

# ***Deck***<sup>TM</sup>

## Software User's Guide

Version 3.0

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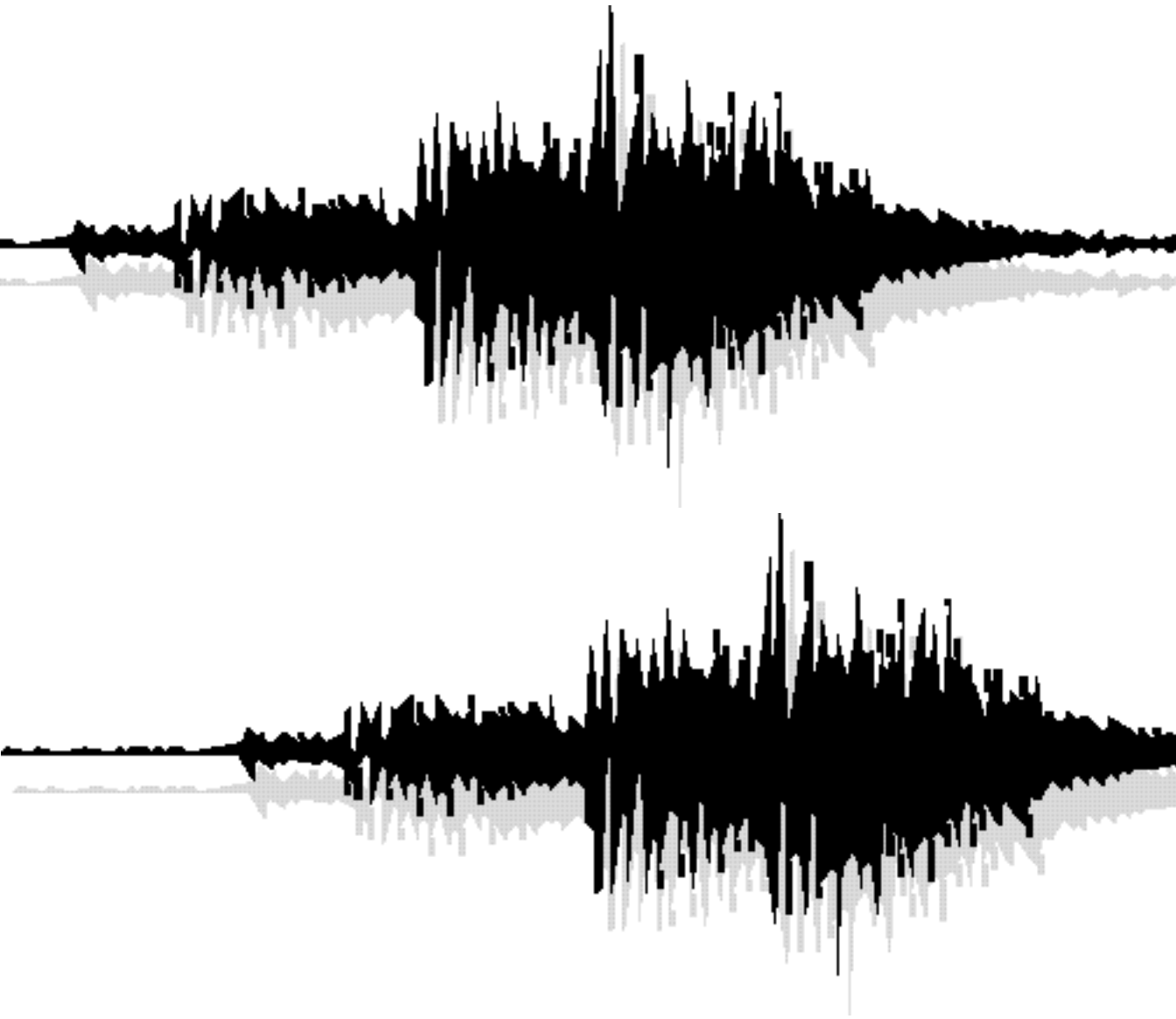
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# Chapter 1

## Introducing Deck





# Chapter 1: Introducing Deck

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## Welcome!

BIAS Deck 3.0 is a full-featured, multitrack digital audio application for the Macintosh. Deck has won critical acclaim for its vast array of professional features and its intuitive user interface. Deck offers completely non-destructive editing, allowing you to edit any track as much as you like, with no fear of losing or altering the original material. Use Deck to record and edit up to 64 simultaneous audio playback tracks (dependent upon the speed of your CPU and hard drives). Deck also offers up to 999 virtual work tracks.

Deck 3.0 is fully native-capable with any G4, G3, or PowerPC Macintosh. You can use your Mac's built-in audio connections with no additional hardware required. Deck also supports the ASIO industry standard, giving you a wide choice of audio hardware options.

Deck delivers real-time signal processing with built-in graphic EQs, delay, chorusing, and more—on every track (subject to CPU speed and power). There's full support for a wide range of VST audio Plug-Ins, as well as support for Adobe Premiere-compatible audio Plug-Ins.

Deck offers a wealth of pro-calibre audio post production features, including frame-accurate spotting and SMPTE/EBU sync capability, and frame-accurate sync to QuickTime movies. Deck is an ideal companion to any Adobe, Avid, Finalcut Pro, iMovie, Media 100, Radius, or other digital video editing system or software.

Deck is intended for a wide variety of users. Musicians use it as a composition environment. Engineers use it for multitrack recording, editing, and mixing. Deck is used in video post-production for spotting sound effects and sound tracks. Sound designers use it for audio sweetening and layback tasks. Multimedia producers use Deck as a self-contained digital audio and video post-production environment. Radio broadcasters use it for field recording as well as cutting entire programs. Anyone with an interest in audio and a capable Macintosh system will benefit from Deck.

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## Deck Features:

- Professional multitrack recording, editing & processing solution
- Up to 64 simultaneous tracks - no audio hardware required
- Runs on most Macs - even PowerBooks
- Up to 999 virtual tracks
- Built-in real-time DSP effects include graphic & parametric EQs, delay, chorus, gain & more
- Support for VST and Adobe Premiere audio plug-ins
- 24-bit automated level mixing with high-res moving faders
- Automated mutes, pans & levels
- Copy, paste, drag & draw automation envelopes
- Integrated digital video support - with frame-accurate MTC & SMPTE/EBU timecode sync
- Syncs to all OMS compatible MIDI sequencers

- Launch BIAS Peak or BIAS Peak LE directly from Deck
- Includes BIAS Peak LE

---

## What's New in Deck 3.0?

Version 3.0 of Deck includes the following new features:

- VST Plug-In support
- Enhanced playback track capability, limited only by your system, with up to 64 simultaneous playback tracks
- Master Outputs window: includes Master Fader and Meters, and VST inserts
- Improved Graphics
- CPU Meter window: displays RAM, CPU, and Disk usage
- Desktop Curtain
- Virtual Memory is supported with Virtual Memory-compatible 3rd party ASIO drivers and VST plugins

---

## Minimum System Requirements

### *To use Deck you will need:*

- PowerPC, G3, or G4 Processor (266MHz or faster)
- Built-in 16-bit Macintosh sound, or supported ASIO-compatible audio hardware and the most recent ASIO 1.0 driver software from ASIO hardware manufacturer, or Korg 1212 I/O PCI-bus audio card.
- Frame-accurate sync to SMPTE/EBU timecode requires an OMS-compatible hardware.
- 32MB System RAM minimum

- 5MB minimum available hard disk space (for program)
- Mac OS 8.5 or later
- QuickTime 3.0 or later
- Sound Manager 3.2.1 or later
- OMS 2.3.8 required for synchronizing Deck to OMS-compatible MIDI sequencers & playback of MIDI tracks
- Hard drive(s) running at 7,200 rpm or faster, UW-SCSI recommended

The Deck application runs in native mode on PowerPC, G3, and G4 Macintosh computers. Deck supports ASIO 1.0 compatible sound cards using the Deck ASIO Plug-in. Deck also offers direct support for the Korg 1212 I/O PCI-bus audio card using the DECK II 1212 I/O Driver.

To record and play back tracks you will also need the following:

- To record, a line-level sound source (mixing board, electronic instrument, CD player, turntable, cassette player, audio DAT machine, microphone, etc.).
- To play back, a stereo amplifier and speakers or powered speakers.
- A mixer or ASIO hardware with an onboard mixer (e.g., Tascam US-428) is strongly recommended.

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## Maximizing Deck's Performance

To get the best performance out of Deck and your Macintosh, observe the following.

### *To maximize Deck's performance:*

- Use a minimal number of System Extensions. Extensions can slow down your Macintosh by using precious processor cycles. In particular,

disable third party extensions that you do not require while running Deck. To set up a dedicated set of extensions for Deck, duplicate your Mac OS Base extensions set in the extensions manager and rename it (something like `audio_set`), restart your computer with this extensions set and install Deck, enable the additional extensions required for Deck (e.g., OMS, drivers for your audio hardware, etc.), and, restart your computer with this updated extensions set.

- Turn File Sharing off, unless you need it.
- Unmount network volumes while running Deck because the Finder can cause slowdowns as it polls network volumes in the background.
- Allocate additional RAM to Deck if possible, using the Finder's Get Info command. (Select the Deck application in the Finder, choose Get Info from the Finder's File menu, and enter the desired RAM allocation in the Preferred Size field. Make sure you allocate more RAM than the amount indicated in the Minimum Size field!).
- Optimize your hard drive.

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## About Your User's Guide

Deck is designed to be simple and intuitive. Your User's Guide is designed to help you set up and use Deck for digital recording and editing as quickly and easily as possible.

This User's Guide assumes that you are familiar with standard Macintosh operating techniques, including:

- Setting up, starting, and using your Macintosh
- Choosing commands from menus
- Double-clicking, selecting, Shift-selecting, and dragging with the mouse
- Opening, copying, saving and deleting files

- Opening, closing, scrolling, moving, re-sizing, and selecting Macintosh windows

If you don't know how to perform these tasks, please refer to your Macintosh User's Guide and spend a little time learning about your Macintosh before going any further. This will make using Deck much easier and more enjoyable.



*Look for important tips and notes whenever you see this exclamation mark.*

## Conventions

The Deck User's Guide uses the following conventions to indicate menu choices and key commands:

<u>Convention</u>	<u>Action</u>
File > Save	Choose Save from the File menu.
Command-S	Hold down the Command key and press the S key.
Option-click	Hold down the Option key and click with the mouse.


---

## About Deck LE

If you are using the *limited edition* of Deck, not all features will be available. Specifically, the following features are not available in Deck LE:

- No more than 8 playback tracks
- Virtual Tracks
- 24-bit Automation
- Automation Envelopes
- Real-time DSP Effects
- Adobe Premiere Plug-In support
- VST Plug-Ins
- QuickTime movie support

- MIDI Time Code and SMPTE/EBU support

 *Features that are not supported in Deck LE will show this icon in the manual. LE features will also appear grayed out in their menus.*

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## **Conclusion**

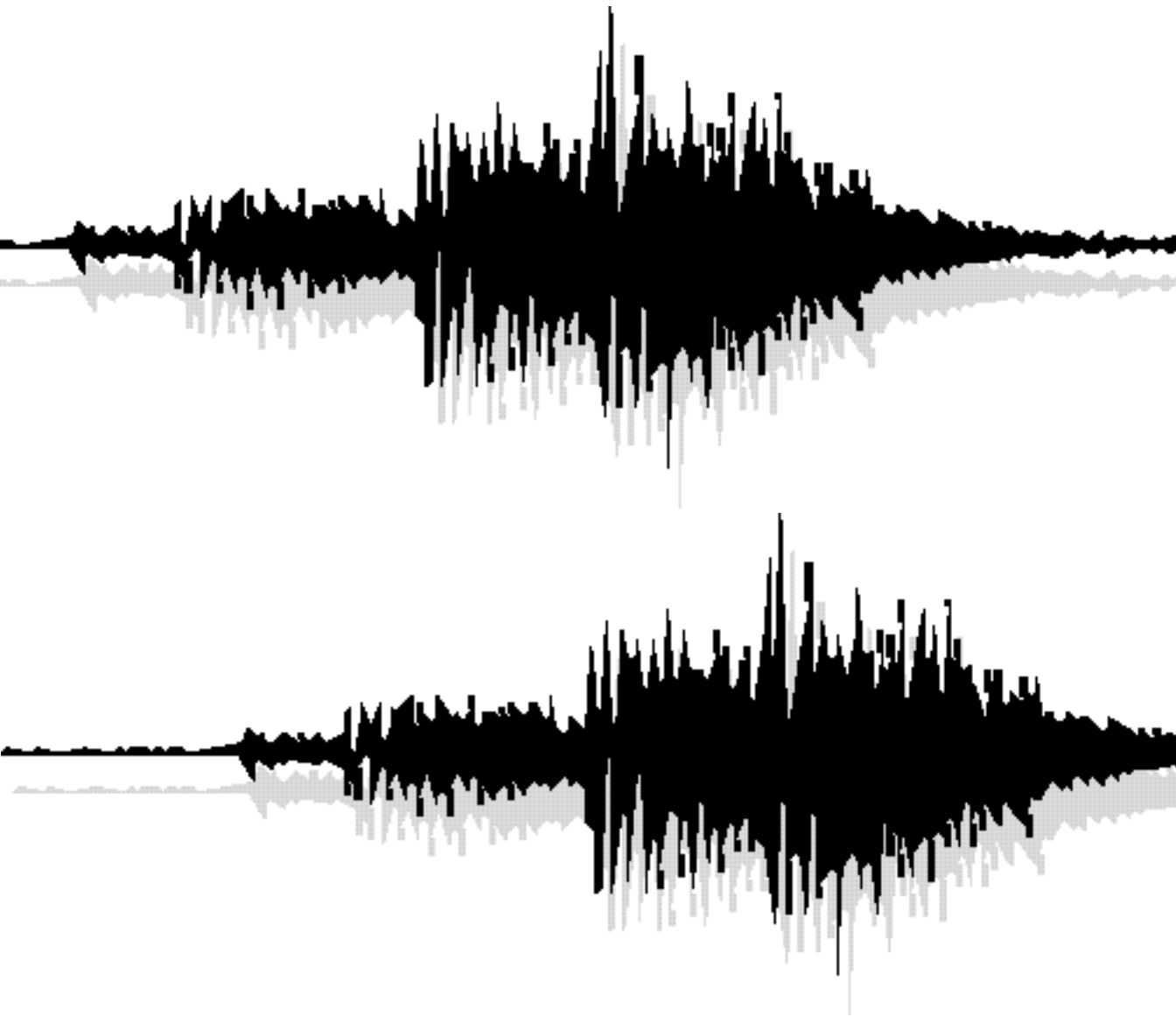
Now that you know a little about Deck, proceed to the next chapter to learn how to install your software and get started using it.

---



## **Chapter 2**

# **Installing and Configuring Deck**





# Chapter 2: Installing and Configuring Deck

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Deck offers powerful high-end synchronization, editing, mixing, and audio processing functions. However, before you can begin using Deck, you need to install and configure your Deck software, and configure your computer and audio hardware. The hardware consists of the built-in 16-bit stereo sound hardware of your Macintosh, or a PCI or PCMCIA audio card, or a USB or Firewire Audio Interface. You will also be using some combination of mixer, amplifier, and speakers to get audio in and out of your Macintosh.

---

## Installing Deck

Deck's auto-installer software makes installation very easy.

Your complete Deck system consists of:

- CD-ROM Installer
- Deck serial number and Product Authorization Code (PAC)



*Before you install Deck, please check the Minimum System Requirements on Page 4 of this Users Guide.*

### To install Deck:

1. If you are using any virus-protection software, turn it off or temporarily remove it, and restart your Macintosh.
2. Insert the Deck Install CD-ROM in your CD-ROM drive, open the Product Installers folder, and

double-click the Install Deck icon.

3. When the Installer dialog appears, read the Read Me for late-breaking information concerning the Installer, then click Continue to proceed.
4. Select where you would like to install Deck, using the Switch Disk pop-up menu.
5. Click Install at the bottom right of this dialog.
6. After you have clicked Install, follow the on-screen instructions. Deck will be installed into a folder named Deck 3.0 on your selected hard disk.
7. At the end of the installation, the installer will allow you to register Deck electronically, which you may find more convenient than mailing your registration card.
8. When the installation is complete, a message will appear indicating that the installation was successful. Click Quit to quit the Installer, or click Continue to install additional copies (don't forget to turn back on any virus-protection software that you may be using the next time you restart the computer).



*If you don't register Deck, it will expire, you will not be eligible for technical support, and you won't be notified about updates, upgrades and other important news from BIAS!*

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## Authorization

Deck must be authorized to work on your Macintosh. To authorize Deck, you will need your Product Authorization Code (PAC) in addition to the serial

number that appears on your Deck Owner's Certificate. BIAS will provide you with your Product Authorization Code when you register Deck.



*You must register Deck in order to obtain your Product Authorization Code; Deck will not launch after the 14 day registration period unless you authorize Deck with your Name, Organization, Serial Number, and Product Authorization Code!*

When you first launch Deck, it will prompt you to authorize it by entering your Name, Organization, Serial number, and Product Authorization Code.

If you have not yet received your PAC, Deck will run fully functional in Registration Mode for 14 days. This allows ample time to register Deck and get the Product Authorization Code from BIAS. To run Deck in Registration Mode, click the "Still waiting for Product Authorization Code" button. If you have registered Deck with BIAS, and have received your PAC, enter your Name, Organization, Serial #, and Product Authorization Code, and click the "Authorize" button or press the Return key. Your copy of Deck 3.0 will now be authorized.

---

## Allocating RAM to Deck

Now you will need to allocate RAM for Deck. In most instances, you will need to allocate more RAM than the factory default setting.



*Deck is not compatible with Connectix RAM Doubler.*

### **To change Deck's RAM allocation:**

1. Quit any applications that you have running.
2. Deck now supports virtual memory, so you should leave virtual memory on unless it conflicts with the ASIO driver or any of the VST plug-ins that you are using with Deck. Set virtual memory

to exactly 1MB above the total system memory; this is the optimal setting, any higher and you risk degraded performance and/or unexpected results.

3. From the Finder, determine how much free RAM is available for Deck by selecting About This Macintosh from the Apple menu.
4. The Largest Unused Block will show how much RAM is free. Here you can also see how much RAM is being used by your system software.
5. Select the Deck application icon in the Deck folder on your desktop.
6. Choose File > Get Info (Command-I).
7. Set the Preferred Size to the amount you want while leaving enough RAM for your system (and any other applications you might want to run simultaneously, e.g., BIAS Peak) to function.

For example, if you have 128MB of RAM and your System is taking up 24MB, you can safely allocate 92MB of RAM to Deck. You should always leave a minimum of 5MB for the largest unused block in your system.

You may have to experiment a bit with the amount of RAM you assign to Deck. Many factors can affect the amount of RAM you will need, such as the amount of free RAM in your system, the size and complexity of your Deck session, and the RAM required to use plug-in effects or an external audio editor such as BIAS Peak.

---

## Making Audio Connections

Deck supports most Apple Sound Manager or ASIO compatible audio hardware, as well as the Macintosh Built-in sound. Deck also directly supports the Korg 1212 I/O audio card (via SoundLink) and the Tascam US-428 USB audio interface (via ASIO). Follow the manufacturers installation instructions for your specific audio card/interface.

It is easy to set up audio connections between your Macintosh and a mixer or speaker system. Your exact setup will differ slightly depending on whether you are using the built-in sound input and output connectors on your Macintosh, or those of third-party audio hardware. Instructions for each case are given below.

## Using the Macintosh's Built-in Inputs and Outputs

If you wish to use your Macintosh's built-in audio inputs and outputs for recording and playback, do the following:

1. Turn down the volume on your playback system.

Deck can be used with a variety of playback systems, including:

- a stereo receiver or amplifier and speakers
- a mixer, amplifier, and a pair of speakers
- a mixer and a pair of amplified (self-powered) speakers
- or simply a pair of amplified (self-powered) speakers, smaller versions of which are often called "multimedia" speakers.

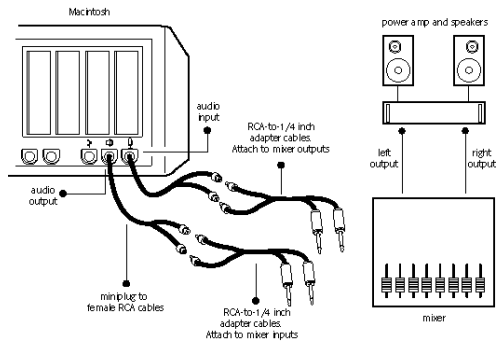
2. Connect your audio source output to the Macintosh's audio input connector.

Your audio source can be one of a variety of devices, such as:

- a cassette, CD, DAT, or mini-disc output
- a mixer output, bus send, or aux send
- a stereo receiver line output (such as "tape deck record" output)
- an instrument line output (such as the output of a synthesizer).

The audio input jacks on most Macs are a standard mini-plug (1/8-inch) connector. Most source outputs are either 1/4 inch "phone" connectors or RCA connectors. To make this connection, you may need to use an 1/4-inch to mini-plug or RCA to mini-plug

cable or adapter.



**!** *For advanced users: Certain professional mixing consoles, DAT decks, or other audio sources may have a nominal output level of +4dBu, whereas the Macintosh expects to see a nominal -10dBu level. Be aware that you may need to adjust your mixers output levels accordingly to prevent overloading the Macintosh's input; or alternately, you may need to use a "+4 to -10" line-matching transformer.*

3. Connect your Macintosh's audio output to your playback system's input. The Macintosh's audio output jack is a standard stereo mini-plug (1/8-inch) connector. Most mixer, receiver, and amplified speaker inputs are equipped with 1/4-inch, RCA, or mini-plug jacks. To make this connection, you may need to use a mini-plug to 1/4-inch or mini-plug to RCA cable or adapter.
4. Raise the volume on your mixer or playback system. Your system should now be properly configured and ready for recording and playback.

## PCI and PCMCIA Audio Cards, and USB and Firewire Audio Interfaces

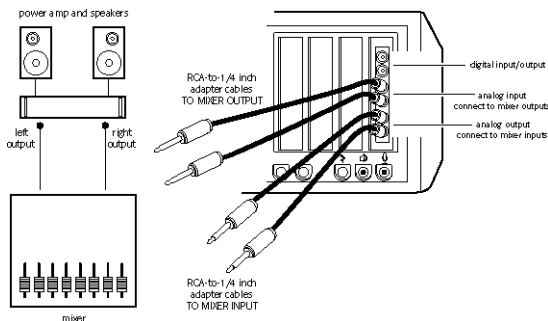
If you have a Sound Manager-compatible or ASIO compatible audio card, or USB or Firewire audio interface, installed in your computer and wish to use

its input and output capabilities instead of your Macintosh's built-in capabilities, do the following:

1. Turn down the volume on your mixer or playback system.
2. Make sure that you have installed the audio card into one of the available PCI expansion slots inside your Macintosh or a PCMCIA card slot in your PowerBook, or connect your USB or Firewire audio interface to an available USB or Firewire port on your Macintosh. If you are not sure how to do this, please refer to the manufacturer's instructions that came with your audio card or interface.
3. Install the Sound Manager and/or ASIO drivers for your audio card or interface. Please refer to the manufacturer's installation instructions for your audio card on how to do this.

To use the audio card's or interface's ASIO driver with Deck, place the ASIO driver inside Deck's ASIO Drivers folder in the Deck folder.

4. Connect your mixer's output to the audio hardware's input connectors.
5. Connect your audio hardware's outputs to your mixer's (or playback system) input.
6. Raise the volume on your mixer or playback system. Your system should now be properly configured and ready for recording and playback.



*A typical mixer/computer configuration is to have the computer outputs go to channel*

*inputs on your mixer and to have the auxiliary or bus sends from the mixer go to the inputs of the computer. Instruments you want to record you patch into other channel inputs on the mixer and you can then route them to the auxiliary or bus sends on the mixer to be recorded by the computer. The mixer's main outputs go to the amplifier/speakers.*

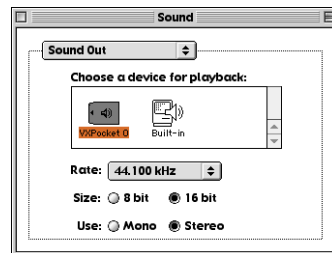
## Using the Inputs and Outputs of an Audio Card or Audio Interface

Deck supports most Sound Manager compatible and ASIO compatible audio cards and interfaces. In order to effectively use these cards with Deck, you will need to make sure you have installed the sound manager drivers supplied by the manufacturer (most audio hardware manufacturers include their own drivers). If you haven't already installed your sound hardware's sound manager drivers, please do so now. In most cases, you will need to place the hardware's sound manager driver extension in your System Folder's Extensions folder. After you have done this, restart your computer.

If your audio hardware also has an ASIO 1.0 driver or a backwards compatible ASIO 2.0 driver you will want to put it into Deck's ASIO Drivers folder.

### **To use a third-party audio hardware's outputs for previewing Premiere-format plug-ins:**

1. Choose Sound Out from the Sound Control Panel pop-up menu.
2. Select audio card (Digigram's VX Pocket is shown in this example) as the sound output device.



The Apple Sound Control Panel

- 3. Close the Sound Control Panel when you have finished.

## ASIO

Deck 3.0 supports ASIO 1.x audio drivers for recording and playback of audio through your ASIO-supported audio hardware. ASIO is a standard technology for routing audio between sound cards and software application developed by Steinberg Software und Hardware, GmBH. ASIO, unlike the Apple Sound Manager, allows for more than 2 channels of simultaneous audio. Most audio hardware currently available have ASIO drivers. BIAS has tested the following cards for ASIO compatibility with Deck 3.0:

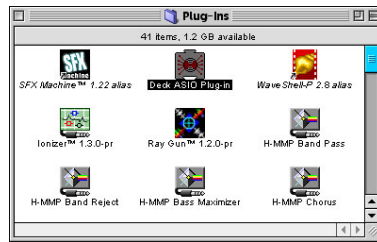
- Apple Sound Manager
- Digidesign Direct IO
- Digigram VX Pocket
- Echo Gina, Layla, and Darla
- Ensoniq PARIS
- Gadget Labs WAVE/8-24
- Korg 1212 I/O
- Lucid PCI-24
- M-Audio Delta Series
- Midiman DMAN 2044
- MOTU PCI-324
- RME Digi96
- SeaSound
- Sonorous STUDI/O
- Tascam US-428
- Yamaha DSP Factory



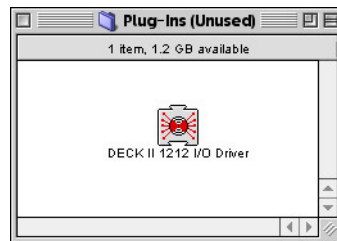
*The MOTU PCI-324 needs to be configured using the MOTU PCI-324 Console and the PCI-324 Cuemix Console prior to launching Deck. The Yamaha DSP Factory requires that you be running MixTest prior to launching Deck and selecting the DS2416 ASIO driver. Other cards may similarly require software utilities provided by the manufacturer of the card (such as the M-Audio Delta series).*

### Configuring Deck for ASIO

In order for Deck to use the ASIO driver for your audio hardware, you must make sure that the Deck ASIO Plug-in is located in the Deck Plug-Ins folder.

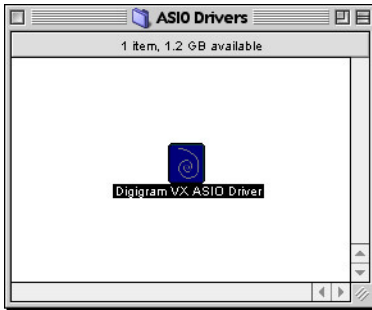


Deck 3.0 also supports the Korg 1212 SoundLink system. To use SoundLink with Deck, be sure that the DECK II 1212 I/O Driver is in the Deck Plug-Ins folder. If you are planning on running Deck with ASIO you must move the DECK II 1212 I/O Driver to the Plug-Ins (Unused) folder.

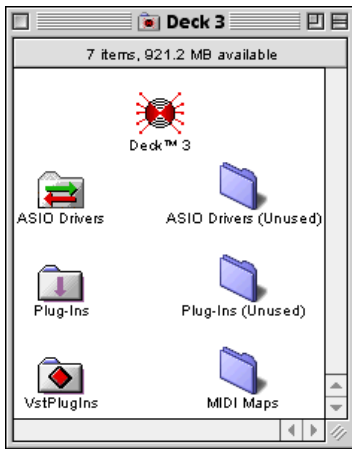


### Installing the ASIO Driver

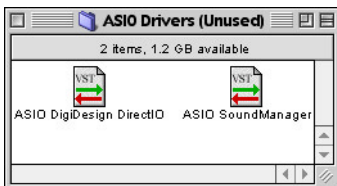
To install an ASIO driver for use with Deck, drag and drop the ASIO driver for your ASIO-supported audio card into the ASIO Drivers folder in Deck's root folder.



Please note that the Deck application must reside in the same folder (i.e., the Deck folder) as the ASIO Drivers folder in order for Deck to be able to recognize the ASIO driver.



Please note that Deck can only have one ASIO driver in Deck's ASIO Drivers folder. You can put multiple ASIO drivers in the folder called ASIO Drivers (Unused), but you will need to manually drag them in and out of Deck's ASIO driver folder if you wish switch ASIO drivers.



Once you have installed the ASIO driver for your audio card, launch the Deck application. Deck will load and register the ASIO driver on launch.

## Korg SoundLink

Deck 3.0 supports the Korg 1212 I/O card via SoundLink™. To use SoundLink with Deck and the Korg 1212 card, be sure that the Deck Korg 1212 I/O Driver is located in the Deck Plug-Ins folder and that the Deck ASIO driver is moved to the Plug-Ins (unused) folder.

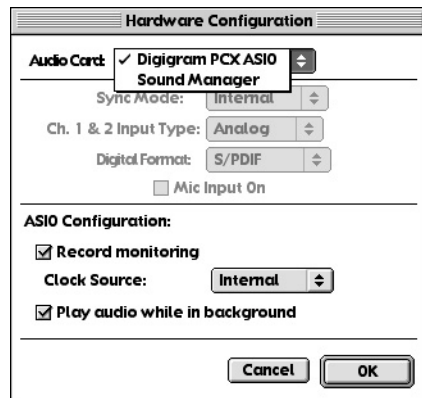
## Hardware Configuration

Once Deck is open, you will need to select and configure your audio interface via the Hardware Configuration dialog whether you are using the Apple Sound Manager, ASIO, or Korg SoundLink.

Choose Hardware Configuration from the Options menu in Deck to open the Hardware Configuration dialog.

### Audio Card

Choose either Sound Manager or your audio card's ASIO driver from the Audio Card pop-up menu.

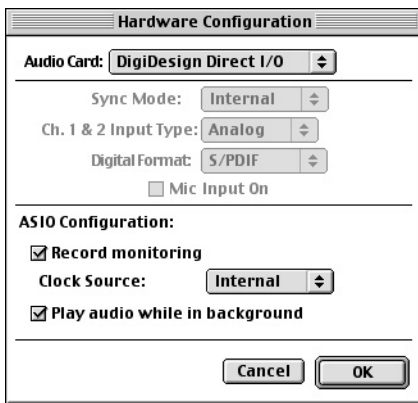




Choosing the Sound Manager will allow Deck to use for audio input and output whatever is selected for Sound In and Sound Out in you Apple Sound Control Panel.

If you are using SoundLink with the Korg 1212 card, choose SoundLink from the Audio Card pop-up menu.

Choose your audio card's ASIO Driver from the Audio Card pop-up menu to allow Deck to access the full multichannel I/O capabilities of your audio card via ASIO.



If you are using Deck with your audio card's ASIO driver, be sure to use the checkboxes to enable or disable Record monitoring and Play audio while in background.

### Clock Source

It is important to note when recording digital audio signals (e.g. SPDIF, ADAT optical, etc.) that the Clock Source be set to the appropriate digital clock source. Recording a digital signal with the clock source set to an incorrect source will lead to "jitter" error, resulting in clicks and pops in the recorded audio stream.

### Play audio while in background

The Play audio while in background check box enables the ASIO driver to operate in the background while Deck is in the background. If you are running more than one audio application using the same ASIO driver

(e.g., BIAS Peak), you will want to disable Play audio while in background.

### Record monitoring

If you want to monitor audio input in the digital domain while you are recording, be sure to enable Record monitoring in the Hardware Configuration dialog.

#### *To monitor recording in the digital domain:*

1. Enable Record monitoring in the Hardware Configuration dialog.
2. Choose the channel inputs for the tracks in Deck you intend to record on.
3. Record enable those tracks.
4. Start recording.

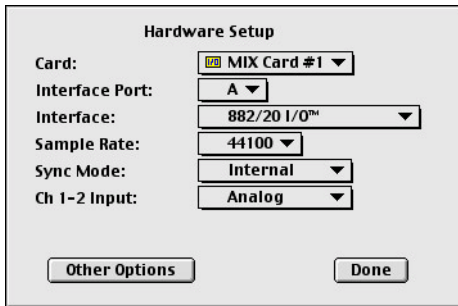
It is strongly recommended that you monitor your recording in the analog domain when recording live or overdubbing. Use your analog mixer to monitor the analog audio signal while recording in Deck. When you record monitor in Deck, there will be a latency equal to twice the size of the ASIO buffer (e.g. at 44,100 with a 2,048 byte buffer size there will be almost 93ms of latency from when you recorded the signal into Deck to when you hear it come back out of the speakers). Monitoring the recording in the analog domain avoids this problem.

#### *To monitor recording in the analog domain:*

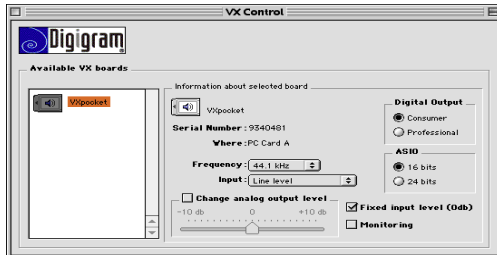
1. Disable Record monitoring in the Hardware Configuration dialog.
2. Be sure that the analog signal(s) you intend to record are correctly routed to the inputs of your audio interface for recording into Deck as well as to be monitored through your speakers.
3. Choose the channel inputs for the tracks in Deck you intend to record on.
4. Record enable those tracks.
5. Start recording.

## Hardware Options

Choose Hardware Options from the Options menu in Deck to open the ASIO driver's utility for certain ASIO supported cards (the Digidesign Hardware Setup dialog and the Digigram VX Pocket Control Panel are shown below).



Digidesign Hardware Setup dialog



Digigram VX Pocket Control Panel



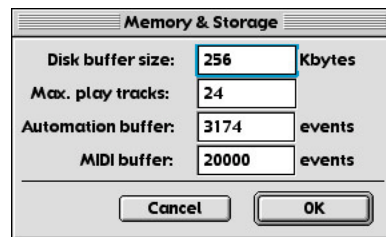
*Please note that some cards' drivers will either not have driver setup utilities or they will have driver setup utilities that need to be configured prior to launching Deck (such as the MOTU PCI-324 or the M-Audio Delta series) and cannot be accessed from within Deck.*

## Configuring Deck and Setting Maximum Playback Tracks

You need to make sure Deck is set to the correct hardware. This usually occurs automatically. You may also need to set the number of playback tracks, especially if you are upgrading from an earlier version of Deck or upgrading your computer platform.

### To configure Deck and set the playback track count:

1. Within Deck, choose Options > Hardware Configuration.
2. Select your audio hardware from the Audio Card option and click OK.
3. Choose File > Preferences > Memory & Storage.
4. Set Max. Play Tracks as desired. (In most cases, the value will default to the nominal track count for your system.) The actual maximum playback tracks will vary depending on your system and hardware.



Memory & Storage preferences dialog



*You can always set the maximum play tracks to a number below the actual maximum available. This is advised if you experience "Disk is too slow" messages, or if you experience poor interface response.*

Optimum track count on any machine depends on many factors, such as the speed of your drive, the speed of your CPU, and the model of Macintosh you run Deck on.

### **Using dedicated audio drives**

Using your system drive to record and play back will decrease your system performance, due to system software design. Use a non-system SCSI hard drive for recording and playback to achieve optimal performance. Using dedicated audio drives running at 7,200 rpm or faster will further improve Deck's track count and performance. UW-SCSI is the current standard for high performance drives, but UDMA-66 drives can achieve nearly the same performance. Firewire hard drives provide another exciting new standard with data transfers up to 30gb/second! (1 16-bit 44,100 audio channel = 88kb/second.) Remember, the faster the hard drive the better.

