working. Disks (even hard disks) can get damaged, so making backups of your music is a must!

"Read Me" Files

There might be a file called "Read Me" on any of the disks that come with the program. This is a text file which describes any changes or additions to the program that are not stated in the manual. Open the file using any word processor or TeachText.

Note Off Controllers

Some Roland synthesizers send a MIDI message called All Notes Off as soon as you release all keys on the keyboard. This may lead to very confusing results when the same synth is used to play back music from more than one Track. If you experience this problem you should filter out this message using the Controller filters in the MIDI Filter dialog box.

Running Status

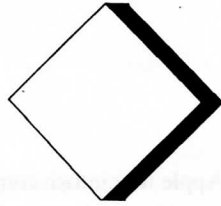
There is a way to make MIDI transmission more compact, called Running Status. This was not a part of MIDI from the beginning so not all units can accept this data compression method. If you experience problems with a Korg DDD1 or DDD5, an Ensoniq Mirage, a Sequential Prophet T8 or a very old Yamaha DX7 you should make sure that you are not transmitting under Running Status from your computer. Check the setting in the MIDI Setup dialog box. It will be obvious if you have this problem since the instrument will hardly play back sequenced material at all.

The Operation manual and Cubase Audio vs Cubase

This operation manual begins with a tutorial section showing you how to get started with MIDI recording in Cubase. After that follow descriptions of all aspects of the regular version of program, that is, the MIDI only version. The audio aspects of the program are described in a separate section of this manual, at the end.

The whole manual is designed so that you don't have to read all the text, only the sections that interest you. However, you should get familiar with all basic operations as they are described in this book. At the end you will find Indexes so that you can look up any function or feature that you need to know more about. In the back you also find a list of all computer keyboard commands.

Whenever the text in the manual refers to a key on the computer keyboard, the key's name is shown in brackets, like this: [Return].



Installation

Introduction

You must install the program using the Installer program as described below, or it won't run!

Your System

This program runs on any Apple Macintosh computer with a hard disk, at least 8 megabytes of RAM (we recommend you to have 12 or more), and system version 7.0 or later. To record audio, you need a faster Macintosh, with a 68020 or faster processor.

Do not use the Apple MIDI Manager if you don't need it, simply because your computer will perform better without it.

About Memory

As stated above, the program *does* run on a Macintosh equipped with 8 Mega-Byte of RAM. However, this requires you to turn off all but the absolutely necessary Extensions, set the memory cache to minimum, etc. If you are to run the program with eight MegaByte you must make sure that your System does not use up more memory than around 1700K. To find out how much RAM your system uses, select "About Macintosh" from the Apple menu in the Finder.

As you may know, you may allocate a program more or less RAM when you are running it under Multifinder or System 7. This is done from the Finder, *after installation*. The exact procedure varies a little with the version of the operating system you are running and is described in the manual that came with the computer.

The Default setting for Cubase Audio is 3500k, which is calculated for a "normal" size screen (a 12" or 13" monitor). If you are using a large screen monitor, please raise this figure to around 3800k. If you have several monitors even more memory might be needed, only experimentation can tell. Allocating more RAM to Cubase Audio makes it possible to record more MIDI and a larger number of audio events (not longer individual audio recordings, their

length is only dependant on disk space). After starting the program, select About Cubase from the Apple menu to see how many events your current RAM setting gives you.

Running without an audio card

You may run the program without any audio hardware installed and without any sound card INIT files. The program will warn you when you start it and some commands related to audio recording will be greyed out or impossible to use. However, any song will play back although any audio tracks will of course be silent.

Setting Up The Computer

If your Apple Macintosh isn't already set up as it should be, do so, following the instructions in the computer's Operation Manual. You should also be reasonably familiar with the computer and operations like handling disks and using the mouse (clicking, selecting, double-clicking and dragging).

Read the "Read This" chapter at the beginning of this manual and the Software Licensing Contract at the end, before proceeding. By opening the sealed pack of disks or sending back the registration card, you are declaring yourself to be in agreement with the conditions in the contract.

Installing The Digital Audio Hardware

For installing the hardware needed for audio recording, please refer to the manual that came with the recording system you are using. Also please try to use any accompanying software to verify all aspects of operation of the hardware, before you use it with Cubase. This makes it a lot easier to find the cause to any problems you might have at an initial stage.

About The DigiSetup File

If you have Digidesign hardware already installed in your computer, you will also have a file in your System folder, called "DigiSetup". This contains a number of settings related to your Digidesign Hardware (which cards you have, their recording frequencies, etc).

We recommend you to delete this file before installing Cubase Audio. This means you will have to redo a few hardware settings, but that will only take you a couple of minutes. Deleting this file minimises the risk of startup problems.

If you have changed your hardware configuration (added or replaced a Digidesign card) you should *definitely* remove the DigiSetup file before installing Cubase Audio.

Setting Up The Computer

If your Apple Macintosh isn't already set up as it should be, do so, following the instructions in the computer's Operation Manual. You should also be reasonably familiar with the computer and operations like handling disks and using the mouse (clicking, selecting, double-clicking and dragging).

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If you have changed your hardware configuration (added or replaced a Digidesign card) you should *definitely* remove the DigiSetup file before installing Cubase Audio.

Installing the MIDI Equipment

- ❑ Make sure the computer's power is turned off!
- ❑ Connect the interface to the computer. Cubase Audio defaults to outputting MIDI to the Modem Port, so we suggest that you start with this. If you have two interfaces or an interface with two inputs, use the Printer port as well.

A note for users of the MIDI Time Piece (MTP) from Mark of the Unicorn: Cubase Audio supports this interface fully. You can have up to four of them connected, two to each port on the Mac, for a total of 512 MIDI Channels. Please refer to the MTP's Operation Manual for more details on the installation and to page 6-7 and page 21-12 on how Cubase Audio reads from and outputs to the MTP.

A note for users of Opcode Studio 4 and 5: There is a ReadMe file on one of the Additional Files disks, telling you how to install and use these interfaces with Cubase.

- ❑ Connect the MIDI Out of the keyboard (or other MIDI device) you plan to use for recording, to the MIDI In of the interface.
- ❑ If your interface has only one output, connect the MIDI Out of the interface to the MIDI In of the first instrument. Then connect the MIDI Thru of that instrument to the MIDI In of the next device. Continue to chain the units in this way until they are all connected to the computer. If you plan to use more than three sound sources we recommend that you either use an interface with more than one output, or a separate MIDI Thru box instead of the Thru jacks on each unit. If more than one instrument *doesn't* have a MIDI Thru Connector, you will *have* to get a MIDI Thru box or an interface with several Outs.
- ❑ If you are using the Mark of the Unicorn MIDI Time Piece interface, connect it to either port (if it doesn't matter to you, use the Modem port), and connect your equipment to it as described in its manual.

- ☐ Make all other interface connections (like SMPTE in and out), all audio connections, turn on the interface(s) and the instruments and verify that they sound (if possible).
- ☐ Set each instrument to receive on a certain MIDI Channel, or if you have multi-timbral instruments, set each Sound (Timbre, Part, Program, Patch) to receive on a different MIDI Channel.

Installing the Software

- ☐ Start up your computer using your normal System, as described below.
- ☐ If you plan to record audio on the same disk as you put the program on, we recommend you to defragment the disk before installing Cubase Audio. Defragmentation of a hard disk is done using a special utility program that does not come with your Mac. Please contact your dealer for more information.

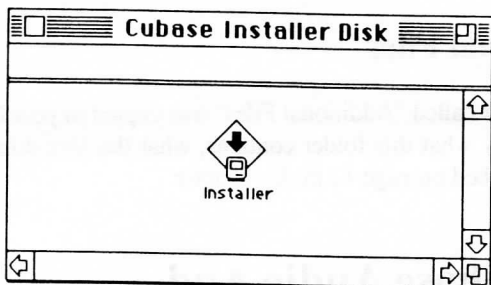
Installing DAE

The DAE (Digital Audio Engine) software from Digidesign comes on a separate disk, called "DAE Installer Disk". This disk is included in the Cubase Audio package. It is installed as follows:

- ☐ Put the DAE Installer Disk in your disk drive. Locate the "Installer" icon (*not* "Install DAE") and double click on it.
- ☐ Use the "Switch Disk" button to select your startup hard disk (the one with the System Folder on it).
- ☐ Click the "Install" button.
Insert disks as needed. See page 12 in this chapter for a list of what files get installed and where.
- ☐ At the end of the installation you will be required to restart your computer. Do so.

Installing Cubase Audio

- ☐ Make sure the Cubase Audio Installer disk is not write protected.
- ☐ Put the Cubase Audio Installer disk in your disk drive. Locate the "Installer" icon (*not* "Install Cubase") and double click on it.



- ☐ Use the "Switch Disk" button to select your startup hard disk (the one with the System Folder on it). Follow the instructions on screen.
- ☐ Click the "Install" button.
Insert disks as needed. See page 12 in this chapter for a list of what files get installed and where.
- ☐ At the end of the installation you will be required to restart your computer. Do so.
- ☐ Locate the Cubase Audio folder on your hard disk, open it and examine its contents. All files that are in the folder now, except those in the Additional Files folder, are absolutely necessary to run the program. Do not move or delete these files. However, you can use the Finder to move the whole folder to any place on any of your hard disks.

Read The Read Me File!

In the Cubase Audio folder that got created on your hard disk during installation you might find a file called ReadMe. This then contains any late-breaking updates that didn't make it into the manual. Please double click on it and read it before proceeding.

Register Your Software!

Please fill out and send in the registration card that comes in this package. Doing so will make sure you are entitled to technical support and kept aware of updates and other news regarding Cubase Audio. In addition, you will receive a second master disk with an additional "install" (see below).

Installing Additional Files

During Installation, a folder called "Additional Files" was copied to your Cubase Audio Folder. Exactly what this folder contains, what the files do and where to put them is described on page 13 in this chapter.

Launching Cubase Audio And Authorizing The Hard Disk

Cubase Audio uses disk based copy protection. The disk that comes in the package is your master disk, your verification to that you have bought the program. Follow the instructions below meticulously. After installation, keep the master disk in a safe place.

Before you can use Cubase Audio you need to authorize your hard disk. This is only done once and the copy protection is then totally "transparent".

- ☐ Double click on the Cubase Audio Program icon.



Cubase Audio

- ☐ The program prompts you to insert the Cubase Audio Master Disk. Do so and click Authorize in the dialog box that appears.
- ☐ After a while a new dialog appears telling you the authorization is done. Click OK.
- ☐ Yet another dialog appears informing you that the program is being decompressed.

- ☐ The Cubase startup dialog appears. After a while this goes away leaving you with the Arrangement window in the Autoload Song.

If You Have Startup Problems

DigiSetup File

As described above, there's a file in your System folder called DigiSetup. This contains the latest settings for your Digidesign hardware. After installing the DAE disk, your old DigiSetup file could possibly cause problems. Please delete this file and try again.

Selecting A Card

If you have several audio cards installed in your computer, and wish to select between them, or if DAE doesn't seem to "find" all your audio cards, quit Cubase Audio, hold down the [Command] key and launch it again. Keep the [Command] key down until the Hardware Setup dialog box appears.

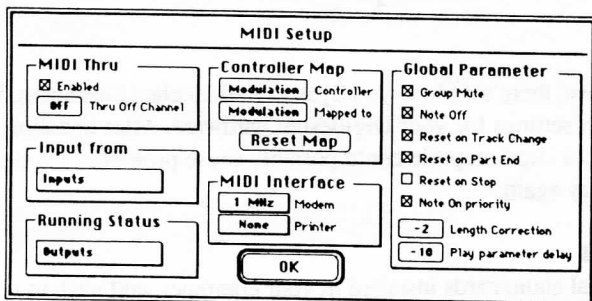
Making Audio Hardware Settings

- ☐ The Hardware Setup dialog on the audio menu allows you to make settings specific to the audio hardware you are using. Please check this and change what's needed. The dialog box is described in detail in your Digidesign documentation.
- ☐ The System dialog, also on the Audio menu, contains further audio recording settings. Most important is the "Default Rec File Size", which determines the maximum length recording you will be able to make. Please change this if needed.

Making MIDI Interface settings

Before you proceed, you have to "tell" Cubase Audio what MIDI Interface to expect.

- ☐ Pull down the Options menu and select MIDI Setup.



- ☐ In the lower right corner of this dialog box you have the MIDI Interface settings. The Mac has two data ports called Modem and Printer and you may use two interfaces, one connected to each port.

You have to make sure that the port is not occupied for any other function or by another program, Control Panel or Extension. For instance if you use the printer port for printing on a laser printer, you have to deactivate AppleTalk in the Chooser before you can use it for MIDI.

- ☐ Use the two MIDI Interface pop-up menus to set each port correctly.
 If you use a regular interface you should select a clock rate: 0.5, 1 or 2 MHz. 1 MHz is the most common but the manual that came with the interface will tell which to use.
 If you use the MIDI Time Piece from Mark of the Unicorn you can set the port to 1MTP or 2MTPs, depending on how many MIDI Time Pieces you have connected to each port.
 If you use only one interface, set the other port to None.
 If you use the Apple MIDI Manager this whole section of the dialog box is greyed out, since all interface settings are done in the Patchbay program, see Appendix 3.

Making Your Changes "Stick"

If you make any changes to the program's settings (in dialog boxes, in the Instrument list, etc), you will probably want the program to start with those same settings every time. This is done by saving a so called Autoload Song, see page 34-2.

Checking Your MIDI Setup

Before you close the dialog box, make sure that your MIDI Thru setting is correct. If you use a synth for recording, set this to *Local Off* if possible, and activate Cubase's Thru function (checked). If you use a separate MIDI device like a MIDI keyboard with no sounding capabilities, a guitar to MIDI converter with no built in synth or similar, Cubase should also have Thru enabled. If you use a synth or similar that can't be set to Local Off, the options are a little bit more complicated due to the nature of MIDI. More information is found on page 21-10.

- ☐ Close the dialog box, by clicking on OK.
- ☐ Play your MIDI keyboard or other device. Check the "In" box on the Transport Bar so that you are sure that Cubase receives MIDI data. If you have Thru activated, the "Out" box just below it should indicate Output of data.



OUT



IN

The In and Out indicators on the Transport Bar indicate MIDI activity.

- ☐ Proceed to the next chapter to try out the MIDI capabilities of Cubase. When you feel familiar with that, proceed to audio recording, which is described in a separate section at the back of this manual.

What is On The Disks?

DAE Installer Disk

This contains a number of Digidesign files needed for the audio recording hardware to operate properly and for the communication between Cubase Audio and the Digidesign hardware to work. All these files are automatically installed and should not be moved after installation.

Cubase Audio Master Disk

This disk only contains one file, called Cubase Audio. This is naturally installed automatically.

Cubase Audio Installer Disk

This contains a large number of files and folders.

The following files should not be moved from the folders they get installed in.

File/Folder name	Location	Description
Cubase Resources, Score Resources and Audio Resources	Cubase Audio folder	Resource files needed to run Cubase Audio.
Audio Tools	Cubase Audio folder	A folder with Plug In tools for the Cubase Audio Wave Editor.

Autoload Song	Cubase Audio folder	This will make the program start with some sensible settings (see "Making Your Changes Stick", above).
System Fonts	System folder (exact location depending on System version)	A folder with TrueType Fonts for the Score Editor.
PostScript fonts	System folder (exact location depending on System version)	Fonts for printout on PostScript printers.
Macintosh IIfx/Quadra 900	Extensions folder in System folder	Files necessary for the Macintosh IIfx and Quadra 900 computers

Additional Files

Also installed into your Cubase Audio folder is a folder called Additional Files. This contains files that you may or may not need.

All the folders in this folder contain ReadMe files with further information.

File/Folder name	Description
AIFF<->DD	A program which converts audio files between Audio IFF and Sound Designer II file formats.
CS-1	A file for users of the JL Cooper CS-1.
Cubase Keyboard	Alternative keyboard layout documents (see your Mac manual).
Digidesign Mix Maps	Mixer Maps for automation of your Digidesign audio recording hardware.

DNA Grooves	Information about the Grooves in the Autoload Song.
Drum Maps	Drum Maps for various equipment with built in drum sounds.
IPS Examples	Examples for the Interactive Phrase Synthesizer.
MIDI Machine Control	Drivers for tape recorders which have MIDI Machine Control implemented. If you have one of these recorders, put the appropriate driver file in the same folder as your Cubase Audio program.
MIDI Manager	Apple MIDI Manager Files.
Mix Maps	Various maps for Cubase Audio's MIDI Mixer.
Print Demonstration	Printing examples for the Score Editor.
R8/G16/G24	Driver files and Mixer Maps for Fostex tape recorders. If you have one of these recorders, put the appropriate driver file in the same folder as your Cubase Audio program. For further info, see the chapter Tape Tracks, in this manual.
SampleCell	If you use the Digidesign SampleCell sample playback card, please read the "Read this" document in this folder.
Studio 5 Owners	A ReadMe document for those who use the Studio 5 MIDI interface from Opcode Systems Inc.

About Driver files

Some driver files are found in the "Additional Files" folder. The Fostex R8/G16/G24 driver files should also be put in the Cubase Folder if you plan to use them. For information about the Digidesign SampleCell driver, see the text document in the folder. For information about the Cooper CS-1 setup file, see the CS-1 manual.

About The Apple MIDI Manager

In the "Additional Files" folder you find the MIDI Manager "package" in a folder with the same name. Cubase Audio supports the Apple MIDI Manager, but use it only if you *really* need it.

To install the Apple MIDI Manager, open the MIDI Manager folder and drag these three files and release them on top of the System Folder symbol:



The MIDI Manager is an INIT file. That means that it is automatically loaded when you start the computer. After dropping it on the System Folder, you have to *Restart* the computer (Special Menu in the Finder) to load it the first time.

If at some later point you want to use Cubase Audio without the Apple MIDI Manager, simply drag the MIDI Manager file out of the System Folder and *re-start* your Mac. Or, use an INIT management program.

To make settings for the MIDI Manager you need to use a program called PatchBay. This comes in two flavours, as a program (application) and as a DA (Desk Accessory).



You can use either, it is a matter of preference only (if you use System 7, you should forget about the DA version).

About Printers and Printer Files

Cubase Audio/Score can print on any Macintosh compatible printer. Just install it and use the Chooser to select it as the active printing device, as described in the operation manual that came with the printer.

When you installed Cubase, the necessary fonts for displaying the Score on screen and for printing it on a non-PostScript printer were installed into your

System file. These fonts (called *Cubas* and *NCho*) are so called TrueType fonts.

Two PostScript font definitions of the Cubase fonts, called *Cubase* and *NChords* were also installed into your System Folder. This allows for perfect printout in any size on a PostScript printer. For more information, see the Score Printing addendum at the end of this manual, page 1-7.

About The Copy Protection

As you noted when installing Cubase Audio, you are allowed to authorize one hard disk to run Cubase Audio. If you send in the Registration card that comes in this package you will receive another master disk which entitles you to one more installation.

Please observe the following points:

- ☐ If you should accidentally delete the Cubase Audio program file, don't worry. Just drag a new copy from the master disk onto your hard disk. Even if you have deleted the program file, the hard disk is still authorized to run a copy of Cubase Audio.
- ☐ You can safely defragment (sometimes called "optimizing") your hard disk. Copy protection is not affected by defragmentation.
- ☐ If you experience a hard disk crash, you may lose your Cubase Audio installation. Please contact your dealer if this happens.
- ☐ The Installation creates an invisible file on the main root of the hard disk. Since it is invisible it can normally not be changed or deleted. Do not ever remove this file, since doing so will cause you to loose one of your hard disk installation counts.
- ☐ Never reformat your hard disk without "deauthorizing" it first (see below).

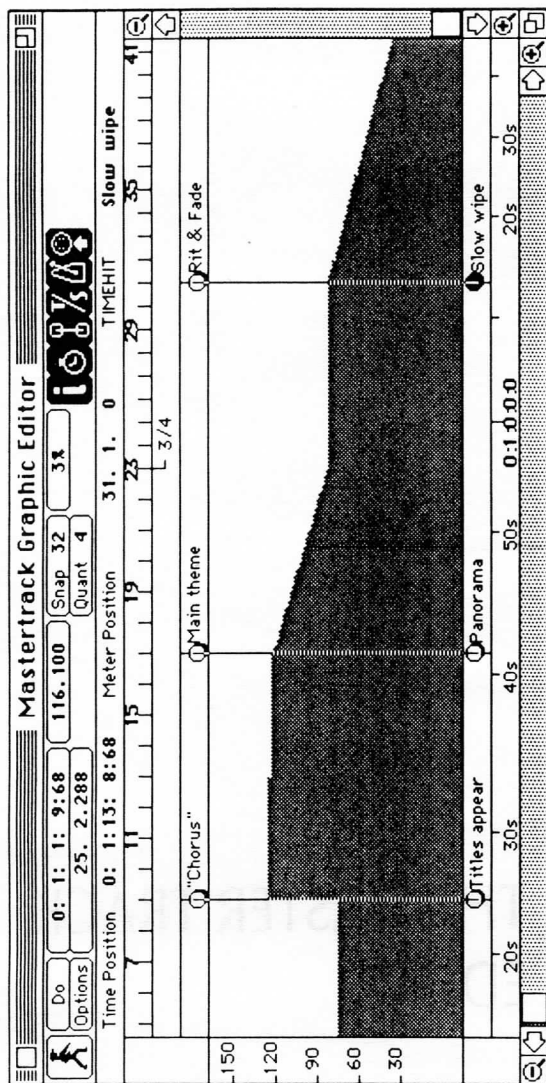
Deauthorizing The Hard Disk

Should you ever need to permanently move your Cubase Audio installation to another computer, you need to deauthorize the hard disk where you have installed the program. Proceed as follows:

- ☐ Write enable your master disk, insert it into the disk drive, and double click on the Cubase Audio program icon.
- ☐ Click "Setup..." in the first dialog and "Deauthorize" in the second. Follow the instructions on screen.
- ☐ Install the program on the new hard disk as described above.



THE MASTER TRACK EDITOR



INTRODUCTION

The Master Track Editor can be used for a number of purposes:

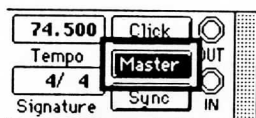
- Scoring for film and video, matching music to visual cues.
- Syncing Cubase to live music on tape.
- Restoring lost sync tracks.
- Creating music that contains many tempo changes, accelerandi or ritardandi.
- Working with material that contains both music (tempo based events) and for example sound effects (time based events).
- Creating tempo maps for music recorded without a metronome, and fit the music to the "barlines" in Cubase.

HOW THE MASTER TRACK EDITOR OPERATES

Cubase has a Master Track, a special "hidden" Track that contains all the tempo and time signature changes. The Master Track Editor lets you set up the Master Track.

There is one Master Track for each Arrangement. The Master Track does not have Parts, you always edit the entire length of the Song.

-
- For the tempo and time signature changes to have any affect on the Arrangement whatsoever, you must have the Master button on the Transport Bar activated!
-



OPENING THE MASTER TRACK EDITOR

You can open the Master Track Editor in three ways:

- By double clicking in the ruler in the Arrange window or in any Editor.
- By selecting Master Track from the Edit menu.
- By pressing [Control]-[M] on the computer keyboard.

OVERVIEW OF THE WINDOW

The Master Track Editor is an editor window like any other in Cubase. The following parts of it will be familiar to anyone who has used the Arrange Window and Key Edit:

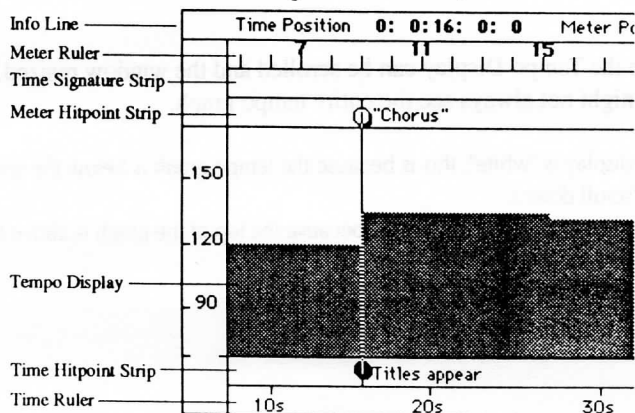
- The window has scroll bars (see the chapter "Overview of Cubase", in the main Cubase manual). These can be used to move around within the view. You can also click the magnification glass symbols to change the magnification of "time" (horizontally), and the tempo graph (vertically).
- The Function bar has pop-up Goto and Do menus, plus a pop-up Options menu.
- The central part of the Editor is of course the tempo graph.
- There are Snap and Quant(ize) settings, also located on the Function Bar.
- There is an Info Line which can be turned on and off with an "Info" button.
- This Editor has a Toolbox like all other. Most of its tools will be familiar if you have used the Continuous data display in Key or Drum Edit.

The central display in the Graphic Editor is divided into six sections. Some of these can be hidden using the group of four buttons on the Function bar.



Here are the graphic Editor's areas, from top to bottom:

- Info Line (turned on/off using the Info button).
- Meter Ruler (always visible).
- Time Signature Strip (turned on/off using the Time Sig button).
- Meter Hitpoint Strip (turned on/off using the Hitpoint button).
- Tempo display (always visible).
- Time Hitpoint Strip (turned on/off using the Hitpoint button).
- Time Ruler (turned on/off using the Time button).



THE TEMPO DISPLAY AND THE RULERS

TEMPO DISPLAY

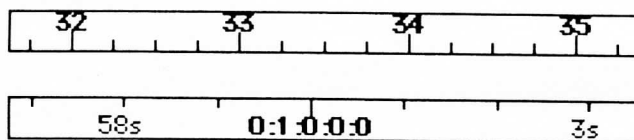
In the middle of the window you will always find the Tempo Display. This behaves very much like the Continuous Data Display in for example Key Edit. For a basic introduction to Cubase's way of handling continuous data (tempo belongs to this type of data), see the "Using the Editors" chapter in the main Cubase manual.

- The Tempo Display always contains one Tempo Event at the beginning of the Song. You can't move or delete the first tempo Event. Likewise the Time Signature strip always contains one Time Signature event at the beginning.

Since the Tempo Display can be scrolled and the window resized, you might not always see the entire tempo graph.

- If the display is "white", this is because the tempo graph is below the window (scroll down).
 - If the entire display is grey, this is because the top of the graph is above the window (scroll up).
- More on working with tempi on page 11.

THE RULERS



The Master Track Editor has two rulers, one above and one below the Tempo Display. The upper shows *meter* (bars, beats etc.) and the lower – which can be turned on/off using the Time button, see above – shows time in one of a number of formats, displayed on the pop-up Options menu.

The formats are made up as follows:

SMPTE/EBU	hours:minutes:seconds:frames:subframes
1/1000 sec	hours:minutes:seconds:thousands of seconds
Frames	frames
16mm Film	feet'frames
35mm Film	feet'frames:sprockets (4 sprockets per frame)

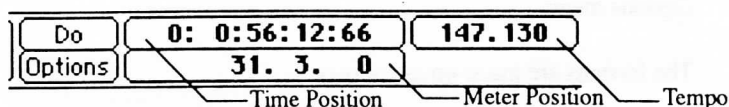
For SMPTE/EBU and Frames, the number of frames per second is set in the Synchronization dialog box, reached from the main Options menu.

How detailed values are displayed of course depends on how far you have zoomed in.

THE SONG POINTER

The Master Track Editor has a Song Pointer as all other graphic Editors in Cubase. To Position the Song Pointer, simply click on either Position Ruler.

POSITION BOXES

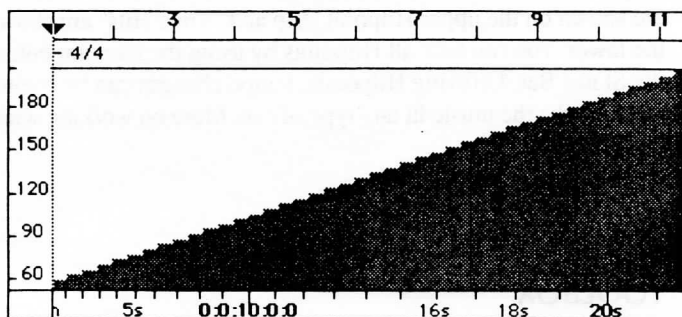


The Mouse Pointer position is always shown on the Status bar, at the top as a time position and below as a meter position. These two position boxes are also used when moving and duplicating objects, as in all Cubase Editors and in the Arrange window.

- Please note that these two boxes always show the position at the closest Snap value. Since the Snap value is used when positioning events, these boxes will always indicate the position that an event will *actually* appear on when you move it or draw it in. This also means that when you have zoomed in very far, you will probably want to set Snap to Off to be able to position accurately.

METER OR TIME BASED DISPLAY

Normally, the meter ruler will be linear, that is, there will be equal distance between all bars on the screen. If there are tempo changes, the time ruler will be non-linear to match. If you watch the accel-erando below you will see that the meter ruler is linear but the tick marks on the timing ruler get more and spread apart as the tempo increases.



There will be cases where you want the Meter ruler to be linear and the Time ruler to adapt to this, and there will be cases where you want the opposite (for example when working with film or video). For this purpose, the display can be switched, using one of the buttons on the Status Bar.



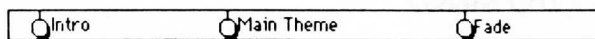
Meter Linear



Time Linear

After switching, you may have to change the horizontal magnification of the window to make the window show the range you are interested in.

HITPOINTS



The Master Track Editor also adds so called Hitpoints to Cubase. These are used to match time positions to meter positions, for example to make a certain musical cue fit a scene in a film or video.

Hitpoints come in two flavours, meter and time based. "Meter Hits" are shown on the upper Hitpoint strip and "Time Hits" are shown on the lower. You can hide all Hitpoints by using the Hitpoint button on the Status Bar. Utilizing Hitpoints, tempo changes can be created which make the music fit any type of cue. More on working with Hitpoints on page 27.

TOOLBOX

The Master Track Editor has a Toolbox, just as all Cubase's main windows:



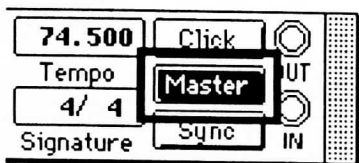
- The Magnifying Glass is not used in the Master Track Editor and is therefore always greyed out.

THE GOTO MENU

This works exactly as the Goto menu in the other Editors, although it has slightly fewer options. See the "Using the Editors" chapter in the main Cubase manual.

WORKING WITH TEMPI AND TIME SIGNATURES

- For the Tempo and Time Signature changes to have any effect on playback, you must turn on the Master button on the Transport Bar.



When you first open the Master Track Editor, for a new song, it will only contain one tempo, displayed as a grey box continuing for ever to the right. From here on there are a number of ways to insert tempo changes and edit them:

RECORDING TEMPO CHANGES IN REAL TIME

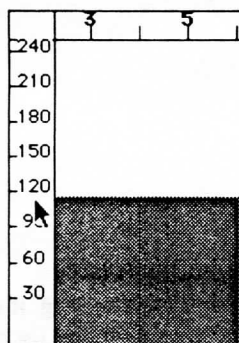
USING THE MOUSE

To record tempo changes using the mouse, proceed as follows:

1. Select a Snap value (using the Snap pop-up on the Function bar) to decide for a spacing between the events.

Do not use a higher value than needed, since this will make it harder to perform detailed editing on the recording afterwards. Often quarter notes will suffice, but experiment to find a value that suits you.

2. Activate playback from any position in the Song.
3. Position the mouse pointer over the tempo scale to the left of the tempo graph.
Watch the Tempo box on the Status bar, it will show the Tempo represented by the mouse position, see page 8.
4. Click the mouse button to insert one tempo event, or drag up and down to create accelerandi or ritardandi.



5. When the mouse button is down you record tempo changes, when it is up you don't. Use this as a way of punching in/out.
The display does not get updated while the mouse button is down.
 6. When you are ready, stop playback.
-
- The recording you make overwrites any earlier recordings at the same positions (The Master Track Editor always records in "Replace Mode").
-

USING THE COMPUTER KEYBOARD

You can use the [+] and [-] keys on the numeric keypad to change the tempo while the music is playing back. This can also be used to record tempi, as described in the chapter "The Options Menu", in the main manual. Please note:

- This type of recording can only be done from the Arrange window, in other words, with the Master Track Editor closed.

This type of recording does not use the Snap value, which means it does not create evenly spaced events and is therefore harder to edit.

USING HUMAN SYNC

This is also done from the Arrange window and is described in detail in the chapter "The Options Menu", in the main manual.

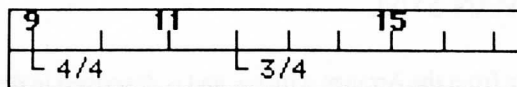
As above, this type of recording does not use the Snap value, and is therefore harder to edit.

ABOUT EDITING TEMPO AND TIME SIGNATURE EVENTS

THE TEMPO DISPLAY

The Tempo Display behaves just as the Continuous data display of Key and Drum edit. This means that one event is shown as a rectangle and that the last event stretches forever to the right. If you feel insecure about how continuous events are handled, please review this section in the chapter "Using the Editors", in the main manual.

TIME SIGNATURE EVENTS

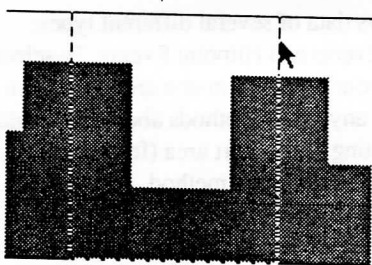


Time Signature Events are displayed as small "brackets" above the tempo graph, visible if the Time Sig button is activated on the Function bar. The events themselves can be selected, moved, copied, etc and the values for them are edited on the Info Line, as described in the chapter "Using the Editors", in the main manual.

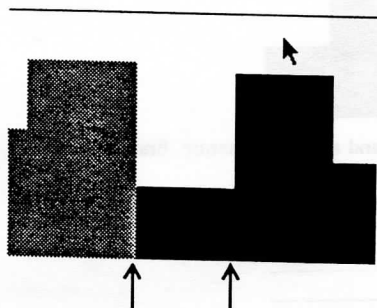
SELECTING

Selecting in the tempo graph is done as everywhere else in Cubase:

- Clicking on one event selects it.
- If you hold down [Shift], you can select more events.
- If you press the mouse button somewhere in a free (white) area and drag, you make up a rectangle. This rectangle should stretch over the *beginning* of all the events you wish to select.



Making up a rectangle like this...



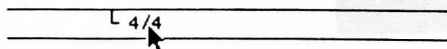
...selects these two events, since they both begin within the range (see the arrows).

- You can click on one event and then use the [←] and [→] keys to step through them and hold down [Shift] to select.
- You can use Select All ([Command]-[A]) to select all events, not just the tempo ones.
- To deselect, simply click on some free (white) area in the display.

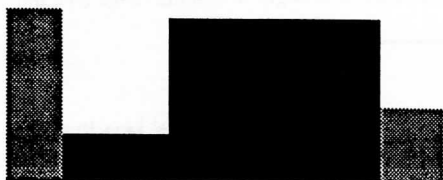
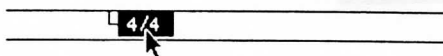
Selecting Time Signature events (and "Hitpoints", see page 27) is done in exactly the same way. However, there is one special procedure in the Master Track Editor:

SELECTING EVENTS OF DIFFERENT TYPES AT THE SAME TIME

The Master Track Editor displays data of several different types: Tempo Events, Time Signature Events and Hitpoint Events. To select more than one type, first make your selection in one area (for example in the Tempo Display) using any of the methods above then hold down [Shift] and continue selecting in the next area (for example among the Time Signatures), again using any method.



To select for example some Tempi and a Time Signature, first select the Tempi, then hold down [Shift]...



...and click on the Time Signature Event.

The only exception to this is Select All, which (as stated above) selects *all* events, regardless of type.

EDITING ON THE INFO LINE

Time Position	0: 0:29:10:29	Meter Position	23. 1. 0
---------------	---------------	----------------	----------

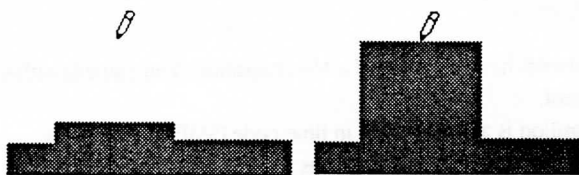
When you select one and only one event its settings appear on the Info Line.

- All types of events have a Time and a Meter position. You can edit either to move the event.
 - The Time Position is always edited in time code (SMPTE) format; as hours:minutes:seconds:frames:subframes.
 - Tempo Events can not be moved using the Info line.
 - Tempo Events have tempo as the parameter. This can be edited just like any value in Cubase. If you have the display switched to the Time based mode (see page 8), the curve will get "compacted" or "expanded" as you change the tempo.
 - Time Signature Events have a numerator and a denominator which can be changed individually to produce any time signature from 1/2 to 16/16.
 - Hitpoints' value (their name) is described on page 30.
-
- Moving Time Signatures using the Info Line can be a bit confusing at first. Here's why: If you move a Time Signature so that it winds up on the same position as an existing Time Signature, that event will be deleted. If this is not what you want, either double click on the position value on the Info Line and type in the desired position or move the event using the mouse, see page 20.
-
- You can not move the first Time Signature Event.
-

REDRAWING THE TEMPO CURVE

If you select the Pencil from the Toolbox and drag over an existing tempo curve, you will change the values of the tempo events you pass over. A box on the status bar, just to the left of the Quant value, will show you exactly which tempo the current mouse position represents, see page 8.

To for example change the value of one event, you can position the Pencil anywhere "over it", move up and down until you see the right tempo, and then simply click to set the event to that tempo.



Clicking in the graph changes the tempo of the event to the position of the pointer.

To change the tempo of several events at the same time, you simply drag over them with the mouse button down. If you drag faster than the program can redraw the screen, don't worry, your movement is tracked anyway and the values are smoothed at the end of the draw.

Please note that this only changes the values of existing events, it does not input new ones. To do this, you must hold down [Option], see below.

If you have the display switched to the Time based mode (see page 8), the curve will get "compacted" or "expanded" as you change the tempi.

DRAWING NEW EVENTS

TEMPO EVENTS

If you hold down [Option] and draw using the Pencil, you are inputting new tempo events. This can be used to input single tempi or to create continuous curves.

To create one single event, first set the Snap value (you can only input events at the closest Snap position), position the pointer (watch the tempo indicator on the Status Bar), hold down [Option] and click once.

To create several events at the same time, hold down [Option] and drag. The events will be spaced according to the Snap value. If you drag faster than the program can redraw the screen, don't worry, your movement is tracked anyway and the values are smoothed at the end of the draw.

If you have the display switched to the Time based mode (see page 8), the curve will get "compacted" or "expanded" as you input new tempi.

TIME SIGNATURE EVENTS

To draw in Time Signature events, simply select the Pencil and click once in the Time Signature strip. You can also drag to input several Time Signature events at the same time. To for example input a Time Signature change at every bar, set Snap to "1" and drag across the time Signature Strip. Then select each one and set its value using the Info Line.

MOVING EVENTS USING THE MOUSE

If you have one or more events selected (even of different types) you can move them using the mouse, just as with any object in Cubase (select the arrow pointer from the Toolbox). Only horizontal movement matters.

If you are only moving one tempo event, its position is indicated by a vertical line.

If the selection contains several tempo events, a rectangle encompassing the area from the start of the first selected event to the start of the last selected event guides you. The movement snaps to the closest Snap value.

-
- A block of tempo data that you move, always *replaces* any existing tempo data on the position you move it to. You can not move the first Tempo and Time Signature Events.
-

DUPLICATING EVENTS

If you hold down [Option] and move events, you are duplicating them. Everything else is as when moving.

CUT, COPY AND PASTE

The Master Track Editor supports full Cut, Copy and Paste of all types of event. Cut and Paste works just like in any other part of Cubase.

- If, as a result of the Paste, one Tempo or Time Signature Event will wind up on the same position as the other, the previous event will get replaced. A block of tempo data that is pasted in, always replaces any tempo data at those positions.
-

DELETING EVENTS

- To delete events using the mouse, select the Eraser and click or drag over the events.
 - To delete using the computer keyboard, first select the events you want to delete, then press [Backspace].
 - You can also use the "Delete" item on the Edit menu to clear the selected events.
-
- You can not delete the first Tempo and Time Signature Events.
-

REPEAT

This function on the pop-up Do menu can be used to block-duplicate a number of events one or more times. It operates on all events, Tempo changes, Time Signature changes and Hitpoints at the same time.

1. Set up the Left and Right Locator (on the Transport bar) to encompass the section you want to repeat.
2. Set the Song Position to where you want the first block of events to appear (you can click on the Time or Meter Rulers to do this).

3. Select Repeat from the pop-up Do menu.
4. In the dialog box that appears, set the number of times you want the block repeated.
5. Click OK.
The copies will now appear. They are lined up "edge to edge", starting at the Song Position.

CREATING ACCELERANDI AND RITARDANDI

The Compasses in the Toolbox (see page 10) can be used to create continuous tempo changes, accelerandi and ritardandi (deaccelerandi). The Compasses tools is described in detail in the chapter "Using the Editors", in the main manual.

- To fit *existing* events under the line (to create a ramp), position the mouse, press the mouse button and drag to create a line. Release the mouse. The events are made fit under the line.
- To create new events, hold down [Option] before pressing the mouse button. New events that fit "under the line" are created, spaced according to the Snap value.

Please note that if you have the display switched to Time Base (see page 8) the ramp will appear "bent" since the meter scale is compacted/expanded. If this is confusing, switch over to meter base.

REDUCING TEMPO EVENTS

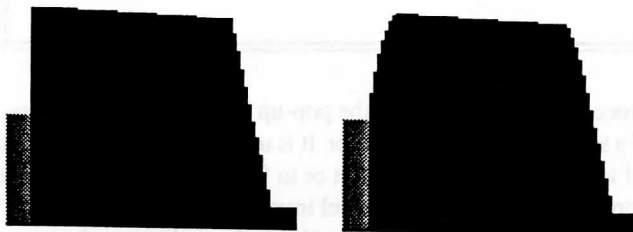
As a result of a tempo recording, using for example Human Sync, you may have an overly dense tempo curve, which might make the screen redraw sluggish and the tempo curve hard to edit.

Reduce, found on the pop-up Do menu thins the data at its densest points, making the spacing more even. Applying it repeatedly will make the data consecutively "thinner".

Reduce only works on the *selected* events. Select a section of the tempo Curve and invoke Reduce.

SMOOTHING TEMPO EVENTS

This function evens out a tempo curve with "transients" (jumps), without inserting or deleting events. Instead, existing Tempo events are averaged to make the curve smoother.



Before Smoothing.....and After.

PROCESSING TEMPO EVENTS

Process Tempo

Selection Range

Start Meter End Meter

Start Time End Time

Settings

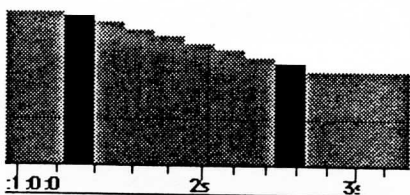
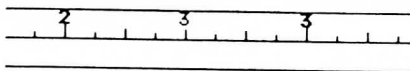
Tempo Scaling Length

The Process dialog, located on the pop-up Do menu, is the equivalent of a so called fit time calculator. It is used to numerically change a set of tempi by a specific amount or to fit a certain cue. Since this function uses numbers, it might feel involved when you first try it. We will try to guide you through it. Here's the main procedure:

- The Process dialog adjusts existing tempi so that a region of bars (for example eight bars) will fit a certain time span (for example "6 seconds and ten frames").
- Since the function does not create any tempi of its own, you have to put them in before you start. If you want a smooth tempo change, create a ritardando or accelerando. If you want more direct changes, only input one or a few events. Also note that the adjustment is made overall for all the tempi in the range, which means they keep their relative tempo differences. In other words, a steep ritardando will still be a steep ritardandi after the processing.
- The adjustments themselves are made in a dialog where you can change only two things: either you simply set an overall scale factor (for example 70% of the original tempo) or you set an end *time* for the range, so the number of bars that you selected will now end at precisely that position.

Here are the details:

1. To use this function, select one or more tempi that make up a range of bars, *but do not include the last tempo in the Song!*
(if the last tempo is selected, Process will be greyed out on the menu). All the tempi within the selected range will get processed, whether they are all selected or not.

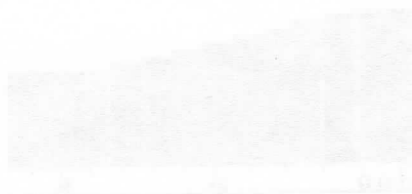


This selection will Process all Tempi between bar 2 and 3.

2. Select Process from the pop-up Do menu.
A dialog box appears.
3. The Start and End Meter values in the "Selection Range" section are only display values. They show you the range of the selection you made.
4. The Start Time and Length fields in the same section are also just display values. Start Time shows you the Time position of the beginning of the selection. Length shows you the current length of the selection. This last value will change when you...
5. ...set the amount of change either by adjusting Length or Tempo Scaling in the "Settings" section of the dialog. In either case the other value and the Length value will get updated to show you how the change will affect the bars the selection encompasses.
6. When you are done with all the settings, click Do.
The changes take effect immediately. You can also click Undo to revert back to what you had before.

7. When you are ready, click Exit.

A more intuitive way of fitting tempi to time based cues is using Hit-points, see page 27.



WORKING WITH HITPOINTS

This chapter describes how Hitpoints are used and how they can be applied to different situations, such as Fit Tempo operations and sync to existing music on tape. The following text will first describe how Hitpoints are handled, and then applies this to real life situations.

WHAT ARE HITPOINTS?

Hitpoints are actually only positional references, markers of important positions. They are used to define relations between time and meter in order to "match tempo" (see below) or to create tempo maps that fit certain cues.

There are two types of Hitpoints, *Meter Hits* and *Time Hits*. Meter Hits are found on a strip above the Tempo Display and Time Hits are found on a strip below (see page 4). If these Strips are not visible, there is a Hitpoint button on the Transport bar that reveals them.



Meter Hits always appear on meter positions (bars, beats etc) and Time Hits are always on time positions (for example displayed as time code).

The idea is that you set out Time Hits and use various tools to find a relation between their positions (defined in *time*) and important musical positions (defined in *bars and beats*). This relation is created in one of two ways: by linking Time and Meter Hits, or by using the Tempo Match/Tempo Scan function.

SETTING OUT HITPOINTS

USING THE MOUSE

The obvious way of setting out Hitpoints is using the Pencil in the Toolbox. This works just as with Time Signature changes (see page 19), just select the Pencil from the Toolbox and click or drag in a Hitpoint Strip. The Snap values restricts your input as usual.

- Please note that when settings out Meter Hits, you may want to turn off Snap completely.

If you hold down [Option] while dragging, you get two linked Hitpoints, but more about that on page 35.

VIA MIDI

You can use MIDI to input *Time Hits*, whether Cubase is playing or not.

1. Activate The MIDI In button on the Status Bar.



The MIDI In button.

2. If so desired (see below) activate playback.
3. "Send" in some MIDI Notes, for example by tapping a MIDI keyboard.
When the MIDI In button is activated, MIDI notes coming in while the Master Track Editor is open will be converted to Time Hits.

4. When you are done, turn off the MIDI In button.

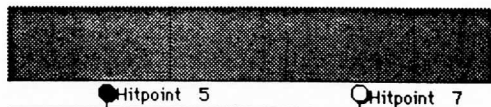
For this function to work, you don't have to be in play or record mode. This means you can add hitpoints even when syncing to time code running very slow or even at still frame (using VITC time code converted to MIDI Time Code, for example). This will allow you to input Hits "manually" with very high precision.

USING FILL

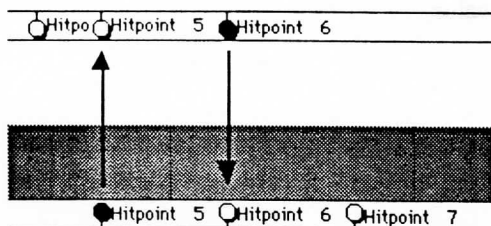
To create evenly spaced Meter Hits, there is a special item on the pop-up Do menu, called "Fill meter hits". This will fill the Meter Hit strip with Hitpoints, between the Left and Right Locator, spaced according to the Snap value.

MIRROR

This function will mirror the selected Hitpoints onto the "other side". A Time Hit will get a Meter Hit at the corresponding position, and vice versa.



Selecting two Hitpoints and then Mirror...



...creates two new Hitpoints.

EDITING HITPOINTS

MOVING AND NAMING USING THE INFO LINE

Just as with Tempo Events and Time Signatures, Hitpoints can be edited one by one on the Info Line (see page 30). Apart from moving them this way you can also give each Hitpoint a name. Just double

click on the default name at the far right end of the Info line and type in a new one.

Meter Position	28. 3. 96	TIMEHIT	Slow Wipe
----------------	-----------	---------	-----------

The right end of the Info line shows the type of Hitpoint and its name.

MOVING, DUPLICATING, DELETING ETC.

Just as with Time Signatures and Tempo Events (and many other objects in Cubase) you can use the Tools in the Toolbox and the computer keyboard to select move, duplicate, cut, copy, paste and delete Hitpoints. This is all described in detail in the previous section.

Also, the Repeat function described on page 21 of course applies to Hitpoints too.

There are some additional editing techniques that apply only to Hitpoints. These are described in the following paragraphs:

KICKING

The Kickers in the Toolbox can be used to move one Hitpoint one Snap value in either direction (depending on which tool you selected).

If – as a result of a kick – a Hitpoint winds up on the same position as another one, you will only see one of them. You can always use the List Editor to check for "double" Hitpoints.

PASTING EVENTS

If you have Copied or Cut *notes* or *control change messages* (for example sustain pedal) from a MIDI Editor, these will be pasted in as Time Hitpoints, starting at the Song Position.

KEEP LINKED AND KEEP SELECTED

These two functions on the pop-up Do menu can be used to conditionally delete Hitpoints.

- Keep Linked deletes all Hitpoints that are not *linked* (see below).
- Keep Selected deletes all Hitpoints that are not selected.

QUANTIZING

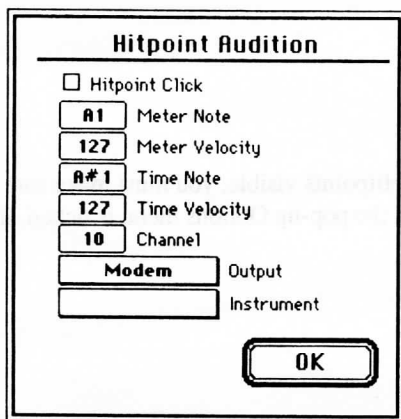
Meter Hits can be Quantized. This is probably most useful together with the Mirror & Link function as described on page 36. Combining these two functions allows you to for example easily insert small tempo changes to make some Hits perfect after using Match to find an adequate tempo.

1. Set a Quantize value using the Quant pop-up menu.
2. Select the Meter Hits you want to Quantize.
If you want to Quantize them all you use Select All, since no other events than Meter Hits are affected by this operation).
3. Select Quantize Meter Hits from the pop-up Do menu.

PLAYING BACK VIA MIDI

You can get audible feedback on the position of a Hitpoint. While this is probably most useful for Time Hits, it can be used on Meter Hits too.