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### **Conclusion**

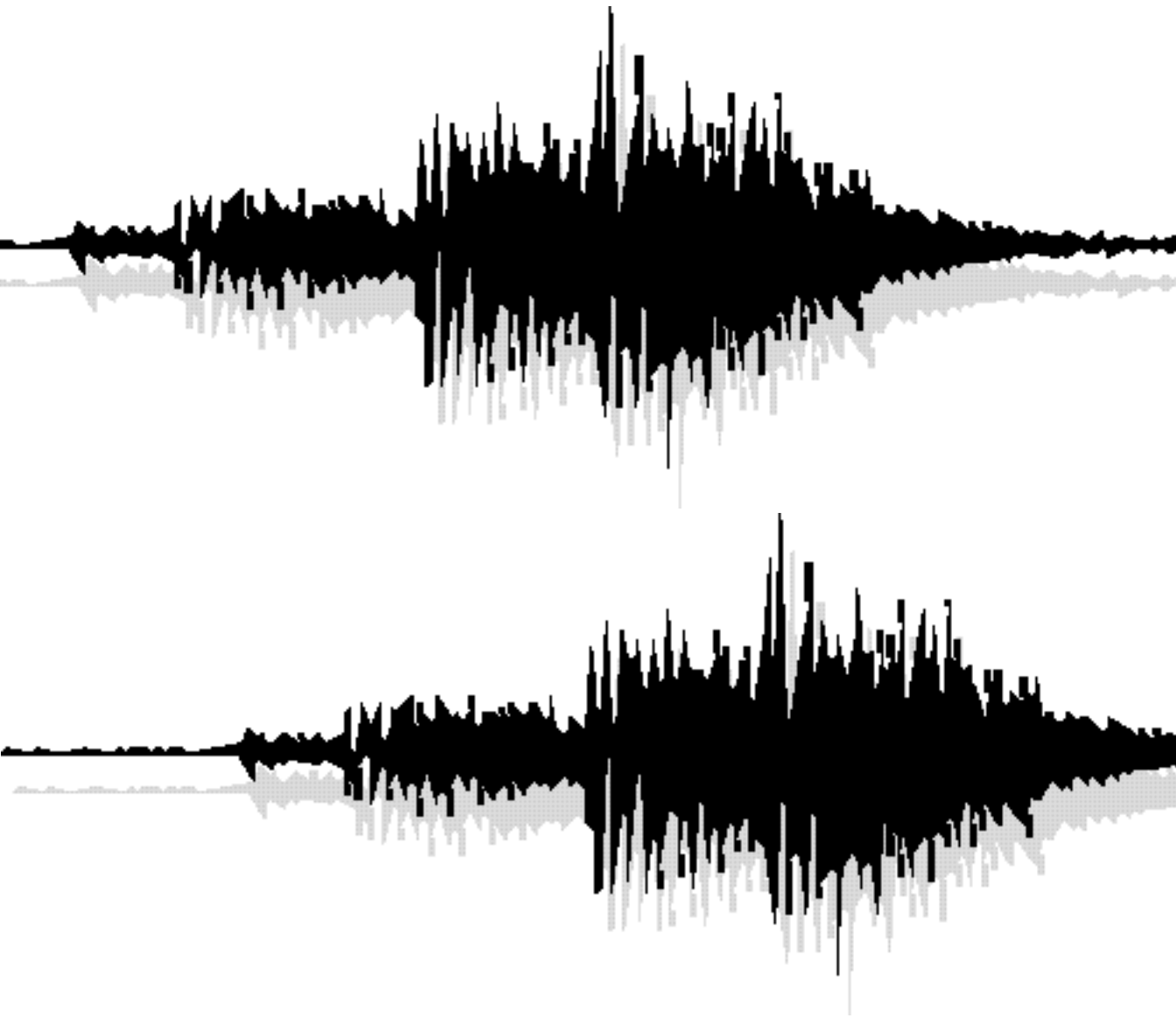
Now that you have installed and configured Deck, proceed to the next chapter to learn several basic concepts and functions essential to using Deck.

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# Chapter 3

## Getting Started





# Chapter 3:

## Getting Started

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Deck generally looks and acts just like a portable mixer and recorder. It enables you to record tracks, monitor them while recording other tracks, adjust the level and EQ of what you've recorded, and effects, and mix down your recording to a master. Deck also offers many features you would not find on a portable analog recorder, including advanced visual waveform editing, noiseless track bounce, multi-point auto-location, moving-fader mixer automation, non-destructive real-time and destructive effects, and CD-quality 16-bit sound. This chapter covers creating and saving sessions, importing audio files, recording, and the basic functions of your Deck system.

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### Deck sessions

A Deck session file is a Macintosh document that contains a map of a specific recording project. It does not contain audio files, but instead it contains pointers to audio files on your hard drive.

When you create a new session, a session file document and an Audio Files folder are created and placed in their own folder by Deck, which is named after the session. If you later create crossfades in the session, a Crossfades folder is automatically created. The Audio Files folder contains any audio files you record into the session and any that are physically copied during import (either by your choice or if they need to be converted).

It is a good idea to keep all of the data associated with each session—the session file, Audio File folder, and Crossfades folder—in that one session folder, especially at first. For more information about the structure of Deck sessions, see Chapter 10, “Digital

Recording and Mixing Basics” and the Appendix, “Fine-Tuning & Troubleshooting Your System.”

### Creating, opening, closing, and saving sessions

#### *To create a new session:*

1. Choose File > New (Command-N).
2. Name your session and select its location.
3. Choose a sample rate and click OK.

Generally you will use the 44100 Hz sample rate (the CD standard rate). For more information about sample rates, see “Basic sampling concepts” on page 190.

#### *To open an existing session:*

1. Choose File > Open (Command-O).
2. Locate and select the desired session file.
3. Click Open.

The Open command cannot be used to open sound files. Instead, they must be added to a session.

#### *To save a session:*

- Choose File > Save (Command-S).

If you wish to save the current session under a new name, choose File > Save A Copy As.

#### *To close a session:*

- Choose File > Close Session (Option-Command-W).

---

## Adding Audio Files and Regions to a Session

The simplest and most common task you will need to perform involves placing existing audio files and organizing them for playback. You can select files in any supported sound file format from your hard drive, add them to the Clipboard, and then place them in any order in the Tracks window. If your Macintosh has a CD-ROM drive, you can also add audio files or QuickTime movies from any CD-ROM disk, or audio files from a regular audio CD. The Library window automatically keeps track of all source material added to the session in this manner.

Deck uses monophonic sound files in the Sound Designer II format. If you add any other type of sound file, Deck will automatically copy the sound file and convert the copy to the correct format. Deck imports Sound Designer I, Sound Designer II, AIFF, Apple Resource (SND), QuickTime, and WAV audio files. Audio files may also need to be converted by Deck if they are not at a supported sampling rate.

Although Deck makes extensive use of the Clipboard to add audio files to a session, it does not put the actual audio data on the Clipboard, it merely uses the Clipboard to keep track of the files you are adding or editing. Therefore you do not need large amounts of RAM to add large audio files to a session.

### **To add sound files and regions to a session:**

1. Choose File > Add Audio to Clipboard (Command-D).
  - To add tracks from an audio CD, use the Add Audio CD Tracks to Clipboard command.
  - To add a SND resource, use the Add SND to Clipboard command.
  - To add the audio from a QuickTime movie, choose QuickTime > Import Movie.

2. Find and select the desired audio file from the list of files on the left.

Information about the selected file appears in the comments area in the lower left corner of the dialog box, and a list of the regions within that sound file appear in list in the upper right corner. The top region represents the entire file.

3. Select the desired region in the sound file from the list on the right.

An audio region marked with **•F•** represents the entire sound file. Regions marked with **•R•** are simple audio regions, and those marked with **•L•** are loops (AIFF files only). Stereo files are split and have the suffix .L (left) and .R (right).

- Click Play to audition the selected file, region, or loop. You can hear the audio looped by turning on the Loop Audition option.
- Turn on the Make a Copy option to copy all imported files into the Audio Files folder for the session. (Note that Deck automatically copies files added from read-only media to the Audio Files folder.)

4. Click Add Region to add the selected region to the current track.
5. The current track is displayed in the lower right corner of the dialog box. To remove regions from the current track, select them and click Remove.
6. Follow steps 2 through 5 until you have added all of the files and regions you desire, then click Done.

If necessary, Deck converts the selected files and regions to match the sample rate and bit depth of the current session.

### **Do one of the following:**

- To place the selected audio at a specific point in time, click in the waveform area of the Tracks window at the desired time and choose Edit > Paste At. The current time location of the cursor's position is displayed at the top of the Tracks



window. If you are adding stereo or multichannel files and regions, select two or more tracks. This assures all the pasted audio will have its channels in phase. For more information about the Tracks window, see “The Tracks, Transport, and Mixer windows” on page 18.

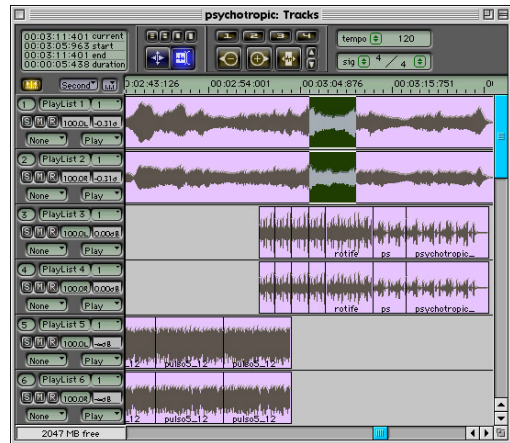
- To place the selected audio on new tracks, choose Edit > Deselect, then choose Edit > Paste At. The new track (or tracks if the selected audio is multichannel) is placed at the top of the Tracks window and any existing audio is moved to lower tracks.
- To place the selected audio at different points in time on various tracks, drag them from the Library window to the Tracks window.

## The Tracks, Transport, Mixer, Master Outputs, and CPU Meter windows

To perform the basic functions in Deck you will be frequently using Tracks, Transport, Mixer, Master Outputs, and CPU Meter windows.

### The Tracks window

The Tracks window is where you view, arrange, and edit audio files along a timeline. Although only the allotted number of play tracks can play, you can always bounce those tracks down to one or two tracks, or use work tracks and virtual mixing to create mixes that are hundreds of tracks deep. For more information about bouncing tracks and virtual mixing, see Chapter 8, “Automation, Mixing, and Mastering.”



Tracks window

### The Transport window

The Transport window acts a lot like the transport on any tape recorder, only it has more features and functions.



Transport window

### The Mixer window

Use the Mixer window for control of audio recording and playback.



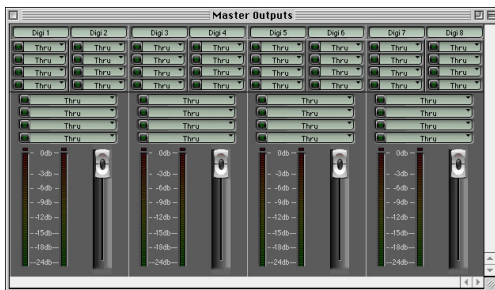
Mixer window

## The Master Outputs window

Use the Master Outputs window to monitor and attenuate the levels of stereo pairs of outputs. You can also assign VST Plug-Ins to mono and stereo output channels.



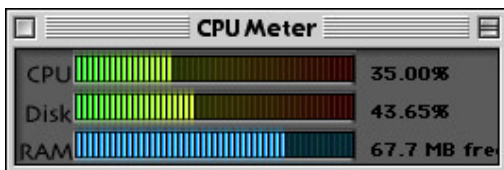
Master Outputs window with stereo audio interface



Master Outputs window with multichannel audio interface

## The CPU Meter window

Use the CPU Meter window to monitor Deck's usage of the CPU, disk, and RAM.



CPU Meter window

You can change the default position of all Deck windows using the File > Preferences > Save Settings as Template command. Every time you begin a new session, the windows will appear in these default positions.

The Transport and Mixer windows can be operated while in the background. That means you can have the Transport controls or Mixer faders partially covered by other Deck windows, yet still access their key functions in real-time without bringing them to the foreground. For detailed information about these and the other Deck windows, see Chapter 9, “Deck Reference.”

## Recording into the Tracks window

The Tracks window allows you to record directly into any of its playback tracks. By monitoring the signal with the Mixer window VU meters you can adjust the signal to avoid it being too quiet (resulting in a noisy recording due to poor signal-to-noise ratio) or too loud (resulting in digital distortion due to clipping).

If you intend to integrate MIDI into a Deck session, it is a good idea to plan for this from the very beginning. If you have an existing MIDI sequence and you wish to record audio over that sequence, make sure to load the MIDI file into Deck's MIDI window before recording any audio. If you wish to record audio first and then lay in MIDI tracks, you may wish to record the audio tracks in time to a MIDI metronome, which can be supplied in real-time from OMS-compatible MIDI sequencing software running in the background; you can also accomplish this by recording a simple MIDI click file and importing it into your session. Doing this assures that your audio tracks will be recorded with a consistent, predictable time base, and your subsequent MIDI tracks will be easy to assemble and synchronize with your digital audio tracks. For more information about the integration of MIDI and audio in Deck, see Chapter 7, “MIDI and Synchronization.”

**To record into the Tracks window:**

1. Make sure you have a Deck session open and that a sound source is hooked up to the audio inputs.
2. To hear what you are recording, you should also hook up the audio outputs to an amplifier with speakers or a headphone amplifier. For more information, see “Making Audio Connections” on page 10.
3. Select the desired audio input from the pop-up menu to the right of the track name.
4. Click the R button to record-enable the desired track.
5. Choose Windows > Mixer. The Track VUs will now be input level VUs and register any input signal.
6. Begin playing from your source and monitor the incoming signal to keep the VU meter as close to the top without turning on the clip light (the small square at the top of the VU meter). The clip light indicates that audio recorded at this level will be distorted. Turn off the clip light by clicking it, and adjust the incoming audio and/or the input level as follows:
  - If you are using the built-in 16 bit audio hardware of your Power Macintosh, set the Analog Input Level (from the Options menu) to 0 and turn up the level of your incoming audio (instrument or mixer) at the source until it registers correctly in the input VU meters. An Analog Input Level setting of 0 does not turn off the input; it turns off the low-quality on-board preamp that causes recording anomalies.
  - If you have any other audio hardware, you may need to adjust the volume of the incoming signal at the source to get a good level.
7. Multiple tracks can be recorded at once, but two record tracks cannot be set to the same input. If you wish to record in stereo, simply record-enable two tracks, assigning one to input 1 and the other to input 2. For true stereo separation, remember to pan one track hard left and the other hard right to match the stereo image of your source audio.
8. Adjust the monitor level of the track you’re recording by sliding its track fader up or down in the Mixer window.
 

When you have a track record-enabled, the track volume fader adjusts the volume level for monitoring the track. It does not change the record level. When the track is not record-enabled, the track volume fader adjusts the output level of any audio that is already on the track. This volume can be set to a different level than the input monitor volume, which is useful during punch-in recording. You should use the track faders to adjust playback volume to your liking, but always make sure that the analog input level or output level of your source is set so that the channel VU meter registers a high signal level, with no clipping.

Due to limitations in Apple’s Sound Manager, you cannot change the monitor volume or pan of any track while it is being recorded with a Power Macintosh. Moreover, tracks being recorded will always play back through the system at full volume while you record, and will monitor through the channel you’ve set as their input channel. (In other words, you cannot record into input 1 and monitor through output 2.) It may be useful to use an external mixer hooked up to your Macintosh computer’s audio output jacks to better control playback volume and panning.
9. When you are ready to record on the enabled track(s), click the Transport’s Record button, and then click the Play button (Spacebar).
 

As soon as you click the Play button, Deck begins recording.
10. When you are finished recording, click the Transport’s Stop button (Spacebar).

If the recording ends before you stop it, you have run out of disk space.

### **To hear the track you just recorded:**

- Click the Transport window's Return-to-zero button (Return) and click the Play button (Spacebar).

Your recorded track is now being played back, and you should see Deck's track VU registering audio level. To adjust the output level of your recorded track, slide its mixer volume fader up (louder) or down (quieter). To pan the track left or right in the stereo image, adjust the track's pan fader in the mixer window.

### **To see the waveform overview of the track you just recorded:**

- In the Tracks window, use the Magnify/Demagnify buttons to adjust your viewing resolution. Option-Shift-clicking these buttons will result in larger resolution jumps.

As you play tracks back, Deck's cursor moves along the time axis, indicating your current location. Enabling Scroll During Playback in the Options menu will make the entire track display scroll during playback, so your current location stays on-screen at all times. (As Scroll During Playback is a computation-intensive feature, its operation may be disabled on older, slower Macintosh computers.)

If you are satisfied with the track you just recorded, you can now go on to recording the next track. If you wish to re-record the track, repeat the procedure you just used. To learn how to re-record only a few select areas of the track, see "Automated punch-in and punch-out recording" on page 27.

## **Effects**

You can also listen to your tracks with Deck's Built-in effects—such as EQ, Delay, Chorus, or Gain—or VST Plug-Ins. In the Mixer window, click one of the four Thru pop-up menus on the track to which you wish to add processing, and select the effect you want. Then open the Effect window (Command-7) for Deck's Built-in effects, or Option-click on the name of the VST Plug-In, and adjust the parameters of that effect. For more information about Deck's Built-in effects and VST Plug-Ins, see Chapter 5, "Effects."

## **Location times**

On the right side of the enlarged Transport window you see two sets of six pop-up menus. The six pop-ups on the left are Deck's Location Time buttons.



*Transport window with Location Times and Mixer States visible*

For those familiar with multitrack recording devices, these are the Deck autolocate memories. Each of these six pop-up menus gives you access to the full list of all location times you have ever stored for the current session. The arrows directly to the left of each menu are the controls that you will use to record and playback location times.

The Transport window can be collapsed or expanded by clicking on the box at its upper right-hand corner. The Location Time, Mixer State, and Punch-In Tools are all hidden when the Transport window is collapsed.

### **To set location times when playback is stopped:**

- Scrub or play the session to set the playhead at the desired time location.

### **Do one of the following:**

- Command-click an arrow button to the left of one of the Location Times windows.
- Choose New from the Location Times pop-up menu.

Location Times are reflected in the Tracks Window by a red flag, or Marker, in the Tracks Window Time Axis (also known as the timeline, which is right above the tracks display, and below the tool buttons, in the Tracks window).

**To set location times during playback:**

- Press Enter on the keypad. The time is added to the list of times on the Location Times pop-up menu.

**To recall location times using the Location Time arrow buttons:**

- In the Transport window, click the arrow button directly to the left of the stored position. Whenever you click the arrow button (or select a location on the pop-up) you will immediately be snapped to that location time, whether audio is playing back or not.

All location times also store the current loop/punch Start and End times. To recall a location time with its Begin and End times, just hold down the control key when you click a Location Time arrow button.

**To name location times:**

1. Command-click the location time pop-up.
2. Type a name and click OK.

**Loop mode**

The loop mode function lets you define a section of your session and automatically loop playback of that section over and over. This is particularly useful for practicing along with a short section of a session in preparation for recording a track, or for evaluating potential loops for arrangement purposes.

**To set loop begin and end times, and turn on loop play:**

1. Scrub the small begin tape counter in the Transport window to the desired loop start point.
  - You can scrub the counter by clicking and holding down the mouse over the counter. When the cursor changes to right/left arrows, drag to the right (forward) or left (backward) to set the exact point in the recording. Scrubbing this way will play audio as the counter moves. If you wish to slide the counter value without hearing audio, hold down the Shift key. Then click and drag the

mouse over the begin tape counter. To set the loop time with the keyboard, hold down the Command key and click the begin counter. Then use the dialog to set your time.

- You can also click the Begin and End buttons to enter the current master counter time while a session is playing back. After the times have been picked up, you can fine tune the begin and end times by scrubbing. Command-click the Begin and End buttons to transfer their times to the Transport window's master counter.
2. Scrub the small end tape counter to the desired loop end point.
  3. Click the Loop button.
  4. Click the Transport's Play button to play back the loop. Click the Stop button to halt playback.



*Loops may not be shorter than 0.5 seconds. If you try to set a loop that is shorter than half a second, Deck will automatically turn off the loop.*

There are a number of tools that greatly enhance the usability of Loop mode. You can automatically move the selection range (in the Tracks window) to the begin and end counters using the Option > Selection Tools > Set Punch Times From command (or move the other direction using the Set from Punch Time command). You can also use other commands on this submenu to automatically select the waveform range between the begin and end times indicated in the Transport window. For more information see Chapter 9, "Deck Reference." Finally, when the Track window is open, you can press C on your keyboard at any time. This issues a Cue command, which automatically sets the Transport window's start and end times to match the current selection and turns on Loop mode. Option-C turns Loop mode off.

**Automated punch-in and punch-out recording**

Although sometimes a recorded track is perfect after the first try, in most situations at least part of the track

will need to be recorded again. Picture, for example, a five-minute vocal track that has only a single line with a mistake. As the engineer on this session, you would want to make one more recording pass and replace only a small piece of the recorded track. In traditional recording, this process of piecemeal replacement is called punch-in recording. Deck offers automated punch-in/punch-out recording.

**To punch-in and punch-out a track section automatically:**

1. Scrub the small begin tape counter in the Transport window to the desired punch-in point. This will be the point where replacement recording automatically begins.
  - You can scrub the counter by clicking and holding down the mouse over the counter. When the cursor changes to right/left arrows, drag to the right (forward) or left (backward) to set the exact point in the recording. Scrubbing this way will play audio as the counter moves. If you wish to slide the counter value without hearing audio, hold down the Shift key. Then click and drag the mouse over the begin tape counter. To set the punch time with the keyboard, hold down the Command key and click the begin counter. Then use the dialog to set your time.
  - You can also click the Begin and End buttons to enter the current master counter time while a session is playing back. After the times have been picked up, you can fine tune them by scrubbing.
2. Scrub the small end tape counter to the desired punch-out point. This will be the point where the replacement recording automatically ends.

You have now set your punch-in (begin) and punch-out (end) times.
3. Click the Punch button.

Punch mode is now turned on, and the portion of the session between the begin and end times will be recorded automatically on the record-enabled track on your next recording pass. No other section of the track will be replaced.

4. Click the Transport's Play button.

As the existing track plays, monitor (play) your new source signal (your instrument, microphone, and so on). Set the input level so that the replacement signal meter level approximately matches the meter level of the signal on the track.

When you are punching-in, you can set the monitor level of the existing track to a different level than the monitor level of the incoming signal. (Remember, monitor level is how loud you hear it, while input level is how loud it is actually recorded.) When a track is not record-enabled, the track's volume fader adjusts the playback (monitor) level of that track. When a track is record-enabled, the track's volume fader adjusts the playback (monitor) level of the incoming signal. Switch record enable on and off to match these two levels.

5. Adjust the relative monitor levels of the other tracks by sliding their volume faders up or down.
6. When you are ready to punch into the track, click the Transport's Record button, and then on the Transport's Play button (Spacebar). Both will be highlighted.

Deck begins playback, and you will hear both the existing track and your new input signal. Remember, however, that only the track section between the counter's begin and end times will be recorded. When playback hits the punch begin point, recording will start automatically and you will no longer hear the original audio track. Recording will continue until the punch end point, at which time you will hear the original audio track again.

7. When you are done, click the Transport's Stop button (Spacebar). Next click the Transport's Return-to-zero button (Return), and then on the Play button (Spacebar) to hear what you recorded.

Remember, Deck is a non-destructive recorder, so when you punch-in new material, the old material is

not deleted. This means you can open the Track window after you have punched-in and view your newly recorded range. If you don't like the new take, you can delete it and stretch the old region to reveal the original take. For more information, see Chapter 4, "Visual Waveform Editing," and the Appendix, "Fine-Tuning & Troubleshooting Your System" for tips on managing multiple takes in Deck.

### **Naming Tracks**

You may wish to begin renaming your tracks when you start doing multiple tracks. The tracks will name themselves Track 1, Track 2, and so on. By giving your tracks more descriptive names, such as "Bass, take 3," you will find it much easier to work with them. To rename a track, Command-click the Track name pop-up box at the left of its track window. This brings up a dialog box that allows you to enter in a new name for your track. (You can also click the track in the Tracks window to select it, then choose Rename from the File menu.) For more information about renaming and editing tracks and regions, see Chapter 4, "Visual Waveform Editing."

### **Compact Session**

After you have made your final decisions regarding takes, you can automatically delete the unused takes from your session by using Compact Session, or compact single audio files using Compact Audio. Before you compact any files, make sure you understand how compacting works, and what it does. For information about compacting session audio files, see Chapter 4, "Visual Waveform Editing."

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## **Conclusion**

Now that you know how to import existing audio files and regions, record directly into Deck, proceed to the next chapter to learn how to edit your audio in a Deck session.

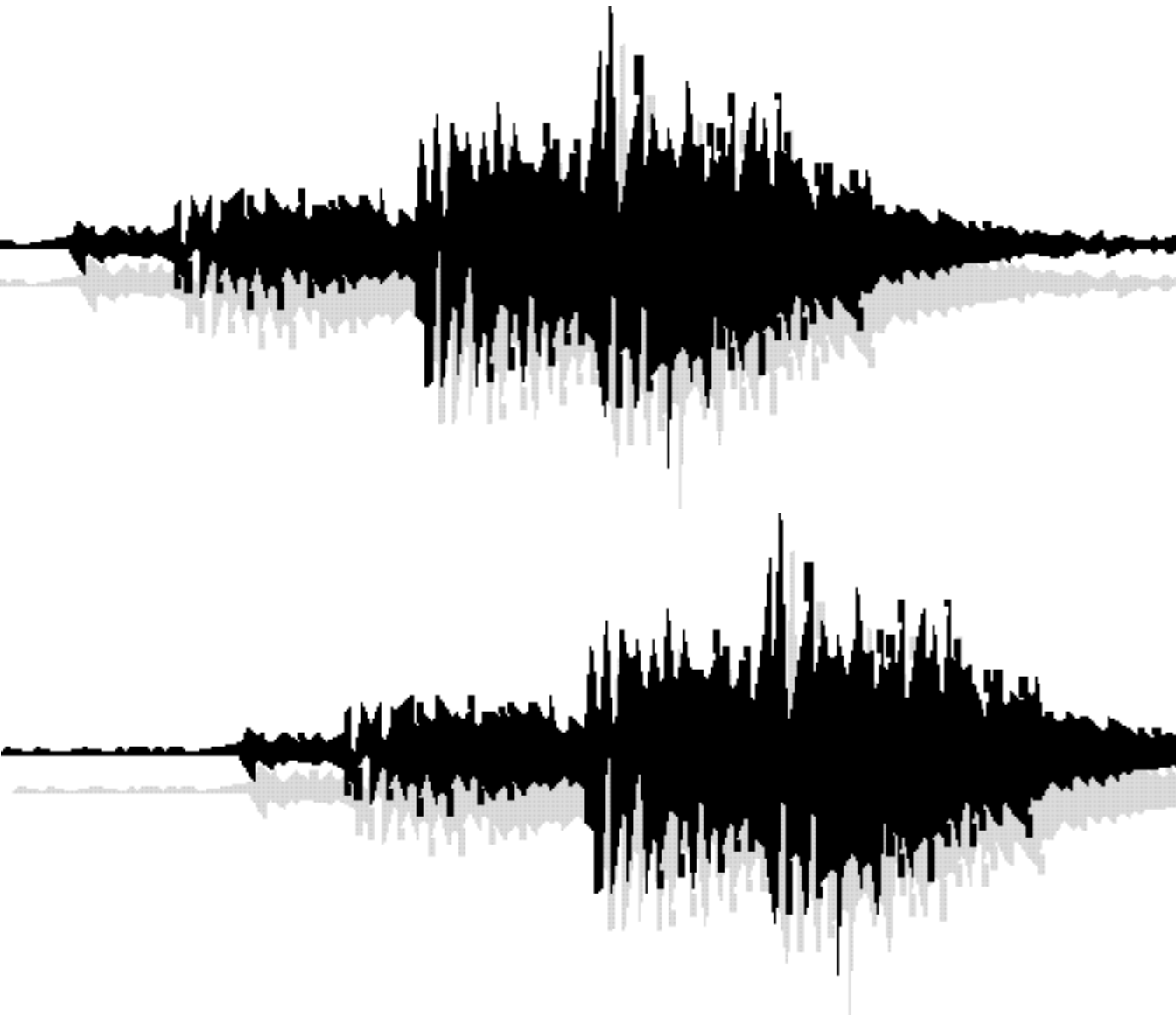
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# Chapter 4

## Visual Waveform Editing





# Chapter 4:

## Visual Waveform Editing

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This chapter of the Deck manual will help you get the most out of the Tracks window, Deck's visual waveform editing environment. You will use the Tracks window to slip tracks, arrange audio, redefine regions, place existing audio, create and edit visual automation envelopes, spot sound to picture, bounce tracks, create work tracks, and more!

The Tracks window is where you will find Deck's real workstation power, and although you do not need to use the Tracks window to record and mix tracks, you need to understand the Tracks window in order to use most of Deck's editing functions.

---

### Moving and Renaming Tracks

The Tracks window uses track position to determine which tracks will play back. Active real-time play tracks are numbered in their Track Control areas, at the left of each track. All other tracks (up to 999 available) are work tracks, as indicated by the letter W which appears in their Track Control areas. Work tracks do not playback. In order to playback audio regions that are currently on a work track, you must move them to a play track. For this reason, it is important that you understand how to change the position of the different tracks.

**To move a track from one track to another, do one of the following:**

1. In the Track Control area at the left of the destination track, select the new track from the Track pop-up menu.
2. Click the Track Control area, then drag the

Control area to its new position. As you drag the track, you will see a dark horizontal line highlighting the destination spot.

If you are using this method to move tracks from position to position in the Tracks window, you may find it easier to accomplish your tasks when the tracks are set to a smaller size. (Click the Track Size buttons in the Tracks window to toggle between track display modes.)

**To cut, copy, and paste entire tracks:**

1. Click the Track Control area. The track will be highlighted to indicate that it is selected. When a track is selected in this fashion, any Edit menu command can be executed on the track.
2. Choose Edit > Cut (Command-X) or Copy (Command-C).
3. Click any track's Control area to select that track as the destination.
4. Choose Edit > Paste (Command-V).

Tracks are never replaced when you use Deck's Paste command. The pasted track is always placed on the track below the selected destination track.

**To rename a track:**

1. Click the track's Control area.
2. Choose Edit > Rename.
3. Type in a new name for the track, then click OK.

The Tracks window will appear immediately showing the track's new name in the Control area pop-up.

You can also rename tracks by holding down the Command key and clicking on the Track pop-up

menu. This method offers a simple way to change the name of the current item in most of Deck's list pop-ups. The same shortcut works with Location Times and Mixer States in the Deck Transport window.

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## Navigating the Tracks window

Before you can really edit audio regions and waveforms, you will need a basic understanding of the tools you will use to navigate within the Tracks window and configure the waveform display area.

### To change the waveform display magnification:

- To magnify (zoom in on) the current waveform display, click the Magnify button.



Magnify button

- To demagnify (zoom out on) the current waveform display, click the Demagnify button.



Demagnify button

- Command-click the Magnify or Demagnify button to zoom all the way in or all the way out, respectively. Option-click them to (de)magnify 2 times; Shift-Option-click to (de)magnify 4 times.
- To auto-zoom to show only the current selection, first select a range or region and then click the Fit Selection button. This is a particularly useful tool for display manipulation when accurate waveform editing is required.



Fit Selection button

- Option-click the Fit Selection button to center the display on the beginning of the selected range or region. Command-click the Fit Selection button to center the display on the end of the selected range or region.

### To magnify the vertical display of waveforms:

- Click the up arrow (Waveform Expand) button to magnify the view of a low-level signal.
- Click the down arrow (Waveform Contract) to return the display to its normal resolution.



Vertical Zoom buttons

This will only magnify the display of the waveform, not the actual audio data. If you wish to alter the disk data to increase the actual level of the audio, use the Normalize command. For more information, see Chapter 5, "Effects."

Use the left and right bracket keys ([ and ]) as a quick shortcut when expanding or contracting the waveform display.

### To store view memories:

1. Set the waveform display so that you are viewing the range you desire at the magnification you wish.
2. Command-click any of the four View Memory buttons.



View Memory buttons

### To recall the stored view:

- Click a view memory button.

The Deck Magnify and Fit Selection tools allow you to zoom in and out in steps that are smaller than the steps between display resolutions. If you are not paying attention, you may end up with the display adjusted to an odd resolution. To pop back to the resolution of your choice, select that resolution on the Axis Resolution pop-up.

**To toggle track size:**

- Click the Track Size Buttons to select track size.



*Track Size buttons*

The Track Size buttons allow you to select one of four waveform display modes. The larger modes are best for locating zero points in a waveform, while the medium display is best for waveform range or region editing, and the shortest is quite useful for track shuffling.

**To place markers in the Tracks Window Time Axis (timeline):**

- Press Enter on the keypad. Whenever you press the Enter key, (during recording, playback or when idle) a red flag—or Marker—is placed in the Tracks Window Time Axis (or timeline) at the current location. The numbers that appear next to the Marker indicates the Marker's time coordinate.
- To rename a marker, Command-click it and a naming dialog will appear.
- To delete markers, Option-click them. Pressing Tab automatically scrolls the Tracks display to bring the next marker along the Time Axis into view.

Markers can greatly aid the decision-making and navigation tasks associated with Tracks window editing. For example, enter markers while recording or playing back audio to flag mistakes or keeper passages, so you can easily locate these areas when you begin editing. If you tend to get lost when recording long repetitive parts, use Markers to provide an on-screen

reference to where transitions or changes occur. You can also use Markers in conjunction with the Tab key to facilitate locating and returning to parts of your session where numerous edits or processes are required.

Markers are identical to Location Times, which are accessed from the Transport window. Whenever you create a Marker (by pressing the Enter key) the Marker's time or name is added to the Location Times pop-up menus, and can be accessed through the pop-up as an autolocate point.

## Basic Range Mode and Object Mode Editing

Range mode lets you select any piece of any waveform on any track, and slice or copy that piece to create or alter a region. Object mode lets you select groups of regions and move those regions for the purposes of song writing, effects spotting, or general organization. You can't select anything smaller than one region in Object mode.



*Object and Range Mode buttons*

Range mode allows you to select waveform ranges by dragging across those ranges. Most of the edits you would perform in Range mode pertain to defining pieces of an audio track as regions, cutting and pasting small portions of longer audio regions, and fading or crossfading sections of audio regions. Object mode is designed for wholesale arrangement of existing regions, and general trimming and placement functions.

For a complete list of keyboard shortcuts that make editing more efficient, see Chapter 9, "Deck Reference."

### To select a waveform range:

1. Click the Range Mode button (or the ~ key) to make sure you are in Range mode. The button will be highlighted.



Range Mode button

2. Drag over any waveform area.



Selected waveform range

If you drag anywhere within the selection, you can tear off the selected range and place it on any track at any time. If you want to define the selected range as a new audio region (for later arrangement in Object mode), you can choose Edit > Slice (Command-R) to create new regions out of the selected range in place, so no overall change in timing or audio placement occurs. You can also process audio ranges with destructive effects available in the Process menu.

There are a number of key commands that greatly enhance the Range mode drag-edit functions. For example, the up and down arrow keys move the selection range between tracks, holding down the Option key while pressing the left or right arrow keys will cause the selection to travel along the timeline, and holding down the Shift key and pressing the arrow keys will extend the selection range. Holding down the Command key when using the arrow keys will let you move the selected audio.

If you're working in pattern-based music forms, the Range mode can help you do cookie-cutter editing, so you can find and edit loops quickly and seamlessly. Assume you've already recorded or imported a 1-bar drum loop and pasted copies of it end-to-end in track one. While listening to this drum loop, you then record a bass line on track two. Now you can use the range of the drum loop as a cookie-cutter to ease selection of a bass passage for looping. Just click once on any drum loop region in track one, then press the tilde (~) key. If you were originally in Object mode, you'll now be in Range mode. If you were originally in Range mode, press the tilde (~) key once more, to get back to Object mode. The selection range will now exactly equal the length of the drum loop. Next, press the down arrow to move the selection range to your new bass track. You can audition the bass track (Shift-Spacebar) and move the selection range along the track using Option-left/right arrow to find the desired bass repetition. Slice your best take (Command-R) then copy and paste it to build a new looped bass track.

Because you've used your consistent drum-loop building block as your cutting tool, you won't have to individually edit the begin/end points of subsequent loops. This editing approach makes the loop identifying, editing and placement processes much easier and is an enormous time saver.

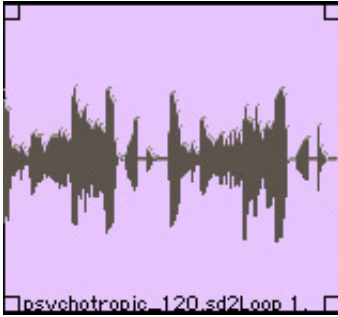
### To object-select a region:

1. Click the Object Mode button (or ~ key) to make sure you are in Object mode. The button will be highlighted.



Object Mode button

2. Click the desired waveform region.



*A selected waveform region*

You can hold down the Shift key and click another region to add that region to the selection. Note that Deck allows you to select multiple regions which aren't next to each other, which can be very useful for checkerboard-style editing and processing. You can now edit the selected region in a number of ways. If you click and drag anywhere within the region, you can drag and place it anywhere within the Tracks window. You can accomplish the same thing by choosing Cut (Command-X) from the Edit menu, and then placing an insertion point anywhere in the Tracks window to paste the selection. (You can also delete the selected range simply by hitting the Delete key on your Macintosh keyboard, but then it will be deleted—it won't go into the Clipboard.) You can use the Edit menu's Copy and Paste commands to paste multiple copies of the region end-to-end (or in any other desired arrangement). You can also execute destructive effects on any selected region or regions. To do so, select the Destructive Effects submenu from the Process menu. For more information about effects, see Chapter 5, "Effects."

Note that when you move a region, the Data Indicator boxes in the upper right corner of the Tracks window will update to show you the duration of the region and the start, stop, and current (mouse) positions. Use these numbers to help place audio at the desired sample, frame, beat or second.

Use Option-click and drag to tear off a copy of any region, while leaving the original behind, Command-

click and drag to paste the current selection at the end of the preceding region (commonly known as a butt splice), and the Command-Option arrow key combinations to move selected audio regions around in the Tracks window. Note that whenever you move a region into an area of the Tracks window where other regions already exist, the region being moved will actually cut (or edit) any regions it falls onto or overlaps.

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## Selecting Axis Units and Managing the Grid

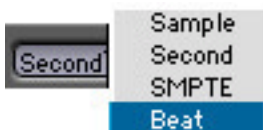
Deck allows you to adjust any session to show you all times and waveforms in seconds, samples, SMPTE frames or bars and beats. You can set these units based on the type of editing you plan to do, and you can reset them at any time without worrying about altering the timing of your tracks. The different units can be very helpful, and it is important to understand them, because many Tracks window edit functions are unit-oriented. One major reason for this is the Tracks window grid, which is extremely useful for many arrangement tasks.

### Smart Grid

Deck's smart grid is like an invisible template that automatically pops your edits to the nearest applicable unit. It's called a smart grid because it automatically adjusts to the most reasonable units for the current display resolution. For example, if you have chosen seconds as your Axis Units, the Tracks window grid can automatically switch between settings—minutes, 10 seconds, 1 second, centiseconds, milliseconds, and samples—based on how far in you zoom. The Deck grid is a particularly important tool for musical arrangement, because it allows you to do drum machine-style editing of audio regions, and edit general audio regions to specific tempos. Although you are free to turn off the grid at any time, it will be worth your while to learn its basic functions.

**To select time units for viewing the session:**

- Select the desired units from the Axis Units pop-up near the top left of the Tracks window.



*Axis Units pop-up menu*

These units will be saved as a part of the session, and when the session is next opened, it will show all time in these units. Remember, you can change your chosen units at any time without affecting the placement of any audio regions.

**Beat Mode**

If you are working in Beat mode, there is a circumstance in which you may wish to have audio regions stick to their bar and beat placement when tempo is changed. If you are using Deck as a virtual drum machine (playing individual drum sounds back as regions), then you will often want to make sure that any tempo changes will adjust audio region placement to make sure that the regions still start at their original bar and beat locations. In this situation, changing tempo will alter where bar and beat boundaries occur in relation to real-time, and bar/beat start times are considered to be relative times rather than absolute times. Deck offers a special preference for this type of editing. If you wish the regions to stick to their bar and beat locations whenever tempo is changed (in Beat mode), then see the “Change region start times with BPM change” preference in the File menu’s General Preferences submenu. When this option is turned on, tempo changes in Beat mode will adjust the placement of audio regions so that they retain their bar and beat locations. For more information, see Chapter 7, “MIDI and Synchronization.”

**To turn the Grid on and off:**

1. Choose Snap to Grid from the Options menu, which allows you to toggle the grid on and off. Note also that you can toggle the grid on and off

by clicking on the Grid button directly to the left of the Axis Units pop-up.



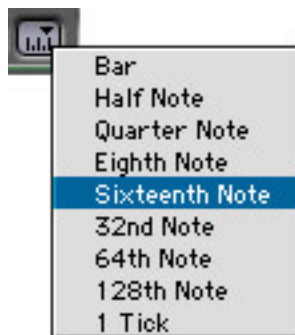
*Grid button*

2. Click this button again to turn the grid back on.

The Grid button will be highlighted when Snap to Grid is enabled.

**To jump to a specific display resolution:**

- Select the desired resolution from the Axis Resolution pop-up to the right of the Axis Units pop-up.



*Axis Resolution pop-up menu*

This is the fastest and most accurate way to set the waveform display area to show the resolution you want. You can now proceed with any edits that should be based on the current units. Remember, you can use any of the four Tracks window view memories to store your current waveform view.

When the resolution is changed, the waveform area is zoomed in or out at its left side. This may pop the display to an area that no longer shows the current selection (or shows its center, but makes it impossible to see the start or end of the selection). Remember, regardless of resolution, you can immediately center the waveform display on the beginning or end of the current selection. To do so, use Position at Beginning



(Command-I) or Position at End (Command-J) from the Option menu's Selection Tools submenu.

To locate to a specific point in the session, simply click the Time Axis (also known as the timeline) to jump to that point. The square black cursor in the Time Axis indicates your current session location.

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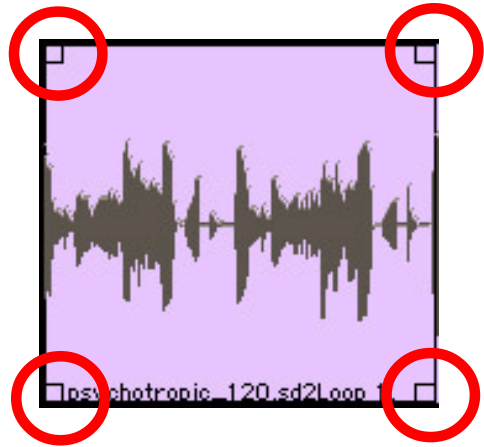
## Editing Regions

Audio regions are the building block of any Deck session, and the techniques for creating and defining regions are among the most important skills to develop. A region can be created in a number of simple ways, from simply tearing off a waveform range to slicing the range in place. Once you have created an audio region, there is a very simple method to edit the start and end points of that region. It requires no special mode, and can be done very quickly.

Whenever possible, make your begin/end points occur during a silent passage, between sound events. Or, if it's not possible to find a good break between words or notes, try to cut at the zero-crossing, where the waveform crosses the line in the middle of the track display. These simple techniques will help you avoid audible clicks and pops resulting from abrupt edits.

### **To re-size an audio region:**

1. Click the Object Mode button (or ~ key) to make sure you are in Object mode.
2. Select the desired waveform region.
3. To re-size the region, click, drag on any of the four region definition tabs, located in each corner of the selected object.



*Region definition tabs*

While you do this, a marquee will appear, highlighting the new size of the region. You can view the numeric display in the upper right corner of Tracks window to see the current size of the region. If you are editing region size with the grid turned on, the size will automatically be constrained to the grid.

Remember, an audio region is like a tiny window into the source sound file. You can adjust that window to show any part of the sound file, but there is no way to make an audio region reveal more data than is contained in the source sound file. When you drag a region definition tab to re-size the region, but the region refuses to grow any larger, this means you have reached the end of the source sound file data.

You can edit the begin and end points of two or more regions simultaneously by selecting multiple regions in Object mode. Just click and drag from an empty section of the Tracks window to create a marquee selection, or hold down the shift key while clicking on the regions you wish to select. Then, click any one of the selected regions' Region Definition tabs and hold down the mouse button while re-sizing. All selected regions will re-size to the begin or end point you set.

---

## Using Play Tracks and Work Tracks

While Deck looks like a simple multitrack audio recorder and editor, the concept of virtual tracks allows you to create mixes that are many layers deep without bouncing tracks. You can think of it like this: Deck allows you to record and arrange a virtually unlimited number of tracks, but at any time you can choose which of those tracks will play. All tracks other than the top play tracks in the Tracks window are called Work tracks. Work tracks do not play back, but they can be mixed together with the play tracks if you have the Virtual Mix command enabled. Work tracks store all information about a track, including automation. If you do not have the Virtual Mix command enabled, you can use work tracks as a visual database of potential playback tracks, arrangements, and pre-mix sources.

### **To move tracks from Play tracks to Work tracks and back:**

- In the Tracks window Control area, click and hold on the track name of the destination track. You will see a pop-up listing all tracks currently in your session. Select the new track. When you let go of the mouse, the new track and all associated information will appear on that track.

---

## Fast Cueing and Auditioning

The Deck Tracks window offers a number of shortcut features you can use to audition specific selections and autocue a range for loop evaluation.

### **To audition any waveform range or region:**

1. Select the waveform range (Range mode) or region (Object mode) you wish to audition. You can select a range or regions on multiple tracks, if you wish.

2. Select Audition Selection from the Process menu's Audition submenu (Command-T, or Shift-spacebar).

Your selected range or region(s) will play back. On playback, all audio will be panned to the center, and automation will be ignored. Note that the Audition command will play back work track audio, if you have that audio selected.

### **To autocue a session range for loop evaluation:**

1. Select the waveform range or regions that constitute the portion of the session you wish to hear in loop playback. All tracks will play back when you begin the cue loop, regardless of which tracks are contained in the selection.
2. Press C. The current selection range is automatically transferred to the Transport window's begin and end times, and Loop mode is turned on. You are now ready to hear the loop.
3. Press the Play button in the Transport window (or the spacebar on your Macintosh keyboard) to hear the loop.

The loop will play back repeatedly until you click the Stop button in the Transport window or hit the spacebar on your Macintosh keyboard. To turn off the loop, click the Loop button in Transport window (or press Option-C).



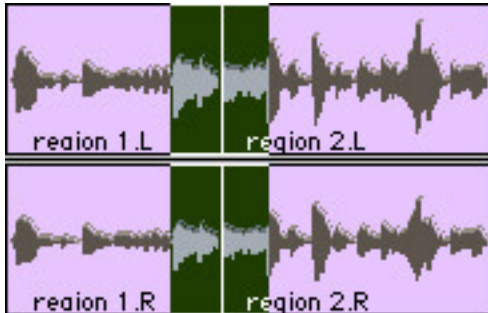
Loop button

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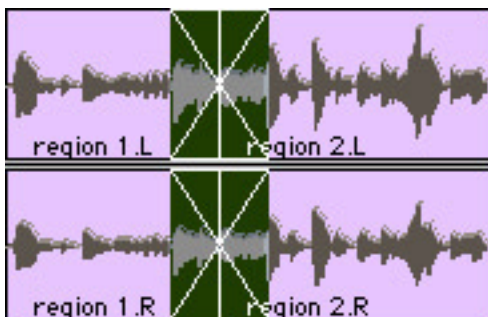
## Constructive Fades and Crossfades

The Deck Tracks window offers all of the standard constructive fade and crossfade functions you would expect in an audio workstation. Unlike automation envelopes (which physically control the volume or pan faders), fades and crossfades create new audio data, and place that audio data on top of the selected range, without deleting the original audio data. Crossfades in particular are extremely important sound design tools,

because they let you overlap two audio regions on the same track, and edit the transition between the two regions so that the first one fades out as the second one fades in. Normally, this would require two tracks, but Deck makes it possible to accomplish this on a single track. This is the kind of range selection you might make to generate a crossfade between two regions:



If you executed a crossfade in this selection, you would get the following results. Region 1 will begin fading out at the beginning of the selected range, and will be fully faded by the end of the selected range. Region 2 will begin fading in at the beginning of the selected range, and will be at full volume by the end of the selected range. The result of this crossfade would look like this:



Fades and crossfades are usually based on the current selection, but Deck offers a number of different fade in and fade out shapes, which also have a great effect on the outcome of any fade or crossfade.

Crossfades are based on audio data that is after the end of region 1 and other data that is before the beginning of region 2 in the source sound files. If you attempt to create a crossfade using regions which reference sound files that contain no data after the end of region 1 or before the beginning of region 2, Deck will warn you that there is no data. You will still be allowed to create the crossfade, but Deck will use silence as the surrogate data.

### Fade out shapes



This curve keeps Region 1 at full volume throughout the crossfade and then immediately fades it out at the very end of the selection.



This curve fades out Region 1 relatively slowly, keeping the amplitude fairly high. Towards the end of the crossfade, the amplitude drops off sharply.



This curve fades out Region 1 slightly faster, with the amplitude slightly lower than the previous envelope.



This envelope fades out Region 1 with a linear fade curve. It creates a smooth, even fade out. It is the default curve.



This curve fades out the amplitude of Region 1 relatively quickly at the beginning of the crossfade.



This curve drops the amplitude of Region 1 even more quickly at the beginning of the crossfade.



This envelope silences Region 1 at the beginning of the crossfade.

### Fade in shapes



This curve brings up Region 2 at full volume immediately at the very beginning of the crossfade and keeps it there throughout the crossfade.



This curve fades in Region 2 quickly in the beginning, reaching full amplitude fairly early in the crossfade.



This curve fades in Region 2 at a moderately fast rate with slightly lower overall amplitude.



This curve fades in Region 2 with a linear fade curve. It is slightly slower, with an even amplitude throughout the crossfade. This is the default envelope.



This curve fades in Region 2 slowly at the beginning of the crossfade.



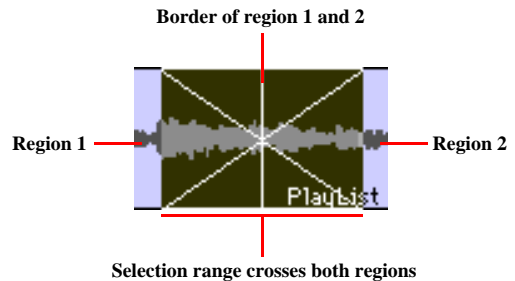
This curve fades in Region 2 even more slowly than the previous curve.



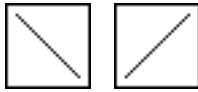
This curve silences Region 2 until the end of the crossfade.

### Possible envelope combinations

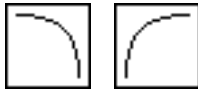
Here are some combinations of Fade Out and Fade In envelopes that you may wish to try.



**Linear Crossfade**—A good general purpose crossfade with a smooth, even transition between Region 1 and Region 2. If volume drops across the center of the crossfade, try the equal power crossfade.



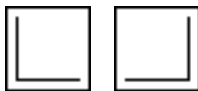
**Equal Power Crossfade**—A good general purpose crossfade, useful in cases where a linear crossfade seems to create an overall drop in volume across the splice point.



**Overlap Fade**—This combination of curves keeps both regions at full amplitude throughout the crossfade: Region 2 jumps in at the beginning and Region 1 jumps out at the end.



**Silence**—Choosing these two curves will create silence for the duration of the crossfade. This combination is not particularly useful for most applications.



**To fade or crossfade the current selection:**

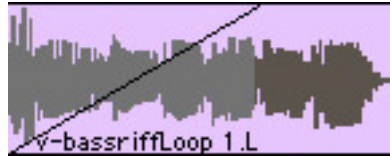
1. Open the Tracks window (Command-3), make sure you're currently in Range mode (~ key), then click and drag with the mouse to select the waveform range you wish to fade or crossfade.

This range must cross at least one region boundary. If it crosses only the beginning of a region, a fade in is generated. If it crosses only the end of a region, a fade out is generated. If it

crosses the border between two touching regions, a crossfade is generated.

2. Select Fade Selection from the Process menu.

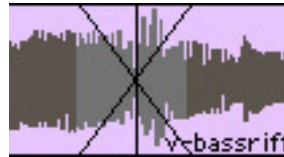
Remember, fade in always begins at the beginning of the selected region and fade out always ends at the end of the region. This is true no matter how far from the beginning or end you select.



Fade in



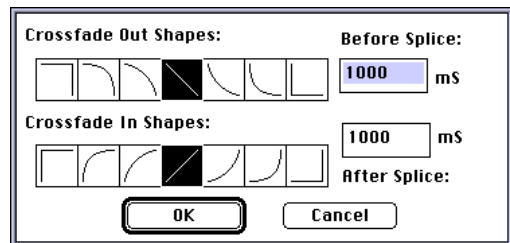
Fade out



Cross fade

**To set the default fade/crossfade:**

1. Select Set Default Fade from the Process menu.



The default fade is the basic fade in and fade out shapes (along with default durations) that are used when you choose the Fade Selection command or the

Default Fade command. The Fade Selection command always uses the default fade curves, but creates the fade or crossfade according to the current waveform selection. The Default Fade command always executes the fade or crossfade using the default fade shapes and the default fade durations. This is a very useful command when you want to create tiny smoothing fades or crossfades, but you don't want to zoom all the way in to select a tiny range. The Default Fade command lets you make large waveform selections that are capable of creating very subtle fades. Whenever you want to create a fade or crossfade that doesn't use the default fade shapes, use the Custom Fade command. This command works just like the Fade Selection command, except it always prompts you to choose your fade shapes before it creates the fade.

2. Set your fade in and fade out shapes, and enter time durations that will be used by the Default Fade command.
3. Click the OK button.

You have now set your default fade information.



*Remember, Deck allows you to execute fades and crossfades on any number of regions at one time. When you select multiple regions and choose the Default Fade command, all selected regions are faded or crossfaded using the default fade shapes and durations. When you select multiple regions and choose the Fade Selection command, all selected regions are faded or crossfaded using the default fade shapes and their whole duration as the fade durations.*

**To execute the default fade/crossfade:**

1. Make sure you have set your default fade information as described above.
2. Open the Tracks window and select the waveform range you wish to fade or crossfade (Range mode), or any region or regions (Object mode) you wish to fade or crossfade.

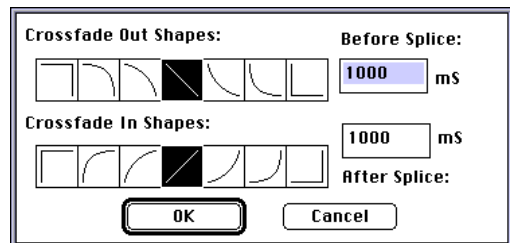
3. Select Default Fade (Command-H) from the Process menu.

If you have a great number of regions selected, this process may take a while. After a few moments, the Deck Tracks window will reappear and all of your fades and crossfades will be in place.

If you are editing music, dialog, or effects, you can use the Default Fade command as an auto pop-filter for correcting the clicks and pops you may have across region boundaries. To do this, set the default fade shapes to equal power and the default fade durations to a short period (60ms, for example). Then select all regions and choose the Default Fade command. All regions will be faded in, faded out and/or crossfaded, guaranteeing that no region transitions will be abrupt. For more information about fade combinations, see "Possible envelope combinations" on page 42.

**To create a custom fade or crossfade:**

1. Open the Tracks window and select the waveform range you wish to fade or crossfade. This range must cross at least one region boundary. If it crosses only over the beginning of a region, a fade in is generated. If it crosses only over the end of a region, a fade out is generated. If it crosses the border between two touching regions, a crossfade is generated.
2. Select Custom Fade (Command-G) from the Process menu.



3. Choose your fade out shape and fade in shape
4. Click the OK button.

After a few moments, your crossfade will be complete and you will see it in the Tracks window. Remember, if there is no audio data in the source file after the end of Region 1 or before the beginning of region 2, Deck will warn you that no data is available. However, Deck will allow you to execute the fade anyway, using silence as the missing crossfade source data.

If you have selected a waveform range that only covers a region beginning or a region end, you will see only one set of fade shapes, rather than two, because you are executing a fade, not a crossfade.

**To delete crossfades:**

1. Open the Tracks window and select a waveform range that touches any crossfade or regions that contain any crossfades.
2. Choose Delete Fade from the Process menu.

All fades in any regions touched by the current selection will be deleted. Note that fades and crossfades are small audio files that are generated automatically by Deck and placed in the current session's Crossfades Folder. When you delete fades, they will be deleted from your hard disk. However, the crossfades are not physically deleted until you save the current session. When you do so, the disk space occupied by the deleted fades will become available.

When you move regions that are connected by a crossfade, that crossfade will be deleted automatically. Any crossfade is related specifically to the two regions it bridges. The crossfade loses all meaning when the regions are separated.

Fades and crossfades are generated by Deck from the original source sound files. Deck always keeps track of the source sound files, and can recreate the crossfades automatically if you delete any of them from your drive. If you ever want to free up disk space consumed by a session's Crossfades Folder, you can simply throw that folder away. The crossfades will be rebuilt automatically when you next open the session.

**Compacting audio that contains crossfades**

When you are dealing with crossfades, you must pay special attention if you plan to use Compact Session or Compact Audio File later on. Both of these processes offer an adjustment called Handle Size, which allows you to choose how much source audio before each region's start and after each region's end will be retained when the source sound files are compacted (that is, when unused portions of sound files are deleted). It is possible to compact a session or sound file with smaller handles than you would need to recreate session crossfades. Remember, crossfades are built from the sound data before the beginning and after the end of the regions. If you delete crossfades or perform edits that delete crossfades after you have compacted with a small handle size, there may not be enough data to recreate the deleted crossfades.

---

**Using Compact Session and Compact Audio Files**

Compaction is a destructive process, so make sure you understand what you're doing before you use it. It is particularly important that you understand the Always Save Regions when Session is Saved and Rewrite Regions preferences in the Deck General Preferences dialog. These preferences have strong effects on the compaction process. Make sure to read about those preferences before you compact audio files or sessions.

**Compact Session**

The Compact Session function can be very useful. Because Deck is a non-destructive recorder, audio data is not deleted when new audio is recorded. This means that no recording or editing process actually changes, damages or deletes the original source files, so you can always go back to previous takes and versions. The only negative side effect of this characteristic is that unused takes and throwaway regions stay on your hard disk, even after you stop using them. If, for example, you record three voice-

over takes and decide to keep the second take, takes 1 and 3 remain on your drive even after you remove them from the session. To permanently delete all unused audio associated with the current session, you will use the Compact Session process. To permanently delete all unused audio from a single audio file, you will use Compact Audio File.

Compact Session automatically compacts all of the audio files in the session's Audio Files folder which are used in the current session. This is the command you will always use to get rid of unused audio data (junk takes, deleted words or unused solos, for example) in all sound files associated with the session.

Files are compacted in the following way: Deck looks at the list of audio regions and loops in each audio file. It then looks through the audio data in each file, and finds all audio data that is not used in any region. After the unused audio has been found, it is permanently deleted from the drive, and all region definitions are updated.

Compact Session only compacts audio files located in the current session's Audio Files folder. It will not compact audio files located elsewhere on the drive, or on other drives. This safety feature has been built into Deck to prevent the accidental compaction of sound files in a central sound effects library, or of sound files used in multiple sessions. Make sure you always keep sound library files and shared sound files in a folders outside the current session's Audio Files folder.

**To compact a session:**

1. Make sure you have deleted all unwanted audio regions from the Tracks window—Play Tracks and Work Tracks.
2. Choose File > Preferences > General and turn on the “Always save regions when session is saved” and “Rewrite region list” options.
3. Open the Library window (Command-6).
4. Choose Session > Library Operations > Update from Session.

5. Save your session (Command-S).
6. Choose Session > Compact Session, set a Handle Size.
7. Click OK.

The Handle Size setting allows you to keep a little bit of extra audio data before every region start and after every region end, which will be useful in the future if you plan to crossfade the regions. You will probably want to set your handle size to at least two seconds for this purpose.

When your session contains crossfades, you must pay special attention to Handle Size settings. It is possible to compact a session or sound file with smaller handles than you would need to recreate your session's crossfades. (Remember, crossfades are built from the sound data before the beginning and after the end of the regions.) Compacting with too small a handle size will not alter your current crossfades. However, if you delete crossfades or perform edits that delete crossfades after you have compacted with a small handle size, there may not be enough data to recreate the deleted crossfades.

**Compact Audio File**

When you select Compact Audio File, Deck looks through the audio data in the file, and finds all audio data in that file that is not used in any region in the current session. After the unused audio has been found, it is permanently deleted from the drive, and all region definitions are updated. The Handle Size setting allows you to keep a little bit of extra audio data before every region start and after every region end, which will be useful if you plan to crossfade the regions. You will probably want to set handle size to at least 2 seconds for this purpose.

**To compact audio files:**

1. Choose File > Preferences > General.
2. Turn on “Always save regions when session is saved” and “Rewrite region list.”
3. Open the Library window (Command-6) and



choose Session > Library Operations > Update from Session.

4. Select File > Compact Audio File.
5. To compact an audio file, just select that file, enter a handle size and click the Compact button.

This process is permanent, so be sure you want to alter the selected audio file before you proceed. You may wish to make a copy of the file if you think you might want to use it in its original form later on.

Compact Audio File affects only the audio file you select, unlike Compact Session, which affects all of the audio in your session's audio files folder.

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## Spotting Audio Regions to Timecode

One of the most common tasks in the audio post-production process is the placement (or spotting) of sound to a particular SMPTE frame. Deck allows you to do this in a very simple way using the normal editing tools.

### ***To spot an audio region to a specific SMPTE frame:***

1. Open the Tracks window and set the units of the window to SMPTE using the Axis Units pop-up.
2. Click the Object Mode button (or ~ key) to switch to Object mode.
3. Add the audio region you wish to spot using the process described in "Adding Audio Files and Regions to a Session" on page 22.
4. Click and hold on the audio region you wish to spot.
5. Drag the region to the frame you desire.

As you drag the region, the number indicator boxes near the upper right of the Tracks window are updated to show the start time, end time, current time, and duration of the selected range. The current time is the time that is directly under the cursor.

The current time indicator is particularly useful when you want to spot a sound to an internal sync point (a point other than the start or end of the region). If, for example, you had the sound of a car roaring by, with a skid sound half way through, you could place the mouse at the skid sound and spot that sound to the desired frame.

You do not have to drag the region to place it. You can also Copy or Cut the region, click to place the insertion point at the correct frame, and then choose the Paste At or Paste After command.

If you know the exact time to which you wish to spot a region, double-click the region, which brings up the Region Info dialog. You can change the region's start time by typing in the new time or capturing one. You can also change the region's name by typing in a new name.

For more information about synchronization and spotting with Deck, see "Synchronization" on page 93.

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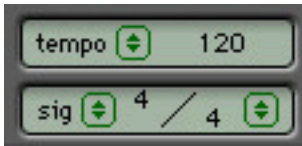
## Using the Tempo and Time Signature settings

The Deck Tracks window offers some simple tools that make it possible to edit audio according to traditional bar and beat settings. This is an absolute necessity when you are recording or arranging music to match a MIDI tempo, click track, or MIDI sequencer track. When you run Deck with the Metro sequencer, the tempo settings take on particular importance, because they allow you to match bar and beat edits between the two programs. For more information about using Deck with Metro, see "Using Deck with the Metro Sequencer" on page 90.

### ***To set and use Deck's tempo and time signature information:***

1. Open the Tracks window and set the units of the window to Beat using the Axis Units pop-up.

2. Drag on the Tempo selector to set a new tempo.



*Tempo selector*

3. You can also hold down the Command key and click the selector to enter the new tempo or time signature as text. Then press the Return key on your Macintosh keyboard to apply the change.
4. Drag on the time signature numerator selector to set the number of beats to a measure.
5. Drag on the time signature denominator selector to set the value of the note that should be considered one beat.

For example, setting this to 4 means that a quarter note is considered to be one beat.

These values are very useful for song-oriented arrangement. When you set these values, you are determining the units that will be used by the beat mode axis markers, and the associated grid settings. Note that the tempo and time signature values only effect the way that Deck's Tracks window Time Axis, Grid, and numeric indicators functions (and, of course, the Transport window's counter). The tempo and time signature values do not alter the placement of any audio regions unless you have configured Deck as described in the following Important message.



*If you are using the Metro sequencer, you will find that any tempo and time signature changes you make in Metro will automatically be made in Deck. Also, any current selection range in Metro's Note Editor or Tracks window will automatically be selected when you switch to Deck. Note, however, that changes made to tempo and time signature in Deck are not passed to Metro when you switch (Metro is designated as the tempo master), so you should change your tempo and time signature*

*information in Metro if you are running both programs. Remember, Deck supports tempo maps, so Metro tempo maps will always be reflected on the Deck Tracks window axis markers (when you are in Beat mode).*

If you are working in Beat mode, there is a circumstance in which you may wish to have audio regions stick to their bar and beat placement when tempo is changed. If you are using Deck as a virtual drum machine (playing individual drum sounds back as regions), you will often want to make sure that any tempo changes will adjust audio region placement to make sure that the regions still start at their original bar and beat locations. In this situation, changing tempo will alter where bar and beat boundaries occur in relation to real-time, and bar/beat start times are considered to be relative times rather than absolute times. Deck offers a special preference for this type of editing. If you wish the regions to stick to their bar and beat locations whenever tempo is changed (in Beat mode), then see the "Change region start times with BPM change" preference (under General preferences in the File menu's Preferences submenu). When this option is turned on, tempo changes in Beat mode will adjust the placement of audio regions so that they retain their bar and beat locations. For more information, see Chapter 7, "MIDI and Synchronization."

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## Using an External Editor

Deck allows you to assign an external audio editing program, such as BIAS Peak, which can be launched from within Deck and used to process audio files.

Deck is designed to allow you to run an external editor and Deck at the same time, and Deck's Launch Editor command automatically switches you into the other program.

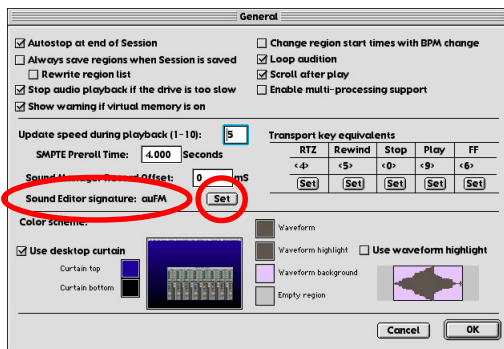
Editing audio in programs that recognize audio regions is different than editing in programs that do

not recognize regions. Both methods are discussed in the following section.

To use an external editor with Deck, you will have to have sufficient RAM to run both programs. Use the Finder's Get Info command to find out how much RAM your audio editing programs requires.

#### **To set an external sound editor:**

1. Choose File > Preferences > General.
2. Click Set to the right of Sound Editor signature.
3. Locate and select your editing program.
4. Click Open.



Set Sound Editor signature in the General preferences dialog

#### **To edit Deck audio files using an external editor:**

1. Make sure you have selected your sound editor using the process described above.
2. Make sure the Tracks window is in Object mode and select the region or file that you wish to edit.
3. Choose Process > Launch Editor (Command-E).

You will immediately be launched into your external editor, and the entire audio file that contains the selected region will be opened in that program. You can now perform any edit you desire, and when you save the change and switch back to Deck, the changed sound file will play back.

Edit your audio with care if you plan to play it from Deck again. If you destructively delete a waveform range or change the length of the file, you will change the overall timing of the Deck track(s), and your Tracks window arrangement may be permanently altered. It is a good idea to work with a copy of the sound file if you can.

#### **Using BIAS Peak as Deck's External Editor**

Editing audio regions using Peak as external editor is a bit different than using any other editor, since Peak recognizes the concept of audio regions.

#### **To edit a Deck audio region in Peak:**

1. Make sure you have selected Peak as your sound editor using the process described in the previous section.
2. In the Tracks window, switch to Object mode.
3. Select the audio region you wish to edit.
4. Choose Process > Launch Editor (Command-E).

You will immediately be launched into Peak, and the selected region will be opened in that program. The region will be highlighted. You can now perform any edit you desire, and when you save the change and switch back to Deck, the changed sound file will play back.

Only changes made to the waveform and saved will be reflected in Deck.

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## **Conclusion**

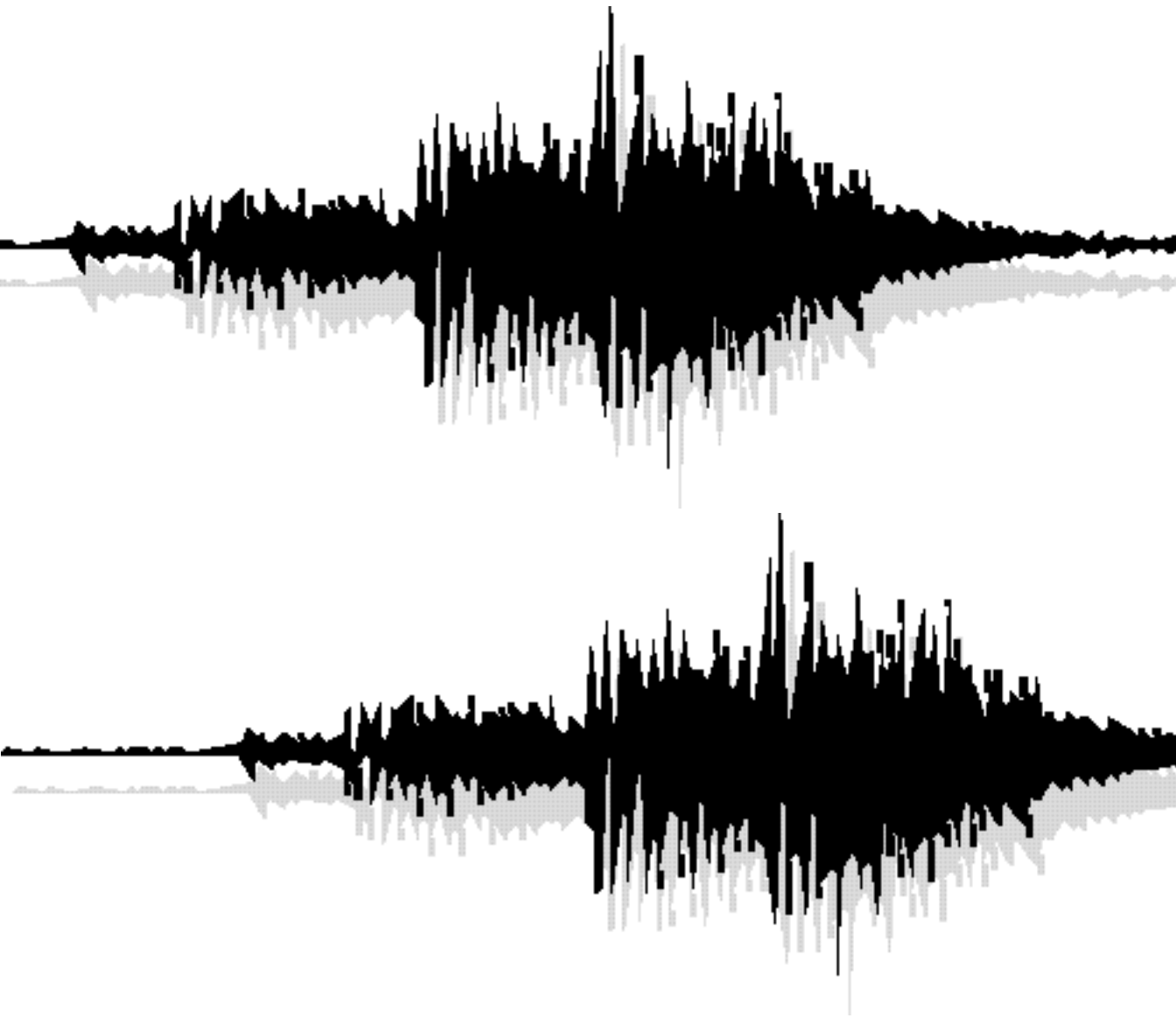
You have learned how to edit and manage audio regions in Deck, proceed to the next chapter to learn about Deck's Built-in destructive and real-time effects as well how to use Premiere format and VST plug-ins with Deck.