To set up MIDI playback of Hitpoints, select "Edit Hitp Note" from the pop-up Do menu. If you are familiar with the Metronome dialog, this one will be self explanatory.



The dialog box is titled "Hitpoint Audition". It contains several controls:

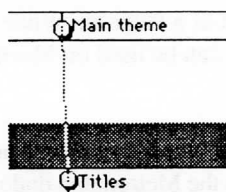
- ☐ Hitpoint Click
- A1** Meter Note
- 127** Meter Velocity
- A#1** Time Note
- 127** Time Velocity
- 10** Channel
- Modem** Output
- Instrument
- OK**

The Meter and Time Hitpoints can be set to play one key each with a certain velocity. Both share a MIDI Channel and Output setting, which – as always – can be defined via an Instrument.

LINKING

Linking Hitpoints is a way of telling the Master Track Editor which Meter and Time Hits belong together. The program can then use this information to change tempo (and insert tempo changes if needed) to

make certain meter and time positions line up. The practical uses of this are described on page 43 and page 45.



Linked Hitpoints

SHOW HITPOINT LINKS

To make the links between Hitpoints visible, you must make sure that Show Hitpoint Links on the pop-up Options menu is ticked. If it isn't, select it.

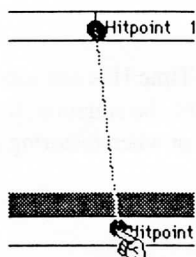
MANUAL LINKING

To manually Link two Hitpoints, proceed as follows:

1. Select the Arrow pointer.
2. Position the mouse inside a Hitpoint.

3. Press the mouse button and drag down or up depending on where you started (from Meter to Time or vice versa).

A line will follow the pointer.



4. Drag until the mouse pointer is positioned inside a Hitpoint on the "other side".
The Hitpoint "lights up" to show you when you have the pointer inside it.
5. Release the mouse.

WHEN DRAWING

If you hold down [Option] while drawing a Hitpoint you automatically get a linked Hitpoint right above/below it.

BREAKING LINKS

If you want to break a Link between two, select the scissors from the Toolbox and use it to click on or drag over the lines. Do not click on the Hitpoints themselves.

Also, if you delete a Hitpoint, its link to any other Hitpoint will of course vanish.

LINK ONE BY ONE

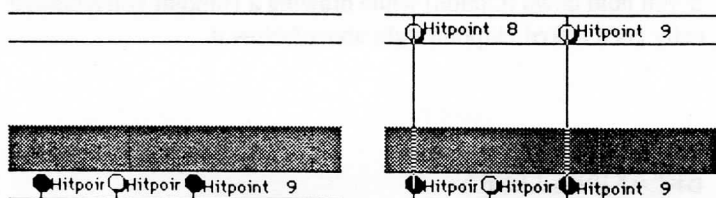
This item on the pop-up Do menu, automatically links the first Meter Hit with the first Time Hit, the second Meter Hit with the second Time Hit, etc.

This is most useful when you have tapped in the Time Hits and used "Fill Meter Hits" to create Meter Hits. This will be the situation, for example when syncing to existing music on tape or when restoring a lost sync track (see page 45).

MIRROR & LINK

This function takes all the *selected* Hitpoints and copies them "to the other side" (Hits to Meter and vice versa) and also links each pair.

This function is very useful when you have certain visual cues indicated as Hitpoints and wish to find corresponding meter positions to fit them to. By using Mirror and Link, moving or quantizing the resultant Meter Hits and then using Straighten up, the tempo is adapted in a few simple operations. For more details, see page 43.



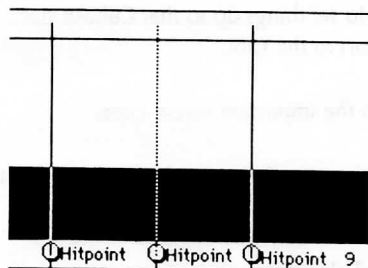
WORKING WITH TEMPO MATCHING

The Tempo Matching feature of the Master Track Editor is best suited for finding suitable tempi for shorter spots or a smaller section of a larger piece.

SHOW HITPOINT MATCH

When this option is turned on on the pop-up Options menu, lines will extend from the Time Hits up over the Tempo Graph and onto the Meter Hit strip.

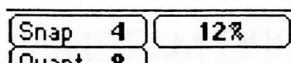
When these lines are dotted, the Time Hits currently do not match any certain meter positions, when they are solid, they match.



In this example, the Time Hit in the middle doesn't match, but the other two do.

ABOUT MATCHING

So how do you tell the program what "matching" means, in your particular case? There are two settings for this, the Snap value and the Tolerance pop-up (in %) just beside it.



If you for example set Snap to 4 and Tolerance to 12%, this means that all Time Hits that wind up within 12% from a quarter note are considered Matching and will be shown in solid black.

FINDING MATCHES

Let's say you have a short video spot for which you want to find *one* tempo that fits as many visual cues as possible. You have a video tape recorder with time code that you can feed to Cubase to achieve synchronization. Proceed as follows:

1. Activate the Master Track by clicking on the Master button on the Transport bar.
2. Use the Synchronization dialog to set things up so that Cubase starts exactly where the music should start in the spot.
3. Set up a few Time Hits to match the important visual cues.
4. Use the Hitpoint MIDI playback function (see page 33) to verify that the Hits actually happen when they should.
5. Decide for a Snap setting and a Tolerance.
Raising the Tolerance will give you a larger number of Matches, but they will be of lower precision. However, you might gain from increasing the Tolerance initially to find as many matches as possible. You can later link the Time Hits to absolute Meter positions and then use Straighten Up to automatically create a perfect fit. See page 41.
6. The method works best if you don't have any tempo changes at all during the section which you try to fit, so preferably delete any tempo changes in the section.
7. Set the tempo to the lowest you could possibly be satisfied with.

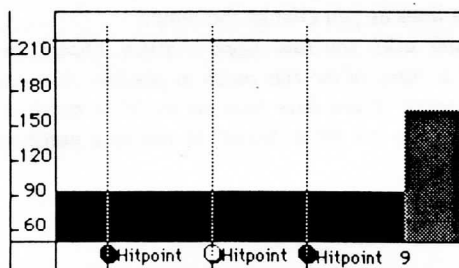
8. Raise the tempo gradually, by using the Pencil directly in the graph. Zoom in vertically if you need higher precision. You can also use the Info Line.
9. Watch the Tempo Match lines as you change the tempo.
Whenever one of them turns solid, you have found a match. Change the tempo up and down until as many of the Hits match as possible. Also note where they match. For example, if you have Snap set to "4", a match on the second quarter in a bar may not be as "useful" to you as a match on the down- or up-beat.
10. Experiment with different Snap and Tolerance settings.
11. Play back the Song and monitor the MIDI playback of the Hits and how they relate to the metronome to get a feel for how the music should be written to fit.

USING AUTO TEMPO SCAN

If adjusting the tempo as in the Process above feels like too much work, the Master Track Editor can do it for you.

1. Set things up just as described above and set the tempo to the lowest you could possibly be satisfied with.
The Master Track Editor always raises the tempo when trying to find matches.
2. Select the Tempo Event you want to vary to find the match
Auto-scan can only vary one Tempo event at a time).

3. Also select (hold down [Shift]) the Time Hits that you want to find a Match for.
The function will only check the selected Time Hits for a match, no other Hits.



To use Tempo Scan, exactly one Tempo Event and at least one Time Hit must be selected.

4. Select Auto Tempo Scan from the pop-up Do menu.

The program now raises the tempo gradually and looks for matches. If it finds a match for *all* selected Hitpoints, it stops. You will have to select Auto Tempo Scan repeatedly to step through all the possibilities.

If no match can be found for all selected Hits, the program will show you the last of the best match that could be found. If you for example have three Hitpoints selected and the program can only find a match for two of them, it will show this.

-
- The more Hitpoints you have, the longer the scan will take. Please be patient...
-

PROCEEDING FROM HERE

If you have found a tempo that you would like to use, but not all Hits match, or you think you have raised the Tolerance too far, you can automatically insert tempo changes to create a perfect match:

1. Use Tempo Match (with or without Auto Tempo Scan) to find a tempo that gives an adequate match, as described above.
2. Select Show Hitpoint Links from the pop-up Options menu. The Tempo Match lines disappear.
3. Select all the Time Hits involved.
4. Select Mirror & Link from the pop-up Do menu.
5. Set Quant to the appropriate value. If your match is for example to downbeats, set it to "1".
6. Use Quantize Meter Hits to move the Meter Hits exactly to the downbeats.
7. Select Straighten Up from the pop-up Do menu.
A dialog box will ask you if you are prepared to insert Tempo changes. Click OK. You will now find that the tempo varies (probably just slightly) between the Hits.

WORKING WITH STRAIGHTEN UP

Straighten Up is a function, and as all others in the Master Track Editor it is located on the pop-up Do menu. Straighten up adjusts and inserts tempi to make Linked Time and Meter Hits match, so that musical positions (Meter Hits) happen at specific time cues (Time Hits).

SHOW HITPOINT LINKS

To display the Links between Hitpoints (instead of the Tempo Match lines) activate Show Hitpoint Links on the pop-up Options menu.

HOW STRAIGHTEN UP WORKS

When you have input and adjusted your Hitpoints and select Straighten Up, all Hitpoints are examined, one pair at a time, starting from the beginning of the song.

To make the two Hitpoints match in time and meter, Tempo events just *before* the pair are adjusted. Visually, this turns any diagonal link-line into a solid vertical one.

If there isn't enough tempo changes for Straighten Up to make a pair match, it will ask for permission to insert additional tempo events.

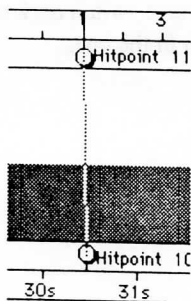
In some cases a perfect match can not be found (for "mathematical" reasons). In this case, the line remains dotted, but it may be straight on screen anyway. This slight mismatch (which is always in the millisecond range) probably won't be noted.

If you have cross-linked Hitpoints, the program will be unable to straighten up and will inform you via a dialog box.

WORKING WITH VISUAL CUES

If you are working with music for film or video, for example with Cubase synced to time code from a video, Straighten Up is an invaluable tool for making cues match the picture. Here's a general outline of how to work with Hitpoints and Straighten Up:

1. Set up synchronisation to the video.
2. Activate the Master Track and open the Master Track Editor. Set an approximate initial tempo for the music you have in mind.
3. In the Synchronisation dialog box, find a reasonable starting point, for example two bars before the music should actually start.
4. In the same dialog, to make the Time Ruler in Cubase display the actual time code on the tape, set the Time Display to the same value as the Song Start. Also set Bar Display to for example -2, so that position 1.1.0 in the Song is where the music should actually start.
5. Draw in, or use MIDI to insert a Time Hit where the music will start.
6. Draw a Meter Hit on Bar 1, and link it to the Time Hit.



7. Now select Straighten Up, and the tempo will get adjusted so that these two points line up.
If the tempo was changed too much, you might have to repeat the procedure, set a new Song Start and Time Display in the Sync dialog, and move the Time Hit accordingly, then Straighten Up again.
8. When the beginning of the Song is adjusted to taste, you can begin inserting Time Hits for important visual cues.
We suggest you name them for future reference.
9. The next step is to create corresponding Meter Hits. This can be done manually (draw and link) or using Mirror and Link.
10. Move the Meter Hits around to fit the music and use Straighten Up to examine what kind of tempo changes were needed.
Please note that Straighten up only inserts one tempo change for each linked pair. If you want a gradual tempo change between two pairs, draw in an accelerando/ritardando, and Straighten Up will scale the entire section to fit.
11. Keep adjusting the Hitpoints, insert new tempo changes (accelerandi or ritardandi for example) where needed, and use Straighten Up to restore the Time/Meter relations.

Don't worry about making last minute changes. If you for example receive a new copy of the video where a few frames have been cut out, just move your Time Hits accordingly and straighten up again. Changes you make in the beginning of the Song won't affect tempi at later positions, since each matched pair of links creates a new fixed "reference" between time and meter.

During the course of this procedure, you can of course switch back to the Arrange window and record and edit music to fit the cues.

SYNCHRONISING TO EXISTING MUSIC AND RECOVERING LOST SYNC TRACKS

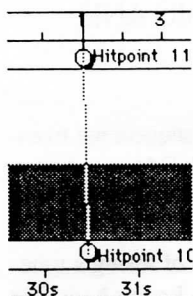
It is not uncommon to have to synchronise MIDI sequencing to existing music. To do this, you need the Master Track Editor and a tape with the music on one track and time code on another.

Anyone who has been in the unfortunate situation of losing a time code track, for example by accidentally erasing it, knows how time consuming it can be to restore it.

The procedure below lets you do both these things very easily:

1. Start by striping the tape with fresh time code, if necessary. This code should start a few bars before the music and extend well after it.
2. Activate the Master Track by clicking on the Master button on the Transport bar.
3. Set up synchronisation to this time code, and verify it works as expected.
4. Try to set an approximate initial tempo.
You can for example turn off sync, and guess at a tempo. Start the sequencer in time with the metronome and adjust roughly.
5. In the Synchronization dialog, set a Songstart position approximately (for example) two bars before the music starts. Turn on sync again.
6. In the same dialog, to make the Time Ruler in Cubase display the actual time code on the tape, set the Time Display to the same value as the Songstart. Also set Bar Display to for example -2 (if the music starts two bars after the Songstart), so that position 1.1.0 in the Song is where the music will actually start.
7. Use MIDI to insert a Time Hit where the music starts. Verify its position by making it play back for example a drum sound via MIDI.

8. Draw a Meter Hit on Bar 1, and link it to the corresponding Time Hit.



9. Now select Straighten Up, and the tempo will get adjusted so that these two points line up.

If the tempo was changed too much, you might have to repeat the procedure. Note down the position of your Time Hit. Select a new Songstart and Time Display in the Sync dialog, and move the Time Hit accordingly. Then Straighten Up again.

10. When the beginning of the Song is adjusted to taste, you can begin inserting Time Hits.

We suggest you use MIDI to input them, and start out with one or two Hits per Bar. Of course, the tighter you place the Hits, the tighter your sync will become, but editing will also be more difficult and each Straighten Up will take more time to perform.

11. Use Fill to input Meter Hits at the same spacing as the Time Hits (set Snap to for example whole notes or half notes). Make sure the first Time Hit and the first Meter Hit indicate the same position in the song; for example, the first Time Hit should be where the downbeat of bar 1 is on the tape and the first Meter Hit should be on position 1.1.0 in Cubase.
12. Select Link One By One from pop-up Do menu.
13. Select Straighten Up from the pop-up Do menu .
Straightening Up might take some time.
14. Play back the Song in sync with the tape.
15. If you don't like what you got, move the Time Hits around and try Straightening Up again.

Remember, Straighten Up only scales the tempo changes between two Hitpoints. If you need a gradual tempo change between two Hits, use the Line Tool to create an accelerando or ritardando that can be scaled to fit.

TIME LOCKED TRACKS AND "FREELY RECORDED" MUSIC

The Master Track Editor interacts with Cubase's Time Locked Tracks in a special and very useful way. If you change the tempo in the Master Track Editor, notes on Time Locked Track will get *moved*, bar-wise, so as to make them still appear on the same time positions. You can use this to your advantage:

- To "reposition" events in music recorded without a metronome, so that they fit the meter positions in Cubase.
- To match music to for example sound effects or other audio events that occur on fixed time positions, rather than meter positions.

ABOUT WORKING WITH TIME LOCKED TRACKS

Time Locked Tracks are described in general in their own chapter in the main Cubase manual. Please just observe the following points:

- The time it will take to recalculate Time Locked Tracks depends on the number of tempo changes in your Arrange window. When you work with the Master Track Editor it is common to have very large amounts of Tempo Events. This will lead to noticeable recalculation times (sometimes *very* long) in two cases: when you adjust the Tempo curve and when you use Straighten Up.
- Try to avoid to edit a Part on a Time Locked Track in a MIDI Editor, at the same time as you are changing the tempo in the Master Track Editor. The reason is that if a tempo change happens to move an event so that it winds up on a position before the *beginning* of its Part, this event will be lost!

WORKING WITH TIME BASED EVENTS

If you already have events on Time Locked Tracks which indicate important positions (Hits) in the music, you can use these as a basis for your tempo changes:

1. Time Lock the Tracks that have events which happen on "fixed" Time Positions.
2. Open a MIDI Editor and select the events you want to use as Hitpoints in the Master Track Editor. Note down the position of the first of the selected events.
3. Open the Master Track Editor and set the Song Position to the position of the first event you copied.
4. Select Paste. The events are now Pasted in as Time Hits and can be used as a basis for Tempo Matching or Straighten Up, as described in the previous section.

REPOSITIONING "FREELY RECORDED" MUSIC

Many musicians find it constraining to record in time with a metronome. With the Master Track Editor you can record in "free time" and later adapt the recording to Cubase's meter positions:

1. Turn off the Metronome and perform a recording.
If you plan to preserve the feeling in the recording, make sure you get a take that contains all the tempi just as you want them.
2. For safety, make a copy of the Track and Mute it.
3. Open the recording for editing, for example in Key Edit. Select all events and drag them so that the first event winds up on position 1.1.0. *This assumes the Part begins on 1.1.0. If it doesn't you can either move the Part or use the Pencil in the Arrange window to adjust the beginning of it.*

4. Select a number of events on easily defined meter positions.
For example if the piece contains a relatively simple bass line (mainly happening on quarter notes and eighth notes), select the notes in this bass line. If it is a more complex piece you might have to work a bit on the selection, or maybe only do a bit at a time. Try to not select notes that are more tightly spaced than quarter notes. (It probably isn't necessary and linking them will take more time.)
 5. If selecting notes in the actual recording doesn't work for you, you might try recording a special Track with a drum sound, where you simply tap the beat while listening to the recording. Then you can use this track for reference instead of the notes in the actual recording.
 6. When you have the selection right, Copy the events (using Copy on the Edit menu). Close the Editor.
 7. Open the Master Track Editor. Position the Song Position on 1.1.0.
Pasting always happens at the Song Position!
 8. Paste.
All the notes will now appear as Time Hits.
 9. Use the Pencil to draw in Meter Hits on the musical positions that the Time Hits refer to.
-
- Since the tempo is completely wrong at this point, the Meter ruler and the Time ruler will not match up at all. This might lead to some confusion at first. What you are supposed to do is to tell the program what meter positions the Pasted Time Hits refer to. If the bass for example played on straight quarter notes only, draw in one Meter Hit on each quarter note.
-
10. When you are done and have one Meter Hit for each Time Hit, use Link One By One on the Pop-up Do menu to link all the Hitpoints together.
 11. Select Straighten Up, and when the dialog box appears, verify that it is OK to insert new Tempo Events.

12. Play back the Track and examine it in Key or Score Edit to check that everything actually wound up as you intended.

When examining the recording in one of the editors, you will note that the events have been moved to the correct musical (meter) positions. This allows you to use Cubase's different tools (such as quantizing) in a predictable way and to format the recording for printout in Score Edit. But, since a number of tempo changes have been created, the piece still plays back as it originally did.

If you are happy with the piece as it is now, you should possibly turn off Time Lock for the Track before you proceed with further editing (maybe you should make a copy first?).

If you want to hear how the piece plays back at a fixed tempo, simply turn off the Master Track. And if you like, you can continue to use the Master Track Editor to edit the tempo further.

MOVING DATA BETWEEN ARRANGEMENTS

As you know, you can have several Arrangements open at the same time. Each Arrangement has its own Master Track, which the Master Track Editor is an editor for. To move Tempo Events, Time Signatures and Hitpoints between Arrangements, you can use two techniques: Copy and Paste or Import/Export. If you feel you don't understand Copy and Paste in general, please look up the chapter "The Edit Menu" in the main Cubase manual.

USING CUT AND PASTE

To Copy and Paste between Arrangements, proceed as follows.

1. Select the events you want to move, in the Graphic Editor or in the List (it doesn't matter which). For details on selecting, see page 15.
2. Select Cut or Copy.
3. Select another Arrangement
This can be either an open one, one that you create using New on the File menu or one that you open from disk (as an Arrangement file or as a Song, it doesn't matter which).
4. In the new Arrangement, open the Master Track Editor.
5. Set the Song Position to where you want to insert the block of data, and select Paste from the Edit menu.

-
- If, as a result of the Paste, one event will wind up on the same position as an existing, the existing event will get replaced. A block of tempo data that is pasted in always replaces any tempo data at those positions.
-

USING IMPORT AND EXPORT

If you want to move an entire Master Track between Arrangements, you use **Import** and **Export** on the pop-up **Do** menu in the Master Track Editor.

- **Export** presents you with an ordinary file selector where you can define a name and location for your Master Track file.
- **Import** loads a Master Track from disk which simply replaces the current Master Track.

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INTRODUCTION

This text is an addendum to the regular Cubase manual. It assumes you are reasonably familiar with using the program for MIDI recording. It also draws on the "Using the Editors" text in the main manual.

WHAT CUBASE AUDIO IS

Cubase Audio is a special version of Cubase that expands the program from being a MIDI recorder to also becoming an audio recorder. It allows you to record a virtually unlimited number of parallel audio "tracks". The actual number of simultaneous audio output channels is wholly dependent on the hardware being used. The total length of the recording is only limited by the storage capacity of your system, i.e. the size of your hard disk(s).

Don't think of Cubase Audio as a regular tape recorder, which normally restricts you to linear recording of parallel tracks. This program basically does everything with audio that it does with MIDI. In fact, the handling of audio is very similar to that of MIDI, allowing you to establish one working method for all of your recording and editing. You can even record MIDI and audio at the same time!

On page 2 in the Hardware Specifics Appendix you will find out more about what possibilities you get when using different types of audio recording hardware.

The number of audio channels in your recording and playback hardware puts a restriction on how many sounds can be played back *at the same time*. Because of Cubase Audio's flexible approach and non-destructive editing capabilities, the effective number of tracks may be much larger. Therefore, what may be called "tracks" in your recording system is referred to as "audio channels" or simply "channels" in Cubase Audio and this manual.

The Mac required to run the program also depends on the hardware you're using. The only specific requirements that Cubase Audio adds is that of RAM. The current version will not run with less than eight

Megabyte of RAM on a four channel system. More channels will require more RAM. See the Appendix Hardware Specifics, page 2, in this Audio addendum to the manual. Also see the general discussion on RAM requirements on page 2-11 of the main Cubase manual.

Volume mixing is either done by drawing in the Editor, just like drawing MIDI Volume in Key Edit, or by using the MIDI Mixer, or both. A number of special mixer maps are included with the program which allow you to control volume and panning to create total automated dynamic mixing of your audio.

PLEASE REMEMBER...

Some of your systems' capabilities will depend on the hardware you are using, see the chapter Hardware Specifics, Appendix 1 in this Audio addendum to the manual. The audio quality, the synchronizing precision, and the speed of operation during certain processes is solely dependant on your recording hardware, not Cubase Audio.

Recording audio is a demanding task for a personal computer. To make the most out of this program we recommend you to run it on one of the faster Mac's, especially if you plan to go beyond four channels of audio. Many of the recording systems that can be run from Cubase will require Nubus slots in your Mac and also make special requirements on your hard disks. See each section in the chapter Hardware Specifics, Appendix 1 in this Audio addendum to the manual.

If your system records audio on a disk connected directly to your Mac (or inside your Mac) some separate file management and hard disk maintenance is required. See Appendix 1, page 4 in this addendum to the manual. We'd like to issue one recommendation right now.

- It is necessary to every now and then *defragment* the disk that holds your audio files. See page 1-5 in the main part of the manual. If possible, use one disk for data (audio and Songs) and another for the program and your System files.

We do not recommend using the Apple MIDI Manager with Cubase Audio.

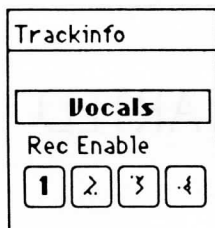
GETTING STARTED

This text assumes you are reasonably familiar with Cubase as a MIDI recorder. If not, check out the "Your First Recording" Chapter in the beginning of the main Cubase manual. Here goes:

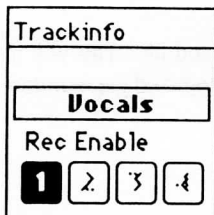
1. If you like, record a couple of MIDI Tracks to which you want to overdub some "real" instrument or vocals. Make sure you have all your equipment connected and the levels adjusted.
2. To record audio, you first have to create an Audio Track or select an existing (Audio Tracks have a small sine wave symbol in the "C" column). If you want to create an Audio Track, press the mouse button in the "C" column for the Track, and select "Audio Track" from the Track Class pop-up menu that appears.



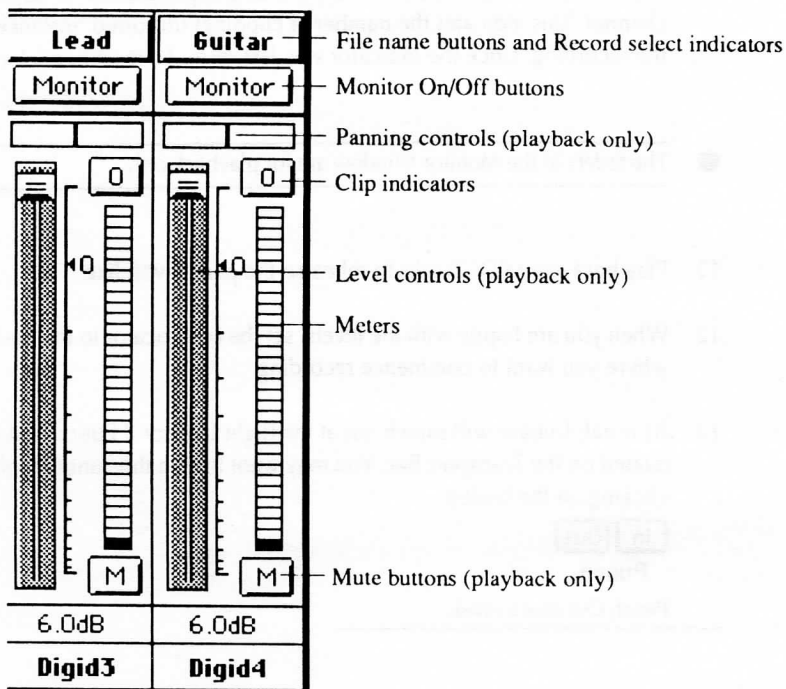
3. Set the Track to Channel 1. It will now record and play back from audio channel 1 in your recording hardware.
4. Open the Inspector (if not already open). As you will see there are a number of Record Ready buttons for the Track. Currently only the one for channel 1 is available, since you set the Track to record on channel 1.



- Click on the Channel 1 Record Ready button, to activate it.



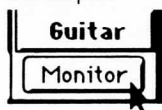
- Bring up the Monitors window, by selecting Monitors from the Audio menu.



- Click on the leftmost File Selector button, the one for audio channel 1.



8. In the file dialog that appears, type in the name of the audio file you are about to create, and find a location for it. "Save" when ready.
9. Turn on Monitoring for this audio channel if you like. This will make your audio source pass through the audio system and get monitored via the output.



10. Set the recording level at the source. The meters in the Monitor window indicate recording level, and there is also a clip indicator for each channel. This indicates the number of clippings (distorted "instances" in the recording) since the indicator was last reset. To reset it, click on it.

● The faders in the Monitor Window are for playback only.

11. Play back the MIDI Tracks to rehearse the part, if you like.
12. When you are happy with the levels, set the Left Locator to the position where you want to commence recording.
13. 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.



Punch

Punch Out deactivated.

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

15. Record as much as you like, and then press Stop (if you have specified a small default file size, Cubase may punch out automatically see page 6 in the Hardware Specifics Appendix).

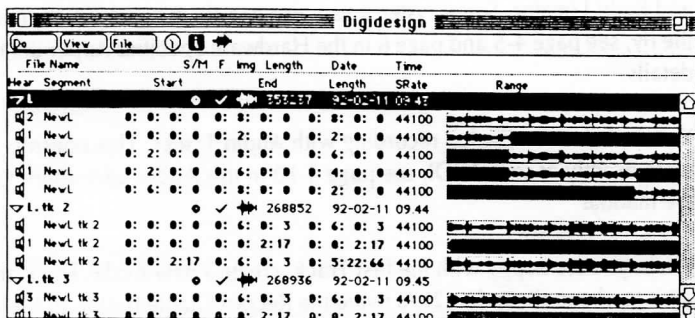
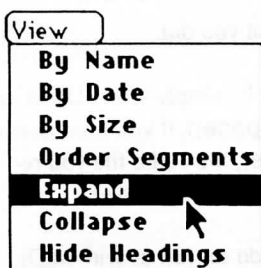
You will have to wait a few seconds while an image of the audio file gets calculated. When this is ready you should have a Part with a waveform in it.



16. If no waveform appears, select Show Events from the Part Appearance hierarchical menu.
17. Play back the Arrangement to listen to what you did.
18. If you want to redo the recording completely, simply select Undo, or delete the Part (select it and press [Backspace]). If you hold down [Command] while pressing [Backspace], the audio file you recorded will also be permanently deleted from the hard disk.
19. If you want to punch in on this recording, do so, just as with MIDI Tracks. All systems can handle an automatic punch set up using the Left and Right Locator. Some systems can also handle manual punch in on the fly, see page 4-5 and page 6 in the Hardware Specifics Appendix for details.
20. You can also use Cycled recording with Audio Tracks. This doesn't work exactly as with MIDI, see page 4-10 in this Audio addendum to the manual.
21. When you are happy with the first Track, create a new Audio Track and set it to channel number 2. Activate the Record Enable button in the Inspector. In the Monitor window, click on the File Selector for channel 2, and name the file. 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.
22. 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 play-

back. 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.

23. If you wish you can use all of the regular Tools for MIDI Tracks on your audio Parts. Move them, duplicate, split them up, join them etc. The only thing to note is that when recording from anywhere but position 1.1.0, the Part will extend to the left of the actual punch in point (the Left Locator), to preserve the attack in the recording.
24. Now it is time to examine what you actually did when you were recording. Select Pool from the Audio menu.
25. Use the pop-up "View" menu in the Pool window to select "Expand".



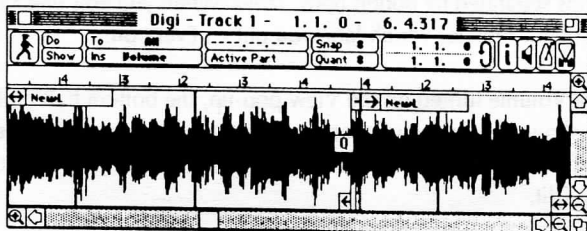
What you see is a list of files and their Segments. The audio files are in bold text and the Segments are in plain.

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, one file can

have a number of Segments, all playing back different sections of the file.

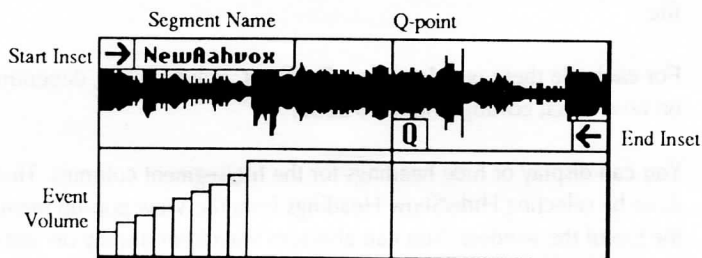
For each file there is at least one Segment, maybe more, depending on how much editing you have done.

26. 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.
27. 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.
28. Click somewhere in the Arrange window so that it gets activated. Find an Audio Part you'd like to inspect closer, and double click on it. The Audio editor opens.



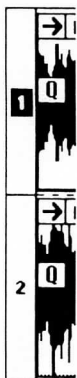
29. In this window you can see a number of *Events*. Each Event plays back one Segment, and you can see the name of that Segment in the Event. This editor has a Toolbox as all others. You can pretty much do with an audio Event what you can do with a MIDI note, and more. You can also

customize the display by using the View pop-up menu on the Status bar. This is what can be shown in an Event:



30. 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 on the Functions bar activated when you drag any of the handles, you will hear where you put it when you release the mouse.
31. When you move Events you may note that you can drag them vertically as well as horizontally (make the window bigger first). We call the horizontal strips separated by dotted lines, *lanes*. When you edit *one* Part, as now, it doesn't matter which lane you put an Event on.
32. If you have Volume turned on the View pop-up, the bottom half of the event will show a volume curve for the event (if you put one in, otherwise this area is left blank). You can draw volume just as with controllers in Key Edit.
33. 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, as in all editors.
34. Next, in the Arrange window, select several Parts that play back on *different* audio channels. Open the editor by double clicking on any of the selected Parts.

35. Turn on Lane Info on the Show pop-up in the editor. You will now see that each lane plays back on one audio channel.



36. By moving an Event to another lane, you move it to another audio channel, and in this case also to another Part.
37. 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, and Cubase will easily find it even if you restore it after a backup. And when you back up, don't forget to include the audio files...

This completes the guided tour of the audio part of Cubase Audio. 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.

OVERVIEW

Handling audio in Cubase is very intuitive, but understanding something about the underlying structure of the program will get you a long way in making the most out of the wonders of non-linear recording and non-destructive editing.

Please read the following text once, and refer to it later when you go through the different processes in the program.

CHANNELS

When we refer to *channels* (or rather *audio channels*), we mean the physical recording and playback channels of the hardware you use. One channel plays back one mono recording at a time. The number of channels in your hardware limits the number of recordings that can be played back *simultaneously*, much like the voices in a synthesizer limits the number of notes that can be played at one time.

SOUND FILES

When you are recording something, you are creating a sound file. Each time you go into record mode, one (and always just one) new sound file per audio channel is created. It is this file that holds the actual recording. Delete the file and the sound is gone, forever.

-
- Disk crashes are a well known fact in the computer industry, and the only verification against disasters is a meticulous backup scheme. After each session, always backup your data, including both the audio and the Song files. The Pool function "Prepare Archive" simplifies backup of complete Songs.
-

The only instances when you will create new sound files — and thereby use up more disk space — is when you:

- Make new recordings.
- Import files from other disks.
- Use the Pool's Export command to make up a file.
- Use the Finder to duplicate files.
- Use Cubase's DSP functions or another software program to make up modified copies of any recording you may have.

New files are created automatically when you record. You don't need to specify file names and locations prior to recording except for the first recording for each audio channel.

You *can* use several files with the same name in one Song. The Macintosh File System requires that you then place the files in different folders however.

Make it a habit to always put the audio files for a Song in the same folder as the Song. When you later load the Song, Cubase always first looks for the audio files in the folder where you put the Song document. That means that you can back up the whole folder and restore it to your hard disk later without the program having any problems with "lost" audio files.

If you *do* use the Finder to move a sound file or rename it (you shouldn't!), the program will warn you next time you open that Song, and will let you find the files automatically or manually. See page 5-8 in this Audio addendum to the manual.

When you save your Song, the program remembers the "creation date" and "last changed" date for each sound file, so it knows if you "tampered" with the file since the last time you had the song open (you might for example have used it in another Song). If this is the case, you will probably need to update the *image* (the waveform picture used on screen) of that sound file. See page 5-9 in this addendum to the manual.

- Cubase Audio actually only records in mono. However, there are facilities for recording several channels into one Track, and to handle those individual recordings as stereo or multi-channel entities. Cubase also imports stereo and multi channel files created by other programs. The program is also able to create a true stereo file out of two mono recordings, by using the Mix command.

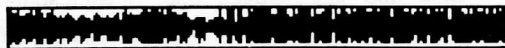
SEGMENTS

Most of the time you don't bother with sound files at all, since Cubase isn't restricted to playing complete recordings. Cubase plays back *Segments* of your recordings, which are sections of sound files defined by a start offset, and a length.

Segments take up virtually no disk space, they only point to the sound files (that do take up a lot of disk space). Making up many Segments from few sound files is a disk space conservative way of working.

You can make up one or many Segments out of one sound file. These Segments can play the same section or different sections of the same sound file. You can use all these Segments in the same Song, and even play them back on different audio channels simultaneously, there are no restrictions.

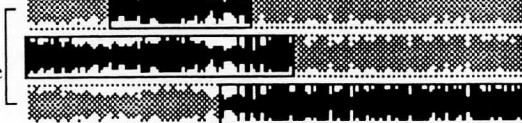
An Audio file



Segment playing
the entire file



Segments playing
sections of the file



A Segment is played back via a channel. You can have several Segments playing back via different channels, at the same time, although they all are Segments out of the same sound file. Complicated? Here's an example:

Let's say that you recorded a few bars of a drum beat. You make up one Segment that plays this recording. Then you make up another very small Segment from the same recording, a Segment that only contains a single snare hit.

Now you can play back the whole recording via one channel and use another channel to play the short Segment wherever you feel additional snare hits are needed. As long as these two Segments play back on different channels they will not cut each other off.

This is what is often referred to as *non-destructive editing*. You can use different portions of one sound file, even on different audio channels, without actually making any permanent changes to that file. Most editing procedures in Cubase are non-destructive. And with those who aren't you are given the choice of creating a copy of the original file before proceeding.

AUDIO EVENTS

When you record MIDI in Cubase, you record Events. By the same token, what you actually handle in Cubase's Audio editor, are audio Events. One Audio Event plays one Segment at a certain time.

The difference between the handling of Events and Segments may seem redundant, but it isn't. Some operations work on Segments and other work on Events.

One thing to note is that the position of the Event determines where the audio *starts* playing, but the Segments determine the *duration* of playback. Another example is that you might delete an *Event* in the Audio Editor, but the *Segment* is still there in the Audio Pool (see below), so that some other Event can play it back.

When you use the Audio editor, most of the handling of Events is identical to that of MIDI Events in other editors.

SUMMARY

Let's repeat this:

- Your recording hardware has a number of *channels*. Each channel can play back one mono recording at a time.
- For each recording you make on a audio channel, one *sound file* is put on disk.
- To specify what part of the sound file should be played back, Cubase makes up *Segments*.
- In the Parts are *Events*, and it is Events you see in the Audio Editor as well. Each Event plays back one *Segment* via one *channel*.

Spend a few moments getting acquainted with this terminology, it will make it a lot easier to understand what's going on in the more complex operations you are able to perform on audio in Cubase.

THE AUDIO POOL

The Audio Pool is for managing your Sound Files and Segments, much like you use the Finder to manage your folders and files.

The Audio Pool displays an overview of each of your recordings (Sound Files), and the Segments made up of each one. It allows you to import Sound files, make up new Segments, delete Segments, etc.

The Audio Pool also performs some signal processing on sound files.

AUDIO IN THE ARRANGE WINDOW

There are different types of Tracks in Cubase, one of them being Audio Tracks. For general handling of Track types, see the "Tracks" chapter in the main manual.

One Audio Part on an Audio Track can contain any number of Audio Events, in any order, parallel or after each other (the exact handling of an audio Part is described later in this manual).

This means you must not confuse Cubase's Audio Tracks with tape recorder Tracks. A Cubase Audio Track may contain any number of parallel recordings taking up any number of audio channels. Sometimes, though, it is convenient to handle a Cubase Track as a tape recorder track. At other times this may be restricting, it's all up to you and what you are trying to achieve.

-
- With Audio Tracks, there is no individual Channel setting per Part, as there is with MIDI Parts. All Parts on the Track will use the Channel setting in the Track list.
-

THE AUDIO EDITOR

There is a special editor for audio. Like all other Cubase editors, it allows you to get a close-up of one or several Parts. The Audio Editor shows Events graphically, as boxes, and displays the actual audio waveform inside these boxes (if you so wish). You use the editor to assemble Events (that play Segments) into parts of music (or whatever noise you're recording!), by putting in new Events, copying, cutting, pasting, splitting, shortening and of course moving them around.

Again, one Part, that you edit in the editor, is not restricted to being like a Track on a traditional tape recorder, you can have many paral-

labeled Segments in the editor. They are then displayed vertically above each other on *lanes*.

THE WAVE EDITOR

This editor performs direct "destructive" (permanent) editing on your audio files. It has plug-in tools for wave editing functions, such as reverse and permanent fade ins and outs.

The Wave Editor also allows you to edit, trim and add Segments, with sample resolution accuracy.

EDITOR SUMMARY

- The Audio Editor allows you to perform non-destructive editing, by letting you work with Events and Segments.
- The Wave Editor primarily performs "destructive" editing, that is, permanent alterations to your sound files.
- The Pool is a mixture of both the above, it is used for some non-destructive and some destructive editing.

GETTING THE SOUND INTO THE PARTS

From the Arrange window you see your audio as Parts on Tracks, just as with MIDI. There are four ways to get the audio Events into a Part:

- By recording (from the Arrange window or from the editor, it doesn't matter).
- By dragging Segments from the Pool into the Arrange window.
- By dragging Segments from the Pool into the Editor.
- By using the Pencil Tool to import Audio into the editor.

RECORDING AND PLAYBACK

Recording audio is done as with MIDI, either on one Cubase Track at a time or in Multi Recording mode on several Tracks at a time.

ONE TRACK – ONE CHANNEL RECORDING

The text below first describes all you need to know about recording *one* audio channel on *one* Track, with Cycle turned *off*. After this follow all additional recording options.

SETTING UP THE TRACK LIST

To record audio you must perform the following steps in the Track list:

1. Create an Audio Track or select an existing, so that it is active.
2. Set the Track's Channel (Chn) to the same number as the channel you plan to use.
3. Record Enable the Channel in the Inspector.

Trackinfo	A	M	C	T	Track	Chn
VoxDub					VoxDub	3
Rec Enable					MIDI Piano	1
					MIDI Bass	1
					MIDI Drums	2

A Track set up for Recording on audio channel 3

SETTING UP THE MONITOR WINDOW

1. Select Monitor from the Audio menu.
The Monitor window appears.
2. Click on the File selector button corresponding to the audio channel you plan to record on.
A standard Macintosh file dialog box appears where you can type in a new name and select where you want the file located. This has to be done the first time you record on an audio channel. After that Cubase automatically creates new sound files for you, by appending the text ".tk2", ".tk3" etc, each time you start a new recording.

-
- If you don't like the Automatic names or for some other reason want another one or a different location for the file, you can specify this prior to recording, just like the first time for the channel.
-

3. Check the File selector button you just clicked. It should now be black to indicate that this channel is ready for recording.
The button turns black when a channel has been set to Record Ready in the Inspector and a file has been selected for recording.
4. If you want the audio source to pass through the audio card while recording, turn on monitoring for the channel.



The Monitor button.

5. If needed adjust the playback Volume and Panning by using the Monitor controls for the channel.
6. Check the Recording Level with the help of the Meters and the Clip indicators, see later in this chapter for more info.

PERFORMING THE ACTUAL RECORDING

Recording is done exactly as with MIDI, see the chapter "Basic recording of MIDI Tracks" in the main manual. Please just note the following points:

GENERAL

- You may record from the Arrange window, the Audio Editor or any other editor, or while the Audio Pool is the topmost window, it doesn't matter. You may not record from the Arrange window when the Editor is open.
- The maximum Length of the Recording is limited only by the size of your hard disk and the "Default Rec File Size" setting in the Audio System dialog.
- Switching Tracks while recording does not allow you to continue recording on the new Track, it deactivates recording, but doesn't stop playback. You have to stop before recording again.

PRECOUNT

- Precount (an on/off setting in the Metronome dialog box) does not work with audio as with MIDI. If Precount is activated, a short portion of audio is recorded before your actual starting point. We definitely recommend you to leave this on. This is to ensure that any attack in the sound will be properly preserved. If you used the Locators for recording, you will note that the Part extends a little bit to the left of the Left Locator. Since Parts snap to their relative starting point (the beginning of the Part doesn't necessarily snap to a bar, beat or whatever) you can still move the Part around in the Arrangement and snapping will work as you expect it to. The only exception to the Precount feature is that no Part obviously can start before the beginning of the Song (position 1.1.0).

RE-RECORDING AND OVERDUBBING

- If you wish to redo the whole recording, use Undo, delete the Part or use the editor to delete the Events that have been created, then re-record. You can *permanently* delete the audio file at the same time by holding down [Command] (This only works when you use the [Delete] or [Backspace] keys to delete, not the Eraser tool).
- You may record again on a Track, and this will mimic a regular overdub in replace mode, as on a tape recorder. The new Events you record will overlap earlier Events. But in fact, each earlier recording is still intact, it is just that it isn't played back where another recording overlaps it. The logic of this becomes apparent when you use the editor, see page 6-6 in this section of the manual.
- The Overdub/Replace Rec switch on the Transport bar doesn't apply to audio. Overdub doesn't apply, since each audio channel can only play one "sound" at a time. And as stated above, recordings are never actually replaced, but new Events may overlap existing Events in the Parts, which will give you the same effect as with an overdub in replace mode.

PUNCH IN AND OUT

- On all hardware systems you can pre-program the punch using the Left Locator and the "In" button on the Transport Bar. On all systems *except* those using the Session 8 hardware and those including a System accelerator card you can also perform manual punch in "on the fly", as with MIDI Tracks.
- You can only punch in once per "play pass". This means you have to Stop before you can punch in again on an Audio Track.

STOPPING RECORDING

- When you stop or deactivate recording, the program normally calculates a screen image for each file recorded during this pass. A dialog box informs you of the progress and disappears when it is finished. If you don't need these waveforms you can speed up all graphic operations in the program by unchecking Use Waveforms on the Audio menu.
- There are a few error possibilities you should be aware of. Your storage media could possibly get filled up. Or, it could be too fragmented or for some other reason too slow to accept the data being recorded. The more channels you try to play back from one hard disk, the faster it has to be. A dialog box will inform you of what went wrong. The chapter "Hardware Specifics", Appendix 1, may contain additional information about potential pitfalls in each system.

STEREO AND MULTI CHANNEL RECORDINGS ON ONE TRACK

Cubase allows you to record on as many audio channels as you like, using only one Track. This can be used to record sources that naturally go together, for example the left and right channel in a stereo pair, a close up and an ambience microphone recording the same instrument, etc.

1. Set the Track to Channel Any instead of a channel number.

2. In the Inspector, set as many channels to Record Ready, as needed.

Trackinfo	A	M	C	T	Track	Chn
Stereo Box					Stereo Box	Any
Rec Enable						
1 2 3 4						

Two channels set to Record Ready.

3. In the Monitor window, select a file for each channel you have set to Record Ready.

When you do this, several File Selector buttons will light up to indicate these channels are ready for recording.

- If you have used the channel(s) before during this session the step above is not needed – Cubase will then assign the file names for you, automatically!

4. Proceed with recording as described above.

All the audio channels will be recorded onto the single Track. When you later open the audio editor (see page 6-3), you will note that there is one *lane* with *events* for each channel, and that these events are automatically grouped to facilitate multi channel editing.

- For all the Channels to play back from the Track, you must keep it set to Channel "Any".

MULTI TRACK RECORDING

You may record on several *Tracks* at the same time. This might be convenient when you record multiple instruments in one take:

1. Activate Multi-Recording from the Options menu.
The only reason for you to select one of the Multi-Recording modes (Merge, Channel, Split etc) specifically, is if you plan to record MIDI and audio at the same time, since the mode you select only applies to your MIDI recording.
 2. A new column appears in the Track list, the Recording column. For Audio Tracks, simply click in this column to put those Tracks you wish to use in Record Ready mode (MIDI Tracks are handled differently).
-
- You can not put two audio Tracks set to the same Channel in Record Ready mode at the same time.
-

Trackinfo	A	M	C	T	R	Track	Chn
			~		~	Lead	1
BackVox			~		~	BackVox	2
Rec Enable			~		~	Guitar	3
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			~		~	MIDI Piano	14

3. If you wish, bring up the Monitor Window to adjust your monitoring and to name and position files, beforehand, just as with single Track recording.

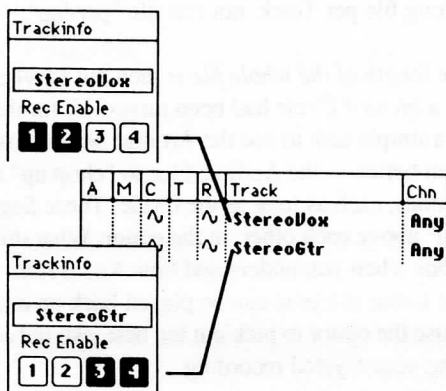


4. Activate recording, just as with a single Track.

If you wish to later merge two *Tracks* to one, use the Functions menu Mixdown feature in combination with the Any channel setting. See page 8-4 in this Audio section of the Cubase manual for details.

MULTI TRACK – MULTI CHANNEL RECORDING

Please note that you may combine the two methods above to record multiple channels on multiple Tracks. This might be used for example to create a number of Stereo Tracks.



Two Tracks, both set up to record in stereo.

RECORDING MIDI AND AUDIO AT THE SAME TIME

When multi Record is active, you may record MIDI and audio at the same time. MIDI/Drum Tracks operate just as they normally do in multi record, except that only three MIDI Tracks may be record enabled rather than the four available in regular versions of Cubase.

CYCLED RECORDING

When you enter recording in Cycled mode, your existing Tracks (MIDI and audio) cycle as usual. However, your new audio recording only creates one long file per Track, not one file "per lap".

One Segment *with the length of the whole file* is then put in where you began recording, a bit as if Cycle had been turned off for that Track only. It is then a simple task to use the Arrange window features or — maybe even better — the Audio editor to "chop up" this Segment into shorter ones, each as long as the Cycle. These Segments can be "stacked" above each other, in the editor. What this means becomes obvious when you understand how Audio Edit works. Since only one Event at a time can be played back on one audio channel, you can use the editor to pick out the best take out of all the ones created during your Cycled recording.

-
- The Cycle modes and functions have no relevance to Audio Tracks.
-

PLAY BACK AND TRANSPORT CONTROLS

WHAT IS BEING PLAYED BACK?

- As stated earlier, the Arrangement doesn't play back sound files, it plays *Events* which are linked to *Segments* of a Sound File. If you think about this for a second you realise that this means that recording actually is a three stage rocket: First of all you have created a Sound File on your disk. Secondly the program has also created a Segment as long as your recording. Finally an Event that plays this Segment is inserted into the Part you recorded into.
- A Segment never spills over the end of a Part, as opposed to MIDI Parts where notes may be longer than the Part. This means your Parts are always at least as long as to the end of the last Segment (they can be longer too).

THE TRACK CHANNEL SETTING

- If you change the channel setting of a Track, you make it use another audio channel in your playback hardware.
 - You may set a Track to channel "Any". It will then be able to use all audio channels in your system. This is used in conjunction with the stereo and multi-channel recording feature described above. It can also be used to create a multi-channel Track using the *lanes* in the audio editor.
- See page 6-6 for details.
- You *can* set two Tracks to the same channel for playback if you wish. But, remember that each physical audio channel in your system is monophonic and therefore only one recording at a time can be played

back by each of the available channels. See page 3-2 in this section of the manual.

WHAT – NO AUDIO?

If you don't hear a recording there may be several reasons:

- Check in the Part whether there is any audio. If Show Events is ticked in the Part Appearance pop-up on the Options menu, and there is just a straight horizontal line in the middle of the Part, you somehow didn't record anything, or just silence.
- Open the editor (double click on the Part) and check if there is an Event in there (use the "GoTo" menu to find the "First Event"). If there isn't, you somehow didn't activate recording.
- Check your channel settings on the Tracks (and in the Parts). If two Events play back on the same audio channel, you will only hear one of them.
- Check your volume settings, both in the Monitor window, in the Mixer window and on your mixer/amp.