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## Chapter 5

# Effects





# Chapter 5:

## Effects

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The effects available in Deck fall into three basic categories: Destructive effects that actually rewrite audio files; non-destructive real-time, in-line effects that act in much the same way as standard external effects boxes or the EQ controls on an external mixer, affecting the signal in real-time during playback or mixdown, leaving the source audio file intact; and Plug-Ins.

Deck plug-in effects use both the Adobe Premiere plug-in architecture and Steinberg VST plug-ins, and are designed by third-party developers such as Arboretum Systems and Waves. These are separate optional software packages that may be purchased from these developers.

You may also choose to use other stand-alone sound editing programs—such as Peak—to destructively edit Deck audio files. Virtually any digital audio editing program that works with Deck-supported audio formats can be assigned as an external editor in Deck, and can be launched from within Deck with a single command.

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### Deck's destructive effects

There are certain cases where you might want to change the actual audio data in a destructive, or permanent, manner. Suppose you have recorded a perfect solo, but the overall level is slightly low (or the waveform seems short). You would definitely want to increase the level of that track to its maximum. All the destructive effects are on the Process > Destructive menu.

**Normalize**—looks at an audio region (or group of regions) and automatically adjusts amplitude (volume) to the maximum allowable level. This allows you to bring up low-level signals to a reasonable level, which uses all of the amplitude resolution available on your system.

**Group Normalize**—functions in the same manner as Normalize, except that it finds the peak over a group of regions and adjusts each region the same amount.



*Waveform before Normalizing*



*Waveform after Normalizing*

**Reverse**—takes the selected audio region (or group of regions) and turns them around so they are backwards. This is quite useful for specialty effects and preprocessing effects such as pre-echo.

**Invert**—flips the audio region (or group of regions) upside-down. This does not alter the sound of the region(s), but can be very useful for matching waveforms for looping and general sound design tasks.

**Duplicate**—physically duplicates the range or

region(s) you have selected and copy the new audio file(s) to that session's Audio Files folder. This is useful if you have copied an audio region several times in your Deck session, but want to have only one instance of that audio file affected by an edit, for example. Deck will make a separate physical copy of that region in the Audio Files folder, and changes made to it will not affect other copies of that region.

**To normalize, reverse, invert or duplicate a region or group of regions:**

1. In the Tracks window, select the range or region(s) you wish to process.
2. Choose the desired effect from the Process > Destructive Effects submenu.
3. Whenever you perform a destructive effect, Deck will ask you if the process should be executed on a copy. Signal processing permanently changes audio data, and it can't be undone, so it is always a good idea to select Make a Copy when using destructive effects.
4. Click OK or Make a Copy to continue.

If you chose Make a Copy, the copy has been placed in the position of the original audio region, but the original region has not been altered.

## Real-time effects

Deck offers built-in real-time, in-line non-destructive effects that are available during playback. The real-time effects in Deck are: Parametric EQ (single and 4-band), Delay, Chorus, Hi Shelf EQ, Lo Shelf EQ, Gain, and Graphic EQ.

These effects are available at each play track's Mixer module, and can be configured in the Effect window. You may assign up to four real-time effects to each play track. The quantity of each kind of effect you will have available in the Mixer window and the configuration of the Effect window can be altered in the

Preferences menu's Effects submenu.

These effects are simple to use, and have an intuitive graphic interface that is similar to that of any multi-effects box. In fact, these effects are easier to use than many hardware multiprocessors, as all the controls for all of the effects you have chosen are available to you in a single window.

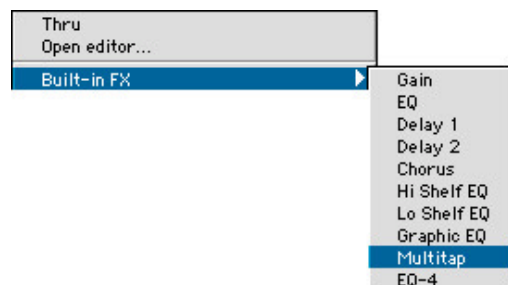
## Assigning effects to play tracks

In Deck, create a new session, or open an existing session. Open the Mixer window from the Windows menu (Command-2). You will notice four boxes labeled Thru at the top of each track's mixer module.



*Effect Selector pop-ups at top of each mixer module*

These are the Effect Selector pop-ups. When you click and hold on Thru in one of the Effect Selector boxes, a pop-up menu will appear containing the names of all the Built-in and VST effects available to you. Keep holding down the mouse button, and scroll through the list to select an effect to add to that track. (Note that you can add up to four effects to each play track by using each of the track's selector boxes.) Choose one of Deck's Built-In effects for the Effect Selector pop-up menu > Built-in FX submenu.



*Built-in FX submenu in the Effect Selector pop-up menu*



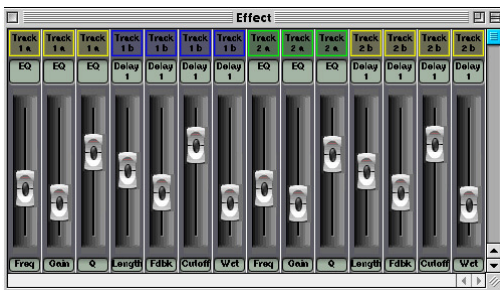
Once you have added effects to your play tracks, you will see the names of the effects you've selected in these selector boxes.



Effects selected, the Delay 1 effect is bypassed

You will now hear the effects when you play back your session. To temporarily bypass an effect, click the Bypass Button to the left of that effect's selector box, and click again to turn the effect back on—the Bypass Button will be highlighted with the effect is on. This allows you to turn the effect on for only part of a track, or to hear the track with and without the effect while keeping the changes you've made to that effect's settings.

To remove an effect and all of its settings from a track, click that effect's selector box and scroll up to Thru. This removes the effect and all of its settings from that track, but you can always add it, or a different effect, at any time, and re-configure it in the Effect window. Now open up the Effect window from the Windows menu (Command-7). You will see slider controls corresponding to each of the effects that you have selected for your session in the Effect window. The following example shows the Effect window with multiple effects.



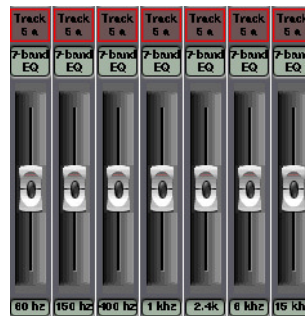
Effect window

Each effect has a different set of parameters that you can change to tailor each effect to your needs. Even if you have chosen one kind of effect for multiple play tracks, the settings of each track's effect can be altered independently of the others. You literally can have up to four independent effects per play track. Note however that the actual number of possible simultaneous effects is determined by your computer's clock speed. You can monitor your system in the CPU Meter window and avoid exceeding your system's capabilities.

You will know you have applied too many real-time effects in a session when Deck starts to behave erratically. When this occurs, it is a good idea to reduce the number of real-time effects applied. The Graphic EQ is the most processor intensive real-time effect.

### Adjusting Effect parameters

Each effect has a different set of parameters that can be adjusted using the sliders in the Effect window. For example, the Graphic EQ sliders work like a real graphic EQ. You can boost or cut each frequency by moving the sliders.

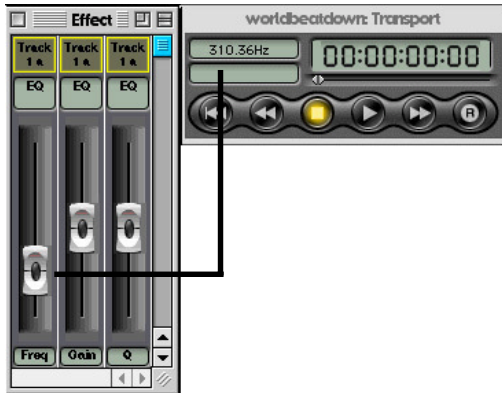


Graphic EQ Effect sliders in Deck

Many of the effects work in tandem with the Transport window. For example, as you move the Frequency slider in the EQ window, the value represented by that slider will be shown in the Control Value Indicator box (upper left) of the Transport window, and will track as you change values by moving the slider. This can be

very useful for isolating a particular frequency with the EQ, or for finding a specific delay speed for the Delay or Chorus effects.

The following diagram shows the Transport window tracking an EQ Frequency slider.



Notice that the mouse cursor is on the frequency slider, and the value of that slider is shown in Hz in the Transport window's Control Value Indicator box. Using the Transport window to track each slider can help you set the various parameters of each effect. You may want to test each effect individually on the same track to get acquainted with them.

Remember that these effects are non-destructive, and will not affect audio files, ranges or regions. They are available on playback, and during mix to disk operations, and you can turn them on and off and change the settings at any time, even on the fly during playback.

### About Deck's Built-in Effects

Here is a brief description of all of Deck's real-time effects, and the different parameters you can adjust for each of them in the Effect window.

#### EQ (single and 4-band), Hi EQ, Lo EQ, Graphic

**EQ (7-band)**—Can be thought of as a very flexible version of the Treble and Bass controls on your home stereo. EQ allows you to isolate and

boost, or cut, certain frequencies (that is, turn them up or down). You might use this to add mid-range punch to a bass track, or to remove sibilance from a vocal.

Deck's EQs (single and 4-band) allow you to select the frequency affected, the gain (the amount of cut or boost) and Q, or resonance, for each EQ selected. The Hi and Lo EQ, are shelf EQ's that allow you to select the frequency and gain of the shelf, or threshold. The Graphic EQs operate as 7-band graphic equalizers, with a slider to boost or cut each of the 7 frequency bands. Both the Graphic EQ and the 4-band EQ are processor intensive.

**Delay**—Adds a delayed copy of the audio at specified intervals, creating an echo effect. A short delay, or slapback, sounds good on rock vocals and rockabilly guitar, and sounds almost like reverb. A long delay yields long, spacey echo effects.

The Delay effects in Deck offer you control over the delay time (length of delay), amount of feedback, cutoff frequency and "wet," or percent of effect, compared to "dry," or unaffected, signal.

**Gain**—A one-control-slider effect, which gives you a +18/-18 dB gain stage. Try using it pre- or post-EQ. This is essentially a preamp, or attenuator, which either increases or decreases the amplitude (volume) of your playback track.

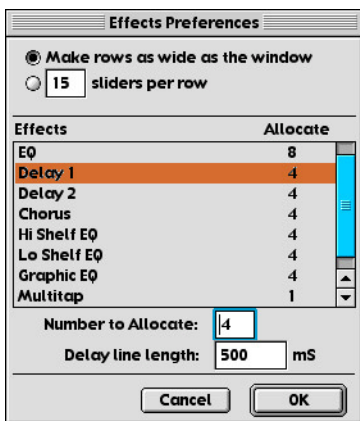
**Chorus**—Is really a short delay with modulation. The delayed sound is mixed with the unaffected audio to create a thicker sound, and with extreme settings, a woozy sound. Chorus adds a lot of body and richness to vocals and guitar, and at extreme settings makes an excellent special effect.

The Deck Chorus effects allow you to choose amount of delay, speed, depth of modulation and "wet," or percent of effect, compared to "dry," or unaffected, signal.

**Multitap**—Designed to use multiple delays to simulate reverb-like effects. Multitap is processor-intensive.

## Setting effects preferences

You may want to change the way the Effect window is configured, or change the quantity of each kind of effect available. You can change these settings by using the Effects Preferences menu.



Effects Preferences dialog

You can use this dialog to specify how you want the Effect windows sliders to be arranged, and to select the number of each kind of effect you want to have available to you in the Mixer window's Effect Selector boxes. You can also select the maximum length of delay in the delay effects by entering the value, in milliseconds, into the Delay Line Length field.

## Premiere Plug-ins

Premiere format plug-in audio effects for Deck are currently available from third-party developers including Arboretum Systems and Waves. You don't need any extra hardware to use Premiere plug-ins—any Macintosh that is supported by Deck should also run the plug-ins. Although features and interfaces will vary quite a bit depending on which plug-ins you add, you can expect to greatly enhance your audio processing capabilities by using Premiere plug-ins.

You don't need Adobe Premiere to use Premiere-compatible effects plug-ins with Deck. We have simply adopted the architecture that Adobe defined for Premiere audio plug-ins, as it represents a simple and open alternative to controlled standards such as the sound designer or TDM plug-in architectures.



*The Plug-ins that come with Adobe Premiere itself cannot be used in programs other than Premiere.*

Premiere format plug-ins are separate software packages that can be purchased, copied to your hard drive, and placed in the Deck Plug-Ins folder. Your plug-in effects will be listed in the External Effects submenu.

Although Premiere plug-in effects are destructive, meaning that they physically rewrite audio files to contain the processed audio data, they create a copy of your audio file, and work from that copy. Plug-in effects will also remove any crossfade information from the region, and may also remove automation data from the portion of the track that you have processed. It is a good idea to add crossfades and automation after processing audio with plug-in effects.

Note that you may have to leave extra RAM free in your system in order to use these effects. The more RAM you can leave free for your Premiere format plug-ins, the longer preview time you will have to audition the effect before you process the audio file.

Previewing (or auditioning) plug-in effects occurs through the Apple Sound Manager. If you are using an Apple Sound Manager compatible sound card, be sure that you have installed its Sound Manager drivers and that it is selected for Sound Out in the Apple Sound control panel.

### To apply a Premiere format plug-in:

1. Select the audio in the Tracks window, either in Range Mode or Object mode, that you want to process.

2. Choose the plug-in you want to process your audio with from the Process > External Effects submenu.
3. Adjust the settings of the plug-in and preview the plug-in before processing the selected audio.
4. Click the Process button in the plug-in to process the selected audio.

Deck will then process the selected audio with the plug-in and redraw the waveform.

## VST Plug-ins

Deck s supports VST 1.0 format plug-ins. VST is a standard audio plug-in technology developed by Steinberg Software und Hardware, GmbH. VST plug-ins offer an exciting array of real-time effects by companies like Steinberg, Cycling '74, Arboretum, Waves, and others.

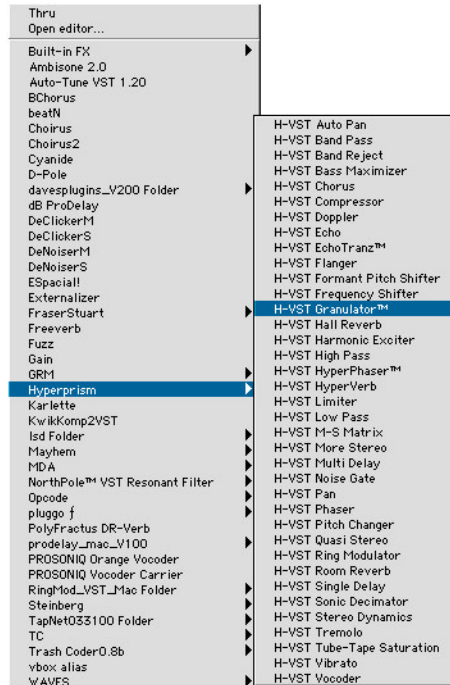
You can chain up to 4 VST plug-ins per channel in real-time using Deck, as long as you have a fast enough CPU in your Macintosh—VST plug-ins are real-time, host-based audio plug-ins that are dependent on the host processor (i.e., your Mac's CPU). Use the CPU Meter window to monitor system usage so as to not overtax the system when using VST Plug-Ins.

### Installing VST Plug-Ins

VST plug-ins are installed in the VstPlugIns folder in the Deck folder. VST Plug-ins are not installed in the Deck Plug-Ins folder, rather the Deck VSTPlugIns folder. To install a VST plug-in, consult the documentation that came with your VST plug-in.

### Organizing VST Plug-Ins

Deck allows you to organize your VST plug-ins in sub-directories. Create folders in the Deck VSTPlugIns folder and move VST plug-ins into these folders. Doing this will organize your VST Plug-ins into submenus in the Effects Selector pop-up menu in the Mixer window and the Master Outputs window.



Effects Selector pop-up with VST plug-ins and submenus

### Inserting VST Plug-Ins

**To insert a VST plug-in in the Mixer window:**

1. In the Mixer window, select a VST plug-in from the Effects Selector pop-up menu on the channel you want to apply the effect to.
2. Choose Open editor from the Effects Selector pop-up menu or Option-click the name of the VST plug-in to open its editor.
3. Press the space bar or the play button in the Transport window to hear the audio processed by the VST plug-in.
4. Adjust the settings of the VST plug-in.
5. You can hide the VST plug-in editor by clicking in the close box of the plug-in editor or choose File > Close (Command-W). The plug-in will remain

active until you remove it, by selecting Thru in the Effects Selector pop-up menu. To make the editor of an active VST plug-in reappear, simply choose Open editor from the Effects Selector pop-up menu or Option-click on the name of the VST plug-in in the Effects Selector box.



VST channel inserts in the Effects Selector boxes on a channel in the Mixer window



The Mixer window supports mono to mono, and stereo to stereo VST plug-ins. You can use mono to stereo VST plug-ins in the mixer window, but they are treated as stereo to stereo, so you should pan your signal hard left—panning to the right attenuates the signal towards  $-\infty$ .

**To insert a VST plug-in in the Master Outputs window:**

1. In the Master Outputs window, select a VST plug-in from the Effects Selector pop-up menu from either the left or right channel, or the stereo channel pair that you want to apply the effect to.
2. Choose Open editor from the Effects Selector pop-up menu or Option-click the name of the VST plug-in to open its editor.
3. Press the space bar or the play button in the Transport window to hear the audio processed by the VST plug-in.
4. Adjust the settings of the VST plug-in.
5. You can hide the VST plug-in editor by clicking in the close box of the plug-in editor or choose File > Close (Command-W). The plug-in will remain active until you remove it, by selecting Thru in the Effects Selector pop-up menu. To make the editor of an active VST plug-ins reappear, choose Open editor from the Effects Selector pop-up menu or

Option-click on the name of the VST plug-in in the Effects Selector box.



VST channel inserts in the Effects Selector boxes on stereo channels in the Master Outputs window



The Master Outputs window supports mono to mono and stereo to stereo VST plug-ins.

**Mono, Mono to Stereo, and Stereo VST inserts**

Mono to stereo VST plug-ins are not generally supported by deck. However, you can use them in a stereo location with the caveat that the plug-in is throwing away the right channel.

If you want to use a stereo insert on a pair of mono tracks, put your mono tracks on adjacent tracks, pan one hard left, pan the other hard right, then place the stereo effect on the Master Outputs for that pair.

If you select the wrong type of insert, Deck will warn you and give you the option of canceling your selection by clicking on the Oops button, or keeping it by clicking on the Ignore button.



**Mono to Mono plug-ins in a stereo insert** mute the right channel (you hear effect if panned hard left, silence if panned hard right).

**Mono to Stereo plug-ins in a stereo insert** mute the right channel (you hear effect if panned hard left, silence if panned hard right).

**Mono to Stereo plug-ins in a mono insert** throw away the right channel coming out of the plug-in.

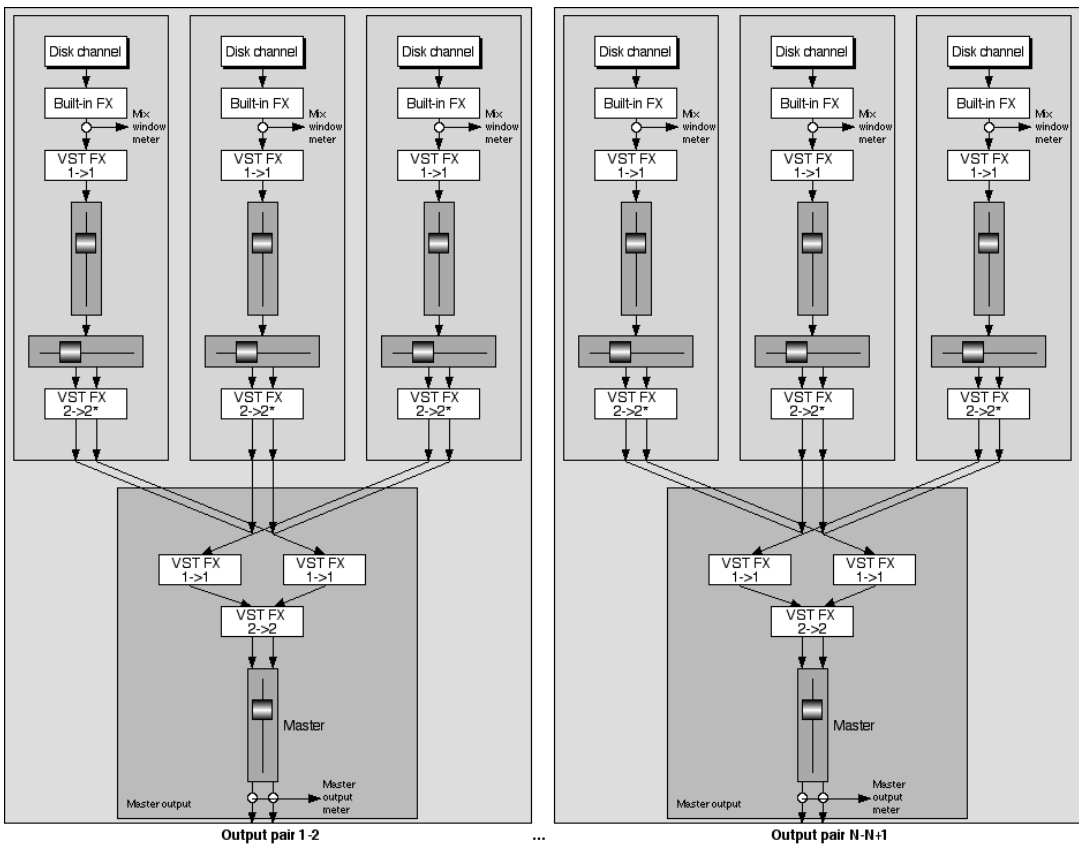
**Stereo to Stereo plug-ins in a mono insert** is generally not allowed. However, in the rare instance where it is, it throws away the right channel coming out of the plug-in.

**To remove a VST plug-in:**

- Choose Thru from the Effects Selector pop-up menu. The VST plug-in on that insert will no longer be active.

**Signal flow by channel**

In the Mixer window, built-in and mono-to-mono VST effects are run mono-to-mono at the top of the chain (pre-fader, pre-pan pot), and stereo-to-stereo VST effects are run after the built-in effects, after the fader and pan pot.



\* VST 1->2 (mono to stereo) effects are supported, however since they appear AFTER the channel pan, they only respond to signal on the left channel. To hear 1->2 VST effects, pan the channel hard left, panning to the right attenuates the signal down to -∞.

\*\* VST 1->2 (mono to stereo) effects are supported, however since they appear in a STEREO position, they only process signal on the left channel and disregard what was on the right channel.



*If you try to assign more VST plug-ins than your CPU can handle, audio may begin to playback erratically. Use the CPU Meters window to monitor the CPU usage when assigning VST plug-ins.*

### **Bouncing your VST plug-in assignments**

Once you have the right settings for your VST plug-ins, you may want to permanently apply the effects to the track(s) to which the VST effects are assigned. Simply solo the track(s) you want to process and Bounce to Mono or Bounce to Stereo Clipboard, and then Paste the clipboard to any available track(s). Active VST plug-ins will also be applied using the Mix to Disk function.

#### **To bounce VST plug-ins:**

1. Solo the track(s) with active VST plug-ins that you wish to bounce.
2. Choose Process > Bounce to Mono Clipboard or Process > Bounce to Stereo Clipboard.
3. Place the cursor on the track(s) in the Tracks window where you wish to place the processed audio.
4. Choose Edit > Paste (Command-V).
5. Change the VST plug-in(s) to Thru in the Effect Selector pop-up menu in the Mixer window for the original track(s).
6. Disable the solo button(s) in the Mixer window for the original track(s).
7. You may choose to mute the original track(s) or mix it with the processed track(s).
8. Press the spacebar or click the Play button in the Transport window to hear the mix.



*Deck LE does not support VST plug-ins.*

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## **Conclusion**

You have learned how to use Deck's built in destructive and real-time effects as well as how to use Premiere format and VST plug-ins in Deck. Proceed to the next chapter to learn about volume and pan automation, mixing, and mastering in Deck.

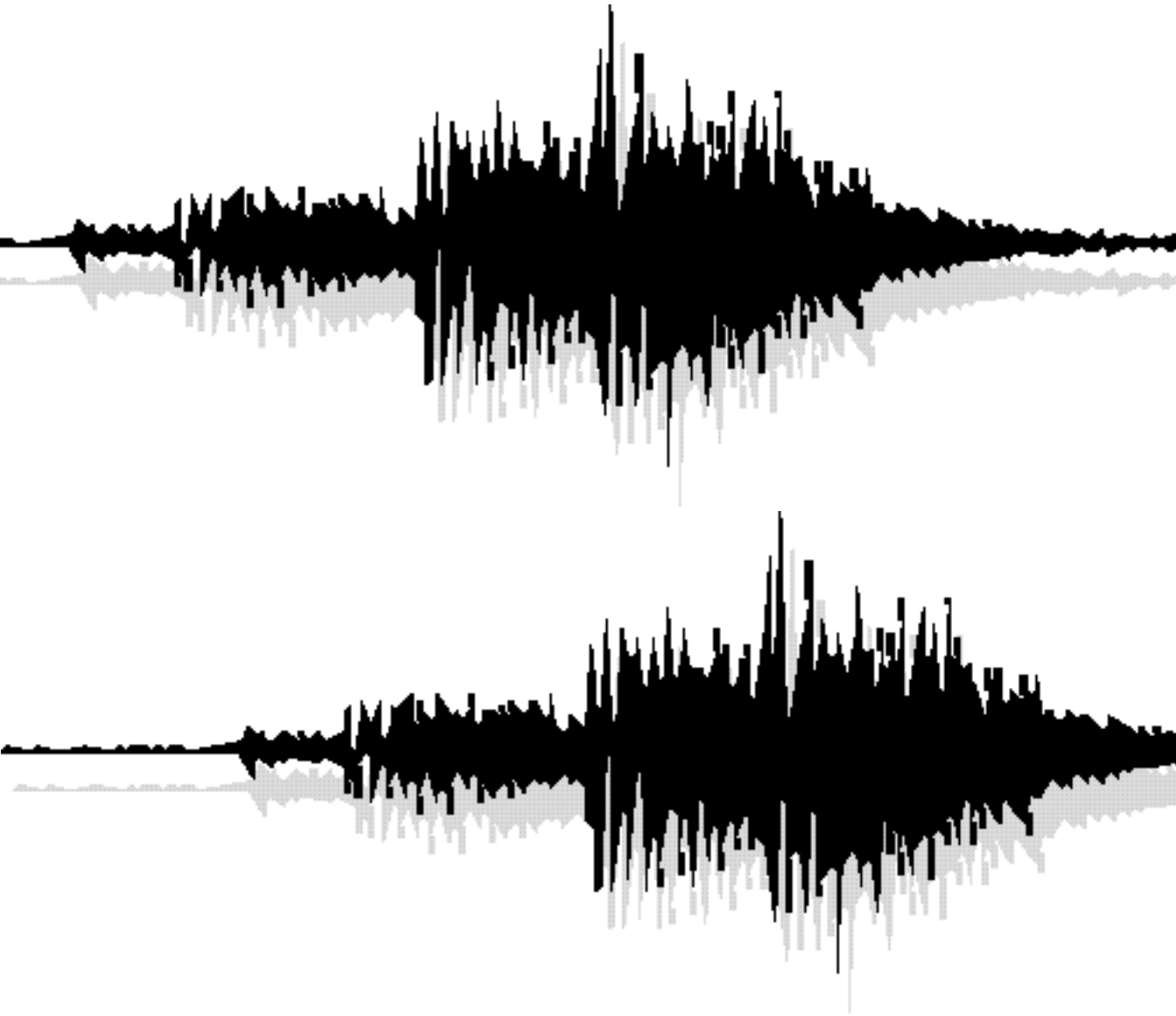
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# Chapter 6

## Automation, Mixing, and Mastering





# Chapter 6:

## Automation, Mixing, and Mastering

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Mixing and mastering are generally the final steps in any audio post-production process. They generate the finished product which you will publish or deliver to clients. This chapter covers mixer-based automation, mixing, and mastering.

When you have finished this chapter, you will have all of the knowledge necessary to take a Deck audio project from start to finish and produce a finished digital audio master.

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### Mixer-based Automation

The process of mixing down a multitrack recording to a stereo master is always complicated by the level and stereo pan changes that must occur during the mixdown process. Smooth fades in and out, instantaneous pan changes that are modulated to a specific rhythm, usually require quite a bit of physical coordination and they are difficult to repeat. This is why high-end mixing boards offer automated mixdown capabilities.

Deck allows you to create and record mixer automation so you can fully automate your mixdown process. Perhaps the simplest way to automate a mixdown is to create and edit visual volume and pan envelopes in the Deck Tracks window.

Deck also offers more traditional real-time mixer automation that is based on the idea of performing a mix and recording the motion of the faders during the performance. This mixer-based automation also creates automation envelopes that can be edited

visually in the Tracks window. To accomplish mixer-based automation, Deck uses the concepts of real-time fader motion recording, mixer states, and transition time. Real-time fader motion recording records the actual movement of Deck's mixer faders, and is a simple, intuitive way to create automation.

Mixer State Automation is scene-by-scene oriented. A mixer state is like a picture of the current position of every fader on the mixer. Each state is stored on Deck's Mixer State pop-up in the Transport window, and each can be recalled at any time. A fixed transition time can be set, and that time is always used to fade smoothly between each mixer state.

Although real-time recording of fader motion and mixer states may seem a bit cumbersome at first, you will find that it often allows simple, one-step recording mixdown automation.

#### *To record real-time fader motion:*

1. Open the session that you wish to automate and open the Mixer window by selecting Windows > Mixer (Command-2).
2. Decide which track volume and pan faders you wish to automate.
3. Use the Automation pop-up on these tracks to select which automation you wish to record. You can choose Record Volume, Record Pan, or Record All. You can choose your controls by track (for example volume on track 1 and pan on track 2), or you can use the Options menu's Automation submenu to record all volumes and pans by choosing Record All.



Automation pop-up menu



Although it is possible to record automation using the mouse as a controller, you may find this cumbersome, as the mouse can only move one control at a time. For the best possible results, use an external MIDI controller (e.g., a Peavey PC-1600 or Tascam US-428) to control the mixer faders that will be recorded. See “MIDI Setup” on page 87 and “MIDI Key Maps” on page 88.

4. Click the Transport’s Record button, then click the Play button (or press Spacebar) to begin recording automation.
5. Perform your mix as desired. All motion of record-enabled faders will be recorded.
6. Click the Transport’s Return-to-zero button (Return), and click the Play button (Spacebar) to see and hear your new automation.

Deck’s recording functions work the same way with automation as they do with audio. For example, you can use punch-in mode to replace a segment of automation just as you would replace a segment of audio.

You can erase the automation on any track by using the erase commands located on the track’s Automation pop-up. You can also use this pop-up to mute the automation on any track by setting the pop-up to Off.

Although the faders’ movement may appear jumpy, do not be deceived by this. Deck automation is always reproduced with 24-bit accuracy (over 16 million values between full volume and no volume). Updating the screen has a lower priority than the control of volume and pan level. Your automation will always play and sound smooth even when the faders appear to jump.

**To view the visual envelopes for the motion you have just recorded:**

1. Choose Windows > Tracks (Command-3).
2. Set the Display pop-up on the track that contains the automation you wish to edit to Volume or Pan.



Display pop-up menu

You can now see and edit the automation envelope you created when you recorded real-time fader motion. (In the illustration, track 2 is set to display the volume envelope.) If you wish to edit these envelopes, you will find it easier if you first choose Automation Thin from the Process menu. Automation Thin will look for straight lines in your automation data and eliminate extraneous breakpoints.

## Visual Automation Envelopes

Controlling the volume and stereo placement of sound is the essence of a mix. Deck allows you to control the volume or pan of any playback track in real-time, and also makes it possible for you to record volume and pan fader motion as you perform it. The concept of performing a mix is a traditional one, but is only one

way to automate a mix.

With the advent of the digital audio workstation, many other methods for creating automated mixes have surfaced. The simple visual editing of a line graph (envelope) to control volume and panning is one of the most powerful and flexible of these new methods. Deck allows you to create and edit all automation data in this fashion if you wish.

Let's say you had a region of audio and you wanted it to come in loud, decrease in volume for about half its duration, and then increase slowly back to full volume. In the analog world you would play back your tape deck and use your automated mixing board to record yourself making the physical fader motion. In Deck, you could simply open up the Tracks window, find the audio region, and create this volume envelope.



*Volume automation envelope with highlight breakpoint*

The volume in this illustration is controlled (and indicated) by the thick line. The lower the line goes, the lower the volume; the top of the track is full volume and the bottom is no volume. If you look closely, you will see a number of breakpoints in the line where the angle of the line changes. Creating these points, which are automatically connected by lines, is the simplest method you can use to automate a mix. Adding and editing these points allows you to alter the mix in very exact ways. These automation envelopes can be edited using the same basic Tracks window functions you use to edit the waveforms.

**To create an automation envelope:**

1. Use the Track Automation View pop-up to choose the type of automation envelope you plan to create or edit. To set all tracks to the same automation type, Option-select the automation type.



*Track Automation View pop-up menu*

2. The track audio data will dim to light gray which indicates that you cannot edit audio data at the same time as automation. When you have the Track Automation View pop-up set to None, then you will be viewing and editing only normal audio waveform data in the waveform area. When the pop-up is set to Volume, waveform data will still be shown, but only volume envelopes can be created and edited on the track. In this situation, up is full volume and down is no volume. When the pop-up is set to Pan, waveform data will still be shown, but only stereo pan envelopes can be created and edited on the track. In this situation, up is left channel and down is right channel.
3. You can view the exact setting of any volume or pan envelope breakpoint by looking at the level or pan indicator on that track as you move the point. The exact current value will be shown as you adjust any point.
4. To create an automation point, hold down the Command key and click the mouse anywhere in the track.
5. As you do so, an automation breakpoint appears, along with the associated flat automation line. You have now set a single level setting.
6. Continue Command-clicking anywhere over the waveform to create more automation points and develop the general envelope shape you wish. To insert a breakpoint with the same vertical value as the previous, hold down the Control and Command keys and click the new location.

At any time you can play back the audio using the Transport window controls (or the spacebar) to hear the new automation. If you open the Mixer window, you can also see the new fader moves reproducing the envelope you just created.

### **To adjust a breakpoint:**

- Click the point and drag it to a new position. To constrain the time to the nearest whole axis unit, hold down the Shift key while dragging.

### **To delete a breakpoint:**

- Hold down the Option key and click that point.

When you are done, you can set the Track Automation View pop-up to None to hide the automation envelope.

You can now continue editing audio waveform ranges and regions, if you wish. As long as the Automation Status pop-up is set to the Play position, all automation on the track will play back.



### **To edit automation envelopes:**

1. Use the Track Automation View pop-up to choose the type of automation envelope you plan to edit.
2. Do one of the following:
  - To adjust a breakpoint, click the point and drag it to a new position.
  - To delete a breakpoint, Option-click that point.
  - To edit automation envelope ranges, switch to Object edit mode, drag to select breakpoints, and then use the Command-arrow keys to move them.

You can also click the Range Mode button (~ key) to switch the Tracks window to Range mode. Select any automation envelope range and edit it as if it were a waveform, tearing off copies and moving them around. To delete automation ranges, select a range of points (in either Object or Range mode) and press the Delete key.

## **Automation and QuickTime Movie Scrubbing**

If you are working with a QuickTime movie, and have Chase Positioning enabled in the QuickTime menu, automation edits will scrub QuickTime frames. As you move a group of breakpoints earlier or later in a track with the arrow keys, Deck's QuickTime window will update, tracking the lead-edge of your automation edit. This provides an easy visual reference for precise positioning of automation events in synch with video frames.

See Chapter 7, "QuickTime" for more information on Deck's QuickTime functions.

## **Copying and Pasting Automation Envelopes**

You can copy and paste automation envelopes. You can also use the Tracks window range and region dragging functions and arrow key manipulations to drag, nudge and copy automation ranges on a track, or between tracks. A list of all Tracks window key commands, including automation shortcuts, appears in Chapter 9, "Deck Reference."

## **Muting and Erasing Automation Envelopes**

### **To mute or erase automation envelopes:**

1. Choose the track on which you wish to mute or erase automation.
2. Click and hold on that track's Automation Status pop-up.
3. To mute all automation on that track, scroll to Off.