WINDING

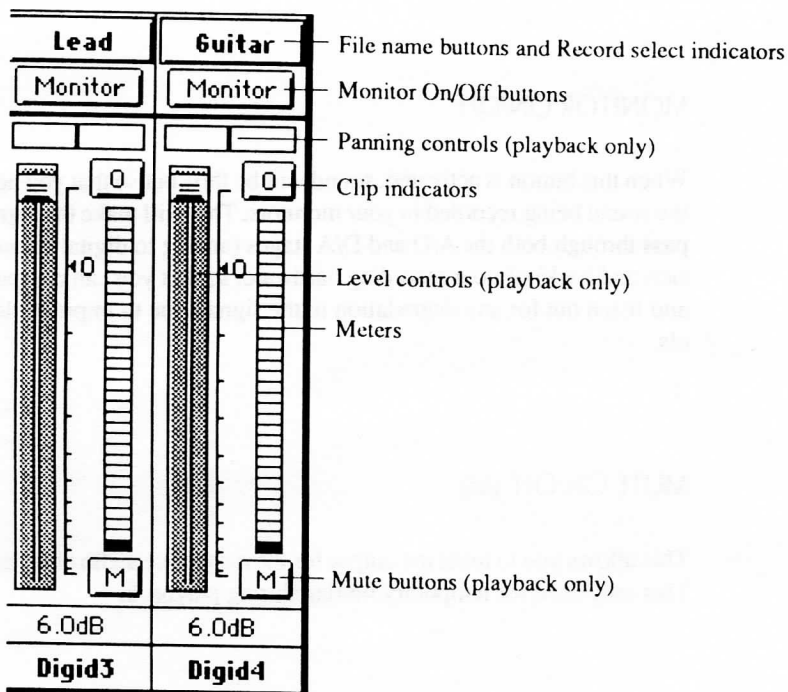
Fast Forward and Rewind works as with MIDI, although it takes slightly longer for the Audio Tracks to catch up, when you e.g. re-wind in the middle of playback.

Cuing doesn't play back Audio Tracks.

MORE ABOUT THE MONITOR WINDOW

The Monitor Window is used both for recording and playback, as described above. In addition it works as a minimal Mixer.

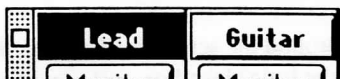
The window itself can be moved around the screen by dragging the dotted bar, and closed by clicking the little close-box, just as with the Toolboxes.



THE FILE NAME BUTTONS

The top row buttons have two purposes.

- When you click on a button, a file dialog appears allowing you to name and position the record file for that channel.
- A black button indicates that the channel is ready for recording



In this example, "Lead" is put into record Ready.

MONITOR ON/OFF

When this button is activated, sound will be thru-put so that you hear the sound being recorded in your monitors. This will make the signal pass through both the A/D and D/A stages (analog to digital conversion and back) of your recording hardware, so that you can compare and listen out for any degradation in the signal, due to improper levels.

MUTE ON/OFF (M)

This allows you to mute the output for the respective audio channels. This only used for temporary muting during playback.

METERS

These show input level during recording and output level during playback.

OUTPUT VOLUME

This controls the output level of the audio hardware. It affects playback only.

- Pushing the fader to the top raises the level +6dB above unity gain.
 - Holding down [⌘] when clicking the fader, sets it to "0".
-
- The recording level is solely set at the source, or at the panel of your recording hardware. The fader in the Monitor window is only for controlling the Output level of the channel, not the recording level.
-

PAN

By dragging the Pan controls left/right you can set the playback panning for each audio channel in the stereo field. Channel pairs playing back stereo files should probably be panned hard left/right.

- Holding down [⌘] when clicking the Pan control sets it to its middle position".
-
- For a thorough discussion on volume and panning, see page 11-2 in this audio section of the manual.
-

NUMBER OF CLIPPINGS

If clipping occurs (as when "recording too loud"), this buttons lights up (goes black) and a number is displayed. For each instance of clipping, the number is incremented, so that you can easily see how

many clipping levels occurred during a recording. You can reset the count by clicking on it as you would a button.

ABOUT FILE NAMING

As stated above you must create a file name for each *new* audio channel you want to record on, during a session. After that all subsequent files will be automatically named for you.

You can rename the files from the Pool window if you like, but don't rename them from the Finder, or Cubase won't be able to find the files next time you load your Song. See page 5-8 and page 10-1 in this section of the manual for details.

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, without losing "sync" with the audio.

ABOUT SYNCHRONIZATION

Generally, synchronization in Cubase Audio is no different from syncing the MIDI only version. Please note the following points:

MIDI CLOCK

With Cubase Audio, you should sync to time code (SMPTE or MIDI Time Code), *not* MIDI Clock.

SYNCHRONIZING DIGITAL AUDIO

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 are here only able to discuss it briefly.

Time code coming from an analog tape recorder will always vary slightly in speed. Different time code generators and different tape recorders will also supply time code with slight differences in speed. In addition, the shuttling of tape mechanisms due to overdubs and re-recordings can cause the physical tape to wear and stretch. This physical degradation causes further instability in the frequency of recorded time code.

When Cubase receives time code, it will vary its playback speed to compensate for such fluctuations in the speed of the time code, that's the whole purpose of synchronization. Small differences in time code speed will then not be noted.

However, things are different with the timing of digital audio. The playback speed of digital audio can not be varied easily. Therefore, most systems rely on a fixed "clocking".

As you may understand by now, problems may appear when the perfectly stable digital audio gets related to the slightly varying speed of a system synchronized to time code.

As an example of these problems, consider SMPTE time code which is running 0.001% fast (please note, a *thousandth of a percent*).

When set against a perfectly stable digital audio file, we find that this tiny error grows, within 16 bars, to become an audibly disturbing 25 tick positioning error (at 120BPM). By 64 bars into the song we have a 100 tick error!

There are generally three ways avoid these problems:

RESOLVING

The first – and best – solution is to use an external clock for the digital audio, often called resolving". By using the time code from the tape recorder as a "master" for this clock, all parts of the system are using the same reference source for their timing. However this option is not available with all systems, and when it is, it requires additional, fairly expensive synchronizing hardware.

CONTINUOUS RESYNCHRONIZATION

Some systems use digital signal processing techniques to simulate variations in playback speed. This is often called "continuous re-sync". Such processing *might* cause signal degradation in the form of harmonic distortion, or positioning errors when relating SMPTE to Sample positions.

CUBASE SOLUTIONS

The third solution is offered by Cubase Audio, and comprises a set of tools and strategies to minimise the problems without the need of additional hardware, and without compromising audio quality:

- The Generate SMPTE command on the Audio menu allows Cubase Audio to create a synthesised audio file containing "perfect" SMPTE code. You can then stripe the tape you intend to synchronize your work to, with this code. By doing so, you will eliminate the need for highly expensive 100.000% stable SMPTE generator devices. Most synchronizers are capable of generating MTC (MIDI Time Code) with a high degree of stability given "perfect" time code. We highly recommend using this feature to generate time code and then recording this synthesized code to tape before commencing any synchronized work with Cubase Audio.

This code is generated "off-line" and is created very quickly. When finished, you can simply throw the file away or perhaps store it on a stable medium such as DAT tape for later use.

- Cubase Audio also contains a mechanism called Calibrate To Tape (also found on the Audio menu) whereby the sample rate of the system can be altered to match the degree of wear the tape you are using has suffered. In this way the pitch of the audio can be adjusted to match that of the taped material as the tape stretches. This feature can also be used to calibrate a tape machine playing a tape recorded on another machine, the adjustment in this case is carried out on the machine itself.
- As you will have understood by the discussion above, the problem increases with the length of the audio files. Therefore, if possible, work with shorter audio segments, of for example up to one minute in length.

5

THE AUDIO POOL

Title Bar — **Functions Bar** — **Headings**

Do **View** **File** **U** **+**

Digidesign

File Name	S/M	F	Img	Length	Date	Time	Range
Header Segment	Start			End	Length	SRate	
2 NewL	0: 0: 0	0: 8: 0	0: 0: 8: 0	0: 0: 44100	92-02-11	09:43	
1 NewL	0: 0: 0	0: 2: 0	0: 0: 2: 0	0: 0: 44100			
1 NewL	0: 2: 0	0: 8: 0	0: 0: 6: 0	0: 0: 44100			
1 NewL	0: 2: 0	0: 6: 0	0: 0: 4: 0	0: 0: 44100			
1 NewL	0: 6: 0	0: 8: 0	0: 0: 2: 0	0: 0: 44100			
L.tk 2				268852	92-02-11	09:44	
1 NewL.tk 2	0: 0: 0	0: 6: 0	0: 3: 0: 6: 0	3: 44100			
1 NewL.tk 2	0: 0: 0	0: 0: 2: 17	0: 0: 2: 17	0: 0: 44100			
1 NewL.tk 2	0: 0: 2: 17	0: 6: 0	0: 3: 0: 5: 22: 66	44100			
L.tk 3				268936	92-02-11	09:45	
3 NewL.tk 3	0: 0: 0	0: 6: 0	0: 3: 0: 6: 0	3: 44100			
1 NewL.tk 3	0: 0: 0	0: 0: 2: 17	0: 0: 2: 17	0: 0: 44100			

A File — **Segments of Files**

This window is opened by selecting Pool from the Audio menu. It displays a list of the Sound Files you are currently using and all their related Segments. The Pool can be seen as a management tool, helping you to maintain an overview of the audio portion of your production.

The Pool also provides "household" tasks as well as access to some of the DSP functions in Cubase.

SETTING THE VIEW

SOUND FILES AND SEGMENTS

Each File is displayed in bold text, and is preceded by a triangle.

▷ **Piano**

You may click on the triangle to hide/show a list of all the Segments that belong to the Sound file.

▽ **Piano**

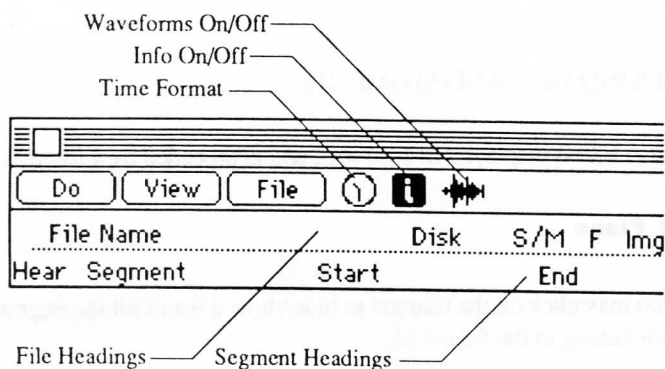
- 🔊 Chorus
- 🔊 Chor copy
- 🔊 Verse

If you want to show all Segments for all Files, select Expand from the pop-up View menu or click on a triangle while holding the [Option] key.

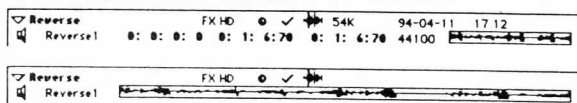
If you wish to see only the Files, select Collapse from the View menu.



WAVEFORMS, INFORMATION AND HEADINGS



- You can decide to display the waveform for the Segments or not, by clicking on the small waveform icon at the top of the window.
- You can decide to display information about the Files and Segments or not, by clicking the info ("i") button at the top of the window. When this is turned off, more of the width of the window is used for the waveforms.



The same Segment with and without Info.

- Above the list of Files and Segments you may find two lines of headings. The upper is for the File columns and the lower for the Segment columns. You use the Hide/Show Headings item on the pop-up View menu to hide/display the headings.
- Time formats can be shown as time code or as samples. Which is decided by clicking the time/frame icon at the top of the window.

The following tables list the information displayed for Files and Segments::

FILE HEADING	EXPLANATION
Name	The name of the File, on disk.
Disk	The Disk the File resides on. Some Digidesign hardware requires Files to be on particular hard disks, in some cases connected directly to the Digidesign hardware, not the regular Macintosh SCSI port.
S/M	Indicates if the File is mono (one bullet) or stereo (two bullets). Normally all Files are mono. The only case when you will get a stereo file in the pool is when you open a Cubase Audio Song created with an older version of the program. Stereo files can not be played back from this version of Cubase Audio. See page 10-2.
F	A tick mark indicates the File has been found, a crossed circle that it has not (see below).
Img	This shows you the status of the waveform image for the File, see below.
Length	This shows the Length of the File in kilobytes.
Date and Time	This shows the date and time the File was created.

SEGMENT HEADING EXPLANATION

Hear	Clicking on this plays the Segment.
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 above). This can be changed, see below.
End	The Segment's End Inset in the File.
Length	The Length of the Segment. Can not be changed.
SRate	The Sample Rate of the File. Can not be changed.
Range	An overview of the Segment in the File.

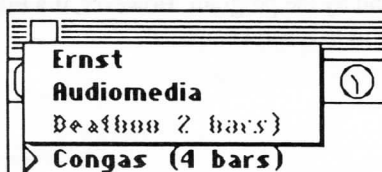
SETTING MAGNIFICATION

The Pool window has a magnifying glass on the horizontal scroll bars, just as the other main Cubase windows. This can be used to set the size of each line, to get a better overview of the waveforms.

WORKING WITH FILES IN THE POOL

GENERAL OPERATIONS

- You can change the name of the File. Double click on it or select the list entry and while holding [Option] hit [N], then enter text as usual. Hit [Return] or click outside when you are finished.
- If you hold down [Command] and [Option] and click on the name of a File, a pop-up list appears showing where the File is located, similar to the pop-up at the top of a file list in a normal file dialog box.



- You can select a File by clicking on it or by using the [↑] and [↓] keys on the computer keyboard.
 - You can audition any Segment by clicking on the speaker icon. Immediately next to the speaker icon is an indication of the number of times this Segment is actually used in your Song.
 - You can delete the selected File from the Audio Pool (if it isn't used in the Song) by using the main Edit menu, or by hitting [Delete] or [Backspace].
-
- Deleting the File does not mean it is deleted from disk, it is simply removed from the Pool.
-
- If you want to also delete the File from the disk, hold down [Command] while hitting [Delete] or [Backspace]. The program asks

you if are sure you want to follow through. This operation can not be Undone!

- You can create a Segment for the File by selecting it and selecting "Duplicate" from the Do menu or by pressing [Option]-[D] on the computer keyboard.
- Double clicking on the waveform opens the Wave Editor.

MISSING FILES

Normally, there is a tick mark to the right of the File name, indicating that the File has been found by the program. However, if a File hasn't been found, a crossed circle is shown instead.

- ✓ The File has been found.
- ⊗ The File can't be found.




A File may be considered missing if you moved it in the Finder since you started the program, or if you ignored the missing files dialog when you Opened the Song or Arrangement. If you always keep your Audio Files in the same folder as the Song and never rename them from the Finder, this will never happen.

To locate a missing File, click on the crossed circle. A dialog appears asking you if you want to locate the File yourself (Manual) or have the program do it for you (Auto). Select either.

Please note that Cubase is quite strict about identifying the Files you are using. Cubase retains information on the Name 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.

WAVE IMAGES

With each File goes an *image*, the picture of the waveform used on the screen in Cubase. When you record new Files, images are created automatically (see page 4-6 in this Audio addendum to the manual.) However, it is possible to not use images or they might get "out of sync" with the actual file, for example when working with other programs to process your audio files. The program indicates the status of the image for each File in the Pool:

-  The Image is OK.
-  The Image might need updating.
-  No Image can be found for this File.

If you click on the icon, a new image is calculated for the File. Whenever the program warns you about problems with the images, you can use this feature to remedy the problem.

WORKING WITH SEGMENTS

GENERAL OPERATIONS

- You select the Segment by clicking on it or by using the [↑] and [↓] key on the computer keyboard. You can select several Segments by holding down [Shift].
 - You can duplicate one Segment by selecting it and selecting "Duplicate" from the Do menu or by pressing [Option]-[D] on the computer keyboard.
 - You can delete the selected Segments not used in the Song by hitting [delete] or [Backspace].
-
- Any Segments used in a Part cannot be deleted from the Pool window, you have to first delete the Events that play the Segment. You can always tell how many times you refer to each Segment in your Song from the number next to the speaker icon.
-
- If you want to also delete the File that plays the Segment, from the disk, hold down [Command] while hitting [delete] or [Backspace]. The program asks you if are sure you want to follow through.
 - You can change the name of a Segment, just as with Files (see above).
 - Double clicking on the waveform opens the Wave Editor.

WAVEFORM OVERVIEW AND INSETS

To the far right of each Segment is a bar-graph displaying where in the File this Segment is. This might contain an image of the waveform. You can turn this on/off by clicking the waveform icon at the top of the window. The total bar represents the total File (this always has the same length, regardless of the File's actual length) and the black area represents the Segment.



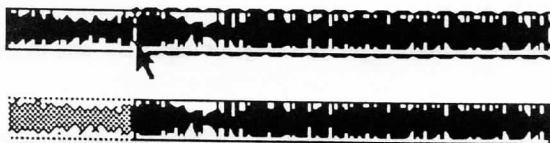
You can change the Segment's *Start and End Insets* within the File in two ways.

- By double clicking on the Start and End number to the left of the waveform and entering new numbers.

Using this method you can do sample accurate editing of Segments, which is not possible to do in the Audio editor. See page 6-7 in the main manual for how to enter time code values from the keyboard.

- By dragging the beginning and end of the Segment in the waveform display.

This last option uses the "Snap To Zero" option if this is activated, see page 9-2 in this Audio Sddendum.



Dragging the Start Inset (top) and the result (bottom).

You can move the whole Segment within the File by holding down the [Command] button and dragging in the waveform display.



Dragging the Segment (top) and the result (bottom).

- You can audition any part of the Segment by holding the mouse down on it's image. Playback will commence from that point. This allows you to easily audition the latter parts of long recordings.
- Double clicking on the waveform opens the Wave Editor.

IMPORTING AUDIO FILES INTO THE POOL

If you select Import Audio from the pop-up File menu you will be presented with a dialog box which allows you to import audio files into Cubase for use in your Song. The exact nature of this dialog is dependent on the hardware system you are using. Regardless, you use this dialog box to find sound files on your hard disk, and to select them.

You may also have the option of auditioning files directly from the dialog box.

For details of each system's Import dialog box, see Appendix "Hardware Specifics" in this Audio addendum to the manual.

When you have selected a file, the dialog box goes away. A new file is visible in the Audio Pool window, and with it is a Segment, which has the same name as the file preceded by the text "New".

If you import the same file twice a new default Segment is assigned to the original file.

STEREO FILES

You can import stereo files, but they will each be split up into two mono files. A dialog will ask you for name and position of each of the created mono files.

If you want to retain the stereo relationship in a file, or if you want to lock the relation between channels in a multi-channel file, use the Pen Tool in Audio Edit to import the audio directly, instead, see page 6-11.

DRAGGING SEGMENTS INTO THE ARRANGEMENT

You can easily drag a Segment from the Pool and release it directly onto an Audio Track (click on the *name* of the Segment or on the *waveform*). This action automatically creates a Part with the same length as the Segment. You can use this as a quick method to import Segments into an Arrangement.

DRAGGING SEGMENTS INTO THE AUDIO EDITOR

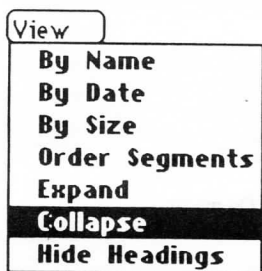
Another method of inserting audio into your Arrangement is to drag a Segment to the Audio Editor. This action inserts an Event into one of the Parts being edited. The Event plays the Segment you dragged. Using this method you can put as many Segments as you require into a single Part. Below is a quick hint to how this is done, the details are found on page 6-11.

1. Click on the name of a Segment, or on the waveform, and drag into an open Audio Editor window (you must open the editor first!).
The mouse position box in the editor informs of which position the Segment will be put on, and the Snap function helps you positioning it.
2. If you are editing a Track set to channel "Any" or if you are editing several Parts, you have to find the right *lane* for the Segment (the horizontal strips divided by dotted lines are called *lanes*).
Depending on which lane you "drop it" on, it will be played back on a different audio channel and maybe it will be put into a different Part.
3. Release the mouse when you have found the right Position.

DRAGGING SEGMENTS INTO THE WAVE EDITOR

You can also drag Segments directly into the Wave Editor, just as with the Audio Editor. This is described in detail on page 6-11.

THE VIEW MENU



You can use the first three items on the View pop-up menu to decide in which order the Sound Files in the Pool should be displayed:

OPTION	DESCRIPTION
By Name	Files are shown alphabetically.
By Date	Files are shown chronologically after the time they were created, with the newest File on top.
By Size	Files are shown after size, with the largest one on top.
Order Segments	You can use this option to rearrange the order of the Segments so that they are shown in the order they appear in the File.

- If you want to show all Segments for all Files, select Expand from the pop-up View menu. If you wish to see only the audio Files, select Collapse.
- The Hide/Show Headings item does just that, hides/shows the headings at the top of the Pool window. The upper line of headings is for Files, the lower for Segments.

THE DO MENU

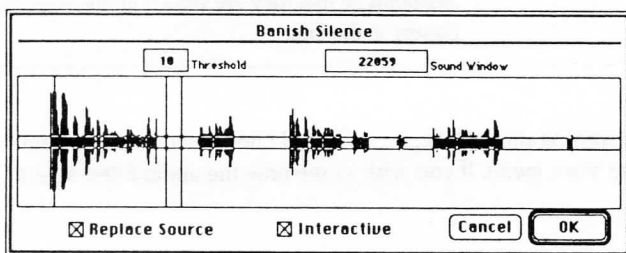


The Digidesign Pool has seven items on the Do menu.

BANISH SILENCE

This function operates on a Segment, that has to be at least one second long. It has a similar effect to that of a noise gate. You set a threshold and a "length" and all signals with a level lower than the threshold for the whole "length" (the *sound window*, see below), will be "banished". The banishing itself is done by the program by creating Segments with the sections of the sound file considered silence "masked out".

When you select a Segment and then select Banish Silence from the Do menu, the waveform in the Segment is displayed in a dialog box.



1. Decide if you want to see the effect of your settings on the audio or not, by checking/unchecking the "Interactive" option.
When working with very long Segments you may wish to switch this feature off. The settings will be retained.
2. Use the two horizontal lines to set the Threshold, by dragging either up or down.
The Threshold is also displayed as numbers, and can be set as a numerical value.
3. Use the right vertical line to set the size of the sound window.
This is also displayed as a number (the number of samples) which can be adjusted. The left vertical line is used to move the sound window around on the screen so that you can match the length of it visually to some audio in the window.

● Please note that the sound window operates on the whole waveform, not just the section it encloses in the graph.

4. Check the number of resulting Segments in the lower left corner of the graph.
Only those signals that you see will actually be left if you decide to click OK to go ahead.
5. Use the check box Replace Source to decide whether the source Segment should be left intact or not.
6. Click OK.

The effect of Banish silence is equivalent to going into the Audio editor, examining the waveform, finding the low level sections, and using the tools to splice up the Segment into separate Events while deleting the "silence" between. You can use this to get rid of unwanted silence for example at the beginning of the recording. Remember also that Banish Silence is an entirely non-destructive function.

Banish Silence uses "Snap To Zero" if that option is enabled. If such is the case, note that the image you see in the dialog may differ slightly from the results obtained.

Using Banish Silence, together with "Purge Segments" and "Erase Unused", allows you to automatically wipe all the silent sections of audio off your hard disk altogether, see below.

ERASE UNUSED

This option allows you to tailor your sound files such that they contain only those portions of material which are actually in use in your Song. This can help you to maintain as much free space on the available hard disks as possible.

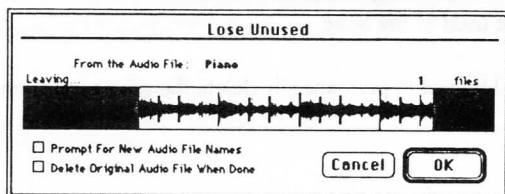
For instance, silence takes up as much disk space as noise, and when you use Segments and their Offsets to hide sections of a sound file that you don't want to hear, you are still using up valuable disk space for those unheard bits.

Those parts of a sound file not used in any Segment are considered unused. Note that even though there is no Event playing back a Segment, it may still reside in the pool and will not be deleted when you invoke Erase unused.

This command works on one sound file at a time.

1. Select either the File or one of it's Segments in the Pool

2. Select the Erase Unused command from the pop-up menu.
A dialog box will show you what sections of the file will be deleted. The grey areas will go and the waveform areas will be kept



3. Decide if you want automatic naming or not by ticking/unticking "Prompt For New...".
4. Select if you want the original file deleted by ticking/unticking Delete Original...).
5. Click OK.
You might be asked for a file name for each of those sections to be kept, depending on your setting.
6. The files are in turn saved to disk. When you return to the Pool you will find each of the kept sections as a file with a Segment of full length. The existing Events in your Song are automatically updated to reference the new files, so that it will sound just the same.

-
- The original file isn't deleted until all the new files have been created. So you have to make sure you have enough disk space for both the original recording and all the new files made up during the process. Cubase will warn you if there is not enough room.
-

If you elect to name the files as the process progresses you can place each new file wherever you wish. If you elect to have the files named automatically they will appear in the same folder as the source file.

There is one way to combine a few commands to automatically delete all silent audio.

1. Open the editor. Use Banish Silence to go through the Events and mask out all audio that you consider as silence. Check thoroughly that the Song plays back as you want it, after the operation.
2. Go into the pool and use Purge Unused (see below) to delete all Segments that are not used in the Song.
3. Finally, use Erase Unused to permanently delete the unused portions of the sound files.