This mutes all of the automation on the current track. That automation is not deleted; it is simply turned off. To turn it back on, just set the track's Automation Status pop-up to Play.

To erase all automation on that track, select Erase Volume, Erase Pan, or Erase All in that track's Automation Status pop-up. The automation type you choose will be permanently deleted from the track.

## Show/Hide Automation Envelope

At any time you can use a track's Automation View pop-up to show or hide automation envelopes on that track. Even when you have hidden the current automation envelopes, the functions on the Automation Status pop-up (play, off, erase, and so on) will still function. You do not need to see an automation envelope to have it play.

## Conform to Audio Edits

Deck's automation follows the track, so that if you move a track to another track, it's automation moves with it. However, you may find that you want to only move or copy a region of audio from one track or location to another, and you might want to move the automation with it. Deck allows you to do this with the Conform to Edits command. Conform to Edits essentially locks the automation to the region of audio so that if you move or copy the region, the automation is moved or copied along with it.

### To enable/disable Conform to Audio Edits:

1. Select Options > Automation > Conform to Audio Edits
2. A check will appear next to Conform to Audio Edits to indicate that it is enabled.
3. Select Options > Automation > Conform to Audio Edits again to disable it.



*Be sure that your automation breakpoints are within the region boundaries when using Conform to Audio Edits, otherwise irregular automation may be introduced.*

## Using mixer states

Although it is possible to automate an entire mix without using Deck's mixer states, these snapshot-style states can be very useful (especially for creating complex automation moves that should occur at specific spots). The mixer states allow you to move any or all of the volume and pan faders in the Mixer

window with a single mouse click. In order to use a mixer state for real-time automation, you will need to store it. Once a mixer state has been stored, it can be recorded in the same way that any real-time automation is recorded. In fact, you can mix real-time fader motion automation and mixer state automation. Both styles of automation create automation envelopes that can be edited in the Deck Tracks window.

### To store a mixer state:

1. Open the session that you wish to automate.
2. While playing back the audio, set the volume and pan faders to your liking. You can also set these states when Deck is not playing back.
3. When the entire mixing board is set up the way you desire, Command-click the arrow button next to the spot where the mixer state should be stored.



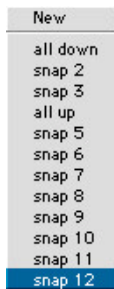
Stored Mixer States in the Transport window

You have now stored a mixer state, and the button next to that state can be used at any time to recall or play that state back onto the Deck Mixer. Note that new states are created with the name "snap" followed by a number. You can rename any mixer state by Command-clicking its name.

Deck allows you to store an unlimited number of mixer states. Every time you store one, it is added to the Mixer State pop-up, which contains all of the mixer states you have created for this session. Each of the six mixer state arrow buttons can be set to give you instant access to any mixer state.

Simply use the Mixer State pop-up menu in the Transport window to select the state you want. That state will be placed at the current arrow button for

instant access.



*Mixer State pop-up menu*

**To recall a mixer state:**

- Click the button to the left of the desired mixer state. That state is instantly recalled by the Deck mixer.



**To delete a mixer state:**

- Option-click the Mixer State button to delete the currently-loaded mixer state.

**To rename a mixer state:**

- Command-click the Mixer State pop-up to rename the currently-loaded mixer state.

All stored mixer states are saved with the current session and will be present just as you left them when you next open the session.

**To record mixer state automation:**

1. Open the session that you wish to automate and open the Mixer window.
2. Set the state transition time to zero (choose Options > State Transition Time).
3. Decide which track volume and pan faders you wish to automate.
4. Use the Automation pop-up on the tracks you wish to automate to set (record-enable) which controls you will be recording.

You can choose Record Volume, Record Pan, or Record All. You may choose your controls by track (for example, volume on track 1 and pan on track 2), or you can use the Options menu's Automation submenu to record all volumes and pans by choosing Record All. Even though you are recording mixer states, only those faders that are set to record will be recorded from the states. This allows you to isolate portions of your mixer states for automation recording.

5. Click the Transport's Record button, then click the Play button (Spacebar) to begin recording automation.
6. During playback, click the mixer state arrows whenever you want to record a mixer state.

The mixer state will be recorded at the moment you click the arrow. Don't worry about the exact timing accuracy of the state. All automation can be edited visually in the Deck Tracks window after it has been recorded.

Deck's recording functions work the same way with automation as they do with audio. For example, you can use punch-in mode to replace a segment of state automation just as you would replace a segment of audio.

Click the Return-to-zero button (or Return) in the Transport window, then click the Play button (Spacebar) to see and hear your new automation.

You can erase the automation on any track by using the erase commands located on the track's Automation pop-up. You can also use this pop-up to mute the automation on any track by setting the pop-up to Off.

**To record mixer state automation with pre-programmed transition fade times:**

1. Choose Options > State Transition Time.
2. Enter the duration of the smooth transition fade you wish, then click OK.

This duration is the period of time that it will take to



fade to the new mixer state. Suppose you have a mixer state that has all of the track volume faders at full volume, but all of the faders are currently turned all the way down. You set the State Transition Time to 2 seconds and begin playback. After a few moments, you click your All Up mixer state. You will immediately see the faders begin to move smoothly, and after 2 seconds, the faders will all be in the full volume position. This has allowed you to generate smooth motion on all faders at once with a single mouse click.

To record this motion in real-time, follow the same steps explained in “Mixer-based Automation” on page 65.

**To record mixer states in the Tracks window:**

1. Select whether to edit Pan or Volume.
2. In Range (Waveform) mode, make an insertion point at the point in time where the automation should be.
3. Click the correct mixer state in the Tracks window. The new automation envelopes associated with the mixer state will be at the desired location.

When you record mixer state automation with automated smooth transitions, the resulting automation can be edited visually in the Tracks window.



*Remember, Deck’s automation follows the track. If you move a track to a work track and record a new one, you will need to create automation for the new track.*

## Bouncing tracks in Deck

Bouncing is the process of ping-ponging, or submixing, multiple tracks together to create one or two new tracks. The new track is then used in place of the original source tracks, thereby freeing up formerly-occupied tracks for more recording. On most four- or eight-track systems, bouncing presents a solution to

the problems caused by a limited number of tracks. Although Deck imposes no restrictions on the number of tracks that can be mixed together, Deck also allows bouncing. For more information, see “Virtual mixing” on page 72. Deck brings major improvements to analog bouncing: Deck bounces tracks digitally, which doesn’t degrade the sound quality of the source tracks. Also, Deck allows you to keep all of your source tracks, so you can always go back to the original tracks and re-bounce for a new submix. (Analog bouncing generally requires that the source tracks be erased so that new tracks can be recorded.)

Deck allows you to bounce tracks in a purely visual fashion. To bounce tracks in Deck, you simply select a range of time in the Tracks window and choose one of the Bounce to Clipboard commands. Your bounce takes place immediately, and the resulting track or region can be placed anywhere you desire.

**To bounce tracks:**

1. Switch to Range mode by clicking the Range Mode button (~ key):



2. Drag to select the destination range for your bounced track(s).

When you bounce in Deck, all of your play tracks are always included in the bounce, except for muted tracks. For this reason, it really doesn’t matter upon which track you choose to select the range. Because of this, you can use the shortcut of selecting the destination range instead of the source range. This will return you to the Tracks window after the bounce is complete, and require only that you use the Paste At command to finish the bounce and paste the new audio at the correct point in time. Remember, you will want to select two destination tracks if you are choosing Bounce to Stereo Clipboard.

3. If you want to make sure that certain tracks are not used as source for a bounce, mute those tracks. Mute and solo are taken into account

when you Bounce to the Clipboard. Also, set the Automation pop-up to Play to include automation.

4. Choose Process > Bounce All to Mono Clipboard (Command-Shift-B) or Bounce All to Stereo Clipboard (Command-Option-B).
5. When the bounce is complete, you will be returned to the Tracks window, and your originally selected range will still be selected.
6. Choose Edit > Paste At (Command-Option-V) to paste the newly-bounced region at the correct place in time.

You are now free to delete the regions that were used to create the bounce. Try using the up and down arrow keys to move the highlighted selection range up or down to tracks you wish to delete for a dead-accurate cut. Or, you can simply move the tracks used as source for the bounce down to the Work Tracks area, where they will not play back. This is the best option, because it allows you to go back to your original source tracks if you desire.

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## Virtual mixing

A major advantage in using a digital audio workstation, like Deck, is that you are not hindered by the limitations of the analog world. Analog recorders and mixers are physically limited to the number of tracks that can be played. Deck does not do its mixing in real-time, so there is no limit to the amount of audio it can mix (other than hard disk space). Although you can only play back the amount of simultaneous real-time play tracks your system is capable of, you can create up to 999 work tracks.

Deck's Virtual Mixing function controls which tracks Deck will mix when you choose to use the Bounce to Disk or Mix to Disk functions. When Virtual Mix is enabled in the Process menu, Deck will mix the audio in your play tracks, and any audio on the Work tracks with the Volume and Panning automation you have created.

### To use Virtual mixing:

1. Choose Process > Virtual Mix to enable Virtual Mix. A check will appear next to the Virtual Mix menu item. Now, whenever you choose a Bounce or Mix command, Deck will mix work tracks as well as play tracks into the new file.
2. Record your tracks as usual. Add any desired automation to the new tracks.
3. When you have filled up the play tracks, create work tracks by selecting New Track from the Process menu. Enter the number of playtracks you recorded in the dialog box. You will now have new work tracks that will serve as destination tracks for the tracks you have just recorded.
4. Move the tracks to the work tracks. Use the Track Name pop-up menu to select Track 1 on the first work track, Track 2 on the second, and so on.
5. Select New Track from the Track pop-up on each of the play tracks.
6. Repeat the above steps until you have recorded all of your material. When you are finished recording and editing, create a master as described in "Final mastering to a mono or stereo disk file" on page 73.

Because you had Virtual Mix selected, the new audio file which is created by the mix or bounce will contain the sound of all your play tracks, plus your work tracks, and all associated automation and effects.

If you chose Bounce to Clipboard, your new mix is in the Clipboard's memory and ready for pasting into the session.

If you did a Mix to Disk, your new mix file is on your hard drive in the folder you selected and can be imported into your session using the Add Audio to Clipboard dialog box.

Using virtual mixing will quickly use up hard disk space. If your hard disk space is limited, you may be best served by bouncing tracks and compacting your session. In either case, be sure you leave enough hard

disk space for the final Mix to Disk process. For example, at a rate of 44.1kHz, you should allow about 5MB per minute for a mono mix and 10MB per minute for a stereo mix.

For more information about moving tracks and using work tracks, see Chapter 4, “Visual Waveform Editing.”

## Renaming Tracks

If you are planning to record many tracks, it is a good idea to rename them. Using Deck’s default naming system (Track 1, Track 2, Track 3, and so on) will get confusing with many tracks.

### To rename a track:

1. Command-click the track name.
2. Type in the new name in the resulting dialog box.

For more information about organizing Deck Tracks, see “File management tips” on page 158.

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## Final mastering to a mono or stereo disk file

The last step in a recording project is generally the mastering process. During mastering, a final stereo mixdown of the recording is created. This stereo version is the master from which all distributed copies will be made. For this reason, the master must be the best possible copy of the final mix.

Once your final mix is automated to your satisfaction, you are ready for the digital mastering process. In this process you will use Deck to create a mono or stereo Sound Designer II, Audio Interchange (AIFF), Sound Resource, QuickTime, or .WAV sound file on your hard disk. This sound file will be an exact digital copy of the mixdown from which it is created, including all effects processing, level and pan settings, and automation.



*Remember that there are some planning steps you will need to take before creating a digital master. If your session plays back a synchro-*

*nized MIDI file from the Metro sequencer, Deck’s MIDI window, or other MIDI sequencer, the MIDI tracks will obviously not be included in a digital master until they have been digitally recorded. The easiest way to do this is observe the following:*

1. When all of your Deck audio tracks are automated and ready for mastering, select Virtual Mix from the Process menu. Use the process described previously in the Virtual Mixing section to free two play tracks. If you are limited by disk space, select Bounce All to Stereo Clipboard from the Process menu to bounce all of your play tracks to a final stereo image, then paste those bounced regions on tracks 1 and 2, for example.
2. Mix the playback from your MIDI device into a stereo image at your mixing board, and record it in stereo onto two remaining Deck tracks—tracks 3 and 4, for example. You now have your original audio plus your MIDI instrument tracks in stereo audio form.
3. Add any extra mixer automation or effects you might need and you’re ready for the mastering.

### To create a digital hard disk master of a session:

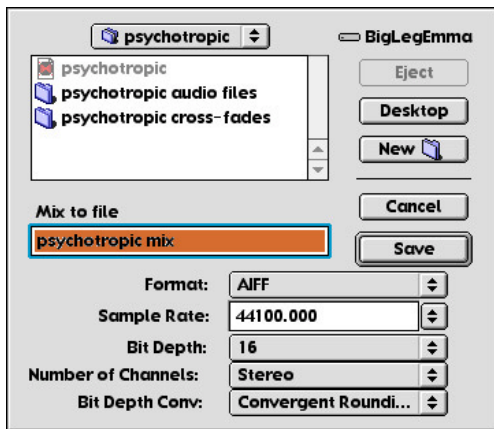
1. Open the session you wish to master (Command-O). Make sure that it plays back exactly as you wish the final mix file to sound, because the master will be an exact copy of the session as you now hear it.
2. If you are using Virtual Mixing, be sure to audition each worktrack in a play track before mixing. The Virtual Mix will not sound exactly like the session, as it adds data to the mix from the work tracks, which cannot be heard during real time playback.
3. Choose Windows > Tracks (Command-3).
4. If you want to mix only a portion of the session to disk, select the range you wish to mix before you choose the Mix to Disk command.

Remember, all of your play tracks (and work

tracks, if Virtual Mixing is enabled) are mixed to disk, even if you only select a range (or regions) on a single track. To remove tracks from the mix, mute those tracks and/or deselect Virtual Mixing in the Process menu. Be sure to select Play from the Automation pop-ups to include automation in the mix.

If you want to mix the entire session to disk, make sure that no audio range or region is selected. You can choose Deselect from the Edit menu to make sure that no audio is currently selected. Note that you can also choose Select All before you mix to disk to make sure that the entire session file is mixed down.

7. Choose Mix to Disk from the Process menu.



*Mix to Disk dialog*

8. Type in the name you wish to use for your master sound file. This will always default to the name of the session followed by “mix.” It is probably a good idea to use this naming scheme, because it associates the master and the source session, and prevents accidentally replacing an important existing file.
9. Select the destination folder for the master.
10. Choose from the following options:

**Format**—sets the type of file you wish to create. Choose from the following formats:

**Sound Designer II (SDII)**—The most common format. This is the native format used by Deck and is supported by a great number of audio programs. If you are creating 16-bit stereo masters for CD mastering, this is generally the format of choice.

**Audio Interchange File Format (AIFF)**—Popular high-resolution audio format. There is no difference in quality or portability between Sound Designer II files and AIFF files. AIFF files are better for cross-platform file exchange and were designed with this purpose in mind. However, AIFF files do not allow you to save region definitions within the sound file, and cannot be used for direct audio recording in Deck or Sound Designer II. For this reason, Sound Designer II files are generally suggested.

**Sound Resource files (.SND)**—Apple-standard format audio files which have the highest level of desktop integration. Eight-bit sound resource files are the standard used by older Macintosh systems, and they can be played back through most internal Macintosh speakers directly from the desktop simply by double-clicking on their icons. Such 8-bit sound resources are also easily integrated into programs such as Macromedia Director or Adobe Premiere, although 16-bit audio is becoming more widely supported by many programs.

**Wave (.WAV)**—Is a Windows sound file format and is useful for transferring sounds or mixed sessions to the Windows platform.

**QuickTime**—Sound files can be used for QuickTime movies, or as stand-alone Macintosh audio-only sound file-players. This format is especially useful for transferring shorter sound file demos over the Internet or to anyone with a QuickTime capable Macintosh or IBM computer.

**Sample Rate**—Sets the sample rate you wish to

have for your final mix file. The pop-up allows you to choose from a variety of preset, standard sample rates, such as 44100Hz and 22050Hz, or you may enter any rate you choose into the pop-up box. You will use different rates for different purposes. 44100Hz is the CD standard rate. Generally speaking, higher sample rates are better because they offer higher fidelity. However, they also require more disk space. Rates such as 22050Hz are good for general purpose multimedia work, as they take up less space—but the lower the rate, the noisier the audio, so choose the lower rates with care.

If you are mixing down to an 8-bit Sound Resource file for desktop playback, the 22050Hz setting will produce very good results.

**Bit Depth**—Specifies the audio bit-depth you wish for your audio master file when the audio is mixed. You may choose between 8-bit and 16-bit. (Remember to select an appropriate Bit-Depth Conversion method for your session if you convert to 8-bit sound.) If you wish to create a true high-fidelity master, always choose 16-bit.

**Number of Channels**—Determines whether your mix will be to a mono file, an (interleaved) stereo file, or split stereo files (which will automatically have .L and .R suffixes attached to their file names). If you're mastering for CD-ROM burning, try using the stereo (interleaved) option, which combines both left and right channels in a single file. If you're planning to bring your mix back into Deck for further work, select the split stereo option, which results in separate left (.L) and right (.R) mix files.

**Bit Depth Conversion**—Sets the 16-to-8 bit conversion method. If you are converting your 16-bit Deck file to an 8-bit file, Bit Depth Conversion makes it possible to create better sounding 8-bit files.

**Truncation**—Takes the high byte of your sound file as the sample value, and throws away the low byte. Truncation can often cause unpleasant

artifacts, or noise—especially on low-level signals and human speech.

**Rounding**—Treats the original 16-bit sample as a fixed-point number, with the decimal point between bytes. If the low byte is greater than or equal to 0.5, then 1 is added to the high byte (hence the name rounding) and the high byte is taken as the sample value.

**Convergent Rounding**—Differs from Rounding in how it treats the value of 0.5 in the low byte of your sound file—1 is only added to the high byte if the low-byte value is greater than or equal to 0.5 and the high byte is even. Otherwise, the high byte is taken as the sample value.

**Dithering**—Is similar to the Dithering function in digital imaging programs. Dithering applies a low level noise signal to the sound file to cover up the unpleasant artifacts caused by truncating. This method is also called Error Diffusion Dithering.

Generally, Rounding and Dithering produce better results than Truncation, but the results of these conversion methods will depend on your source material. Experiment with different kinds of conversion to see what works best for you.

11. Click Save to create the digital mix file.

Deck uses the exact same set of routines to create a mix file that it uses to play back the source tracks. For this reason, you can be absolutely sure that the mix file will be a true copy of the session's mix. Once you have created a digital master of your session, you are free to transfer it to a portable medium for duplication. Better still, use BIAS Peak to master your stereo mix and burn it to CD yourself.

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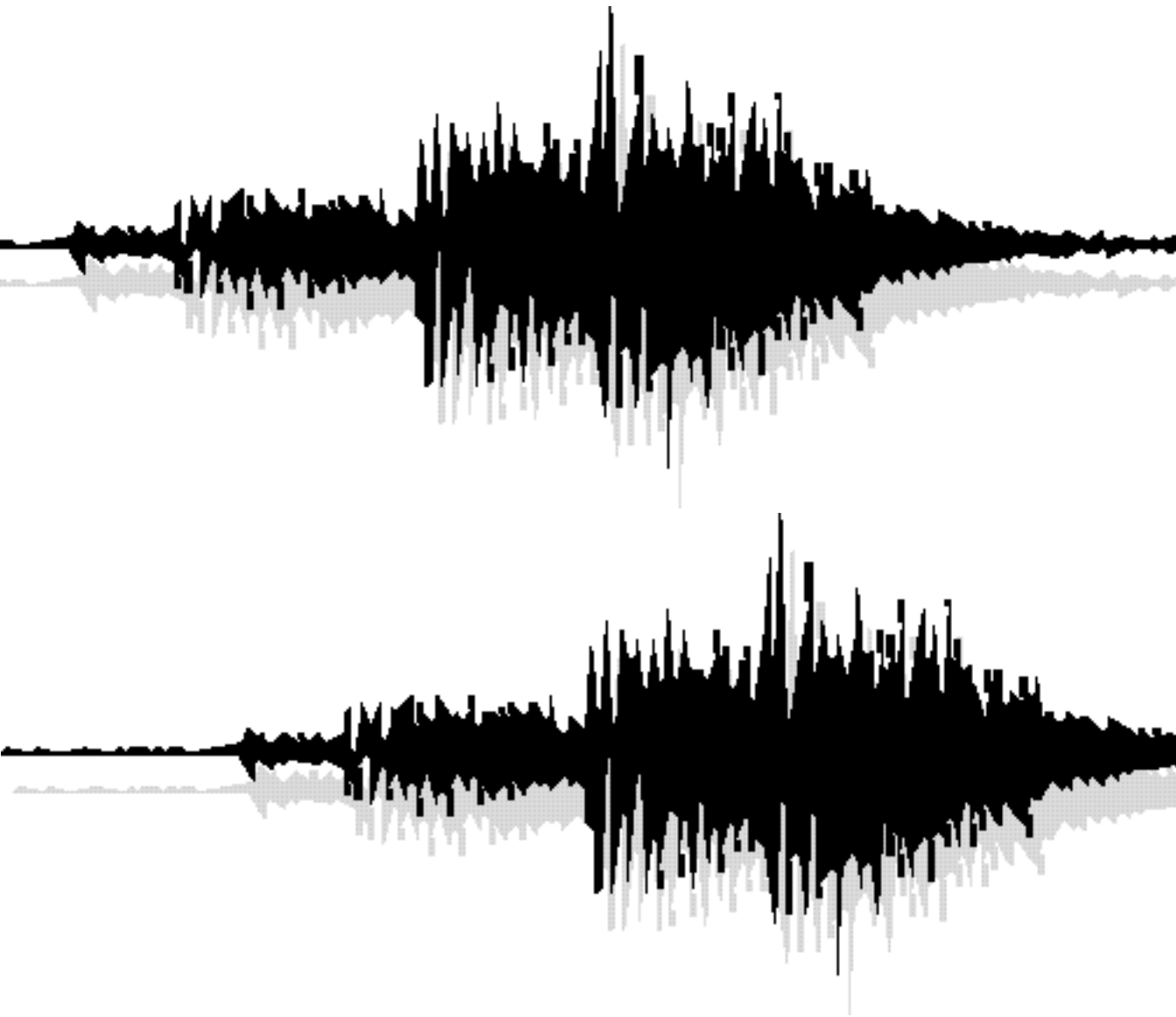
## **Conclusion**

You have learned how to mix and master in Deck. In the next chapter you will learn about using Deck to score QuickTime movies.

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# Chapter 7

## QuickTime







# Chapter 7: QuickTime

Deck is the perfect compliment to any QuickTime movie authoring program, such as Adobe Premiere, Final Cut Pro, or iMovie. You can import any existing QuickTime movie into Deck and add synchronized audio to that movie, exploiting all of Deck's audio editing, processing, and mixing features.

Deck is capable of playing back multiple tracks of 16-bit audio and a QuickTime movie—and that movie's native soundtrack, if desired—simultaneously from a single hard drive. You can add music, narration, and sound effects to your QuickTime movie, and export it as a new movie with its soundtrack mixed down in a variety of sample and bit rates for distribution, multimedia and CD-ROM production, or just for fun.

You need to have Apple's QuickTime extension, version 3.0 or higher, installed in your Macintosh. (QuickTime is usually included in Apple System software, but if you don't have it, you can download it from Apple's Web site, or contact Apple directly.) It is also helpful to have a movie playing program, such as QuickTime Player, if you want to be able to playback your finished self-contained QuickTime movies without opening Deck.

## Importing a QuickTime Movie

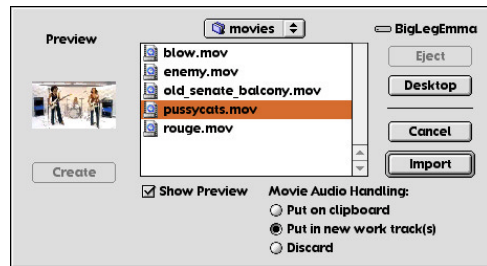
When importing a QuickTime movie that already has a soundtrack, you can either discard or import the movie's audio along with the movie. If you do import the movie's audio, Deck will convert the movie's audio to 16-bit at your session's chosen sample rate.

### **To import a QuickTime movie into Deck:**

1. Create a new session, or open the session you

wish to synchronize to a QuickTime movie.

2. Select QuickTime > Import Movie.



3. Locate and select the desired movie.

4. Select one of the following:

- Put on Clipboard—Removes the existing soundtrack from the QuickTime movie and converts it to 16-bit monophonic Sound Designer II file(s) at whatever sampling rate you've selected for your session. These files are created in the session's audio files folder and then placed on the Clipboard for pasting into any track in the Tracks window. To guarantee that the Clipboard file will sync to the imported movie, you will need to drag or paste it so that it starts at the session zero time.

If the source audio was stereo, you will need to select two tracks in Deck's Tracks window when you paste the audio.

- Put in new work track(s)—Removes the source audio from the QuickTime movie and converts it to 16-bit monophonic Sound Designer II files. These files are created in the session's Audio Files folder, and then placed onto new work tracks at the bottom of the Tracks window. To play back these tracks, click the track control area(s) to select the track, then drag the track up to one of the play tracks. (You can also use the track pop-up

at the bottom of any track in the Mixer window to move these new tracks up to playback tracks.) Choose this option to make sure that the original QuickTime audio will be included in any 16-bit stereo mixdowns and in exported QuickTime movies.

- **Discard**—Imports the QuickTime movie without its original audio.

You can change the size of the QuickTime window using the QuickTime menu's Size submenu. If you added the movie's audio to the Clipboard, you will need to paste it onto a track by choosing Edit > Paste At, or by dragging the audio into the Tracks window from the Library window. Be sure to place the movie's audio at the very beginning of the session—session zero. The QuickTime movie will always play back in sync with that Deck session, and the movie will always open whenever that session is opened.

Sessions are set to have a default length of 10 seconds if they contain no audio. If you wish to play back a QuickTime movie without its native soundtrack, use Session End Time from the Session menu to set the session length to be as long or longer than the movie's duration.

### **QuickTime window**

To open the QuickTime window, or to bring it to the front of the screen if it becomes buried under Deck's other windows, select QuickTime from the Windows menu (Command-4). The QuickTime window contains no controls. The movie's playback is controlled by Deck's Transport controls. However, note that you can scrub the QuickTime movie by clicking and holding in the QuickTime window—move the cursor to the left to scrub back and move it to the right to scrub forward.

### **Deck's QuickTime tools**

Now that you have a QuickTime movie imported into Deck, you will want to get acquainted with Deck's QuickTime tools.

Here are some of the QuickTime tools you will find in Deck's QuickTime menu:

**Dispose Movie**—Closes the current movie so that you can import another; only one QuickTime movie may be opened at a time.

**Get Movie Info**—Opens a dialog box that shows you information about the current movie, including its location on your hard drive, the date the movie was created, number of frames, frames per second, and length.

**Copy Frame**—Copies whatever frame of your movie is currently showing to the Clipboard. You can then paste that frame into the Scrapbook, or into a word processing or imaging program such as Microsoft Word or Adobe Photoshop. The frame is always copied at the size you see. You can also use Copy Frame to copy a frame of live video from the Live Video window.

**Set Poster**—Sets and saves the current QuickTime movie's poster—or preview—frame. The poster frame is the frame that will be used as the movie's icon and as the preview frame that will show when programs like Deck show QuickTime movies for importing or opening.

**Chase Positioning**—Turns on QuickTime Chase Mode, which automatically scrolls the QuickTime movie along with the audio and automation in the Tracks window. The QuickTime window will scrub to the current frame when audio regions are moved. (The frame at the region's start time is always shown.) Alternatively, selecting an audio region in the Tracks window, then scrubbing in the QuickTime window (click and hold down the cursor, then drag left or right) will cause currently-selected audio to reposition to the lead edge of the current frame. This is a fast, indispensable function for spotting music, dialog, and effects to specific QuickTime movie frames.

If Chase Positioning is enabled, moving volume or pan automation break points along the track timeline will also scrub QuickTime frames, enabling fast positioning

of automation events with sub-frame accuracy.

**Set Offset**—Lets you start the movie at a time other than session zero. Normally, when you import a QuickTime movie into Deck, it will begin at session zero—the very beginning of the session.

**Live Video**—Is useful if you are using Deck to add music or spot effects to live analog video coming into the video port of your AV Macintosh or the inputs of a video card.

**Configure Live Video**—Configures the incoming video signal, such as selecting a compressor, color depth, and frame rate. The options available depend on your video hardware.

Non-real-time QuickTime functions such as scrub or Chase positioning do allow you to view and spot all the QuickTime frames in a given movie, up to 30 frames per second, regardless of your computer's speed or disk throughput, and don't require additional video hardware. So even if your setup won't play back full-motion, full-frame video, you can still spot and edit accurately to 30 frames per second QuickTime.

**Size**—Sets a size for your QuickTime movie window. Note that the Size option does not affect the actual size of the QuickTime movie, and it will revert to its native size when you export it. The Size option only affects the size of Deck's QuickTime window, and is for your convenience while you work with QuickTime in Deck.

**Center**—Places the QuickTime window in the center of your monitor without the title bar.

### Scrubbing QuickTime video

Two of Deck's other QuickTime features are scrub video, which allows you to drag smoothly through video on your hard disk, and scrub-to-spot, which lets you select an audio region in the Tracks window and drag through video frames to spot audio to a specific QuickTime frame.

#### **To scrub video direct from the drive:**

1. Place the mouse cursor over the QuickTime window. Then click and hold down the mouse button. The arrow cursor changes to a right-left triangle.
2. Drag to the left (earlier) or right (later) to scrub video directly from the drive.

#### **To Scrub To Spot:**

1. Choose QuickTime > Chase Positioning.
2. Select an audio region or group of regions in the Tracks window.
3. Place the mouse cursor over the QuickTime window. Then click and hold down the mouse button. The arrow cursor changes to a right-left triangle.
4. Drag to the left (earlier) or right (later) to find the video frame on which the selected audio should start. Then let go of the mouse button to auto-spot the selected region or regions on that frame.

When you let go, the entire Tracks window selection will be moved so that it starts on the frame you chose. Use this function for quick spotting of sound effects or music cues.

When you have a QuickTime movie imported into Deck and you know your way around Deck's QuickTime features, you may add multitrack audio to your digital video. All of Deck's audio importing, recording, editing, layering, processing, and mixing features can be used to add a soundtrack to your movie.

Once you have finished your Deck soundtrack, you may Export your movie as a new flattened QuickTime movie with its new audio attached.

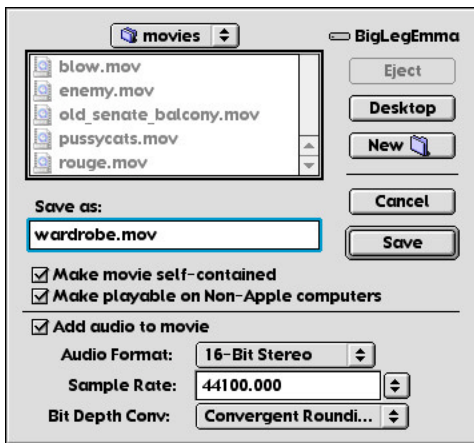
### Exporting the final QuickTime movie

If you are using Deck as a QuickTime audio post-production tool, then the last step in your process is

quite similar to the final audio mastering process described in Chapter 6, “Automation, Mixing, and Mastering.” The main difference is that you are creating a finished file (or files) that consist of a desktop playable picture as well as sound. The process of mixing down a final QuickTime movie (with audio) from the current session is very simple.

**To create a final QuickTime movie with session audio:**

1. Open the session that contains the audio and movie you wish to mix down.
2. Make sure that the session and its movie play back exactly as you wish the final product to look and sound. The exported movie will be an exact copy of the session as you see and hear it.
3. Choose QuickTime > Export Movie.



*Export Movie dialog*

The Export Movie dialog allows you to create new QuickTime movies that contain (or reference) 8- or 16-bit mono or stereo audio interchange file format (AIFF) audio tracks at a variety of sample rates. The exported movie contains all of the edited audio, automation, and audio effects, if any. You can think of the Export Movie command as a Mix-to-disk command for picture and sound. It is usually the last step in the QuickTime audio post-production process, and the

result can be played back on any QuickTime-capable computer.

4. Choose a destination folder and type in a name for the movie.
5. Select from the following options:

**Make movie self-contained**—Creates an entirely new, self-contained movie. The self-contained movie will consist of a single QuickTime (Movie Player) document that contains all picture and sound. According to QuickTime specifications, the sound and picture are interleaved, creating a movie that is fully transportable and plays efficiently. Note that a self-contained movie will take a while for Deck to create, because it requires an extra step (flattening), which can be time consuming. Remember, a self-contained movie will generally be quite a large document.

Make a movie self-contained when you want to create a single document for delivery. If you are simply performing test edits and mixdowns, do not make the movie self-contained. When the movie is not self-contained, a new, extremely small (typically around 30K) movie document is created. Like a Deck session, this document simply references the source sound and picture files. The Movie Info command in Apple’s QuickTime Movie Player can always be used to determine which audio and picture files are used by a movie that is not self-contained.

**Make playable on Non-Apple Computers**—

Creates a self-contained movie that is playable on other QuickTime capable platforms, such as Windows. It will flatten your movie and remove all Macintosh-specific data from it. You will need to check “Make movie self-contained” in order to use this option.

**Add audio to movie**—Determines whether the audio from the current Deck session will be mixed, converted, and added to the finished movie. You will generally want to have this option turned on. When it is turned off, a silent movie document is

created, and the audio data stays in Deck.

**Audio Format**—Specifies the audio bit-depth you wish for your audio mixdown file when the audio is mixed and the movie is exported. An AIFF sound file is always created unless you chose “Make movie self-contained,” in which case the audio is placed directly into the movie picture data. You may choose between 8-bit mono, 8-bit stereo, 16-bit mono, or 16-bit stereo. The 8-bit mono format requires less disk space, takes less time to upload to the Internet, and plays back more efficiently on older Macintosh computers. If you wish to create a high-fidelity master, choose 16-bit stereo.

**Sample Rate**—Sets the sample rate you wish to have for your final QuickTime movie audio. You can select one of the preset, standard rates, or select other and enter any rate into the pop-up box. Generally speaking, higher sample rates are better because they offer higher fidelity. However, they also require more disk space. For the highest-fidelity results, set this pop-up to the highest supported rate, such as 48000 or 44100Hz. This will mix down your audio as a CD-quality soundtrack, but will also create a large movie document. If you don’t need CD-quality audio, or if you require a smaller movie, a rate of 22050Hz provides a good balance between audio quality and file size.

**Bit Depth Conversion**—Specifies the down sampling method. If you are converting your 16-bit Deck file to an 8-bit file, Bit Depth Conversion makes it possible to create better sounding 8-bit files.

**Truncation**—Takes the high byte of your sound file as the sample value, and throws away the low byte. Truncation can often cause unpleasant artifacts, or noise—especially on low-level signals and human speech.

**Rounding**—Treats the original 16-bit sample as a fixed-point number, with the decimal point between bytes. If the low byte is greater than or equal to 0.5, then 1 is added to the high byte

(hence the name rounding) and the high byte is taken as the sample value.

**Convergent Rounding**—Differs from Rounding in how it treats the value of 0.5 in the low byte of your sound file—1 is only added to the high byte if the low-byte value is greater than or equal to 0.5 and the high byte is even. Otherwise, the high byte is taken as the sample value.

**Dithering**—Is similar to the Dithering function in digital imaging programs. Dithering applies a low level noise signal to the sound file to cover up the unpleasant artifacts caused by truncating. This method is also called Error Diffusion Dithering.

If you are mixing down a QuickTime movie with 8-bit sound for desktop playback, a sample rate of 22050Hz and Dithering or Convergent Rounding will produce very good results.