DUPLICATE

If a Segment is selected, this action creates a copy of it. If a File is selected, this action creates a new default Segment which plays the full length of the File.

EXPORT SEGMENTS

This uses the selected Segment to extract a new sound file from the original. The type of file depends on the hardware you use, see the Hardware Specifics Appendix, page 9, in this Audio addendum to the manual.

SAVE SEGMENT AS REGION

This saves the Segment settings into the audio file they relate to. You can save the settings of the selected Segments or for all the related Segments pertaining to that file.

With Digidesign audio cards, this saves the Segments as *regions*. They can be imported via the Digidesign File Selector dialog, or

used in other programs that read Sound Designer II files and make use of the regions.

PURGE SEGMENTS

This allows you to delete all Segments that are not used in the Song. This does not delete any audio Files, only Segments.

FIND PARTS

This option allows you to easily determine which Parts in the current Arrangement are using the selected Audio Files or Segments.

1. Select the Segments.
2. Select "Find Parts from the pop-up "Do" menu.
The Parts which use the Segments get selected in the Arrange window. By selecting Edit from the Edit menu, these Parts get opened in the Audio Editor.

LOADING AND SAVING THE POOL

Normally, the Pool is 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.



When you select Save Pool a dialog box asks you if you want to save all Files and Segments, or just the selected ones. After this a standard dialog box appears where you can specify a name and a location.



A Pool document as it looks in the Finder.

-
- The audio Files themselves are not saved in the pool, 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!
-

If you load a Pool, the Files in it are added to the current Pool.

PREPARE ARCHIVE

This function on the Pool pop-up File menu takes all the audio Files used in the Song (if you wish, all the audio Files in the Pool) and puts them in a new folder that you specify. This folder can then easily be backed up to another disk or other media, using the Finder's copy commands or any backup utility program.

1. Select Prepare Archive from the Pool's pop-up File menu.
A standard Macintosh file dialog appears where you specify a name and location for your new archive folder.
2. Click Save to create the folder.
3. In the new dialog that appears, specify if you want to include *All* the Files in the Pool, or only those that are *Referenced* (actually used in the Song).

All the sound files are now moved to the selected folder. If the files are on another disk, copies are automatically created and put into the same folder.

-
- We recommend you to also save your Song document into this folder. If you make this a habit you can rest assured that you always have all the files for one Song in the same place. This makes backing up and restoring much simpler.
-

PREPARE MASTER

This option examines the usage of audio files in your song and extracts all the used audio, creating new files as it does so. In a sense, the function is a composite of other Cubase Audio operations, those being "Purge Segments", "Erase Unused", and "Prepare Archive". Following the operation, the audio files your song is using are minimized to only the material which actually appears in the song.

This operation is entirely non-destructive, in that no audio files will be erased from your hard disk. However, it cannot be undone and it requires that you have sufficient space on your destination hard disk for the operation to complete. You will be warned should there be insufficient free space to complete the operation.

Proceed as follows:

1. Make sure your Song is saved.
2. Select "Prepare Master" from the Pool's pop-up File menu.
A dialog box appears you that this operation is not undoable.
3. A new dialog box appears informing you that you need to create a new folder. Use the File selector that appears after this, to do so.

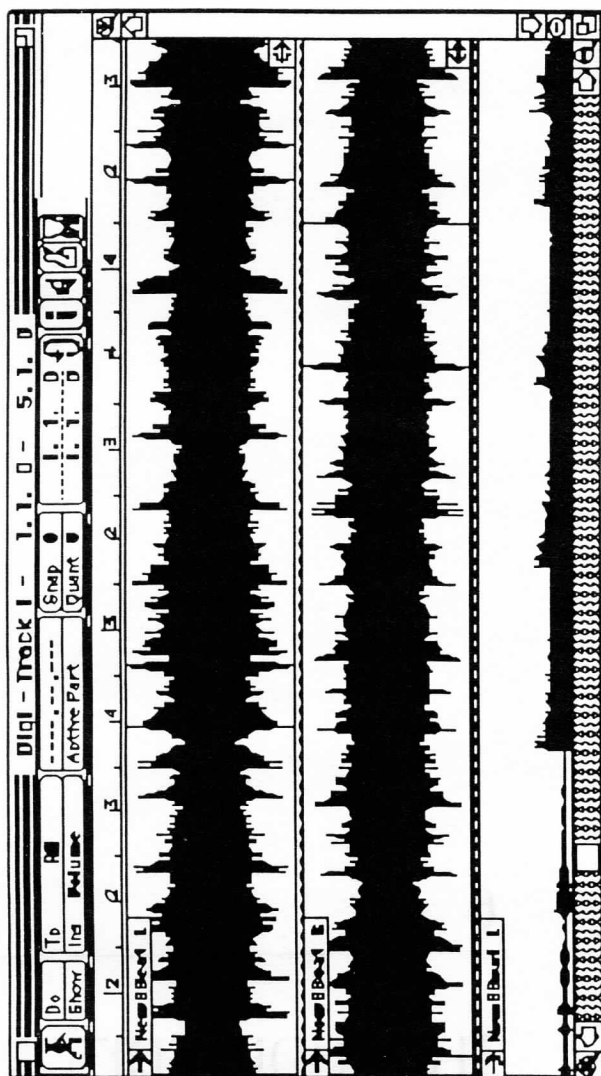
The software now examines your use of the audio material in the Pool, discards anything which is not used, and then proceeds to create new audio files which corresponds to the sections of the existing material. All the new files which are created are named automatically. The software also creates new Segments which play these new files, and swaps these in automatically.

4. Save the Song in its new state into the same folder as the new files.
This is necessary, since the Song you have after the operation uses completely new files and Segments than before.



6

THE AUDIO EDITOR



Title Bar

Functions Bar

Lanes with Events

INTRODUCTION

OPENING AUDIO EDIT

To enter the Audio Editor, select one or several Audio parts and double click on one of them. Alternatively you can select Parts or just activate an Audio Track, and select Edit from the Edit menu or press [Command]-[E] on the computer keyboard.

OVERVIEW

This chapter assumes you are reasonably familiar with the MIDI editors. It mainly lists the differences from these other editors. Please refer to the chapter "Edit Windows in General" in the main Cubase manual.

The Audio Editor displays Audio Events. These are boxes that may have the waveform displayed in them (if you don't want this, uncheck Show Waveforms from the pop-up Show menu.) It can also display a volume setting or curve for the event (check Volume on the Show menu). The length of a box represents the length of the Event. You have a Position Bar above the actual Event display, very similar to the one in the Arrange display. The Song Position is shown graphically, just as in the Arrange window.

You can only have one Audio Editor open at a time.

THE WINDOW'S PARTS

On the top of this window you find the Functions Bar that is similar in all Editors. Below this you *may* find the Event Info Line, if it is active (see below).

The central part of the window is of course the Event display with the Events. This is divided into a number of *audio lanes*, that bear some resemblance to Tracks, but are not really the same thing. On *one* audio lane you have a number of audio Events that all play back *on the same channel* (see below).

There is a pop-up Show menu where you can select what will be shown on the lanes:



WAVEFORMS

This turns the display of Waveforms on and off in the editor. Waveforms appear in the Segments if you have had "Use Waveforms" ticked when you did the recording and if you allowed the program to finish calculating images after each recording. If you for some reason don't get any waveform in an Event, you can calculate one in the Pool, see page 5-9 in this Audio addendum to the manual.

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 6-8 for details.

LANE INFO

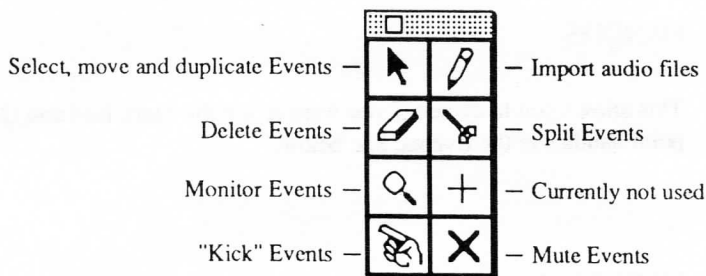
This invokes a display to the left of each lane, which shows what Audio channel the Events on the lane play back on.

VOLUME

If this is ticked, the lower half of each event displays volume that you might have put in using the Toolbox (just as with controllers in Key Edit).

THE TOOLBOX

The Audio Editor has a Toolbox like all editors. Here's a quick run-down of its tools.

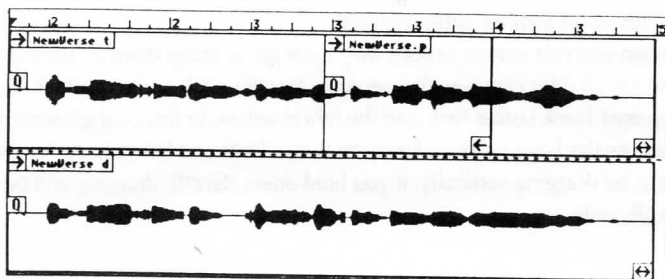


EVENTS, LANES, PARTS AND CHANNELS

It is very important that you understand the relations between the items under this heading, so bear with us for a few minutes while we try to explain this to you:

You can have a virtually unlimited number of Audio Events in the editor, they do not take up more of your available memory than do MIDI Events.

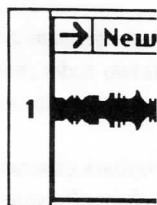
There are no restrictions on how the audio Events can be put in. They can be lined up sequentially, which means after each other, on one lane or on several lanes, they can be on top of each other, with start and end points overlapping, or any combination of all this.



WHAT ARE THE LANES?

The lanes are just "rails" for your audio "hangers", the Events. The program displays the Events on lanes and you can put Events on lanes. Here are the rules:

- When you edit one Track that is set to a specific channel (*not* to "Any"), you get a large number of lanes. These all have equal value. You may put Events on any lane in the editor, this doesn't affect playback in any way. This is only to simplify editing for you by allowing you the type of overview that suits you best. If you hold down [Shift] and drag an Event vertically to another lane, you may get a better overview of overlapping Events, without affecting playback.
- When you edit one Track set to channel "Any" you get *one lane for each available audio channel* in your system, counted from top to bottom. If you turn on Lane Info, you will see the audio channel of each lane to the left in the window.



This lane plays on audio channel 1.

- With an "Any" Track, moving an Event from one lane to another means putting it on another audio channel.
- When you edit several Tracks, they each get as many lanes as needed to display all their Events with a separate lane for each audio channel. The topmost Track comes first, and the others below. In this configuration, you can use the lanes to move Events between Parts and between audio channels, by dragging vertically. If you hold down [Shift], dragging will be vertically only.

SHOW BY OUTPUT

Normally the lanes and therefore the Events on them are sorted vertically per audio channel and Track as stated above. If you want to put all the Events that use the same audio channel on the same lane (regardless of if they're on the same Track or not), for example to see how they compete about the audio channel (see below), simply turn on By Output on the pop-up Show menu in the editor.

EVENTS AND AUDIO CHANNELS

The fact that you can see several Events at the same "time" does not mean all of them will play back. Which ones you will actually hear depends on the number of channels in your hardware, the channel settings for each lane and the channel settings for the Tracks in the Arrange window.

- The number of sounds that can possibly be played back in a given moment, is only restricted by your hardware. If the hardware has two audio channels, then that is your limit, if it has eight, up to eight sounds can play simultaneously, and so on.
- If one Track in the Arrange window is set to a certain playback channel, *all* audio on that Track will compete for *one single audio channel* in your hardware.

- If several Tracks in the Arrange window are set to the same channel, all audio on those Tracks will compete about one playback channel in your hardware.
 - If the Track/Part is set to playback channel "Any", it is the lanes that determine which channel will be used. Each of the lanes plays back on one Audio channel. By putting different Events on different lanes you can have one Part playing back on many audio channels. The channel number for each lane is displayed if you turn on "Lane Info" from the pop-up Show menu.
-
- In short, any Event that is in any way made to play back on a certain channel will always compete with all other audio Events about that channel. The "most recent Event" always wins and overlapped Events are always returned to if they last long enough.
-

WHAT YOU SEE IS WHAT YOU HEAR — ALMOST!

To find out about how channel defeating will work in any particular case, select all the Parts that contain "competing" audio and open them in the editor. To put all Events that play on the same channel on the same lane, select "Show By Output" from the Show menu.

The basic principle of the Audio editor is that you hear what you see (WYSIWYH, for all you acronym fans out there). An Event that is on the same lane as another will always have its *start point* visible, and the waveforms you see on the lane are the ones you hear from that lane. If an Event finishes so that the end of an underlying long Event becomes visible, that revealed part will be heard again.

Even if two Events are on different lanes, but on the same channel (as set in the editor or the Arrange window) the same principle applies. An Event that starts will always be played until another "competing" event starts.

STEREO, MULTI-CHANNEL RECORDINGS AND GROUPING

As described in the Recording and Playback chapter, Cubase Audio actually only plays mono files. However, the Grouping feature allows you to handle two or more recordings as one entity, effectively allowing you to work with stereo or multi-channel recordings as if they were one.

When you record to a channel set to Any, and have more than one channel set to Record Ready, Cubase will automatically Group Events for you, as described on page 4-6.

Playback of Grouped events is phase locked. This means that the stereo relationship is kept intact for two channels recorded at the same time and automatically grouped.

-
- To ensure the stereo relationship is kept unaffected by editing, try to avoid Ungrouping two recordings that make up a stereo pair. If you have to do this, make absolutely sure you don't edit one of the channels separately or you'll disturb the stereo relationship.
-

CHANNEL SETTINGS

If Grouped events in a stereo or multi channel recording are to play back on separate channels, you must have the Track set to channel "Any". If not, only one of the events will play.

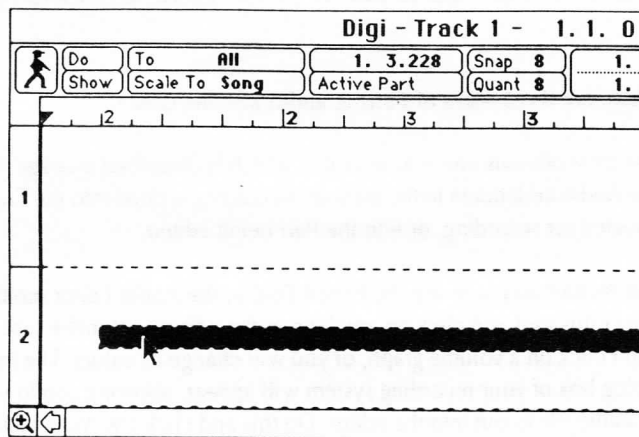
→ More about grouping on page 6-24.

PUTTING AUDIO INTO THE EDITOR

There are three ways of putting audio into the editor.

- The most obvious one is to record it, which is described on page 4-1 in this Audio addendum to the manual. Recording is done into the Track(s) selected for recording, or into the Part being edited.
- The second way is to use the Pencil Tool in the Audio Editor toolbox. Select this tool and click on any lane in the editor (just make sure you don't click on a volume graph, or you will change its value). The Import dialog box of your recording system will appear, allowing you to select an audio file to put into the editor. Do this and click OK. What actually happens is three things. A file gets selected, a Segment is made up, and an Event playing that Segment will be put in on one of the lanes.
- When you use the Pen to import a stereo file it will be split up into a number of mono files, imported into the Pool separately (a number of file dialogs appear, allowing you to name each file). The events are then automatically grouped to retain the stereo relation between the files.
- The third way is to drag a Segment from the Pool into the editor. Open the Pool by selecting it from the Audio menu (each installed recording system has its own Pool). Click on the name of a Segment (not a file!) and drag the outline from the Pool into the Audio editor. The length of the outline you are dragging has nothing to do with the length of the sound. To position the start of the Event you are putting in, use the mouse box which may show the position in bars and beats or as time code. The Snap setting aids you in this. When you have found the correct position, release the mouse button.
- If you are editing a Part set to channel "Any" or if you are editing several Parts, you have to find the right lane for the Segment, when you use the Pen or drag from the Pool. Depending on which lane you "drop it" or "draw it" on, it will be played back on a different audio channel or be

put into a different Part. See above for the details on lanes, channels and Parts.



Dragging a Segment into the Audio Editor

TIME/METER SCALE

By clicking on the Time/Meter Scale button on the Functions bar, you decide if you want to see bars or time as linear in the display.



Meter linear



Time linear

With *Meter* selected, the window always shows the bars linearly (as the Arrange window and the other editors always do). This means that two bars take up the same space on the screen, even if they have different tempi. In this mode, the images of the recordings (the waveforms), will be contracted or expanded. Their length in the display are dependant on tempo.

With *Time* selected, the length of your samples in the display will always be proportional to their actual length in time (minutes, seconds etc). On the other hand, if you have tempo changes and the Bar Position displays bars and beats, the bar scale will not be linear, bars with different tempo will be of different length in the display.

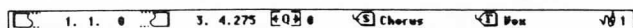
There are four combinations of scale displays and Time/Meter Scale settings:

SCALE	POSITIONS	RESULT
Meter	Bars and Beats	The scale is linear, with an even spacing between bar numbers. The length of the audio events are adjusted to this.
Meter	Minutes, seconds etc.	The display as such is linear in relation to bar, beats etc. The scale (showing minutes, seconds etc) and the waveforms are compressed and expanded to fit.
Time	Bars and Beats	Time is linear in the display. So are the waveforms, that is, their length on the screen is proportional to their actual length in time. The scale showing bar and beats is adjusted to this.
Time	Minutes, seconds etc.	Time is linear in the display, so are the waveforms and the scale.

- Remember that Snap and Quantize are always meter based (bars/beats...).

THE EVENT INFO LINE

It is possible to numerically change the values for one *selected* Audio Event. This is done on the Event Info Line. You can hide/show the Event Info Line by clicking on the i-button on the Functions Bar or by pressing [Option]-[I] on the computer keyboard.



If no Event, or several Events are selected, then the Event Info Line shows "—" for all values.

You can use the mouse and keyboard to change any value for the selected Event except its audio channel. The parameters are Start Position (click on any of the three numerals as usual), End Inset, Q-point (see below) Segment name, File name (for display only) and audio Channel (for display only). Any changes you do are shown graphically in the Event display.




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 offsets are visible in the upper and the lower corners (respectively) of the Events if Show Handles is ticked on the pop-up view menu.

The Start and End Inset handles can be dragged to the left and right. Use this to mask out the sections of a file that you don't want to hear, or bring out sections that you do want to hear.

- Changing the Start Inset is not the same as moving the Event. When you change the Start Inset you will hear more or less of your recording, but at the same song positions. When you move an Event you will hear as much of your recording as before, but at another position in your song.

Note that the actual "active area" of the Handle spreads along the entire length of the Event, with half of the Handle's visible "height". This enables you to adjust the offset of any Event you can see by clicking on the Event's edge, whether or not the actual handle is visible at the time. The upper area is used for adjusting the Start offset of the Segment, the lower area is used for the End offset.

SYMBOL	EXPLANATION
	This is the Start Inset when the Event plays the sound file from its absolute beginning. There is no point in dragging a handle like this to the left.
	This is the End Inset when the Event plays the sound file to its absolute end. There is no point in dragging a handle like this to the right.
	This is either Inset when some audio has been masked out.

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

These settings are always in ticks and *they do not Snap*. If you need sample accurate editing of Segments, use the Pool.

MONITORING SETTINGS

If you turn on the Speaker icon, a short section of the Segment will play 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.

ZERO CROSSINGS

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 9-2 in this Audio addendum to the manual.

-
- Groups do not Snap to Zero.
-

Q-POINTS

INTRODUCTION

Each Event has a Q-point. This is used for snapping the Event to musical positions when you move or Quantize.

With audio, as opposed to MIDI, the beginning of an Event might not occur at a musical position at all. The Q-Point allows you to set a position in the Segment which is to be taken as it's "musically significant position". The first down-beat in the Segment for instance.

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

USING Q-POINTS

When you move the event in Audio Edit, it is the Q-point that snaps to the closest Snap value. Also when you Quantize (even from the Arrange window), it is the Q-point (rather than the beginning of the event) that gets aligned with a certain position.

If you drag a Segment from the Pool into either the Arrange Window or the Audio Editor, the destination position will be determined by snapping the Q-Point of that Segment to the point where the mouse button is released.

SETTING THE Q-POINT

AUTOMATICALLY

- When you have PreRecord turned on, recording starts slightly earlier than the Left Locator, to ensure the attack of the recording is preserved even if the performer starts playing slightly early. To compensate for this the Q-point is put exactly at the Left Locator, allowing you to move the event with a snap to the beat as intended.
- If you punch in manually, off the beat, the Q-Point is put in at the closest beat.
- When you "Insert" a new file from disk, the software will automatically place the Q-Point on the nearest sensible bar or beat position.
- When you Split an event with the Scissors, the software will determine a sensible position for a Q-Point in the Segment which does not contain the existing Q-Point.
- The same intelligence as above will come into operation should you drag the start or end offset of a Segment beyond the existing Q-Point position.

MANUALLY

- The "Q" handle in an Event (only visible if "Handles" are ticked on the pop-up Show menu) can be dragged anywhere up to approx. 30 seconds into the Segment. It can also be set numerically on the Event Info line, where the position is displayed in ticks from the Start Inset.
- If you hold down the [⌘] key, the Q-Point snaps to the current Snap value.

MONITORING SETTINGS

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. The Events will play back at full volume.

- Q-Points are also used significantly in the process of determining tempo automatically. See below.

MOVING EVENTS

BY DRAGGING

You may graphically move the selected Events in the editor. Just press and hold the mouse with the arrow pointer over one of the selected Events (not in the handles) and move the mouse. When you release the mouse button, the selected Events are moved to the new position.

- If you reach any of the sides of the window, it automatically scrolls.
- 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 (and thereby maybe to another audio channel or Part) without affecting Start position.
- The Snap function acts so that the Q-point of the dragged Event is positioned on the closest value. This works as a sort of "move quantize."
- Moving an Event to another lane may mean to move it to another audio channel or even another Part, see page 6-6 in this Audio addendum.

The mouse box shows you where the Q-point of the first selected and dragged Event will wind up when you release the button.

BY "KICKING"

You can "Kick" an Event one Snap value at a time, forward or backwards in time. Select the hand from the Toolbox.



Position the pointer over the Event you want to move. If you click on the first half of an Event, the Event is moved one snap value later in the song. If you click on the later half it is moved to an earlier position in the song.

DUPLICATING EVENTS

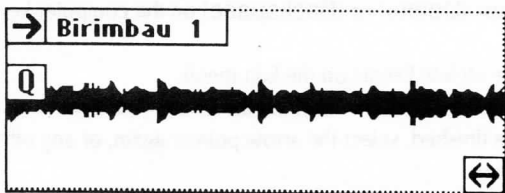
REAL COPIES

By holding down [Option] and dragging an event you create a copy of it, just as with any event in Cubase. A new segment for this event is also created. Please make it into a habit to rename the Segment (by using the Info Line, clicking in the Name box of the Event, or by holding [Option] and hitting [N]) to avoid confusion in the Pool.

Two Events duplicated this way are totally separate, any changes you do in the editor or the pool will not affect the other Event/Segment.

GHOST COPIES

If you instead hold down [Command], you create a ghost copy, which is indicated by a dotted outline.



Now all Events that play this Segment are indicated by a dotted outline, the program doesn't differentiate between the "original" and the ghost, they are all considered ghost copies of each other.

These ghost Events are "semi separate" from each other. If you make any changes to the Segment in the Pool, this will affect all Ghost Events that play this Segment. If you make change to the Start and End Insets of one of the ghost Events in the editor, the 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 [Command] key while editing any of those Events.

Everything else about duplicating or creating ghosts is as when moving.

DELETING EVENTS

There are several ways to get rid of unwanted Events.

- Select them and press [Delete] or [Backspace] on the computer keyboard.
- Select them and use Delete Events on the Edit menu.
- Select the Eraser from the Toolbox. Click on the Events you want to eradicate. When you are finished, select the arrow pointer again, or any other tool from the Toolbox.

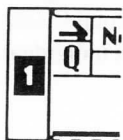
Deleting an Event does not delete it's Segment from the Audio Pool.

- If you want to also delete the audio file from the disk, hold down [Command] while hitting [Delete] or [Backspace]. The program asks you if are sure you want to follow through. In this case the File and it's associated Segments will be removed from the Pool. Note that this operation cannot be undone, the deleted audio file will be erased from your disk.

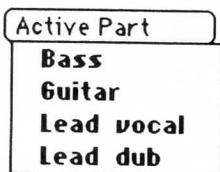
CUT, COPY AND PASTE

Using Cut, Copy and Paste you can move and copy Events within a Part or between Parts. See page 22-16 in the main manual for details on Cutting, Copying and Pasting which works exactly as with MIDI Events.

Pasting in a Cubase Editor always adds Events to the active Part. The currently Active Part is indicated in the Editor's window title and in the Lane Info fields, by a black rectangle.



To select which Part is active, when you edit several, either click directly in the Lane Info fields or use the Active Part pop-up on the Status bar:



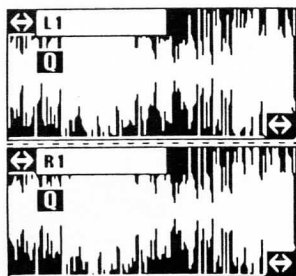
The Active Part pop-up on the Status Bar.

- If possible, Events are always pasted in on a lane that plays back on the same channel the original Event played back on.

GROUPING

As described on page 4-6, stereo and multi channel recordings done on one Track creates Grouped events. But, you can Group Events manually and Ungroup Events to again handle them as individual recordings.

- To Group several Events, select them and select "Group" from the Audio Editor pop-up Do menu.
- To Ungroup, select the Grouped Event and select Ungroup from the same menu.



Two Grouped Selected Events.