6. Click Save.

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## Conclusion

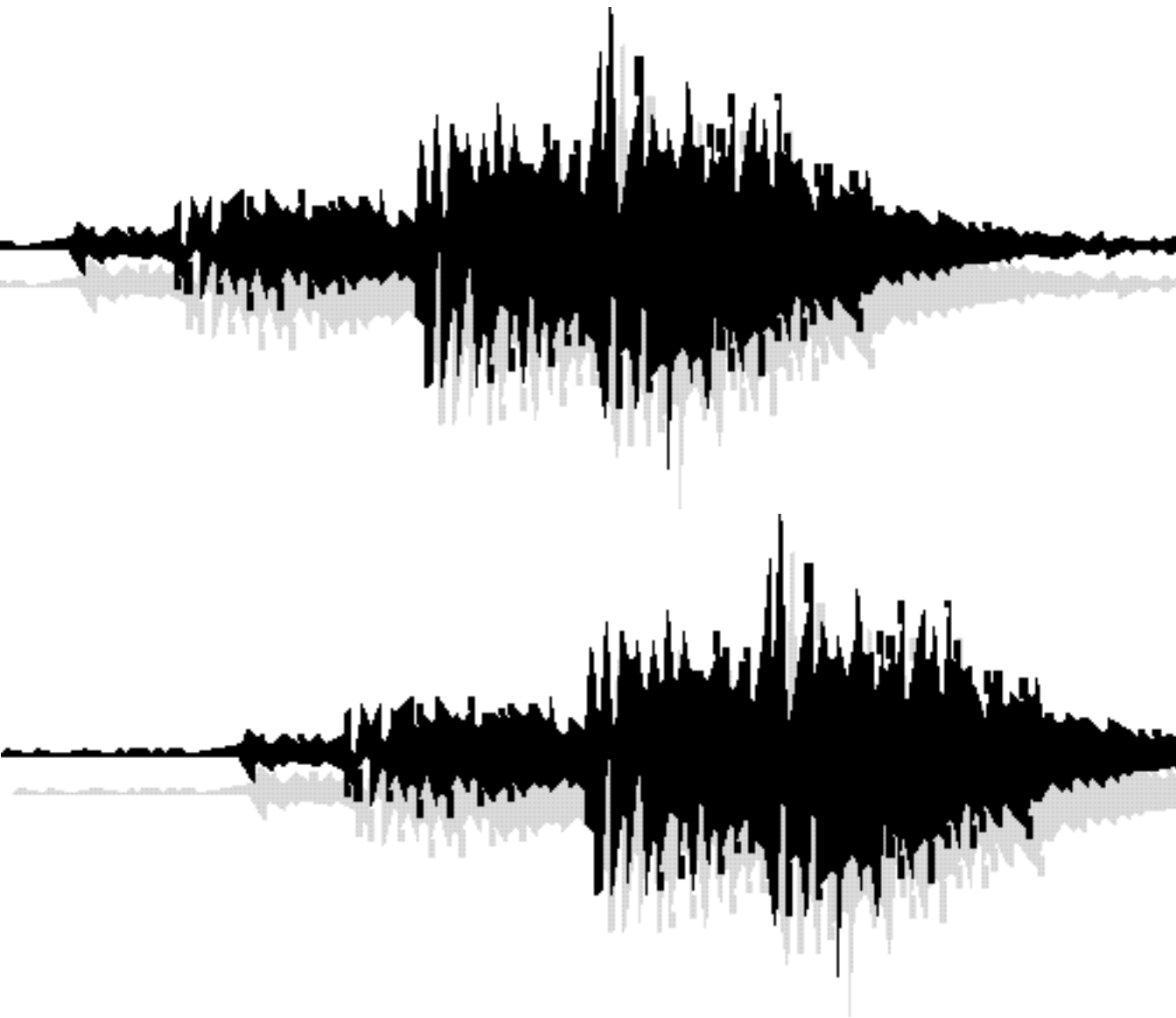
Now that you know a about Deck’s QuickTime functionality, proceed to the next chapter to learn about Deck’s MIDI and SMPTE sync capabilities.

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# Chapter 8

## MIDI and Synchronization







# Chapter 8:

## MIDI and Synchronization

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Using the MIDI functions will enable you to synchronize your session to SMPTE time code, use Deck as a master time code source, import a MIDI file for synchronous playback with your session, and control Deck with external MIDI devices. You can also synchronize Deck with a MIDI sequencer, such as Metro.

The next section of this chapter focuses on the methods you will employ to synchronize Deck to an analog video or audio deck. You will need to understand synchronization in order to add audio to video or film picture, or extend the tracks of your analog multitrack with synchronized hard disk audio tracks. You can also synchronize Deck to QuickTime movies. For more information, see Chapter 7, “QuickTime.”

---

### MIDI Setup

Before you can use Deck’s MIDI functions, you will need to install and configure OMS (Open Music System, formerly the Opcode MIDI System). The OMS installer can be downloaded for free from [www.opcode.com](http://www.opcode.com). Please refer to the Opcode Technical Documentation for more detailed information on configuring OMS.



*OMS must be installed and configured to run Deck with MIDI.*

### The Open Music System (OMS)

OMS consists of a set of system documents that, along with the OMS Setup application, allow you to describe

your MIDI studio’s configuration and have that description be recognized by all OMS-compatible programs. Once you have set up your OMS environment, OMS-compatible applications can list all of your MIDI instruments (including sound-generating devices, interfaces and controllers) by name. This eliminates the need to separately set up and define your MIDI system configuration in every software application.

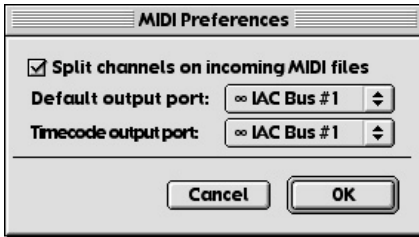
#### ***When you have OMS installed, configure Deck as follows:***

1. Open any Deck Session.
2. Choose Options > MIDI Setup.

If you are running Deck with OMS-compatible slave programs (e.g., Metro) set up the dialog to allow Only OMS Applications. This will make it possible for you to switch between Deck and the slave program(s) during playback without forcing MIDI or audio playback to stop. If you are running Deck with programs in the background that are NOT OMS-compatible, select the Allow Non-OMS Applications option. This will allow the ports to be shared, but may stop MIDI and/or audio playback when you switch between applications. (For more information about configuring and using OMS, see the OMS documentation available from Opcode.)

### MIDI preferences

The next step in configuring your system for MIDI is setting your MIDI Preferences. Choose File > Preferences > MIDI to open the MIDI Preferences dialog.



*MIDI Preferences dialog*

**Split channels on incoming MIDI files**—Splits the channels when you import a MIDI file. This is useful when you are importing Type 0 MIDI files, which store all track data in one channel.

**Default Output Port**—Specifies the default MIDI output port.

**Timecode Output Port**—Controls through which port outgoing MIDI time code is sent. To change the port, simply select a different port using the pop-up menu.

If you plan to import large MIDI files, you should first increase the MIDI buffer size in the Memory and Storage preferences. Remember, whenever you increase the buffer size, you should also increase the amount of RAM allocated to Deck.

You have now finished configuring your MIDI setup and can use any of Deck's MIDI functions.

---

## Sending MIDI timecode

You can use Deck as a time code master very easily. Simply choose Output MIDI Timecode from the Options menu. Deck will automatically generate time code and send it through the Timecode Output Port you chose in the MIDI Preferences. To stop sending timecode, choose Output MIDI Timecode again. You can tell if Deck is sending timecode by looking for a check next to Output MIDI Timecode in Options. If the command is checked, Deck is sending time code.

---

## MIDI Key Maps

Deck allows you to create, save, and load MIDI Key Maps. You can map MIDI controllers to the Transport controls (Rewind, Fast Forward, Stop, Play, and Record). The Panning and Volume faders, and Solo, Mute, and Record enable buttons in the Mixer window can also be mapped to MIDI control. The Mixer state and Location buttons in the Transport window also respond to MIDI controller messages in addition to MIDI keydown and keyup messages. Deck's MIDI mapping capabilities allow you to quickly and easily setup Deck to be controlled by any MIDI control surface.

### MIDI Map Fader

#### *To map MIDI controllers to Deck*

1. Enable MIDI Map Faders in the Options menu. All MIDI mappable faders and buttons will turn green.
2. Click on the fader(s) or button(s) that you want to map a MIDI controller to. The fader(s) or button(s) will turn yellow.
3. Toggle the MIDI control you want mapped to the highlighted fader(s) or button(s). The fader(s) or button(s) will turn red.
4. Repeat steps 2 and 3 for each MIDI controller you want to map.
5. When you have finished assigning MIDI controllers to Deck's faders and buttons, uncheck MIDI Map Faders in the Options menu.

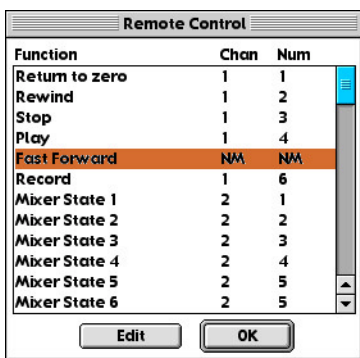
To map more than one button or fader to a single MIDI controller, simply click the faders or buttons you want to map and then toggle the MIDI controller you want mapped.

### Edit MIDI Map

Deck allows you to Edit the MIDI Map manually.

### To manually Edit Deck's MIDI Map:

1. Choose Edit MIDI Map from the Options menu to open the Remote Control dialog.



2. Highlight the Function you wish to edit and click the Edit button to open the Edit Map Element dialog.



3. Enter the MIDI Channel and MIDI controller number that you want to map to the designated function and click OK.
4. Repeat steps 2 and 3 for each Function you wish to edit and click OK in the Remote Control dialog when you are finished.

### To unmap a mapped fader:

1. Open the session that contains the faders you wish to unmap.
2. Move your external MIDI controllers to see how the mapped screen faders move along with them.
3. Choose MIDI Map Faders from the Options menu. All of the mapped faders on the screen will automatically be highlighted in red. (Other faders will be highlighted in green.)

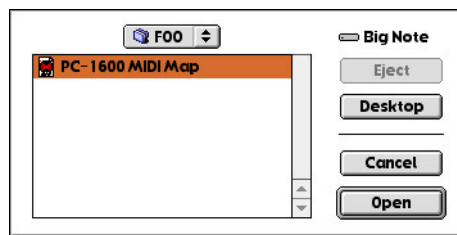
4. Click once on any mapped (red) fader to unmap it. The fader will be filled highlighted in green to indicate that it is no longer mapped.


5. Choose MIDI Map Faders again to turn off map mode.

You have now unmapped the fader. Remember to save the session if you wish to unmap the fader permanently.

### Save and Load MIDI Map

Once you have Mapped MIDI controllers to Deck's faders and buttons, you can Save your MIDI Maps and Load them later. This is especially useful if you regularly work with different control interfaces or if you frequently use the same MIDI Mappings in every session. To Save your MIDI Map, simply select Save MIDI Map from the File menu and you will be prompted to Save the current MIDI Map to your hard drive. To Load a previously saved MIDI Map, select Load MIDI Map from the File menu and locate the desired MIDI Map on your hard drive and click Open.



 *The Tascam US-428 communicates to Deck via MIDI, however most of its faders and buttons are already mapped to functions in Deck. If you attempt to MIDI map one of the US-428 controls that Deck already understands, the built-in behavior will override the MIDI mapping that you select. The Aux 1 ... Aux 4 and F2 and F3 buttons on the US-428 are unused by Deck and could be used to map to Deck's Location Times or Mixer State buttons in the transport window.*

---

## Using Deck with the Metro Sequencer

Deck offers the ability to synchronize to the Metro sequencer on a single Macintosh. Running Deck and Metro together requires no special software or complicated setup process. If the two programs are running simultaneously, they automatically connect to each other and stay synchronized. You can edit, play, and record from either program and the other runs in sync. You can even switch between programs during playback and edit without stopping. Each program can save and open documents automatically in the other, can pass tempos and selections, and can start up and quit the other. The level of cross-program control is up to you.

There are a number of key advantages to using Metro as your MIDI solution with Deck, as opposed to using other OMS-compatible third party sequencers. One benefit is the enhanced level of integration and interoperability, as described above. Another advantage is that Deck and Metro use a proprietary timing architecture which allows the two programs to continuously share timing data, so they can stay locked in rock-solid sync. By contrast, OMS and MIDI Manager only allow for trigger sync, meaning two programs can start at the same time, but they have no way to re-synchronize downstream should their timing slip. Deck and Metro's continuous MIDI/Audio re-synchronization therefore gets you more reliable punch-ins and punch-outs, plus more stability on longer sessions.

### Setting the Deck Connections on the Metro Setup menu

Metro offers a settings dialog that allows you to configure the level of interaction between Deck and Metro. In Metro, choose **Setup > Digital Audio**.

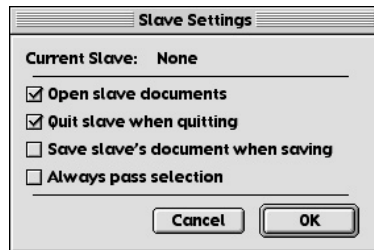


*Metro Digital Audio Setup dialog*

If you are planning to run Deck with Metro in the background, you can set the preferences as shown in the above illustration. This setup assumes that you will be starting Deck, and that you always want Metro to be started up and connected in the background. To complete the configuration process, you will also want to set up Deck's Slave Settings, as explained below.

### Setting the Slave Settings preference on the Deck File menu

Deck offers a settings dialog that allows you to configure the level of interaction between Deck and any compatible slave program (Metro or other MIDI sequencers). Choose **File > Preferences > Slave Settings** to open the Slave Settings dialog.



*Slave Settings dialog*

When you are running Deck with Metro in the background, you can set the slave settings as shown in the above illustration. This setup assumes that you will

be starting Deck, and that you always want Metro to be started up and connected in the background. When you open a session with Deck configured in this fashion, Deck will automatically open the associated MIDI file in Metro. Although you will not see Metro (unless you switch to it), playback within Deck will automatically control playback from Metro (and vice versa).

**Open Slave Documents**—Lets you choose whether Deck should always start up the slave application (Metro) and open the Metro document associated with the Deck session you open.

This keeps Deck sessions linked with their associated Metro documents. (The same holds true for any MIDI slave program.)

**Quit Slave when Quitting**—Makes Deck close the associated Metro document when the Deck session is closed.

**Save Slave's Document when Saving**—Causes the Metro session to be saved whenever you save in Deck.

**Always Pass Selection**—Passes the current selection in Deck to Metro—so if you are stopped at bar 37 in Deck, you will automatically be at bar 37 when you switch to Metro.

When you are running Deck and Metro on a single Macintosh, choose one of the two programs (the one you will usually run in the foreground) and set only that program to Open Documents in the other program. If you generally plan to open Metro and work on MIDI first, then set Metro to Open Documents. If you usually lay down audio before adding MIDI, then set Deck to Open Documents. (See the Slave Settings preference in the Deck Preferences submenu.)

### **Setting the screen update speed for Metro within Deck**

Deck offers a special preference that allows you to set how often the Metro screens update when they are in the background. (It also controls how often the Deck

screens update when they are running in the background behind Metro.)

To update the screen of Metro (or any other background program) as often as possible, set “Update speed during playback” to 1. This will allow the background program to update as smoothly as possible, and is suggested if you are using Metro. If you wish to lock out the screen updates of background programs during playback, set the “Update speed during playback” to 10.

### **Setting up Deck with a MIDI or audio metronome**

Deck is primarily an audio program, so it has no internal MIDI metronome. If you wish to use a click or metronome, you will need to use the Metro sequencer (or another compatible slave sequencer) running in the background on your Macintosh. You can also create a click track in a different sequencer and import the file to play with your session. For more information, see “Importing MIDI files” on page 92.

#### ***To set up and run Deck with MIDI or audio metronome:***

1. Make sure that Deck and Metro are configured to run together.  
  
The programs are set at the factory to run correctly together, but you can review these settings by reading through “Setting the Deck Connections on the Metro Setup menu” on page 90.
2. Create a new session in Deck, then switch to Metro and create a new Metro document. You can accomplish this by selecting New from the File menu in both programs.
3. Drag the Bars setting on any track in the Metro Tracks window to set the number of click bars you want.

You can set this to any number you desire. You can use a short setting as a basic count in. Set the bars count to a high number (600, for example) if you want a long period of click.

4. Click the dialog door in the lower right-hand corner of the Metro tempo setting area in Metro's Transport window.
5. Use the Metro Tempo dialog to enter the tempo you desire. Then click the OK button.
6. You have now set the tempo of the click (and the start tempo of the Metro MIDI file as a whole.) Now you just need to turn the metronome on.
7. Click the Metro Metronome icon to turn on the MIDI click.

The click is now on. It can be set to trigger any MIDI device, or to play a number of sounds using your Macintosh speaker or Macintosh audio output jack. Whenever the click is turned on, it will automatically play when you hit your Deck play button. For more information about editing and configuring the Metro metronome, consult your Metro user's guide.

Deck and Metro share a common tempo setting and exchange tempo maps. To change the shared tempo, set the tempo in Metro as described above. Changing the tempo in Deck will not automatically change the tempo in Metro, but Metro will change the tempo in Deck. Note that Deck does support MIDI file playback in tenths of a BPM, but does not yet allow entry in tenths.

Remember, the Metro Transport window can be set to two different sizes. If you can't find the Tempo and Metronome setting areas, click the Transport window's grow box to reveal all of the Transport controls.

## Importing MIDI files

If you do not own Metro but would like to hear a MIDI file that you have created in a sequencer play back with your session, you can use Deck to import the MIDI file.

### To Import a Standard MIDI File into Deck:

1. Open up the MIDI window by choosing Windows > MIDI.



MIDI window

2. Click the Import button.
3. This will bring up a standard file dialog asking you to pick a file to import. Choose the standard MIDI file you wish to import.
4. When you have opened the file, Deck will take a few moments to translate the file.
5. Click on the Port pop-up menus to assign the MIDI tracks to specific MIDI instruments in your setup.
6. Command-click the Track name to rename individual MIDI tracks.



MIDI window with imported MIDI file

You can change the MIDI file that is played with the session by clicking the Import button again and

choosing a new file. Deck will erase the previous MIDI data to make room for the new file.

MIDI files are imported with their tempo maps, and Deck will play back those tempo maps and display audio bar/beat data according to the initial tempo event. To view audio waveforms visually adjusted to tempo-accurate bar/beat display, just choose Beat from the Options menu's Time Mode submenu.

Deck's tempo indicator only shows you the first tempo of any MIDI file. Although Deck will follow tempo changes in your MIDI file, the display's not updated to show each new tempo. Entering a new tempo will clear out the existing tempo map and set the session to that single new tempo.

---

## MIDI Thru

Another of Deck's MIDI functions is MIDI Thru. To use MIDI Thru, open up the MIDI window, and press the button on the Thru track.

You can change the port for this track by clicking on it and selecting a new port using the pop-up menu. Now all MIDI events coming into the "in" port will be routed through the port you choose.

---

## Synchronization

This section focuses on synchronizing Deck to a video or audio deck. You will need this information in order to add audio to analog video or film, or to extend the tracks of your analog multitrack with synchronized hard disk audio tracks. You can also synchronize Deck to QuickTime movies (Macintosh digital video). For more information, see Chapter 7, "QuickTime."

One of the most important features of Deck is that it provides a true non-linear multitrack synchronization environment. Deck makes it possible for Macintosh

hard disk audio to operate seamlessly in sync with film, video, and other sources. The task of synchronizing picture and sound is handled by Deck, which runs as a slave to your SMPTE source. All you need to do is route the SMPTE signal from your video or audio source to a compatible Macintosh MIDI interface (Opcode's Studio 5 or MOTU's MIDI TimePiece, for example). Then, when you select the applicable SMPTE frame rate in Deck and put Deck online, the current session will automatically synchronize to the external time code source.

If you plan to use Deck in a sync environment, you should start with a basic understanding of SMPTE time code. If you are already familiar with time code, you are ready to use the system. If you have never used SMPTE time code, it would probably be wise to read one of the publications listed in "Suggested reading" in Chapter 10, "Basics".

### An important note about trigger synchronization

In the world of computer-based audio synchronization, most systems differentiate between continuous re-synchronization and trigger sync.

Continuous re-synchronization refers to systems that measure the playback speed stability of the master timing (SMPTE) source, and constantly adjust slave playback speed to match the master device's fluctuation. Trigger sync simply waits for a start frame and triggers playback. In this case, slave playback speed is not altered, regardless of master speed fluctuation.

Deck offers both continuous resync (the native mode) and trigger sync. It is important to note, however, that Deck only offers continuous resync on playback. This makes Deck very useful for audio post-production tasks, but it makes it difficult to use Deck as a recording slave with older analog multitrack decks and low-end VCRs. Whenever you record, Deck must use trigger sync, because it is impossible to accomplish the multiple sample rate conversions necessary for continuous record resync using software alone. There

are a number of elegant ways for dealing with this situation.

### **Make sure all devices are locked to house sync**

For the best possible results, you should make sure all of your devices are plugged into a central sync reference signal, and run Deck with Trigger Sync turned on. By putting the burden of servo-accuracy on the shoulders of the different analog devices instead of making your Macintosh constantly change the sample rate, you will always maintain the highest possible audio fidelity. In most environments a “video black” signal, referred to as “black burst,” is used as the central reference. When the same signal is supplied to all rooms and all devices, it is often called “house sync.” Many multitrack audio decks and all video decks can make use of such a signal. Whenever possible, hook up all of your analog devices to black burst.

If you are using an inexpensive consumer video deck, you can generally improve your record-sync accuracy by using the “poor person’s black burst.” You can accomplish this by turning on any video camera (a Handycam will suffice), and hooking up the video out from the camera into the video in on the VCR. This will force the VCR to gen-lock to the camera, which usually supplies a much healthier sync signal than the VCR alone, and forces the VCR to play back with fewer time fluctuations.

### **Slave Deck only to digital sources**

When you slave Deck to a digital source, such as timecode striped DAT or digital multitrack recorders, you can usually avoid any synchronization problems. These devices are very dependent on the time accuracy of their playback, and usually will not fluctuate playback speed. If you are slaving Deck to such a device, you should put Deck into Trigger Sync mode, then proceed as usual. This is one of the best possible configurations for Deck use.

### **Use a SMPTE Slave Driver**

If you have a SMPTE Slave Driver—a device that converts analog SMPTE signal into digital slave clock

and word clock—you can use it to sync Deck to. The Slave Driver measures speed fluctuations in the source SMPTE signal and continuously changes the record AND playback sample rate. This solution offers the best system performance and audio fidelity, because all hard disk audio recording and playback speeds are adjusted directly at the hardware, thereby avoiding the degradation of the audio signal often caused by software-based real-time sample rate conversion.

### **To synchronize Deck recording or playback to time code:**

1. Make sure that you have your SMPTE source hooked up to a MIDI interface that is capable of SMPTE-to-MIDI time code conversion (e.g., Opcode’s Studio 5 or Mark of the Unicorn’s MIDI TimePiece).
2. Open the session you wish to synchronize to time code.
3. Choose Options > MIDI Setup. Make sure that you have the correct MIDI port enabled, and that it is set to the correct speed. For most applications, you can turn on both the Printer and Modem ports and set them to the 1.0 MHz, Generic settings.



*If you are syncing to SMPTE and running Metro in the background (or foreground), configure Deck to receive sync and use it to control synchronized playback. Do not set Metro to sync to SMPTE. Set up Metro for normal, simple playback. Deck will handle all synchronization tasks, and will control Metro playback directly.*

4. Choose Options > SMPTE Start Frame.
5. Type in the hour, minute, second, and frame number of the SMPTE frame that will be used as your session zero time (the beginning of program material on your time code-striped tape, or the scene you are working with). Click OK.
6. The time you enter in the previous dialog will be your SMPTE start time, and the Return-to-zero



button will always return you to this point.

You can click the dialog's Capture button to capture the current time code frame from your time code source. Note, however, that the Capture button will not get an accurate time unless you are syncing to video tape using Vertical Interval Time Code (VITC). If you are using standard Longitudinal Time Code (LTC), the Capture button will lift the last frame that was received, but that frame can vary by one second or more from the actual position. This situation is caused by the fact that only VITC can be read at slow shuttle speeds and in still-frame/pause mode. LTC frame addresses are unreadable at slow speeds and in still-frame/pause.

7. Choose Options > Online.
8. To play back audio in sync with incoming time code, press the Play button in the Transport window to put the current session in play-standby.

The status indicator in the Transport window now says "Standby" to indicate that Deck is waiting for incoming time code. As soon as any time code is present at the selected MIDI port, Deck will synchronize and begin playback.

***To record audio in sync with incoming time code:***

1. Make sure you have a track record-enabled in the Mixer window of Deck.
2. Press the Transport's Record button, and then the Play button, to put the current session in record-standby.
3. The status indicator in the Transport window now says "Standby" to indicate that Deck is waiting for incoming time code. As soon as any time code is present at the selected MIDI port, Deck will synchronize and begin recording. Note that it may take a few seconds for audio recording and playback to lock and begin.

The SMPTE synchronization pre-roll time is user-

adjustable in the General preferences in the File menu's Preferences submenu. This setting is adjusted in seconds, and the time you enter will be the amount of time Deck takes between the first received SMPTE frame and the beginning of playback. If you have a fast Macintosh and a fast drive, you can set this preference to two seconds or less. If you are having trouble getting Deck to sync ("missed in-point" messages), then set this value to six or more seconds.

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## Conclusion

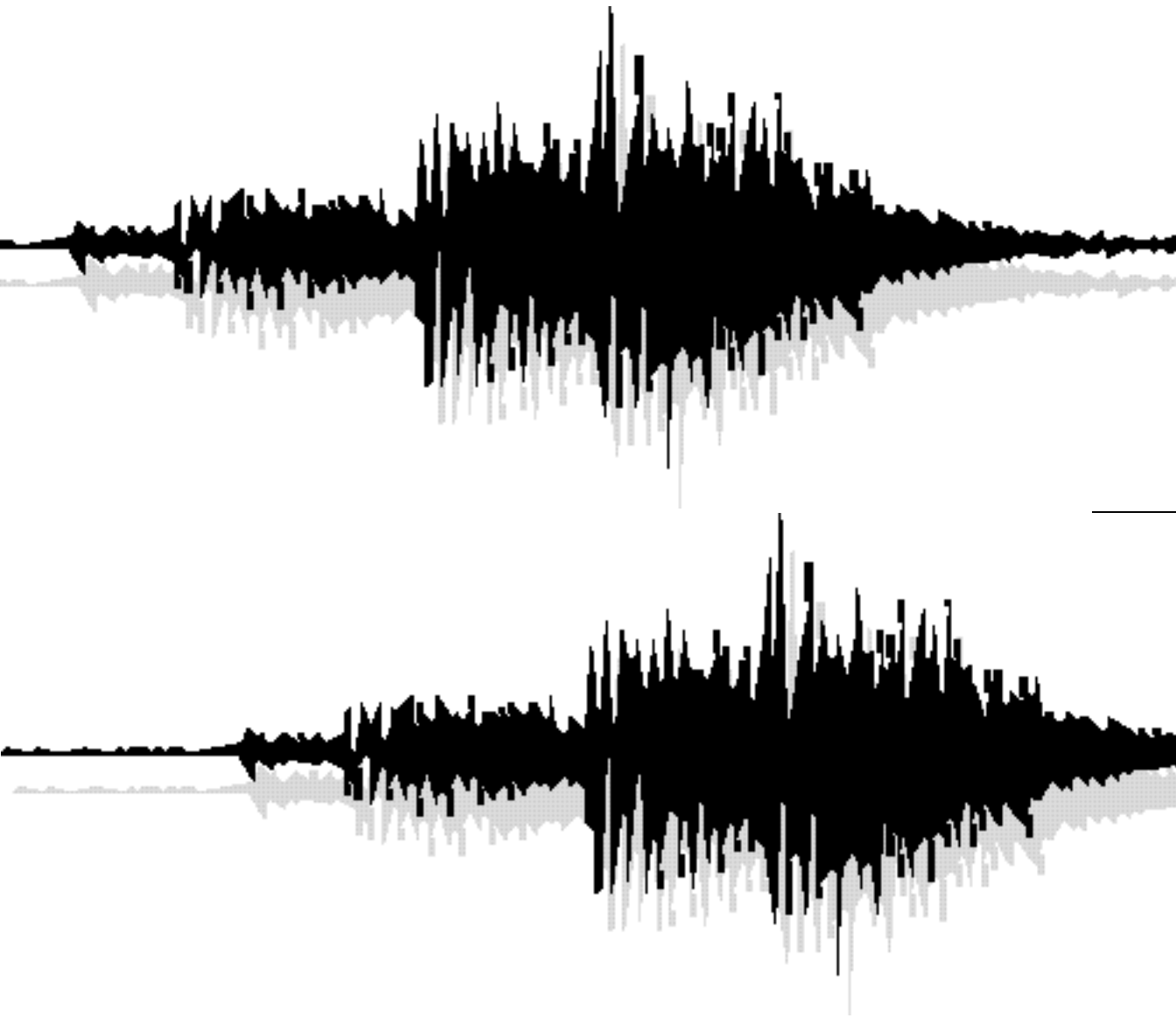
You have learned about using MIDI to control Deck's faders and buttons, and to sync to MIDI sequencers (e.g., Metro). You also learned about using MIDI Time Code and SMPTE to sync Deck to Video. The next chapter is a comprehensive overview of all the menus and windows in Deck.

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# Chapter 9

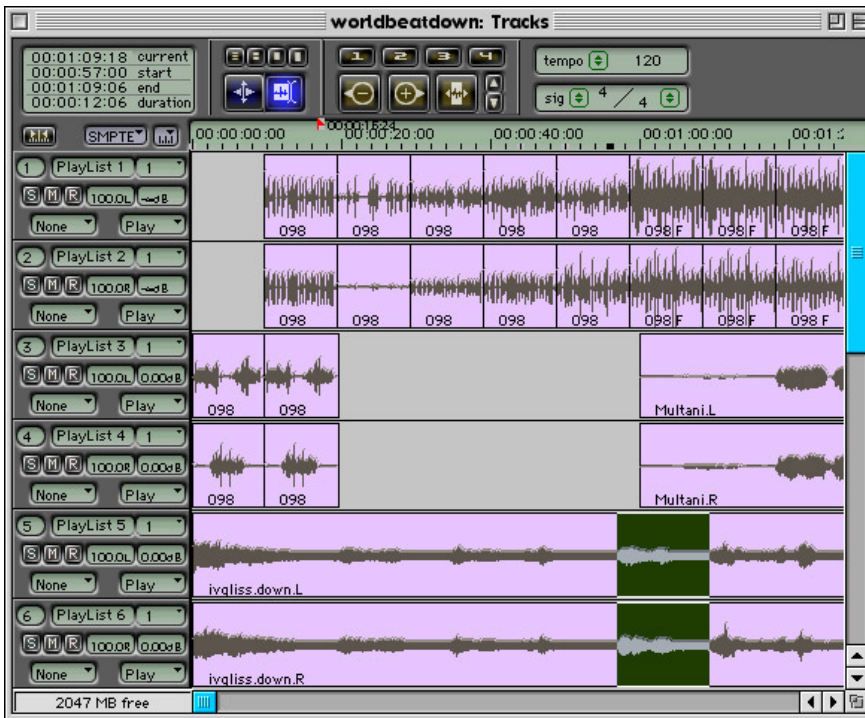
## Deck Reference





# Chapter 9: Deck Reference

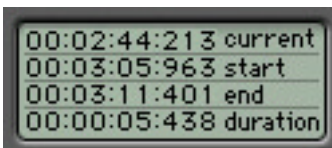
This chapter explains all of Deck's windows, screen controls, and indicators, and each of the menu commands found in each of Deck's menus. If you have a specific question about a Deck window, command, control, or function, this chapter is for you. If you are curious about a specific procedure, or you want to learn about Deck in general, then you should read through the previous chapters of this manual. For more information about digital recording, see Chapter 10, "Digital Recording and Mixing Basics."



Tracks window

## Tracks Global Control Area

The Tracks Global Control Area runs along the top of the Tracks window. It includes, from right to left, the Location Indicator, Track Size buttons, Object/Range buttons, View Memory buttons, Zoom buttons, Tempo controls, Snap to Grid, Time Axis, etc.



**Location Indicator**—Display the current time (under the hot-spot of the cursor); and the start time, end time, and duration of the selected object or range. All times are indicated in the selected axis units. For more information, see “Selecting Axis Units and Managing the Grid” on page 37.

You can place (spot) a specific point in any region to the exact frame or beat by grabbing the desired region at the start point of the waveform and dragging the region until the current time indicates the frame or beat you want. This spotting method makes it possible to spot sound by points other than region start and end points.



**Track Size Buttons**—Set the track display size. The two larger display modes are useful for detailed waveform editing; the medium size is a good all-purpose size; and the smallest can show up to 24 tracks at once, which is particularly useful for managing complex sessions.



**Object and Range Mode Buttons**—Enables Object or Range mode. Object Mode allows you to select and manipulate entire audio regions as units. It is most

useful for arrangement. Range mode allows you to select waveform ranges within or across any audio region. It is most useful for editing of components before arrangement begins (creation of loops, and so on).

Use the tilde key (~) to switch between Object and Range modes.



**View Memory Buttons**—Store and recall the current state of the Tracks window’s waveform area. For more information about storing and recalling view memories, see “Navigating the Tracks window” on page 34.



**Zoom In and Zoom Out buttons**—Adjusts the display to show more or less time. Command-click to zoom all the way in or out. Option-click to zoom in 2 times. Option-Shift-click to zoom in 4 times.



**Fit Selection button**—Expands or contracts the display so that the current selection fills the screen. In Range Mode, press the Z key on your keyboard with the mouse button still down after making a selection in the Tracks window to zoom the selection to fill the screen.



**Vertical Zoom buttons**—Manipulate the vertical display resolution of the waveforms. The up arrow expands the waveform display for viewing audio recorded at low levels, or for finding the zero points of a waveform. The down button returns the display to

normal resolution. Command-clicking on either button will immediately expand to maximum or return to normal. The square brackets—( [ and ] )—can be used instead of the Vertical Zoom buttons.



**Tempo Controls**—Set the base tempo and time signature that will be used to display and edit audio in Beat mode. These settings make it possible to set up Beat mode to snap edits and selections to the desired bar and beat lengths of positions. If you are using Metro as your sequencer, the tempo setting will automatically be set by Metro, and any changes made to the tempo will be reflected in Metro. Drag on the tempo and time signature value areas to enter new settings, or Command-click the controls to enter settings as text.

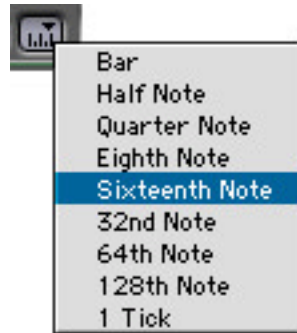


**Snap to Grid**—Turns the grid on and off. The grid units auto-adjust to match the current axis resolution. For example, when the axis resolution is set to bars, the grid is one bar. When it is set to quarter notes, the grid is one quarter note. The grid is particularly useful for music or sound arrangement according to specific tempo.



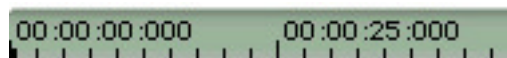
**Axis Units Pop-up**—Sets the time units by which you will be editing. The selected time units appear at on the horizontal axis directly above the waveform area of the window. You may choose between the following units: Sample, Second, SMPTE, and Beat. Sample displays the sample number in relation to the start of

the session. (If your session's sample rate is 44.1kHz, there are 44,100 samples per second.) Second displays all times in wall-clock time. SMPTE displays all times by SMPTE timecode frame, which is useful for synchronization to picture or external tape devices. (Choose Options > SMPTE Format to select your SMPTE frame format.) Beat is generally used for music composition, and is particularly useful when you are using Deck in sync with a MIDI sequencer.

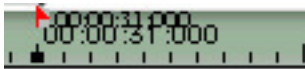


**Axis Resolution Pop-up**—Changes the waveform display to natural subunits of the master axis units. For example, Beat mode offers Bar, Half Note, Quarter Note, Eighth Note, Sixteenth Note, 32nd Note, 64th Note, 128th Note, and 1 Tick as its resolutions.

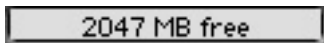
You can use the Options menu's Selection Tools submenu to set the waveform display to specific areas (the start or end of the current selection, for example) with a single command, regardless of the view resolution. Or try the Command-[ and Command-] shortcuts to jump to the beginning or ending of your selection.



**Time Axis**—Indicates the time frame of the waveforms in the waveform area. The time axis (or timeline) is always shown in the units selected on the Axis Units pop-up, and the axis is constantly adjusted as the magnification level (view resolution) is changed.