OPERATIONS ON GROUPED EVENTS

- When you click on one Grouped Event, all events in the Group get selected.
- In the same manner, if you move, kick, quantize, duplicate, cut copy, paste or delete, this affects the entire group. Muting with the Mute Tool also affects the entire Group.
- If the grouped events start at the same position, the Start Inset and Q-Points will be set identically for all when you adjust it for one of them.

Likewise if the events end at the same position, the End Inset is adjusted simultaneously for all.

- If the events do not start at the same position, Start Inset, End Inset and Q-point is set individually for each event in the Group.
 - The Q-point of the top event in a Group is always used for Snapping and Quantizing.
 - Using the Split Tool and the Split Events function splits across all events in the Group.
 - To use the Info Line you have to select the event with the cursor keys, since clicking selects the entire Group.
 - Banish Silence and Export Segments also only work on one event at a time. To use these on stereo material, ungroup, use the Function and Group again.
-
- Snap to Zero is never used on Groups.
-

CHANNEL SETTINGS

For Grouped events in a stereo or multi channel recording to play back on separate channels, you must have the Track set to channel "Any". If not, only one of the events will play.

MAKING AN EVENT PLAY ANOTHER SEGMENT

WITH ANY TYPE OF EVENT

If you hold down [Command] and [Option] 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.



If you select another Segment from this list, the Event will play back this Segment instead.

Use this to make an already positioned Event play back another sound.

WITH GHOST EVENTS

If you select a Ghost Event or an Event that has ghosts and press [Command], [Shift] and [Option] you are able to select a new Segment from the list as above. This will switch *all* the ghost Events that are now in the editor to play that Segment.

CHANGING THE NAME OF A SEGMENT

This can be done on the selected Segment from the Info Line, by clicking on the Name Box in an Event, or by holding [Option] and hitting [N]. Enter a new name as usual, and press [Return] when you are done.



MONITORING

Of course, you can have playback running while you are editing. And, you can also use the cue function in the Edit window. But there are more ways to listen to your music in Audio Edit.

AUDITIONING

1. Deactivate the Scrub icon on the Status Bar.



Auditioning mode.

2. Select the Magnifying Glass from the Toolbox.
3. Click on an Event.

The Event is played back from that point as long as you hold the mouse button down. It is played at full volume.

SCRUBBING

1. Activate the Scrub icon on the Status Bar.



Scrub mode.

2. Select the Magnifying Glass from the Toolbox.
3. Press the mouse over an event and drag sideways.
The speed of your dragging will determine playback speed.

-
- Scrubbing is unavailable on the Digidesign Session 8.
-

MONITORING SETTINGS

You can use the Speaker icon to monitor your Inset and Q-point edits, see page 6-15 and page 6-19 in this Audio addendum to the manual.

SELECTING AN OUTPUT

All the procedures above use the Audio Output specified in the Audio System settings dialog, see page 6 in the Hardware Specifics Appendix.

MUTING EVENTS

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



A muted Event.

SPLITTING EVENTS

Using the scissors Tool in the Toolbox you can "chop up" your Events into smaller ones which creates Segments for each new Event. The Snap value applies to the Split.

If "Snap to Zero" is ticked on the main Audio menu, the split will happen at the first zero crossing after the point where you clicked (for an explanation of this term, see page 9-2 in this Audio addendum to the manual).

You can automatically delete the left or right resulting Event by holding [Option] or [Command] respectively when you Split the original Segment.

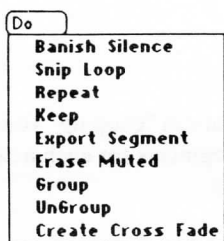
You can also use the Do menu to Split, see below.

QUANTIZE AND OTHER FUNCTIONS

You can easily Quantize audio Events, from the editor or from the Arrange window (for more info on audio in the Arrange window, see the chapter "Arrangement Editing" in this addendum to the manual).

Over Quantize is used exclusively for Audio Parts, it is the only quantize option available which has any relevance to Audio. This option moves the Events so that their Q-Points wind up at the closest Quantize value.

THE POP-UP DO MENU



BANISH SILENCE

This works on one and only one Event. It is used to mask out silence in the Segment that the Event plays. This is described in detail on page 5-16. Please note that when you use Banish Silence from the editor, not only are new Segments are created, but also Events that play those Segments on the same positions as before the operation.

SNIP LOOP

This command splits all Events at the positions of the Left and Right Loop position, much as when you use the scissors.

REPEAT

This works just like Repeat in the other Editors, allowing you to for example set up a Loop and then Repeating everything within it to the end of the Part.

KEEP

This command also works just like Keep in the other editors. Snip Loop, Keep and Repeat can be used together to make up a repeating section of an arbitrary section of the audio in the editor.

EXPORT SEGMENT

This segment allows you to save one selected Segment as a separate audio file. A regular file dialog will allow you to name and position the file. See page 9 in the Hardware Specifics Appendix for more info about file formats.

ERASE MUTED

Selecting this function permanently deletes all the events that are currently muted. This is a quick way of "cleaning up" a part after editing.

Deleting Muted Events does not delete Segments. Neither does it erase any files from your hard disk.

GROUP/UNGROUP

See page 6-24.

CREATE CROSSFADE

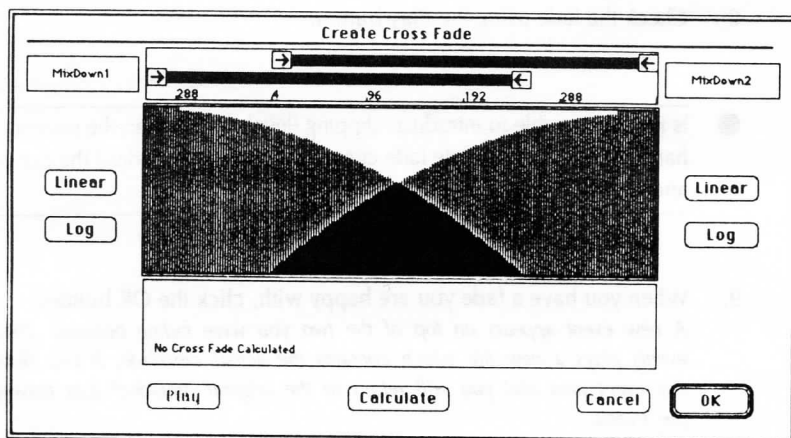
This item allows you to create a smooth fade between two sections of audio. It does so by creating one or more new files which each contain a crossfade between two other events. Events which play these crossfade files are then inserted into the audio editor at the correct position. The Segment settings of the events are changed, but the original files are not affected by the operation.

The crossfade is created by "unveiling" sections of an audio file which are not played by the current segments. Therefore, it will not be possible to create a fade *from* the end of one file. Likewise, you can't create a fade *to* the beginning of a file.

1. Select two events which you want to fade between.
These two events must play on the same audio channel. They should probably either be positioned edge to edge or overlap. It is possible to select events with a gap between them, but it might not create the desired result.

2. Select Create Crossfade from the pop-up Do menu.

The following dialog box appears.



The Crossfade dialog. The display shows a one bar section with the join between the files in the middle of the display.

3. Use the upper set of arrows to set the start and end points for the fade of the first file.
You will not be able to drag past the end of the start/end points of the entire file.
4. Use the lower set of arrows to set the start and end points for the fade of the second file.
5. Use the mouse to draw the shape of the fade in and fade out curves.
Drawing in the overlapping area only affects the start segment (the fade out). If you want to change the overlapping part of the fade curve for the end segment (the fade in), start dragging to the right of the overlap and keep dragging to the left. You can also hold down the [⌘] key; when you do, drawing always affects the fade in, no matter where you start dragging.
6. As an alternative to drawing, you can use the buttons to the left of the curve displays to select "preset" linear or logarithmic curve type.
The logarithmic curve will create the most natural fade.

7. Click Calculate.
A preview of the crossfade gets created, which you can see in the box below the curve display.
 8. Check the fade using the Play button.
-
- Is it quite possible to introduce clipping (levels higher than the system can handle) with inappropriate fade curves. If this happens, adjust the curves and Calculate again.
-
9. When you have a fade you are happy with, click the OK button.
A new event appears on top of the two you were fading between. This event plays a new file which contains the actual crossfade. If you delete this event (and file) you will return to the original "unfaded" join between the events.
 10. To ensure the three events retain their timing relationship even after editing, they are automatically Grouped.

CREATING RAMPS

If you select Crossfade with only one event selected, a dialog box will ask you if you want to create a Fade In or a Fade Out. After that a variation on the dialog above appears, allowing you to make settings for the fade. Everything else is as above.

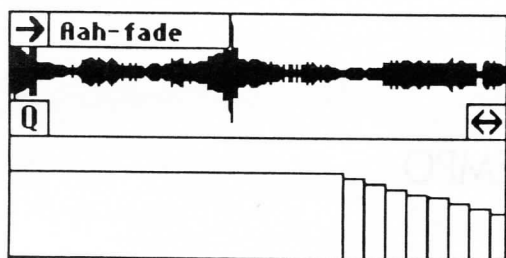
FADING GROUPED EVENTS AND MULTIPLE SELECTIONS

The program lets you fade grouped events into each other, which means you can create crossfades between stereo recordings.

You can also select more than two files to fade between in which case the crossfade set for the two first will be used for all of them.

As stated above you can for example not crossfade between events which are very far apart. If the program can't make anything sensible out of the selection of events you have made, it will tell you so.

EVENT VOLUME



If you tick Volume on the pop-up Show menu, the lower half of each event is used to display a volume curve individual to the event.

The relation between the volume you put in for an event and the volume control from the Mixer window and the Monitor window is described in detail in chapter 10 — Mixing — in this Audio addendum to the manual.

You put in new volume "events" and edit existing, just as in the Continuous data section of Key and Drum Edit. Exactly how this is done is described in the Editors in General chapter but here is a quick run-down:

- New Events are always put in at the closest Quantize value.
- If you use the pen, you edit the value of existing events.

- If you use the pen and hold down [Option] you put in new events.
- If you use the eraser tool, the volume "event" you clicked on gets deleted.
- If you use the line tool, you either "ramp" the existing events or put in new events (hold down [Option]).

Volume events can not 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.

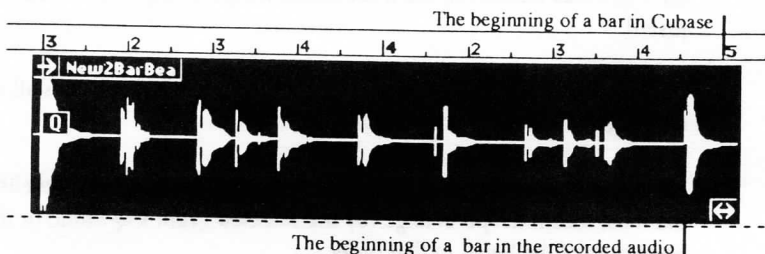
If two consecutive volume events have the same value, the later is deleted.

MATCH TEMPO

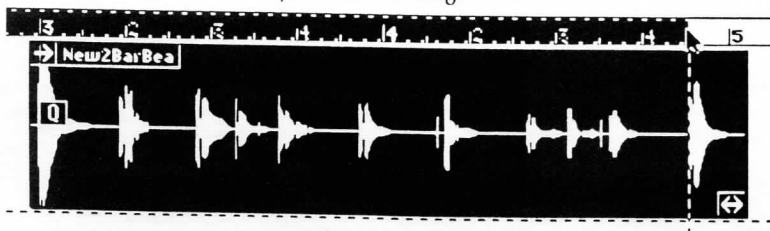
You can very easily match Cubase's tempo to some recorded audio material. This is done by dragging on the Position bar, stretching a given number of bars and beats to match the length of a section of audio. Do as follows:

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

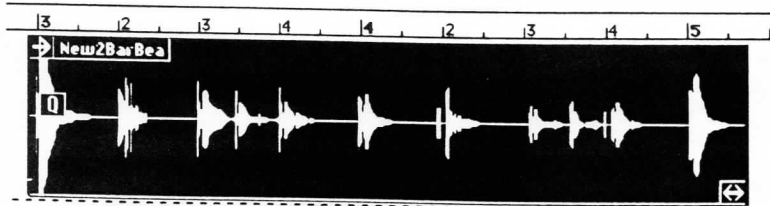
5. Move the Event so that the Q-point is lined up with some sensible musical point in your song (for example the downbeat of a bar).



6. Now it is time for the Magic: 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.)
7. A "range" becomes inverted in the scale area, extending from that Event's Q-Point to the point where you clicked. You can stretch and shrink the range by dragging your mouse to the right and left.
8. Drag the bar position you picked up so that it becomes aligned with the end of the section of audio you are matching.



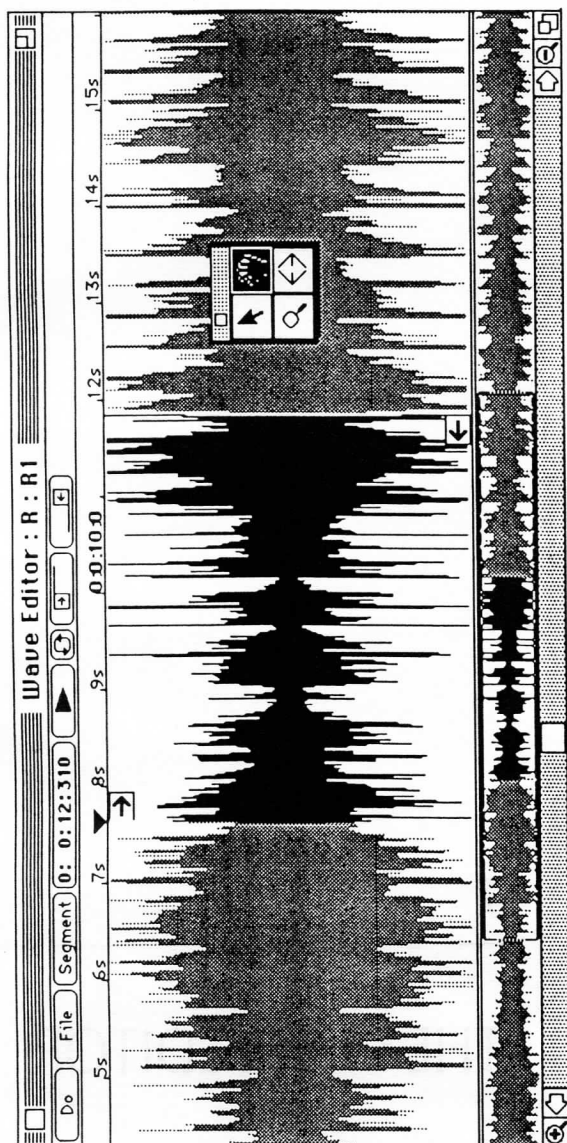
9. Release the mouse.



10. 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.
 11. If the Master Track is off, and no Event is selected, the range goes all the way back to the beginning of the Song.
 12. 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.
 13. If you need to insert a tempo change into the Master Track, you can hold down [Shift] and [Option] 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.

7

THE WAVE EDITOR



The Wave Editor allows you to make direct editing on your audio files. In contrast to the audio editor, the Wave Editor makes permanent changes to your audio files, (sometimes called "destructive editing").

You can of course Undo the last action in the Wave Editor. However, if you plan to experiment with different editing operations in the Wave Editor, and think you might want to go back to the original file at a later stage, use the Finder to duplicate your audio files before editing them in the Wave Editor.

OPENING THE WAVE EDITOR

There are four ways to open the Wave Editor.

- Double click on an event in Audio Edit.
- Select an event in Audio Edit and select "Edit" from the Edit menu or press [⌘-E].
- Double click on a Segment in the Pool.
- Select a Segment in the Pool and select "Edit" from the Edit menu or press [⌘-E].
- You can drag a Segment from the Pool into an open Wave Editor window.

You can open as many Wave Editor windows as memory in your computer permits.

THE VIEW

The Wave Editor consists of the following areas (from top to bottom):

- Status Bar. Holds some menus and buttons.
- Ruler. Shows positions in Time (SMPTE) format.
- Waveform Display. Shows the actual file and the active Segment (see below).
- Thumbnail View. Always shows the entire file. The black rectangle in the thumbnail indicates which part of the files is displayed in the waveform display above the thumbnail.
- The Wave Editor has a Toolbox with Tools one tool for selecting, one for moving the Segment within the audio file, and two tools for auditioning and scrubbing. These are all described later in this chapter.

DISPLAYING DIFFERENT FILES AND SEGMENTS

FILES

As described above, you can have many files open, in different Wave Editor windows. Of course, you can switch between windows when you want to edit different Files, but there's another way:

- In each editor, you will find a list of the files currently opened for Wave Editing. This list is found on the pop-up Files menu.

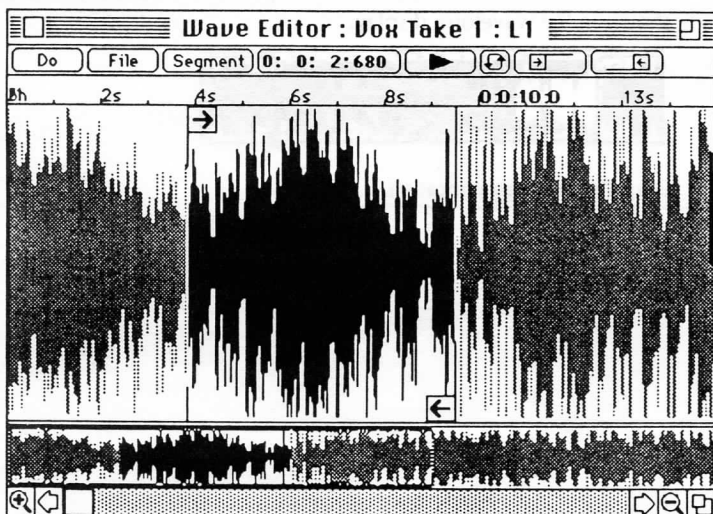


The Wave Editor's File menu holds a list of opened Files

- To make the current window display another File, simply select the File from the pop-up File menu.

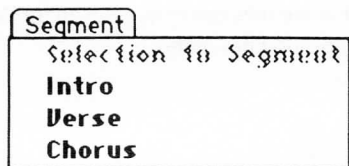
SEGMENTS

The waveform display shows the currently *active* Segment in black, and all audio data outside it in grey.



In the middle of this view you can see the active Segment in black.

- To view a list of all Segments in the File, pull down the Segments menu.



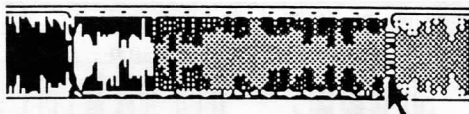
The Wave Editor's Segment menu holds a list of the File's Segments

- To display another Segment in the Waveform display, simply select it from the pop-up Segment menu.

SETTING MAGNIFICATION

There are two ways to set the Magnification:

- Use the Magnifying Glass Symbols at the end of the scroll bar.
- Hold down the [⌘] key and drag inside the Thumbnail view. When you release the mouse button, the selected part of the waveform will be shown in the waveform display.



Dragging to set magnification.

PLAYING BACK



The Play and Loop buttons

When you press the Play button, the audio in the Wave Editor gets played back.

- If no audio is selected (see below), playback starts from the current Song Position.
- To move the Song position, simply click in the ruler.
- When some audio is selected, only this will play back.
- If the Loop button is activated, audio will loop continuously as long as you press the Play button.
- If you start Looped playback from within the Segment, only the Segment will loop.
- The Wave Editor has Auditioning and scrubbing tools that work just as in Audio Edit, see page 6-27.



The Wave Editor's Audition and Scrub Tools.

SCROLLING

As in all editors, you can use the scroll bars to move through the file. But the Wave Editor offers additional options.

- By clicking the Segment Start and End buttons on the Status Bar, the display is automatically scrolled to the beginning/end of the Segment. The Song position is also moved to this position.



The Go To Segment Start/End buttons.

- By dragging the black rectangle in the Thumbnail, you can scroll to any position.



Dragging in the Thumbnail

SELECTING

There are a number of techniques for selecting a section of the audio for editing (see below). These methods are similar to selecting in all other Cubase windows:

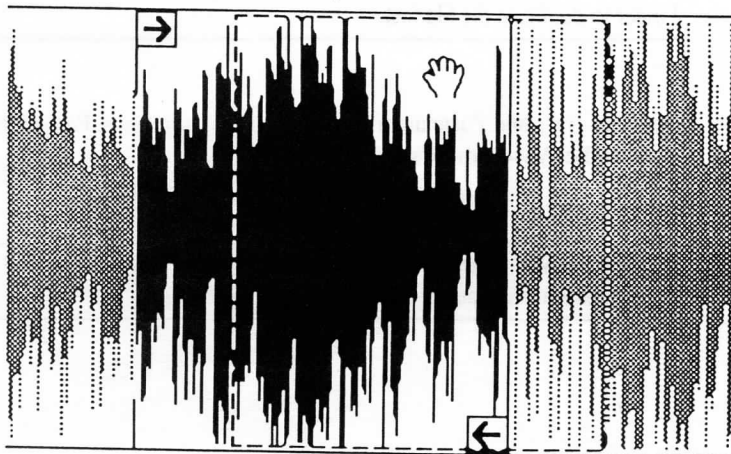
- You can select from one point to another: Click, hold down [Shift] and click again. The area between the two positions will be selected.
- You can drag to make up a selection rectangle.

- You can use Select All on the Edit menu ([⌘]-[A]). This will select all the audio in the active Segment. If the active Segment is already selected, it will select the entire file.
In other words, to select the entire file, press [⌘]-[A] twice.

WORKING WITH SEGMENTS

Adjusting and creating Segments in the Wave Editor allows you to define positions with sample accuracy. The Playback Loop tool is also a convenient way of "testing" Start and End Inset settings.

- By dragging the start and end points of the current Segment, you adjust it, just like in the Audio Editor (see page 6-14).
- If you want to make your current selection into a Segment, pull down the pop-up Segment menu and select "Selection To Segment".
- By using the Hand Tool in the Wave Editor's Toolbox you can move the Segment without affecting its length.



Moving the Segment with the Hand Tool.

CREATING NEW FILES

You can turn the current selection into a new File by selecting "Selection To File" from the Wave Editor's pop-up File menu. A dialog box appears, asking to name and position the new File.

EDITING

After all this is the *Wave Editor*, right?

CUT, COPY AND PASTE

- Cut and Paste in Wave Edit performs permanent changes to your audio files. To make sure you don't inadvertently change your recordings, use the Finder to duplicate the file first.

You can copy and Paste as in all other Cubase windows. Pasting happens at the Wave Editor's Song Position.

- The material you Paste always *replaces* existing material. This means it overwrites whatever audio was there before the Paste.

USING PLUG-INS

The pop-up Do menu contains plug-in modules found by Cubase.

A plug in is a file containing a "miniature computer program" which can perform a specific editing function on your audio file, such as creating a fade-in or fade out.

The plug-ins themselves are located in the "Audio Tools" folder in your Cubase folder. As soon as a plug-in is put into this folder, it appears in the Wave Editor's Do menu, even if Cubase is already running.

-
- You must not rename the Audio Tools folder, or Cubase will not be able to find the plug-in modules.
-

To apply a plug in, proceed as follows:

1. If you only want process a part of the file, make a selection.
2. Select the desired tool from the Do menu.
If no audio is selected, a dialog box asks you if you want to process the entire file or only the currently active Segment. After this, the file gets processed directly, or a dialog box with settings appears.
3. If a dialog box appears, fill it in and click OK.

The following plug in audio Tools are provided with Cubase Audio:

TOOL NAME	BRIEF DESCRIPTION
Fade	This opens up a dialog allowing you to select between a number of different fade types. See Crossfade on page 6-32 for more information.
Fade In	This creates a simple linear fade in.

Fade Out	This creates a simple linear fade out.
Invert Phase	This can be used for example with a stereo recording where one channel has accidentally been recorded out of phase with the other. You could say the it turns the waveform "upside down".
Normalize	<p>If a recording has to low a level, you can use this command to bring it up to maximum output, or some other fraction of maximum volume that you decide. 96db is full normalizing. Values above that will introduce clipping.</p> <p>Please note that any noise in the recording is amplified just as much as the rest of the signal. It is always better to re-record at a correct level, if you have the option.</p>
Quieten	This lowers the amplitude of the recording to about half the level.
Reverse	This reverses the audio, like when you turn a tape backwards.
Silence	This replaces the audio with absolute silence.

DEVELOPING PLUG-INS

The included plug-ins hare developed by Steinberg. Additional plug-ins are developed by third-party developers.

The specification for Cubase Audio plug-ins is in the public domain. If you are interested in obtaining details about it, contact your local Steinberg distributor.

ARRANGEMENT EDITING

Handling Parts with audio events is very much the same as handling Parts with MIDI.

You can use most of the tools and procedures to edit audio Parts. Please just observe the following points:

INSPECTOR

Audio Tracks only have one Playback parameter, Delay.

MOVING, DUPLICATING AND CREATING GHOSTS

There are two things to note about audio Events (in Parts):

- When you move Parts, the movement Snaps to the Snap value as usual. With Prerecording turned on in the Metronome dialog box, your recorded Parts will begin slightly before the position where you set recording to begin (see page 4-4 in this Audio addendum to the manual). Still, when you move a Part with Snap for example set to "Bar" the Part will *move* by exact Bars, so that its starting point relative to the downbeats, is kept as it originally was.
- Duplicating Parts creating Ghost Parts creates no new Segments, only new Events.

USING THE TOOLS

PEN

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 notes.

ERASER

This works exactly as on MIDI Parts, but it does not delete the corresponding Segments or audio files.

SCISSORS

When you Split a Part in two you also split the Events at that position and thereby create new Segments. Otherwise, splitting works as with MIDI. 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 9-2 in this addendum to the manual for details.

Remember that you can split a Part into many if you hold down [*Option*]. This can be used for example with Cycled recording to make each Cycle "pass" into a separate Part.

MAGNIFYING GLASS

This plays the segment under the Cursor.

GLUE TUBE

This works exactly as on MIDI Parts.

MATCH QUANTIZE

This does not work on Audio Parts.

MUTE

This works exactly as on MIDI Parts.

QUANTIZING

The only Function on the Functions menu that applies to Audio Parts is Over Quantize. This moves the Events in the selected Parts, so that their Q-points line up with the selected Quantize value. See page 6-17 in this addendum to the manual.

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 the Mix Audio command on the Audio menu, which works directly on audio.

If you have a number of audio recordings that are separated onto different Tracks, but which you would like to collect to one Track, use Mixdown. Setting the Mixdown Track to channel "Any" will then make it play back as all the separate Tracks did 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.

The Mixdown is mainly done as with MIDI Tracks, the big difference being 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 Part of the Arrangement you want to get mixed 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 steal 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 page 14-14 in the main manual.

1. Select an Audio Track to be Remixed. Set up the Left and Right Locators as boundaries for the split. All music between the Locators will be Remixed. Select Remix Track from the Structure menu.
2. As many new Tracks as are needed are created. 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.

THE AUDIO MENU

Most of the commands on this menu are covered in the relevant sections of this manual, but here is a quick run-down of the possibilities:



MONITORS

Brings up the Monitor window. See page 4-3 in this Audio addendum to the manual for a detailed explanation.

SNAP TO ZERO

This affects the following operations:

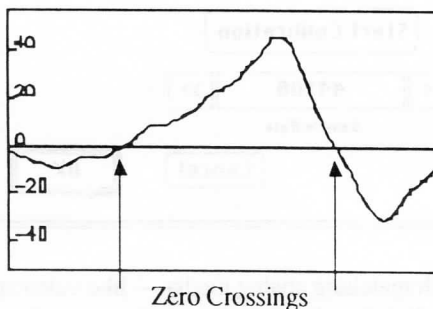
- Banish Silence
- Changing Start and End Insets.
- Using the Scissors in the Audio Editor.
- Using Snip Loop.
- Splitting Parts in the Arrange window.

- Grouped Events are never affected by Snap To Zero.

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.

WHAT IS A ZERO CROSSING?

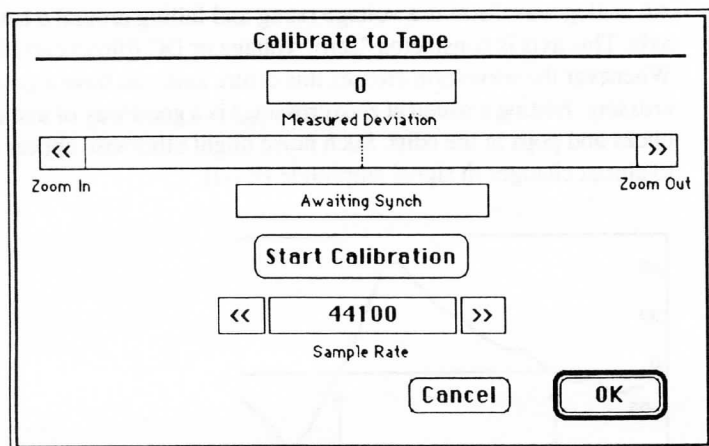
An analog waveform is a voltage rising and falling around a centre axis. This axis is considered "zero" voltage or DC (direct current). Whenever the waveform crosses this centre axis you have a *zero crossing*. Editing a sound at zero crossings is a good way of avoiding clicks and pops in the edits. Such noise might otherwise appear due to abrupt changes in signal amplitude (level)



USE WAVEFORMS

When this is ticked, waveforms will be created and used for each new recording. Having this unticked makes many operations slightly faster, but gives you less information about the recording. 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.

CALIBRATE TO TAPE



There is a problem with matching analog media — like video and tape recorders — with digital audio recording equipment, when it comes to sync. In a time code synchronized system you can only have one master, a source that delivers an absolute time reference to all other equipment in the form of time code (SMPTE).

Digital audio recording systems do not sync easily. Many don't in fact sync at all. When you start playback of an audio file it simply starts at an absolute time code reference, after that it will follow its own internal clock. This clock is very stable, probably more stable

than that of the video or tape recorder delivering the time reference signal for the system.

The time code on a tape may not be played back at an absolutely accurate speed, nor may that speed be perfectly stable (see page 4-17 in this audio addendum to the main Cubase manual). And even if it was at one point, a tape that has been used for a long time may *stretch*.

This means that you may note with long audio recordings that at the end of the audio file the tape recorder has drifted out of sync with the digital audio. There is only one way to minimise this problem and that is to record perfectly stable time code and then calibrate the playback hardware so that its internal time base "agrees" as much as possible with the tape recorder on how long for example an hour is. The Calibrate To Tape function in Cubase helps with this by allowing you to change the Sample rate frequency of your hard disk recording system in small steps. You may have to recalibrate as the tape wears.

1. Set things up so that you have sync from your master (e.g. a tape recorder or video) coming in into Cubase. Use the Synchronization dialog box to set Cubase up to sync to incoming time code.
2. Make sure your master tape machine is trimmed well and load a blank tape with a stable time code signal on it. Verify that sync works as usual.
3. Mute your digital Audio Tracks!
4. Open the Calibrate To Tape dialog box.
5. Click Start Calibration. The dialog will inform you that it is waiting for incoming sync. Start the tape.
6. Let the tape roll for a long time, preferably from start to end. Click Stop Calibration and then Stop the tape.
7. At the top you will see how much the digital audio system has deviated from the master code source in samples. Beneath this is a bar graph showing the same thing.

8. If you now select OK, the displayed sample rate calculated by the calibration mechanism to produce optimal sync, will become that used by the system for recording and playback.
-
- Recordings made at unique sample rates may produce problems if imported into other productions at a later date.
-

Changing the Playback Sample rate will also change the pitch of the digital audio you have already recorded. Normally, this is too little for anyone to hear, though.

Also note that you have now calibrated the tape assuming that the tape recorder was stable, but didn't agree on the digital system on the "speed of time". If your master is apparently very unstable, do not attempt to synchronize to it, you will simply create problems for yourself. Use the Generate SMPTE function to synthesize stable time code, and restripe the tape with this.

GENERATE SMPTE

Generate SMPTE File

Start Time

0: 0: 0: 0

Frame Rate

25 fps

Length in Minutes

30

Cancel

Generate

This command allows you to create a sound file of perfectly stable time code (SMPTE) which can be played back and recorded on a

tape recorder for synchronizing purposes (also known as "striping the tape").

The sound file that gets created is exactly the equivalent of the sound from any LTC Time code generator.

The main reason for using this feature instead of a regular device is that the synthesized code is perfectly stable and generated at the same sample rate as the one currently being used in your Song. Thereby you get a time code that is perfectly matched to your digital audio system, speed-wise. There is a thorough discussion on the problems of using different time code sources on page 4-17 in this Audio addendum to the manual.

1. Select a frame rate, a start time and a length for the audio time code file (each minute takes up slightly more than 5 Megabyte of disk space).
2. Click Generate. In the file dialog that appears, find a folder where you want the file, and click Save.
3. A progress indicator will appear while the file is generated.
4. When finished, import the file into a spare Audio Track, positioning it at "1.1.0", *and solo that Track*.
5. Patch the output of your audio hardware to the Track on the tape recorder where you want to record the time code.
6. Start the tape recorder in record mode and initiate playback in Cubase. Time code gets recorded onto the tape recorder.
7. When you are finished you may simply throw away the time code file, or perhaps transfer it to a stable media, such as DAT tape, for future use.

MIX AUDIO

This 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 make a number of Tracks into a 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 Update Events (see page 6-35) 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.
 - The MIDI Mixer volumes (see page 11-3 in this Audio addendum to the manual) will be ignored.
2. Create an empty Audio Track, where you want the mixdown to wind up.
If the Mixdown will be in stereo, set this Track to channel "Any".
3. Select Mix Audio from the Audio menu.
A dialog box appears and asks you if you want a mono or stereo file.
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.

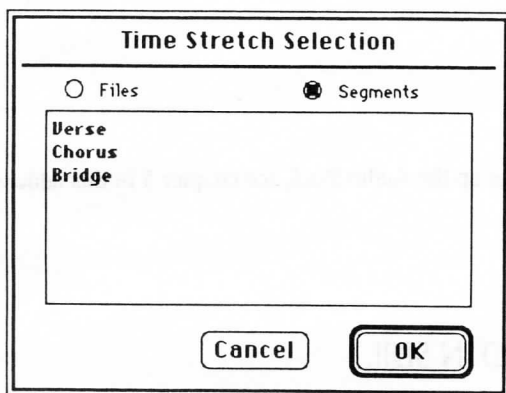
The Update Events which control Volume, can be used practically and creatively. Below follow two tips:

- 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 on one audio file only. Mix it down to a new file to make the volume change permanent.

TIME STRETCH AND HARMONIZE

These two items require the Steinberg program Time Bandit, which allows you to time stretch, transpose and harmonize recorded audio with excellent quality. You can work either on particular Segments or the entire Files the Segments reference to.

5. Select up to 50 files or Segments from the Pool or the Audio Editor.
6. Pull down the Audio menu and select Time Stretch or Harmonize. *A dialog box appears with a list where you can check your File/Segment selection. The list either displays Files or Segments depending on the radio buttons at the top.*



7. Click OK.
Either Time Bandit automatically gets launched, or if Cubase can't find it, it will ask you to locate it, using a regular File dialog box.
8. Time Bandit's Time Stretch or Transpose/Harmonize window will appear. Make all the settings you need.
For details about these windows, please refer to the Time Bandit manual.
9. When the settings are done, click Process. The files will get processed one after the other.

When this is all done, you will return to Cubase Audio. Here images for the new files will be created. You will find that Time Bandit always works on copies of your original files, so you will have additional files and Segments in the Pool when you return to Cubase. Selected events which point to the new files created will now play new stretched/transposed Segments.

HARDWARE SETUP AND SYSTEM

These two items bring up different dialogs depending on the hardware system you use. See the Hardware Specifics Appendix.

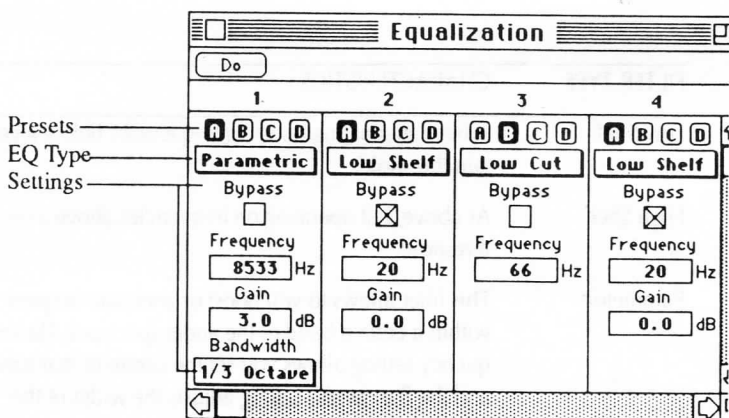
POOL

This item brings up the Audio Pool, see chapter 5 in this addendum to the manual.

EDIT AUDIO IN SDII...

This item is described on page 4 in the "Hardware Specifics" Appendix to this section of the manual.

EQUALIZATION



- This window will not appear with all audio recording systems, see page 2 in the Hardware Specifics Appendix.

This window allows you to set up the EQ (filters) for each of your audio channels.

There is one set of settings for each audio channel in your hardware. The following controls are available:

PRESETS

For each channel you can make four EQ settings (A to D) to switch between. The active "Preset" is indicated in black.

EQ TYPE

This is a pop-up menu allowing you to select between five types of filters:

FILTER TYPE	CHARACTERISTICS
Low Shelf	A filter attenuating/boosting frequencies below a certain threshold.
High Shelf	As above, but operating on frequencies above a certain threshold.
Parametric	This filter allows to you boost or attenuate frequencies within a certain band of the audio spectrum. The frequency setting allows you set the centre of that band and the Bandwidth setting adjusts the width of the band.
Low Cut	A filter allowing you to more or less remove material below a certain frequency.
High Cut	As above, but operating on material above a certain frequency.

BYPASS

This is a switch allowing you to turn the effect of the filter off completely.

FREQUENCY

The part of the spectrum the filter operates in.

GAIN

The amount of attenuation (negative values) or boost (positive values) in the specified frequency range. The Low and High Cut filters have no Gain setting.

BANDWIDTH

Only the Parametric type of EQ has a Bandwidth setting. It allows you to set the width of the spectrum the filter operates in.

FILE HANDLING

The handling of files is almost identical to that of the MIDI only version of Cubase. There are a few things to note, though:

- The Pool is saved as part of the Song and is common to all open Arrangements. We recommend you to always save complete Songs.
- The program always first looks for the audio files in the same folder as the Song is in. This means that if you back up a complete folder with a Song and all the audio files for it, you will never have any problems with "lost" audio files, even after you restore the backup.
- If you have moved or deleted any audio file since last time you saved a Song, an alert box will inform you. Opening songs with lost files will display an alert. See page 5-8 for info about finding "lost" files.
- Audio files do not launch Cubase, that is, double clicking on them in the Finder doesn't start Cubase.
- Double clicking on a Pool document in the Finder does not open the Song the Pool was last used in. Instead you get the Autoload Song.
- The Audio files created by a recording hardware system can not be used to launch Cubase. They will most probably launch some other program that came with your recording hardware.

OPENING OLDER CUBASE AUDIO FILES

This version of Cubase Audio is "upwards compatible" with older versions of the program. Opening an old file is totally transparent, except in one case: if the Song contains stereo files.

If you open a Song which plays stereo files, the Program will ask you if you want to split up the stereo recordings into mono files (see page 5-12 for more info).

- If you don't you will not be able to play back the stereo files. However, you will be able to open the Song and examine it without making any changes to it.

- If you decide to split the stereo files into mono, you will need as much free disk space as the stereo recordings already use, since the created mono files are copies of their stereo counterparts, rather than replacements for them.

MIXING

There are three "mixpoints" for your digital audio.

- Each Event has its own volume curve which you draw in, in the Audio Editor. This is what we call the Event Volume.
- You can use the Cubase Mixer to dynamically control the volume and panning of the audio channels in your hardware, see below.
- The Monitor window in Cubase Audio has playback panning and volume controls that essentially double up for the Mixer volume and pan.

If you compare the audio flow through Cubase Audio to that of a regular mixer you will find that the Event Volume is just like the channel volume, it is individual for each input (if you look upon the events as inputs to the mixer).

The Mixer and Monitor volumes on the other hand are more like the group volumes, that is, all events assigned to a certain audio channel (the equivalent of a group) are affected equally by these volume changes.

- The panning controls in the Monitor window pans the sound between pairs of outputs. The panning for channel 1 and 2 pan between output 1 and 2, the pan controls for channel 3 and 4 pan between output 3 and 4 etc. For stereo work you will probably want to pan each pair hard left/right.

THE EVENT VOLUME

How to draw in or change the volume curve in an event is described on page 6-35 in this Audio addendum to the manual. Event volume is perfect for fades in individual events or for compensation of abrupt level changes in the recorded material.

The program restricts the density of the volume changes to a maximum of 1/64 triplet notes, which should suffice even for the most demanding applications. We recommend you to not put in more volume events than is necessary for your application.

Event volume is effective during regular playback, but not when monitoring using the Speaker button or the Magnifying glass tool.

THE MIXER VOLUME AND PAN

On one of the disks that come with the program you will find a number of MIDI Mixer files, for 2, 4, 8 and 16 channel Digidesign systems, plus a special mixer map for the Session 8. These allow you to perform automated mixing on your audio.

The maps contain a number of Volume and Panning objects. If you wish, include either Mixer Map in your Autoload Song. If you have a 12 channel system, use the 16 channel map and delete the objects for the superfluous four channels.

If you inspect any of the mixer Volume and Pan objects, you will find that they communicate with the Digidesign Sound cards via pseudo MIDI messages. The Output should always be "DD MIDI", the MIDI Channels represent audio channels and the Volume is sent as Controller 7 while Panning is sent as Controller 10. Using this information you will be able to make up your own Digidesign mixer objects to include in any Mixer Map.

The Session 8 map also includes a number of objects specific to control of the Session 8 hardware.

Actually performing the mix is done as with any Mixer recording, and is described in the MIDI Mixer chapter in the main manual.

Again we recommend you not to put in more volume or panning mixer events than is necessary for your application.

EQ

Settings in the EQ window can not be automated.

THE MONITOR WINDOW CONTROLS

These controls can *not* be automated. They are mainly there for monitoring purposes during recording, and are described in detail on page 4-3 and page 4-13.

However, when you use the Mix Audio functions the resulting material will be affected by these settings, but not by Event Volume or Mixer window mixing.

APPENDIX 1 – HARDWARE SPECIFICS

DIGIDESIGN HARDWARE

Cubase Audio currently supports the following Digidesign cards.

CARD	NUMBER OF AUDIO CHANNELS	EQ MODULES PER CHANNEL
ProTools single card	4	2
ProTools multiple cards (requires System Accelerator card and external hard disk).	8 to 16 (depending on how many cards you have).	2
Audiomedia II	4	1
Audiomedia LC	2 or 4 (depending on computer model).	1
Session 8	8	1
Sound Tools II	4	1
Audiomedia I	4	None
Sound Tools 1	2	None

PUNCH IN AND SCRUBBING

- With multiple Pro Tools cards system and with the Session 8, Punch In must be preprogrammed using the "In" button and the Left Locator settings on the Transport Bar.
- Session 8 does not support scrubbing.

HARDWARE INSTALLATION

For all references to hardware installation, connections, signal levels maintenance etc, we refer to the manual that comes with the hardware.

With each Digidesign system comes a program that lets you verify that the system records and plays back as it should.

PROTOOLS MULTIPLE CARD SYSTEMS

If you have more than one ProTools card, the first will appear as channel 1 to 4, the second as channel 5 to 8 etc.

There is also a direct relationship between inputs and outputs. For example to record on channel 5 you connect your input source on the first input of the second card.

-
- Never try to record or play back more than eight channels from one hard disk. See the Installation chapter for more details. If you accidentally do this, the system may lock up and you will have to turn off both your computer and all the connected equipment before trying to restart.
-

HARD DISKS

Audio requires a lot of disk space and fast disks. In fact, recording one minute of audio in mono requires between 5 and 6 megabyte of disk space, depending on the sampling frequency of your hardware. We recommend you to use a separate drive for your song documents and audio files, leaving the internal drive of your computer to hold the System files, programs and the like.

The Digidesign documentation lists the requirements they put on the hard disk to use in terms of speed and interleave.

-
- It is necessary to every now and then *defragment* the disk that holds your audio files. See page 1-3 in the main manual.
-

INSTALLING DIGIDESIGN FILES NECESSARY TO RUN CUBASE AUDIO

How this is done is explained in chapter 2 of the main manual. The Installer takes care of putting all the necessary files in the right places for you.

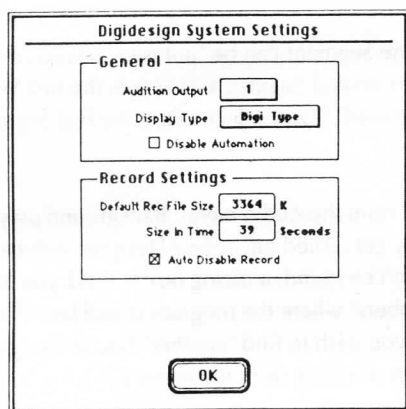
EDIT AUDIO IN SDII...

This item on the Audio menu allows you to use the Digidesign program Sound Designer II to perform additional editing and processing on a Segment (of course assuming you have this program installed

on your hard disk). This requires you to use MultiFinder or System 7.

1. Select the Segment. Only one Segment can be "put into" Sound Designer at a time. If you select several Segments or Events the first Segment in the selection will be used. If you select a Part, the first Segment in it will be used.
2. Select "Edit Audio in SDII..." from the Audio menu. Background playing in Cubase will automatically get turned off. Sound Designer will be launched. If the program can't be found, a dialog box will ask you to locate it. Cubase then "remembers" where the program is and launches it automatically next time. (If you wish to find "another" Sound Designer, hold down the [⌘] key when selecting from the menu.)
3. The file that plays the selected Segment will appear in Sound Designer, and the Segment will be made the selection. You can now use any editing functions on the file. Please note the following very important points:
 - Deleting sections of the file concerned can produce unexpected results. Don't do it. It is usually much faster to use Cubase's "Export Segment" facility to create a new file which contains only the Audio you require. Any editing you perform will be reflected in every Audio Segment which refers to that section of Audio File. If you require unique results use Cubase's "Export Segment" to make a new file containing only the Audio you intend editing.
4. When the editing is done, you can simply switch back to Cubase to hear the edited file in it's original "environment". As stated above, it's image will probably be out of date and will need to be updated from within the Pool.

THE DIGIDESIGN SYSTEM DIALOG



This dialog is reached by selecting "System" from the Audio menu.

SETTING	EXPLANATION
Audition Output	This is used to decide which of your audio channels (and thereby output) to use for playback from the Pool, from the Wave Editor and when using the Magnifying Glass in Audio Edit.
Display Type	This setting is used to decide which type of Waveform display the program uses, mainly for newly created files (not for files which already "contain" and image. "Wave Type" is a "uni-polar" type of display used in many wave editing programs. "Digi Type" is a bi-polar type of display used in Digidesign products.
Disable Automation	This turns off all "playback" of Event Volume. See page 6-35.

Default Rec File Size and Size In Time	This setting determines how much disk space each file reserves before Recording. This setting will put a limit on how long continuous Recordings you are able to make.
Auto Disable Record	When this is activated, the record enable switch is automatically disabled after a recording pass. For one thing, this makes switching between Tracks faster.

THE DIGIDESIGN HARDWARE DIALOG

Hardware Setup

Select Card Type:

- ☒ Audiomedia
- ☐ Sound Accelerator
- ☐ Pro Tools Audiocard

Cards To Use:

Card 1: Slot 9

Track Mapping:

DSP Slot 9

plays Track 1 (L)

and Track 2 (R)

Peripheral: No Peripheral

Sample Rate: 44100

OK

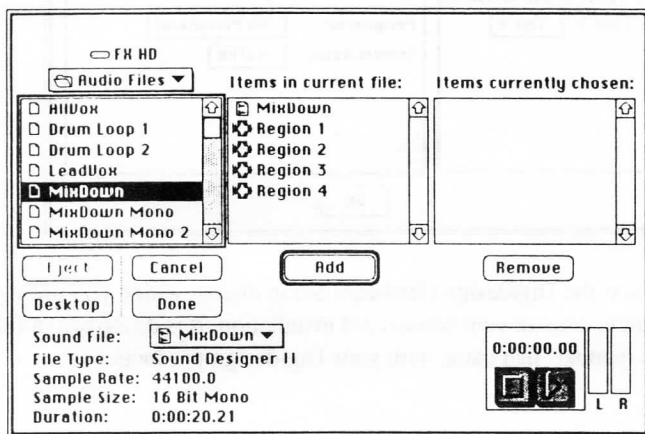
This is the Digidesign Hardware Setup dialog, which you use if you want to change your sound card installation. It is described in full in the manuals that came with your Digidesign products.

SWITCHING CARDS

You can not switch between different hardware systems while Cubase Audio is running. If you have several audio cards installed and you wish to select one of them for use with Cubase Audio, proceed as follows:

1. Quit Cubase Audio
2. Hold down the [⌘] key, and double click on Cubase Audio to launch it. Keep the [⌘] key down while the program is being loaded.
3. The Hardware Setup dialog appears. Use it to select cards(s) and to set them up.

DIGIDESIGN IMPORT FILE DIALOG



This is also a Digidesign dialog box. It is used for selecting and auditioning sound files and regions.

- The left list and the four buttons below it work as a regular Macintosh file selector.
- You can import files in Sound Designer 1, Sound Designer II and Audio IFF (AIFF) format).
- When you have selected a file in the left list, it appears in the middle list. If the selected file is in Sound Designer II format it may contain regions (which will be turned into Segments). The regions will then also appear in the middle list.
- To set up a file or region to be added the Pool, select it and click the Add button.
- To Remove a file from the set about to be added to the Pool, select it in the right list and click the Remove button.
- To get information about any file in any list, click on it. In the lower left corner of the dialog box you will see the type and size etc. The pop-up allows you to verify the location of the file.
- To audition any file/region in any list, select it and click the Play button in the lower right corner. If you want to stop before the file has ended, click the Stop button.
- When you are done, click the Done button. The dialog closes and all the "Added" files appear in the Pool. Any regions in Sound Designer II files are automatically converted into Segments.

EXPORTED FILES AND SEGMENTS

All exported files from Cubase are in Sound Designer II format. You can use the "Export Segments" command in the Pool and Audio Editor to also put in regions in your files. This allows you to use files complete with Segments in other programs that read Sound Designer II files and their embedded regions.

KEYBOARD COMMANDS

The following Keyboard commands are specific to the Audio part of Cubase Audio:

GENERAL

[Option]-[N] Name File/Segment.

ARRANGE WINDOW

[Command]-[Backspace] Delete Part *and* the Audio files it plays.

POOL

[Command]-[Backspace] Delete Segment *and* the Audio files it plays.

[Option]-[D] Duplicate Segment.

AUDIO EDIT

[Return]	Keep
[Esc]	Cancel
[Option]-[O]	Loop On/Off
[Option]-[L]	Input Left Loop boundary
[Option]-[R]	Input Right Loop boundary
[Option]-[I]	Info On/Off
[Command]-[Backspace]	Delete Event <i>and</i> the Audio files it plays.
[←]	Previous Event
[→]	Next event

The arrows can be used in combination with the [Shift] key to select several events.

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