**Markers**—Provide a graphic corollary in the Tracks window to the autolocate points stored in the Transport window’s Location Time pop-ups. For more information about using markers, see “Navigating the Tracks window” on page 34.



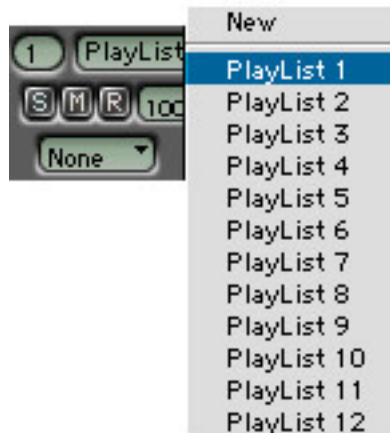
**Hard Drive Status Indicator**—Shows the amount of remaining unused space on the hard drive that contains the current session. You can usually free up more drive space by selecting File > Compact Session. If you run out of disk space while recording a new track, recording stops, thereby ruining your take. For more information about compacting a session, see “Compact Session” on page 29.

### Track Control Area

There is a Track Control Area for each track in the Tracks window just to the left of each track. It contains the Track pop-up menu, input selector box, solo/mute/record buttons, track level and pan indicators, as well as track automation view.



**Track Label/Drag Area**—in the upper left hand corner of the Track Control Area, lists the number of the current track and enables you to drag the track from this area to rearrange track order. For more information, see “Moving and Renaming Tracks” on page 33.



**Track Pop-up**—Specifies the track that is currently loaded in the indicated track position. You may change the track location by clicking and dragging on the pop-up to select a new track. You may also change the name of the current track by Command-clicking in this area.



**Input Selector Pop-up**—Specifies which audio input channels on your hardware will supply signal to the current track for recording.



**Solo and Mute Buttons**—Solo enables you to hear that track alone. Mute turns off that track’s playback. Note that multiple tracks may be soloed or muted simultaneously, and that Solo always takes precedence over Mute.





**Record Button**—Enables recording to that track. When you click this button, you will immediately be able to hear the audio that is coming through the input channel selected in the track's Input Selector. For more information about recording, see “Recording into the Tracks window” on page 24.



**Track Level and Pan Indicators**—Enable you to monitor level and pan values while editing automation. Dragging these indicators allows you to set track volume and pan levels from the Tracks window (without going to the Mixer).



**Track Automation View Pop-up**—Allows you to view, create and edit automation envelopes in the waveform area of the Tracks window. When this pop-up is set to None, then the track shows and edits only waveform information. For more information about automation envelopes, see “Visual Automation Envelopes” on page 66.



**Track Automation Status Pop-up**—Functions in exactly the same fashion as the automation pop-up explained at length on page 69. For information about real-time recording of fader motion, see Chapter 6, “Automation, Mixing, and Mastering.” When you are editing automation envelopes in the Tracks window, this pop-up is most useful for turning automation on or off by track, and for erasing all of the automation on a track. This pop-up must be set to Play during monitoring and during the mixing process to ensure that your automation data is calculated into the new file.

Hold down the Option key while selecting the automation status to set all tracks to the same status.



**Work Tracks**—Deck allows only as many tracks of audio as your system will allow, but the Tracks window lets you create an unlimited number of work tracks. A work track functions just like a play track except that you cannot hear audio played back from a work track in real-time, other than when auditioning. Use work tracks to create a virtual mix. For more information about virtual mixing, see “Virtual mixing” on page 72.

---

## Tracks window key commands

Many of the editing features in the Deck Tracks window are available only from key commands. By using key commands, Deck makes it possible to execute and modify all kinds of edits without requiring a number of different modes. Here is a list of the Tracks window key commands and what they do:

<b>Keyboard shortcut</b>	<b>Result</b>
Command-,	Positions to fit
[	Zooms in wave amplitude
]	Zooms out wave amplitude
C	Turns cue loop on and sets cue from current selection
Tab	Moves to next location time or marker
Shift-Tab	Moves to previous location time or marker
+	Moves selection ahead by set nudge time
-	Moves selection back by set nudge time
Return	Returns to zero
Tilde (~)	Toggles between Range and Object modes
Spacebar	Plays/stops/continues
Control-Spacebar	Plays from previous play position
Shift-Spacebar or Command-T	Auditions selection
Option-C	Turns cue loop off
Option-[	Full zooms in wave amplitude
Option-]	Full zooms out wave amplitude
Command-]	Jumps to left of selection
Command-[	Jumps to right of selection
Enter	Creates marker in Time Axis at current location time
Option-click marker	Deletes marker
Command-click marker	Renames marker
Shift after beginning to drag vertically	Constrains to original start time
Command-drag	“Sticks” region to end of previous region (“butt-splice”)

**Keyboard shortcut**

Control after beginning to drag  
Option-drag  
Arrow keys  
Command left/right arrow  
Option-click magnifier  
Shift-Option-click magnifier  
Command-click left magnifier (-)  
Command-click right magnifier (+)  
Command-click fit selection  
Option-click fit selection  
Option-click track view display  
Option-click automation mode display  
Command-click Track name  
Command-click track level indicator  
Command-click pan indicator  
Option-click pan indicator  
Option-click track level indicator  
Command-click horizontal scroll bar  
Command-Shift-Option-U  
X-drag  
S-drag  
Option-S-drag  
Option-Command-V  
Option-click Transport master counter  
Command-V  
Shift-Command-V  
Command-C  
Command-X

**Result**

Slides all regions later in time by length of selected region  
Copies region, leaves original behind  
Move selection up/down/left/right  
Move selection by current Grid Unit  
Zooms in/out 2 times  
Zooms in/out 4 times  
Zooms full out  
Zooms full in  
Positions selection left  
Positions selection right  
Changes all track displays to new views mode  
Changes all track automation displays to new mode  
Renames Track  
Opens volume text entry dialog box  
Opens panning text entry dialog box  
Sets pan position to center  
Sets volume slider to 0dB  
Moves Tracks window view by half screen increment  
Recalculates all region overviews  
Fits marquee to full screen without changing selection  
Solo scrubs current track  
Scrubs all tracks  
Pastes At  
Moves Tracks window to current location time  
Pastes after  
Pastes before  
Copies  
Cuts

**Keyboard shortcut**

Command-B

Command-Y

Command-A

Command-U

Shift-click automation event

Command-click automation event

Control-Command-click automation event

**Result**

Clears

Removes

Selects all

Deselects

Constrains time

Enters new automation break point

Enters new automation break point with same level as preceding breakpoint

---

**Tracks window key commands (Range mode only)****Keyboard shortcut**

A-click

Shift-A-click

Option-Shift-A-click

Shift-A-left/right arrow

Option-Shift-A-left/right arrow

Z-drag

Option-left/right arrow

Control-left/right arrow

Shift-left/right arrow

Left/right arrow

Up/down arrow

Shift-up/down arrow

Command-R

Control-click automation event

Command-up arrow

Command-down arrow

Command-Option-left/right arrow

Command-Option-up/down arrow

**Result**

Selects whole region or empty space between regions

Extends selection/insertion point to region boundary

Extends selection/insertion point to beginning/end of session

Extends selection/insertion point to region boundary

Extends selection/insertion point to beginning/end of session

Fits new selection to full screen

Moves section range left or right by selection amount

Collapses selection to left or right

Extends selection to left or right

Moves selection by current grid unit

Moves selection to neighboring track

Extends selection to neighboring track

Slices (creates new region)

Constrains amplitude

Nudges up selected automation points pixel by pixel

Nudges down selected automation points pixel by pixel

Copies selection to left or right

Copies selection above or below

---

## Tracks window key commands (Object mode only)

### Keyboard shortcut

- Control-click automation event
- Command-up arrow automation event
- Command-down arrow automation event
- Command-left arrow automation event
- Command-right arrow automation event

### Result

- Opens event entry dialog box
  - Nudges up selected automation points pixel by pixel
  - Nudges down selected automation points pixel by pixel
  - Nudges left selected automation points pixel by pixel
  - Nudges right selected automation points pixel by pixel
- 

## Mixer window


Choose Windows > Mixer (Command-2) to open the Mixer window. The Mixer window is where you control basic audio tasks, including recording, overdubbing, synchronization, mixing, automating and, on Power Macintosh, assigning real-time effects to play tracks.

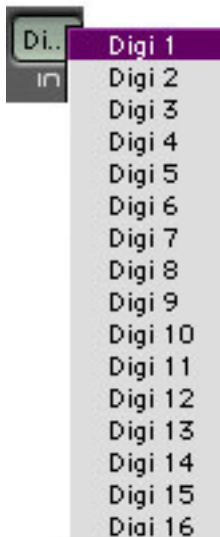
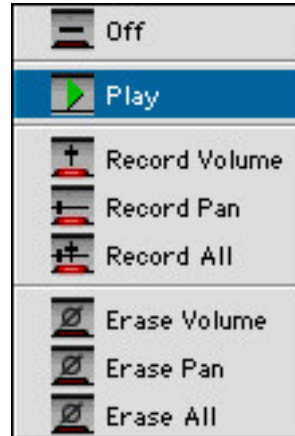


Mixer window



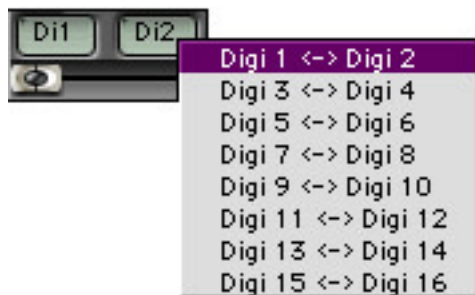
**Effect Selector Boxes**—Allows you to assign up to four real-time, in-line effects (Built-in or VST) to each play track. To temporarily turn off an effect, click the Effect On/Off button to the left of its selector box. To permanently remove an effect and all of its settings, set the selector to Thru. To open a VST effect’s edit window, Option-click on the VST effect name or choose Open editor from the pop-up menu.

 *Each enabled record track must be set to a different input. Multiple tracks cannot record from the same input.*



**Input selector**—Specifies which audio input channel on your hardware will supply signal to the current track for recording. Each enabled record track must be set to a different input because multiple tracks cannot record from the same input.

**Automation pop-up**—Is used to record, play back, and erase real-time volume and pan automation on this track. For more information about recording and editing automation, see “Visual Automation Envelopes” on page 66, and “Mixer-based Automation” on page 65.



**Track Output Pan selectors**—Specify the output pair (left and right output channel) through which the track’s audio will play.



**Pan fader**—Adjusts the placement of the track’s audio in the stereo field (left and right). This will function correctly only if you have routed your audio outputs to the left and right channels of a stereo amplification system or powered speakers.



**Volume fader**—When playing back a track of audio, the track volume fader controls the overall volume level of the track. When the track is record-enabled (with the track’s Rec button highlighted), the volume fader controls the monitor level of the input signal, not the actual level of the track’s recording. Fader values are displayed in the Transport window’s Control Value Indicator box. To enter a specific level for a fader, Command-click it. For information about setting audio input levels for various audio hardware, see Chapter 3, “Recording and Adding Audio to Sessions.”



**Solo button**—Enables you to hear that track alone. Multiple tracks may be soloed simultaneously. If a track is both muted and soloed, it will play back.



**Mute button**—Turns off that track’s playback. Multiple tracks may be muted simultaneously.

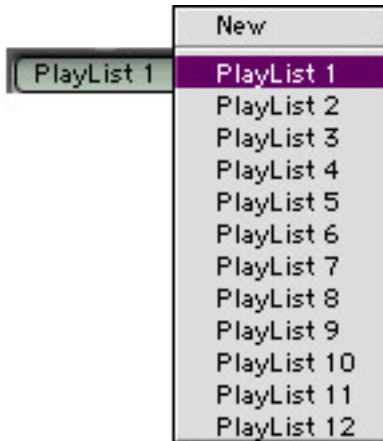


**Record-enable button**—Enables recording to that track. When you click this button, you will immediately be able to hear the audio that is coming through the input selected in the track’s input selector. For more information about recording, see “Recording into the Tracks window” on page 24.



**VU Meter and Clip Light**—When the track is not record-enabled, the meter shows you the amplitude (volume) level of the audio signal on that track, regardless of the track’s fader setting, enabling you to see where you have signal, even if that signal is muted or fully attenuated. When the track is record-enabled, the meter shows you the amplitude (volume) level of the incoming audio signal present at the selected audio input. Use it to adjust the incoming signal to the highest possible level without clipping. If the signal is too high, the Clip Light (top segment of the meter) will turn on. Click the Clip Light to turn it off, then

adjust your signal.



**Track Selection pop-up**—Specifies the track that is cued to play on this track location. Command-click this area to rename the current track.

### Channel Signal Flow

The signal flow in Deck from audio file playback to output is important to understand when applying panning, as well as VST plug-ins or Deck's Built-in effects. The signal path for audio file playback comes first from disk (or the specified channel input during recording), passes in mono through Deck's Built-in effect(s) (if any are enabled on that channel), through Deck's channel volume fader (mono gain control), through any mono-to-mono VST effects, and through the volume fader; it is then panned left/right to the assigned outputs via the panner fader, and finally passes through any active stereo-to-stereo VST plug-ins on the channel in question before passing through the assigned Master Outputs.

## Transport Window

Choose Windows > Transport (Command-1) to open the Transport window. The Transport window controls audio playback and recording, and linear movement through your session, much like the transport controls on an analog tape deck. The Transport does not have to be the active window for the Transport buttons to function.



*Transport window, full size*



*Transport window, medium size*



*Transport window, minimum size*

The Transport window has three possible sizes. Click the window's zoom box to adjust its size.





**Master Counter**—Shows your current position in the session, and allows you to drag on it to scrub audio playback in either direction for exact location. When you first start up Deck, the default time units are set to SMPTE frame (29.97 frames per second non-drop). To choose a different time unit (such as seconds, or beats) use the Axis Units pop-up in the Tracks window. If you wish to set the session start time to a nonzero value, choose Options > SMPTE Start Time.

Option-click the Master Counter to automatically scroll the Tracks window to the Master Counter time. The Tracks window will automatically scroll after playback stops if you have the Scroll after Play preference turned on. For more information, see General Preferences in the File menu section on page 120. The Tracks window will scroll during play if you have Scroll during Playback enabled in the Option menu.



**Transport Buttons**—Function very much like those on an analog tape deck. The buttons are, from right to left, Return-to-zero, Rewind, Stop, Play, Fast Forward, and Record.

The normal function of the Record button is to enable non-destructive (constructive) recording. This means that the punching in of new audio over old will not erase the original audio. This is a safer recording method, and it allows you to go back to a previous version if you don't like a punch-in.

Spacebar is the default keyboard command for both play and stop. Control-Spacebar to begin playing from the last counter position, not the current one. The Return key is the shortcut for Return-to-zero. Keyboard shortcuts for the transport controls can be changed with the General Preferences command.

For information about external control of the transport buttons, see “MIDI Key Maps” on page 88.



**Slide Locator**—Offers you an easy way to locate quickly to any part of the current session. Drag on the horizontal slider to move around in the recording. As you drag the slider, the tape counter is updated to show you the current time. When you let go, you will be ready to begin playback or recording from that point.

The slide locator is useful for general movement around the current session, but the autolocation buttons, explained in “Location times” on page 26, provide a quicker and more accurate method for exact time location.



**Punch Mode**—Toggles Deck record functions into punch mode. When Deck is in punch mode, the begin counter sets the punch-in point and the end counter sets the punch-out point. When punch mode is on, all recording will occur only between the punch-in point and punch-out point. For more information about automated punch-in and punch-out, see “Automated punch-in and punch-out recording” on page 27.



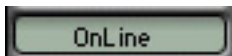
**Loop (Rehearse) Mode**—Toggles Deck playback functions into loop (rehearse) mode. When Deck is in loop (rehearse) mode, the begin counter sets the loop start point and the “end” counter sets the loop end point. When loop mode is turned on, the loop range alone (from begin to end) will play back repeatedly. For more information about loop/rehearse, see “Loop mode” on page 27.



**Begin and End Time Counters**—Indicate the times that will be used by the loop (rehearse) and punch functions. These counters may be set in five ways:

1. Set a selection range in the Tracks window, then press C. This method will automatically enable looping.
2. Click the begin and end buttons during playback to pick up the current counter time.
3. Drag the counters left or right to scrub their values with audio.
4. Command-click the counters to enter precise times directly.
5. Choose Options > Selection Tools > Set Punch Time From to set the begin and end times from the current Tracks window selection.

Command-click the begin or end button to move that time up into the Transport window’s main counter.



**Status Indicator**—Alerts you to certain situations. For example, when Deck is set to slave to timecode, the status indicator will contain the word “Standby.” If you are ever unsure what is required of you at a particular stage of Deck production, or if Deck seems to be waiting for something, make sure to check this indicator.



**Control Value Indicator**—Displays the value of the real-time effect, mixer pan, or mixer volume control

you are currently moving. This indicator will also show you the value of most of the controls in the Effect window, so that you can keep track of the parameters of each Effect control as you adjust it.



**Location Times**—Are counter memories that allow you to store up to 200 times for immediate recall and location. Location times are stored as a part of the session file, and will always remain with the session in which they were created until they are replaced or reset. Location times are displayed as red markers in the Tracks window. For more information about location times, see “Location times” on page 26.



**Mixer States**—Allow you to take a snapshot of the current mixer setting for later recall. Mixer states are stored as a part of the session file, and will always remain with the session in which they were created until they are replaced or reset. For more information about using mixer states, see “Using mixer states” on page 69.



**Pitch Control Fader**—Allows you to adjust the audio playback speed by small amounts in order to compensate for pitch and time conflicts (as on a multitrack tape deck). It acts as a tape speed control that allows you to slow down playback speed from normal speed to a near stop (–98%). Some audio distortion may result from extreme settings.

Digital disk-based pitch control is accomplished using real-time sample rate conversion, which strains your CPU to the limit. Resetting the pitch control to zero will turn the tracks back on.

You may also set the session playback rate using the Pull-down command from the Options menu. Pitch control is a playback-only feature. Deck always records at normal speed.

## Library window

Choose Windows > Library (Command-6) to open the Library window.

The Library window allows you to easily view all of the audio source material that your session currently contains. You may also drag and drop, or cut and paste, audio regions from the Library window into the Tracks window.

The first column shows the names of the regions you have placed in your session. The second column shows the length of the region, and the third column shows the location on your hard drive of the associated audio file.

If you are importing large quantities of material, use the Add Audio dialog box to import all of it. Then use the Library window to spot the regions accurately, rather than pasting them directly into the Tracks window.

The Library window will initially show regions that you have imported into Deck, with the Add Audio command, for example. If you want to see all regions in your session in this window, select Update from Session from the Session menu’s Library Operations submenu. For more information about Library Operations, see “Session menu” on page 138.

Library		
⏏ Pow Riff B 98 bpm.L	00:00:02:13	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Pow Riff B 98 bpm.L
⏏ Pow Riff B 98 bpm.R	00:00:02:13	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Pow Riff B 98 bpm.R
⏏ Red Mod 98 bpm.L	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Red Mod 98 bpm.L
⏏ Red Mod 98 bpm.R	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Red Mod 98 bpm.R
⏏ Rubber Lap 98 bpm.L	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Rubber Lap 98 bpm.L
⏏ Rubber Lap 98 bpm.R	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Rubber Lap 98 bpm.R
⏏ SSF Vowel 98 bpm.L	00:00:02:13	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:SSF Vowel 98 bpm.L
⏏ SSF Vowel 98 bpm.R	00:00:02:13	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:SSF Vowel 98 bpm.R
⏏ Spring 98 bpm.L	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Spring 98 bpm.L
⏏ Spring 98 bpm.R	00:00:04:26	Big Note :AUDIO:Deck Sessions:worlIdbeatdown:worlIdbeatdown audio files:Spring 98 bpm.R

Library window



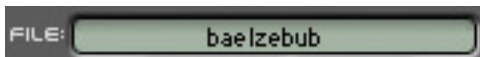
## MIDI window

Choose Windows > MIDI (Command-5) to open the MIDI window.

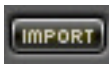


MIDI window

The MIDI window can be used to import a standard MIDI file to play back with your session, in sync with your audio tracks. For more information about using MIDI, see Chapter 8, “MIDI and Synchronization.”



**File Indicator**—Shows you the name of the current MIDI file.



**Import Button**—Imports a MIDI file into the session. If you select a new MIDI file, all current MIDI data will be erased.

Deck only supports the importation of Standard MIDI files as defined by the International MIDI Association specification version 1.0 (that is, Type 0 and Type 1).

**Subscribe Button**—Subscribes to your Standard MIDI file. With the subscribe function on, whenever Deck is switched from the background to the current application, it will look at the current Standard MIDI file to see if it has been changed. If the modification time is more recent than when you first imported the file, Deck will automatically re-import the file. This function allows you to edit your MIDI file and have the changes be reflected in your session.

For the subscribe function to work properly, you must re-export your file into Standard MIDI format using the same name.



**Mute All Button**—Mutes all MIDI tracks. This command takes precedence over Solo and Mute buttons on individual MIDI tracks.



**MIDI Thru Track**—The first track in the MIDI Window is the MIDI Thru track.

**MIDI Thru Port**—Uses the default port you selected in the MIDI preferences dialog box as the port through which outgoing MIDI data is sent.

**MIDI Thru Switch**—Toggles the MIDI Thru track on and off. When the switch is on, Deck will send any MIDI data coming into the system out the MIDI Thru port.



**Track Name**—Rename the track by Command-clicking on the desired track.



**Track Port Indicator**—If you are using OMS, the pop-up will display a list of your OMS instruments. If you are using Deck's internal MIDI setup, this area will display the ports you chose in the MIDI Setup available in the Options menu.



**Track Channel Indicator**—Indicates the channel through which the MIDI data is played. Change the channel by clicking in the channel area and dragging up or down to the desired channel number. A dash (-) indicates that MIDI data will be played through the channels indicated in the original file.



**Solo and Mute buttons**—Solo enables you to hear that track alone. Note that multiple tracks may be soloed simultaneously, and that track Solo always takes precedence over track Mute. Mute turns off that track's playback.

---

## QuickTime window

Choose Windows > QuickTime™ (Command-4) to open the QuickTime movie window. QuickTime window allows you to load and play a QuickTime movie in sync with your digital audio. For more information about using QuickTime movies, including descriptions of the commands on the QuickTime menu, see Chapter 7, “QuickTime.” Also see, “QuickTime menu”, on page 140, for more information on Deck's QuickTime functions.

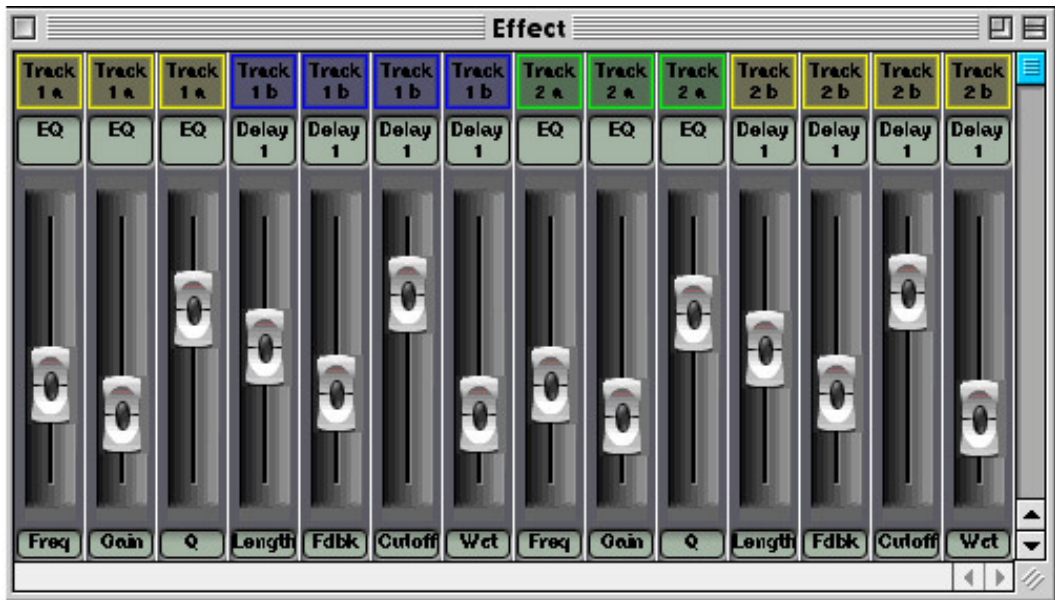
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## Effect window

Choose Windows > Effect (Command-7) to open the Effect window. The Effect window contains the controls for all of Deck's real-time in-line audio effects. For more information about using effects, see Chapter 5, "Effects."

The Effect window contains the controls for all real-time effects currently selected for your session. To add effects to a session, use the Effect Selector boxes in the Mixer window to add up to four effects per play track. Then open the Effect window (Command-7) and you will see a set of control sliders for each effect you have selected. You can configure the Effect window by using the Preferences submenu, found in the File menu's Preferences submenu.

By using the Transport window's Control Value Indicator, you can track the value of effects sliders as you move them. This can help you zero in on a particular frequency band while using an EQ effect, or adjust delay time for a Delay effect, for example



Effect window

## Master Outputs window

Choose Windows > Master Outputs (Command-9) to open the Master Outputs window. Use the Master Outputs window monitor and attenuate the levels of stereo pairs of outputs. You can also assign VST Plug-Ins to mono and stereo outputs.



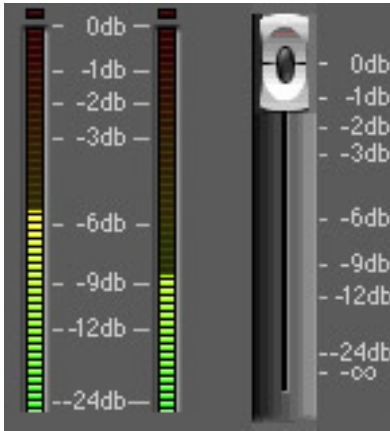
Master Outputs window, stereo



**Output Indicator boxes**—Displays the master channel output assignment of your audio interface. They are always grouped in stereo pairs.



**Effect Selector pop-ups (Mono/Stereo)**—Allows you to assign up to four real-time, in-line effects (VST only) to either a mono (mono to mono) master output channel or to a master output stereo pair (stereo to stereo). To temporarily turn off an effect, click the Effect On/Off button to the left of its selector box. To permanently remove an effect and all of its settings, set the selector to Thru. To open a VST effect's edit window, Option-click on the VST effect name or choose Open editor from the pop-up menu. For more information about using VST effects in the Master Outputs window, see Chapter 5, “Effects.”



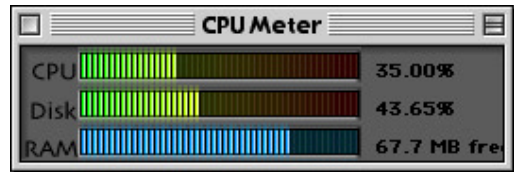
**Master Fader**—When playing back the mix of your Deck session, the Master Volume Fader controls the overall volume level of the stereo master outputs. Fader values are displayed in the Transport window's Control Value Indicator box. The VU Meters and Clip lights are post-fader on the Master Outputs.

**VU Meters and Clip Lights**—Show you the amplitude (volume) level of the audio signal on the stereo master output. The meters are post-fader. Use it to adjust the master output signal to the highest possible level without clipping. If the signal is too high, the Clip Lights (top segment of the meter) will turn on. Click a Clip Light to turn it off, then adjust your signal with the Master Fader.

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## CPU Meter window

Choose Windows > CPU Meter (Command-0) to open the CPU Meter window. Use the CPU Meter window to monitor Deck's usage of the CPU, disk, and RAM.



*CPU Meter window*

**CPU**—monitors the percentage of maximum real-time CPU cycles Deck is using.

**Disk**—monitors the percentage of maximum throughput on your hard drive(s).

**RAM**—monitors the amount of RAM available from the amount of RAM that has been allocated to Deck. See “Allocating RAM to Deck”, on page 10.



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## File menu

The File menu contains most of the commands you will use to create, open, import, load, and maintain the different files used by Deck.

**New (Command-N)**—Creates a new empty session.

**Open (Command-O)**—Opens a session.

**Close Session (Option-Command-W)**—Closes the current session.

**Save (Command-S)**—Saves all of the changes that have been made to the session since the last save. If you have the “Always Save Regions when Session is Saved” preference set (File > Preferences > General) then saving the session will automatically save all region definitions to their associated sound files.

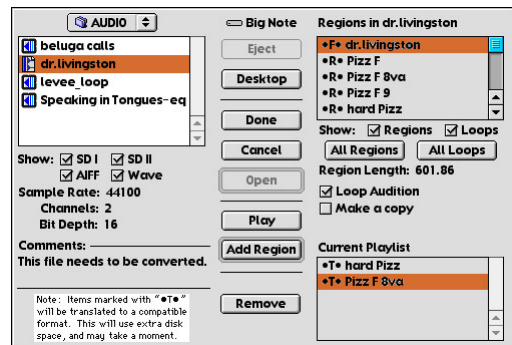
**Save A Copy As**—Allows you to create and save a copy of the currently open session under a new name. This procedure will only copy the session document, and not the associated audio file and crossfade folders.

When two session files share the same audio files, any destructive audio edits (Normalize, Invert, and so on) will always appear in both. For this reason, it is often wise to execute destructive edits on a copy using the Make a Copy button in the Destructive Effects dialog box.

**Revert**—Disregards all changes made to the current session and opens the most recently saved version of that session.

**Add Audio to Clipboard (Command-D)**—Allows you to select any sound file or set of sound files from any mounted drive, and add those sound files to the Clipboard and the Library window for pasting onto any track in the Tracks window. Note that you must have a session already open to use this command. For more

information about adding audio to a session, see “Adding Audio Files and Regions to a Session” on page 22.



**Add SND to Clipboard**—Allows you to select any sound resource on any mounted hard drive, and add that sound resource to the Clipboard for pasting onto any track in the Tracks window.

**Add SDII Playlist to Clipboard**—Allows those with Digidesign hardware to edit playlists using Sound Designer II software and easily import their work into a Deck session.

**Load Audio File (Command-I)**—This command remains in Deck from original DECK, and is here for the convenience of original Deck owners. Generally, you will be much better served by adding audio directly to the Tracks window using the Add Audio to Clipboard command. Using the Load Audio File command as a shortcut allows you to load an existing audio sound file directly onto any active play track.

Only monophonic or split stereo Sound Designer II sound files may be loaded using the Load Audio File command. For other file formats, see Adding Audio Files and Regions to a Session on page 22.

**Add Audio CD Track To Clipboard (Option-Command-D)**—If you have a built-in Apple double speed or faster CD-ROM drive, or other supported drive, you can use the Add Audio CD Track command

to add tracks from any audio CD to the Deck Clipboard. Note that this is a digital transfer process so there is no loss of signal or sound quality. Also note that we use QuickTime to accomplish CD audio lifts, so don't be confused by the importing movies status display you'll see as the lifts occur.

**!** *In order to use this feature, you must have either the Apple CD-ROM driver, or a driver that is 100% compatible. Also required is the Foreign File Access System Extension with its Audio CD support file, version 5.0.1 or later. In addition, a supported CD-ROM mechanism is required.*

**Compact Audio File**—Lets you get rid of unused audio data in a sound file. Compacting audio is a destructive process. For more information, see “Using Compact Session and Compact Audio Files” on page 90.

If you use the entire sound file in any session, you will find that there is no unused audio data to delete. In such a case, Compact Audio File may not increase your available drive space.

**Defragment Audio File**—Defragments a designated audio file. You may generally prefer to optimize you audio hard drives with a separate application, such as Norton Speed Disk.

**Launch Metro (Option-Command-I)**—If you have the Metro sequencer installed on your computer, the Launch Metro command will automatically launch, or bring Metro to the foreground if it is already open. For more information on using Deck with Metro, see “Using Deck with the Metro Sequencer” on page 90.

**Import MIDI File**—Allows you to import MIDI files into your session without opening the MIDI window. For more information about Deck's MIDI import functions, see “Importing MIDI Files” on page 92.

Deck's MIDI Preferences are preset to split channels when importing. If you do not wish the channels to be split, turn this preference off.

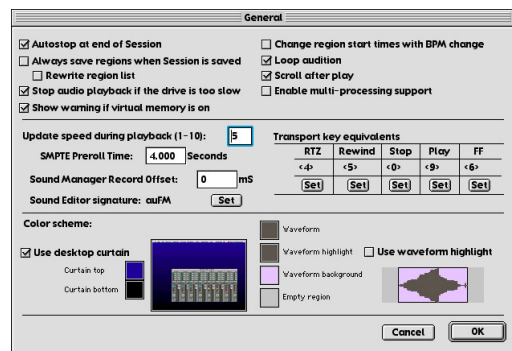
**Dispose MIDI File**—Removes the current MIDI file from your session.

**Load MIDI Map**—Loads previously configured and saved MIDI maps. This is especially useful if you regularly work with different control interfaces or if you frequently use the same MIDI Mappings in every session. To Load a previously saved MIDI Map, select Load MIDI Map from the File menu and locate the desired MIDI Map on your hard drive and click Open. For more information on mapping MIDI controllers to faders in Deck, see “MIDI Key Maps”, on page 88.

**Save MIDI Map**—Saves your custom MIDI Maps. This is especially useful if you regularly work with different control interfaces or if you frequently use the same MIDI Mappings in every session. To Save your MIDI Map, simply select Save MIDI Map from the File menu and you will be prompted to Save the current MIDI Map to your hard drive. For more information on mapping MIDI controllers to faders in Deck, see “MIDI Key Maps”, on page 88.

## Preferences

### General Preferences



General Preferences dialog

**Autostop at end of Session**—Lets you select whether Deck should automatically stop playback when the end of the current session's longest track is reached.

**Always save regions when Session is saved**—

Makes sure that all audio regions you have created or edited are saved at the same time the session is saved. If you turn this preference off, the audio regions you create will be local to the session only, and will not be available for use within other programs (e.g., Peak) until you select the Session menu's Export Session Regions command. This preference should generally be turned on. This preference needs to be on for compacting to work.

**Rewrite region list**—Allows you to select exactly what happens when regions are saved out to their source sound files. If turned on, existing regions are deleted from the source sound file and replaced by the current regions when the session is saved. If turned off, the current regions are added to the source sound file. Regions with the same name replace their older versions, but no existing sound file regions are deleted. Use this option with care. If all of the sound files in the current session are used only by that session, this command will keep those sound files in perfect sync with the session. This will make the sure that the Compact Session command will yield the best results by making sure that no extraneous regions remain in the source sound files. This preference needs to be on for Compacting to work.

**Stop audio playback if the drive is too slow**—

Allows you to set how carefully Deck checks to see if your drive is too slow. If you attempt to play multiple tracks from a very slow drive, Deck may not be able to play them without a small skip in playback. Often this skip is so subtle you will not be able to hear it. When this preference is turned on, Deck will put up a warning dialog box and immediately stop playback any time disk performance might cause a playback skip. When this preference is turned off, Deck will continue to play back, even if a slight skip is possible.



*If you are mixing live directly to DAT or a mastering medium, then turn this preference on. It guarantees that audio playback will be supervised and stopped before any skip might occur. If you are simply editing sound and you plan to mix to disk, then leave this preference turned off. Almost all skips will not be audible, and even if you do hear one, it will not appear in the master file that results from a mix-to-disk.*

**Change region start times with BPM change**—

This preference applies only to edits made in the Tracks window when you are in Beat mode. When this preference is turned on, any change to the tempo in the Tracks window will move all audio regions to adjust their start times to the new bar/beat boundaries. This is useful if you are using Deck as a virtual drum machine, with individual sounds that should shift with a tempo change. When this preference is turned off, any change to the tempo in the Tracks window will not move any audio regions. This is useful if you are using Deck to arrange segments of audio that have their own internal rhythms, or if you are doing synchronization work, and want to make sure that audio times always remain unchanged.

**Loop audition**—When this preference is on, the Process menu's Audition Selection command will automatically loop any selected range during playback. When the preference is off, Audition Selection will only play back the selection a single time.

**Scroll after play**—When this preference is turned on, Deck will automatically scroll the Tracks window to the point at which playback stopped. You can use this function to easily find the waveforms you just played.

**Enable multi-processing support**—Enables multi-processing support for Deck's built-in effects. This means that Deck's built-in effects will run on the second processor, if one is present, while all other functions run off the primary processor.

**Update speed during playback**—This preference allows you to set how much time is available for other programs to update in the background behind Deck audio playback. A setting of 1 allows the background program to update as often as possible. This setting makes it easier to see screen activity in background programs. (If you are running Metro in the background, you may want to use a setting of 1 to make it easier to see what’s happening in Metro’s windows during Deck playback.) A setting of 10 prevents background programs from updating during playback, allowing Deck to monopolize your display. This setting does not affect the performance of the background program at all. It only affects screen drawing. A setting of 5 is suggested.

**SMPTE Preroll Time**—This setting applies only if you are recording or playing audio while online and synchronized to SMPTE timecode. In such cases, the preroll time is the time you allot to Deck to lock up and begin playback. The number of seconds you choose is the time between the first received SMPTE frame value and the start of Deck playback. If you have a fast Macintosh and fast hard drive(s), you can set this to a lower number (2 seconds, for example) for faster lockup times. If you have a slow Macintosh, slow drive(s), or problems locking up to SMPTE, try setting this value to 6 or 8 seconds. (In almost all configurations, the default will suffice.)

**Sound Manager Record Offset**—Allows you to specify an offset time in milliseconds when recording via the Apple Sound Manager. This allows you to make adjustments for latency.

**Sound Editor signature**—This preference applies only to the Launch Editor command on the Process menu. It is designed for users who wish to use a dedicated two-track editor to further edit their Deck audio regions (e.g., BIAS Peak). This is the Macintosh signature of the program you wish to launch as your waveform editor. To choose the program you wish to use as your an external editor, click the Set button, and use the resulting Open dialog box to select the program. When you click the Open button, the

editor’s signature will appear. From that point on, when you select a waveform region in the Tracks window (when in Object mode) and select Launch Editor (Command-E) from the Process menu, you will be launched into your audio editor, and the correct sound file will appear with the applicable range selected. For more information on using an External Editor with Deck, see “Using and External Editor” on page 48.

**Transport key equivalents**—These boxes indicate the Macintosh keyboard keys that will operate your Deck Transport controls. Any key that types a visible character can be used as a Transport key (e.g., keys such as return and clear cannot be used). Once you set these equivalents, the Deck Transport buttons can be controlled directly from the keyboard. To set a key equivalent, click the applicable Set button. Then press the key you desire for that function.

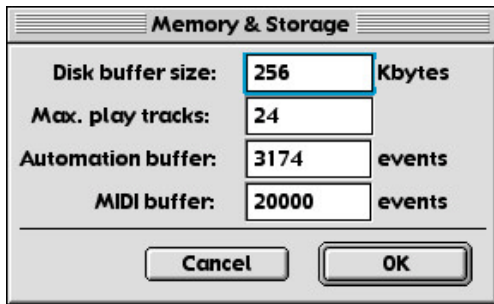


*Only one function may be used per key.*

*During the setting process, if you attempt to type a key that is already assigned to another function (or if you click a key that is not valid), you will hear a warning beep. You must click a valid key before you will be allowed to continue.*

**Color scheme**—Allows you to set the color preferences for the Waveform, Waveform highlight, Waveform, and Empty region display. You may also choose to Use desktop curtain and its colors, as well as whether or not to enable the Use waveform highlight function.

## Memory & Storage Preferences



*Memory & Storage Preferences dialog*

**Disk buffer size**—Deck accomplishes its recording and playback tasks by routing hard disk audio data through RAM and then out of your audio outputs. The chunks of audio data that are placed in RAM reside in the disk buffers. When you have a small disk buffer (128K or less), Deck can load and manipulate these buffers quite quickly, so program response may seem smoother, but more pressure is put on the performance of the hard drive. When you have a large disk buffer (512K or more), it may take Deck longer to load the buffers from disk, but those loadings can occur less often, so less performance is required from the drive. If you have a fast Macintosh and a fast drive, leave this setting at 192K. This should allow generally smooth operation. If you have a slower Macintosh, or especially a slower drive (an erasable optical drive, for example) increase these buffers until your playback performance increases. It is not uncommon, with extremely slow drives, to use a disk buffer setting of 1024K.

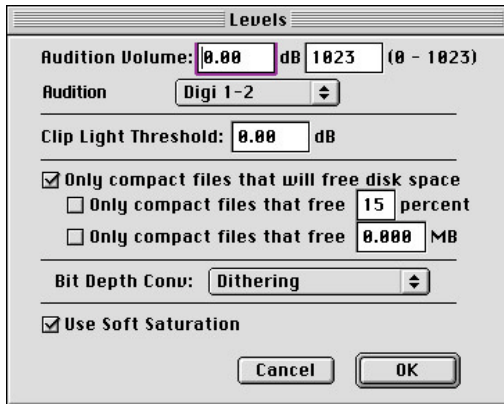
Your disk buffer is stored in RAM. If you increase the size of your disk buffer, you should also increase the amount of RAM you allocate to Deck. This is accomplished by selecting the Deck icon in the Finder, and choosing Get Info from the File menu. Use the resulting window to increase the preferred RAM allocation. Multiply the number of tracks by the increase in disk buffer size, and enter in that amount. (Remember, there is one disk buffer for each play track.)

**Max. play tracks**—Use this setting to select the number of playback tracks for Deck sessions. You can decrease this number if you wish to use fewer playback tracks (to save RAM by decreasing the number of allocated buffers, for example) but you cannot increase the number of tracks above your system's limitations. It's quite possible to exceed your system's capacity by throwing up more play tracks than your CPU or hard drive can handle. If you're adjusting this value, it is recommended that you keep the "Stop Audio Playback if the drive is too slow" General Preference enabled.

**Automation buffer**—This setting is the number of automation events allocated to your session. If you are using basic automation envelopes for simple level and pan changes, this setting should suffice. If you are creating complex automation envelopes, or using large amounts of real-time fader automation recording, then you may need to increase the buffer size. Remember, if you increase it by a large amount, you should also increase the amount of RAM allocated to Deck.

**MIDI buffer**—This setting is the number of MIDI events allocated to your session. The default setting should suffice for small files. If you have long MIDI files, or many tracks, then you may wish to increase this allocated amount. Remember, if you increase it by a large amount, you should also increase the amount of RAM allocated to Deck. If you never use MIDI, you can set this to 0 to conserve RAM.

## Levels Preferences



**Audition Volume**—Determines the level of audition volume. You may choose either a dB value or a number between 0 and 1023.

**Audition Outputs**—Sets the audition outputs to any stereo output pairs on your ASIO-compatible audio interface.

**Clip Light Threshold**—The clip light turns on if the incoming signal is above the Clip Light Threshold. The default setting is 0.00dB—use this setting to lower it. Remember, audio that is clipped may be distorted.

**Only compact files that will free disk space**—This preference and those associated with it control how much disk space the Compact File and Compact Session commands will free up. The Compact command writes each region into a new file and eliminates any data that is not used in the original file. However, if you have many regions that overlap in a file, the compaction process will not save you any disk space; it may even take up more. It is recommend that you leave this setting turned on.

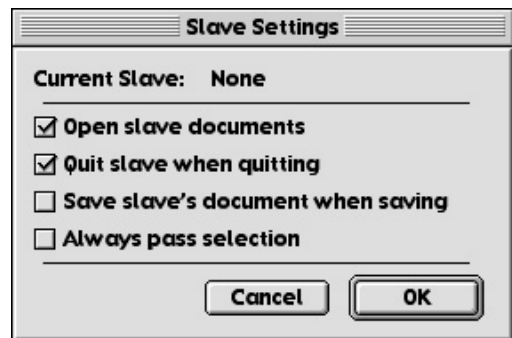
**Only compact files that will free x percent**—Like the above preference, this preference further constrains the Compact command. Simply choose a percentage and the Compact command will not work below that amount.

**Only compact files that will free x MB**—Like the above preference, this preference constrains the Compact command. Simply choose a number and the Compact command will not work unless it frees that much disk space.

**Bit Depth Conversion**—Sets the default bit-depth conversion method in the Mix-To-Disk, Mix Regions as Files and Export Movie dialog boxes. Bit depth conversion will only affect mixdown, and will only be enabled when you are converting 16-bit audio down to 8-bit depth. Setting the default will only affect the default choice that appears in the Bit Depth Conv. pop-ups in Deck—you can still use the pop-ups to select any of the four methods when mixing or exporting audio.

**Use Soft Saturation**—Enables Soft Saturation. Soft Saturation mimics analog distortion and compresses the dynamic range to give you additional headroom before clipping. Nonetheless, it is best to adjust your input levels while recording to avoid clipping and not use soft saturation.

## Slave Settings Preferences



*Slave Settings Preferences dialog*

**Current slave**—This indicator shows the name of the program that is running as a time-linked slave to Deck on your Macintosh. This will generally be a sequencer (e.g., Metro), but it can be any background-compatible

program that understands Deck's timing architecture. If you have a program that is incompatible with this slaving architecture, please contact BIAS and the program's manufacturer.

You do not need to choose a Current Slave program. The slave software automatically makes itself known to Deck using AppleEvents. All you have to do is start up the slave program one time with Deck running in the background. If the program is slave-compatible, its name will then appear in this indicator.

**Open Slave Documents**—This check box lets you choose whether Deck should always start up the slave application and open the slave's associated document whenever a Deck session is opened. When you are running Metro with Deck, for example, Deck keeps track of what MIDI file is open in Metro and associates that MIDI file with the current Deck session file. When you have Open Slave Documents checked in this dialog box, opening a Deck session will automatically open the associated MIDI file in Metro in the background.

Both Deck and Metro offer the ability to open the other application and its associated document. Turn on this function in one program or the other, not in both. Choose which program is the one you generally use first in the composition or tracking process, and configure that program to open documents in the other application.

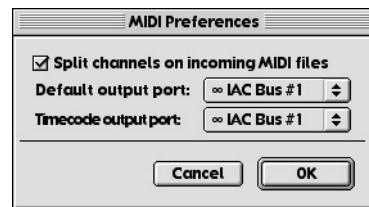
**Quit Slave When Quitting**—This check box lets you set Deck to force the slave application to quit when you quick Deck. This is a simple timesaving function, and is particularly useful if you are using the slave in a transparent way, and you don't want to be reminded that the slave is even running.

**Save Slave's Document When Saving**—This check box allows you to choose whether Deck should automatically save the slave program's document any time the current Deck session is saved. This preference is useful, because it helps make sure that Deck session versions always stay in sync with slave

application documents (e.g., Metro MIDI files).

**Always Pass Selection**—This check box enables the Pass Selection function in Deck, so that when you stop at any time in Deck and switch to Metro, Metro's Transport and other windows will be set at the same time. For example, if you stop Deck at Bar 37 to do some editing and then switch to Metro to edit the same section, all of Metro's windows will show the corresponding Metro MIDI events at Bar 37.

## MIDI Preferences



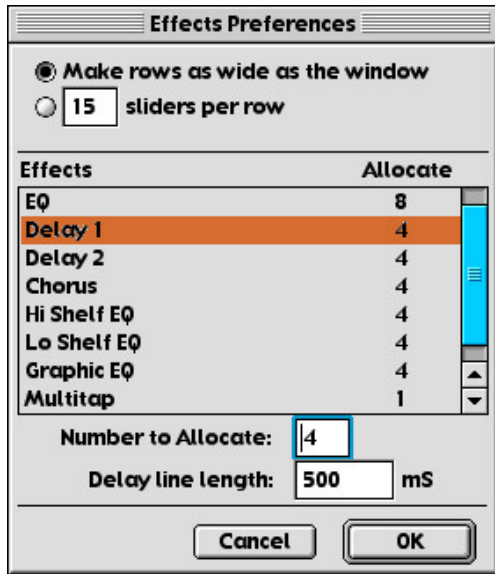
*MIDI Preferences dialog*

**Split channels on incoming MIDI files**—When this preference is on, Deck will split the channels when you import a MIDI file. This is useful when you are importing Type 0 MIDI files, which store all track data in one channel.

**Default output port**—This pop-up lists your MIDI ports and uses the first one on the list as the default output port. To change the port, simply select a different port using the pop-up menu.

**Timecode output port**—This pop-up controls through which port outgoing MIDI timecode is sent. To change the port, simply select a different port using the pop-up menu.

## Effects Preferences



*Effects Preferences dialog*

**Make rows as wide as the window and sliders per row**—These options control the on-screen layout of the Effect window sliders. “Make rows as wide as the window” allows you to fluidly re-configure the window size by using the Macintosh window size tool (the grab area in the lower right-hand corner of the Effect window). The sliders per row field allows you to specify a set width for the Effect window.

**Effects Allocation**—Allows you to specify the maximum number of Deck’s real-time built-in effects, for each effect. To set this preference, click the name of the effect you wish to allocate, then enter a number in the Number to Allocate box below.

**Delay line length**—Set the maximum delay line length (or loop time) for Deck’s real-time delay effect. This setting is in milliseconds (ms), or thousandths-of-a-second.

## Save Settings as Template

Choose File > Preferences > Save Settings as Template, and Deck will take a snapshot of the current location of all open windows in the current session, and use that as a template. Whenever you create a new session, Deck will automatically open only those windows, and they will be in the same location as they were when you selected Save Settings.

**Quit (Command-Q)**—Closes the current session and quits Deck.

## Edit menu

Most edits in Deck consist of placing components (sound file regions), copying and/or pasting those components. The Edit menu contains all of the commands you will use to apply your typical Macintosh edit functions.

**Undo (Command-Z)**—Reverses the effect of the last edit operation performed. Undo only reverses the most recently performed action. Deck will always warn you if you are executing a process that cannot be undone (certain destructive effects, for example).

**Clipboard Memories**—You can copy or cut to, and paste from, any of four clipboards, labelled A, B, C, and D. Only one of the four is active at any one time. Use the Clipboard Memories submenu to select a new Clipboard, or use the key command shortcuts: Shift-Command-Option-A/B/C/D. Note that inactive clipboard memories still retain their contents (if any). When you have frequently-used regions, keep them in Clipboard memories, so they’re always ready for pasting into your session.

**Cut (Command-X)**—Removes selected data from its original location and places it on the Macintosh Clipboard for pasting (or for deletion).

Cut removes data; it does not affect time. When you cut waveform data, a space is left where the data was



located. If you want to cut out waveform data and close the gap by sliding later waveform data earlier, use the Remove command.

**Copy (Command-C)**—Makes a duplicate of selected data and places that duplicate data on the Clipboard.

**Clear (Command-B or Delete)**—Removes the selected data without placing it on the Macintosh Clipboard. This command makes it possible to copy a waveform region, clear a different region, and then paste the originally copied region.

If you are copying regions from more than one track, you will need to select more than one destination track for any Paste command. Selecting a single destination track will paste only the first copied track.

**Paste Before (Shift-Command-V)**—Pastes the Clipboard contents before the insertion point or selection range, with the end of the pasted region(s) butt-spliced to the beginning of the previous selected range.

**Paste At (Option-Command-V)**—Pastes the Clipboard contents at the insertion point or selected range, replacing the selection, if applicable. If the Clipboard contents are longer than the selected destination range or region, then the entire Clipboard will be pasted, potentially covering up audio regions after the paste point. If you want to constrain the paste not to exceed the size of the selected range or region, use Edit > Replace.

**Paste After (Command-V)**—Pastes the Clipboard contents after the insertion point or selected range, with the beginning of the pasted region butt-spliced to the end of the selection.

**Multiple Paste After**—Pastes the Clipboard contents multiple times, as directed, after the insertion point or selected range.

**Replace**—Replaces the currently selected range or region with the Clipboard contents. If the Clipboard

contents are longer than the selected destination range or region, then only that portion of the Clipboard that fits into the selected range will be pasted. If the Clipboard contents are shorter than the selected destination range or region, then the Clipboard contents will replace the entire selected range or region, potentially creating an area of silence at the end of the destination range or region.

**Slice (Command-R)**—Performs an in-place separation of the selected waveform Range, thereby making a region out of that range. Slice is only available in Range mode. To slice a waveform range, simply select that range and choose the Slice command. This will create a stand-alone waveform region which you can use for arrangement purposes. Remember, Deck offers an even faster way to slice a region for arrangement purposes. You can always just select the waveform range you desire, then click and hold the mouse on the selected range, and drag that range (or Option-drag a copy) to the new destination. This tear-off solution is often much faster than the Slice command when you are doing basic arrangement; however, the Slice command is very useful if you wish to define a new region without moving that region.

You can also use the Slice command when only an insertion point is present. This allows you to create a boundary, thereby generating two regions (the region before the boundary and the region after the boundary).

**Insert At**—Performs the same basic functions as the Paste At command, except it pushes all of the waveform data after the insertion point later by the length of the Clipboard contents. The Insert At command never replaces waveform data. If a waveform range or region is selected, the Insert At command will simply insert Clipboard contents beginning at the range or region's start point and push all subsequent regions later in time. The selected range or region will not be deleted.

If you are copying regions from more than one track, you will need to select more than one destination

track for any Insert command. Selecting a single destination track will insert only the first copied track.

**Insert After**—Performs the same basic functions as the Paste After command, except it pushes all of the waveform data after the insertion point later by the length of the Clipboard contents. Like the Insert At command, the Insert After command never replaces waveform data. If a waveform range or region is selected, the Insert After command will simply insert beginning at the range or region's end point and push all subsequent regions later in time. The selected range or region will not be deleted.

Remember that you can perform many important arrangement edits using drag features or the arrow keys in tandem with the command, Option and control keys. (The control key performs Insert functions.) Experimenting with these key combinations will help you develop more efficient editing methods. For more information, see “Tracks window” on page 132.

**Insert Time**—Inserts empty time on any track or tracks. To insert time, select the waveform region or range after which you wish to create empty space, then choose the Insert Time command. (If you want to insert time on multiple tracks, select regions or ranges on multiple tracks.) When the dialog box appears, the start time will default to the start time of the selected range or region, and the end time will default to the end time of the selected range or region. If you want to change these values, enter the desired new Start Time and End Time into the boxes. This will determine the start and end times of the silence you wish to add. (The example above shows 1 second of empty time inserted at 4 seconds.) When you are ready, click OK. Empty space will be inserted as specified on the tracks that were selected when you chose the Insert Time command. No waveform data is ever deleted—empty time is simply inserted, and the waveform(s) to the right of the selection are moved to the right by the empty time. If you enter a start time that is in the middle of existing regions, those regions will be split into new regions to make room for the empty time.

Note that the Insert Time dialog box time units will default to whatever Axis units you have selected for your session.

**Remove (Command-Y)**—Deletes the actual time associated with the selected region or range, causing all later regions on the selected track(s) to slide earlier in time by the amount of the removed data. Use the Remove command to prevent the creation of empty time on a track (or tracks) and close the gap created by a deletion automatically.

**Select All (Command-A)**—Deselects all of the waveform data in the current track or tracks. To select all on a single track, put an insertion point on that track, or select a range or region on the track, then choose the Select All command. To select all on more than one track, put an insertion point on those tracks, or select a range or regions on those tracks, then choose the Select All command.

**Deselect (Command-U)**—Deselects all ranges or regions, leaving you with no selection or insertion point in the Tracks window.

**Rename**—Renames the selected sound file region or track. To rename a track, just select that play track or work track by clicking in the track name area at the left-hand side of the Tracks window. Then choose the Rename command. You can rename tracks, mixer states, and location times in the mixer window and transport window by Command-clicking on the specific playlist, mixer state, or location time pop-up.

**Make Contiguous**—Snaps together any selected waveforms. This snap will always be to the left. If you have many separate regions in the same track selected, all of the regions will snap together, with the first one placed at session zero. If you have a single region, Make Contiguous will snap that region to session zero.

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## Process menu

The Process menu contains all of the commands you will use to create new tracks and process audio constructively or destructively. It gives you access to fades and crossfades, normalization and other effects, and lets you control the track bouncing and mixing functions.

**New Track (Command-K)**—Creates a specified number of empty tracks. If you already have your system’s maximum amount of audio tracks in the Tracks window, this command creates new empty work tracks.

If you have added audio regions to the Clipboard using the File menu’s Add Audio to Clipboard, you can automatically create new tracks in the Tracks window simply by choosing the Paste At or Paste After command with no insertion point or selected range.

**Bounce All to Mono Clipboard (Shift-Command-B)**—This is a very important command. The Bounce to Mono Clipboard command allows you to remix one or more tracks to disk, in order to combine them for playback on a single track. The command automatically bounces the currently selected range to the Clipboard, including automation events, crossfades and real-time effects. Bounce to Mono Clipboard always mixes all play tracks, so if you want to remove certain tracks from the mix, use the mute button to mute those tracks. When you choose Bounce to Mono Clipboard, all pan information on the play tracks is ignored, and a mono sound file is the result. To place the newly mixed file(s) on a track, select the destination (with an insertion point or range) and choose any Paste or Insert command.

If you are bouncing only a portion of the current session to the Clipboard, select the empty destination track to specify the range to be bounced. Deck always bounces all play tracks, so by using this method, you

return to the Tracks window after the bounce with the correct, phase accurate range selected. Then choose Paste At to paste the bounce file in phase with its source tracks. Note that this also works if you select a destination range on a Deck work track.

Once you have bounced multiple tracks to mono or stereo and pasted in the resulting files, move the original source tracks to Deck work tracks, and create new empty tracks. Use these new empty tracks to record or arrange more audio. By following this process, you can create mixes that are hundreds of tracks deep without any analog signal degradation. Remember, you may also mix work tracks when the Virtual Mix command is enabled.

**Bounce All to Stereo Clipboard (Option-Command-B)**—Functions in the same fashion as the Bounce to Mono Clipboard command, except it creates a stereo mix file and places it on the Clipboard. This mix file reflects the currently selected range, including all automation events, crossfades and real-time effects. Bounce to Stereo Clipboard always mixes all play tracks, so if you want to remove certain tracks from the mix, mute those tracks using their mute buttons. When you choose Bounce to Stereo Clipboard, all pan and volume automation and real-time effects is used, and two mono sound files are the result. To place these newly mixed sound files on tracks, select the destination tracks (you must set an insertion point or range across two tracks) and choose any Paste or Insert command. For some applicable hints, see Bounce All to Mono Clipboard above.

Bouncing to the Clipboard is very useful for creating submixes internal to your Deck session. Bounce tracks when you are attempting to collapse multiple tracks to make room for new tracks (for overdubbing purposes). If you are done with your Deck session, and you want to create a master mix file on your hard disk, see the Mix to Disk command below.

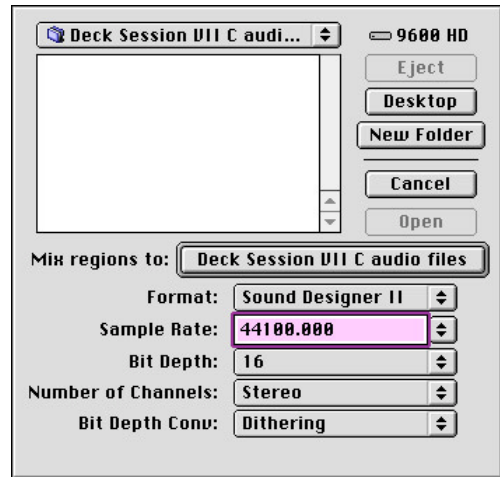
**Mix to Disk (Option-Command-M)**—Creates a mono or stereo Sound Designer II, AIFF, Sound Resource (.SND), Wave (.WAV), or QuickTime sound

file that exactly reflects the way the session sounds when it plays back. (There is one exception to this rule—see the following explanation of Virtual Mix.) All level and pan settings, automation and real-time effects are included in the mix. For more information about creating a final master, see “Final mastering to a mono or stereo disk file” on page 73.

It is usually better to use the Mix to Disk command to create your audio master file instead of mastering directly to DAT. Mixing to a random access medium (your hard drive), guarantees that your final mix file will be an exact copy of your session data. You can then back this copy up to streaming tape, optical disk or DAT data backup for optimum results. DAT audio recorders are sequential recorders, and they use error correction schemes to compensate for data integrity problems. Unlike a hard drive, a DAT recorder doesn't verify that your data is undamaged, and it cannot rewind and retrieve data if it encounters a data transmission problem.

**Virtual Mix**—Controls which tracks Deck will mix when you choose the Bounce or Mix to Disk commands. When this command is off, Deck will mix only the active play tracks. This will create a mix that sounds exactly the same as when you play the session. However, when the Virtual Mix command is on, Deck will also mix whatever is on the work tracks, both audio and automation data.

**Mix Regions As Files (Shift-Command-M)**—Mixes selected regions to a separate sound file. Use this to export regions from a session as a separate sound file. When you select Mix Regions As Files, the following dialog box will appear:



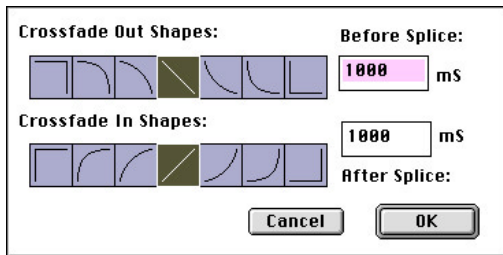
Use this dialog box to select the format, sample rate, number of channels, bit depth conversion (if mixing down to 8-bit) and destination for your new sound files.

**Fade Selection (Command-F)**—Generates a fade in, fade out, or crossfade over the selected range using the default fade curves, but not the fade times (as set with the Process > Set Default Fade command). If the selected range crosses only the beginning or end of a region, a fade in is generated. If the selected range crosses the border between two regions, a crossfade is generated. For more information about creating fades, see “Constructive fades and crossfades” on page 40.

Crossfades require that there is waveform data on your hard disk after the end of region 1 (the fade out area) and before the beginning of region 2 (the fade in area). If you have no data in these areas of the source sound file, Deck will warn you, but it will allow you to attempt to build the crossfade using whatever data is available.

**Set Default Fade**—Sets the default fade curves and default fade times. The default fade times only apply to instances when you are fading and/or crossfading multiple regions. These default fade times allow you to

select hundreds of regions and region boundaries, and execute fades on all regions at once. Use the Custom Fade command if you want to manually enter precise fade times.



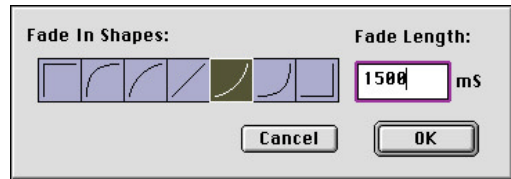
Set Fade dialog

**Default Fade (Command-H)**—Executes fades in, fades out, and crossfades on all of the waveform regions and region boundaries that are selected. The fades and crossfades are all created using the fade curves and fade times set in the Set Default Fade dialog box. The default fade times are used, regardless of the selected range.

If you select a single region in Object mode and choose the Default Fade command, the default fade in and fade out will both be executed on the region.

**Custom Fade (Command-G)**—Generates a fade in, fade out, or crossfade over the selected range, allowing you to specify fade shapes and fade times. If the selected range crosses only the beginning or end of a region, a fade in is generated. If the selected range crosses the border between two regions, a crossfade is generated. For more information about creating fades, see “Constructive fades and crossfades” on page 40.

You should use the Custom Fade dialog box any time you are creating a specialized fade or crossfade, and you don’t want to use your selected default shapes.



Fade In dialog

If you are using the Custom Fade command to create a fade in or a fade out, you will only see one set of fade shape icons.

Crossfades are created in memory, so if Deck tells you that there is not enough memory to generate a fade, you can increase the size of Deck’s memory partition (using the Finder’s Get Info command), and try the fade again. If you are having trouble generating extremely long fades or crossfades due to memory limitations, try using Deck’s volume automation envelopes. These require no extra RAM, and can generate 24-bit fades of any length.

**Delete Fade**—Deletes any existing fade or crossfade from the selected range.

**Rebuild Fades**—Rebuilds all crossfades in your current session.

## Destructive Effects

The Destructive Effects submenu contains all of Deck’s destructive audio effects. In order to use these functions, you will need to select one or more regions in Object mode or select a range in Range mode. For more information about the available effects, see Chapter 5, “Effects.”

## External Effects

The External Effects submenu lists installed Premiere format plug-ins within the Deck Plug-Ins folder. To use external processing a region must be selected in Object mode.

**Region Info (Command-M)**—Shows you information about a selected region. You must select the

region in Object mode. When you choose the Region Info command, the following dialog box appears:



Region Information dialog

The dialog box shows you the region's name, followed by the associated audio file's location on your hard drive. You may rename regions in this dialog box. Below the file location, the region's start, end, and duration times appear. You may change the start time of the selected region by typing the new time in the start time fields. If you click the Capture Start button, the new start time will be the current SMPTE time.

Clicking the Show File button will switch Deck to the background, and highlight the audio file associated with the region on the desktop. The Launch Editor button will switch Deck to the background, and then open your chosen sound editing program along with the audio file associated with the selected region. The selected region will be highlighted in the sound editing program. The Audition button will play the selected region. (If you have the Loop Audition box checked, clicking the Audition button will loop the selected region.)

Double-clicking on any region in the Tracks window while in Object mode will open up the Region Info window for that region.


## Audition submenu

**Audition Selection (Command-T or Shift-Spacebar)**—The Audition Selection command

plays back only the selected range or regions (in mono), automatically muting all unselected audio. You can use this command to listen to specific portions of your session to evaluate them for editing or arrangement purposes. Remember, Audition can be used on one or more tracks at the same time, and also works on virtual tracks.

**Audition End of Selection**—This command allows you to audition the last two seconds of a selected region or range. This can be useful for auditioning the end of a long region.

**Audition Pre-Post Selection**—This command allows you to audition portions of the audio both before and after the selected range or region.

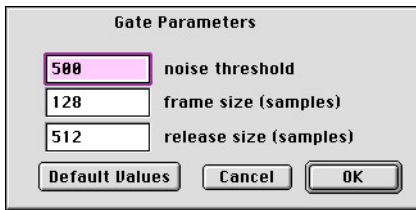
 *Don't forget about the Loop Audition setting in the General preferences (on the File menu's Preferences submenu). When this option is turned on, the selected range or regions always loop automatically when auditioned using any of the three Audition methods. This is an excellent way to test out loops for composition or ambience-building purposes.*

**Launch Editor (Command-E)**—Opens the sound editing program you selected using the Set button in the General preferences dialog box. If you have a region selected, the sound file that contains that region will be opened and the region will be selected automatically in the sound editing program. This function is intended primarily for users of Sound Designer II who wish to access some of that program's two-track destructive signal processing. It will work with other programs, although some audio editing programs do not support regions. For more information, see "Using an external editor" on page 48.

**Automation Thin**—Use this command to delete extraneous automation data. If you are using the Mixer window or an external device to record automation events, many more break points appear than if you click in the Tracks window to add automation events. You will find it easier to edit automation data you have

recorded after using this command. First select either volume or pan from the Automation View pop-up of the track you wish to edit (you must be in the Tracks window). Select the data you wish to edit, then choose the Automation Thin command. Deck will find straight lines in the data and delete the intervening envelopes. This is a non-destructive process which you may undo.

**Strip Silence**—This command functions like a non-destructive gate. When you have audio selected in the Tracks window, the Strip Silence command will auto-create regions from a selected range by non-destructively deleting silent areas based on parameters you choose in the following dialog box:



*Strip Silence dialog*

Audio that is at a level above the specified Noise Threshold will appear in new regions. Areas of audio below the Noise Threshold for a duration equal to the Frame Size will be non-destructively deleted. The Noise Threshold can be any number between 0 (no volume) and 1023 (full volume). The Frame Size indicates the number of samples in each “window” Deck uses to calculate whether audio is signal or noise. If you choose too small a frame size, you may end up with more regions than you desire. The Release Size tells Deck how many samples to include at the beginning and end of audio it has determined to be signal. The Release Size ensures that the beginning and end signal are included in each new region. Both Frame Size and Release Size are in samples, to allow highly accurate editing.

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## Options menu

The Options menu contains all of the commands you will need to configure MIDI input and output, configure SMPTE setup, enable basic automation recording and playback, and manipulate general features of the Tracks window display.

**MIDI Setup**—Deck requires that you install Open Music System (OMS)—available for free from [www.opcode.com](http://www.opcode.com)—in order to use MIDI with Deck. Generally, you should configure Deck OMS compatibility to accept Only OMS Applications, and you should avoid Apple’s MIDI Manager. If you are running the Metro sequencer on your Macintosh in sync with Deck, make sure to set OMS to allow Only OMS Applications. This will improve the speed and smoothness of the switch between the two programs during playback.

**The SMPTE Format submenu**—Use this submenu to select the SMPTE format you wish to receive and send when Deck is synchronizing to SMPTE. (Deck attempts to determine incoming time code format automatically, but you should always set it anyway to prevent time base problems.) You may choose between any of the following formats: 24 Frame (film), 25 Frame (PAL/SECAM video), 29.97 Frame (NTSC color video), 29.97 Drop-frame (NTSC wall clock color video), 30 Frame, and 30 Drop-frame.

24 frame is used for most film applications; 25 frame is for PAL/SECAM video; 29.97 is for NTSC color video; 29.97 drop is for wall-clock accurate broadcast NTSC color video; and 30 frame/30-drop frame are misnomer formats that were originally used for black and white video, but are now generally used only for time stamping synchronization in audio-only applications (and, cleverly, for various film-to-tape pulldown/pullup conversions).

If you are working in NTSC video, and someone sends you a video tape striped with 30 frame code on the address track, you can safely assume that the time code is actually 29.97 frame time base. This mix up is a leftover from the early days of time code.

**SMPTE Start Time**—Offsets the Master Counter by a specific number of SMPTE frames. You can think of this time as the current session's zero time. If you then set Deck to synchronize playback, the session will begin to play when the SMPTE Start Time frame is received. For more information, see Chapter 8, "MIDI and Synchronization."

You can also use the Capture button in the SMPTE Start Time dialog box to lift the current SMPTE frame from tape directly into the dialog box. Remember, however, that capture functions are often not accurate if you are using longitudinal time code (LTC), because this timecode cannot be read at slow shuttle speeds.

If you are using vertical interval time code (VITC), the capture button will always lift the correct SMPTE frame address, even when your video deck is crawling or on a still-frame.

**SMPTE Online (Command-J)**—This command puts the current session online, which means it is ready to synchronize to incoming SMPTE time code. To lock playback to incoming code, just select this command and click the Play button in Deck's Transport window. This puts Deck in standby mode. As soon as time code is detected, Deck will begin to play back at the correct frame.

Remember, you will need a tape source with SMPTE time code on one track, and a SMPTE-to-MIDI time code converter/Macintosh MIDI interface in order to synchronize to SMPTE. (Mark of the Unicorn's MIDI TimePiece or Opcode's Studio 5, are examples MIDI interfaces with SMPTE-to-MTC capabilities.) For more information, see Chapter 8, "MIDI and Synchronization."

To record audio while online, just record-enable a track, select the SMPTE Online command, and press Record and Play buttons in Deck's Transport window. This puts Deck in record-standby mode. As soon as time code is detected, Deck will begin recording, and DECK will automatically place the recorded audio at the correct time.

**Timecode Source**—Sets the timecode source. If you have a Korg 1212 I/O card, use the DECK II 1212 I/O Driver, and select Soundlink DRS.

**Trigger Sync**—Deck offers two types of synchronization. Deck's native mode is called "continuous resync," and is generally the more desirable of the two modes. When Trigger Sync is turned off, Deck is in continuous resync mode. In this mode, Deck watches all incoming SMPTE frames to determine if the speed of your source playback unit is correct. When Deck determines that the SMPTE playback source is slowing down or speeding up, Deck will alter the playback sample rate in real-time in order to compensate for the speed changes. When this happens, you may hear Deck audio playback slow down or speed up. Continuous resync mode guarantees that your session's digital audio will remain tightly synced to the SMPTE source.

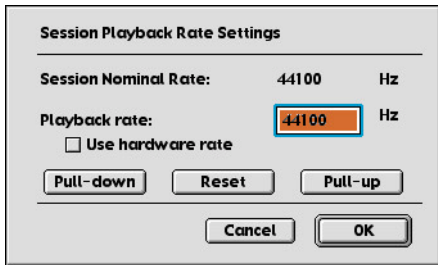
When Trigger Sync is turned on, the session's playback sample rate will not be altered during playback. Deck will still sync to the incoming SMPTE frame, and chase/lock correctly, but no playback speed adjustments will be made. Trigger Sync is designed specifically for users who know that their SMPTE source is absolutely time-locked. For video professionals, use Trigger Sync if you run your SMPTE source video deck with house sync (a black burst hooked to a video input). For audio professionals, use Trigger Sync if you run digital multitracks, or timecoded DAT as your SMPTE source, or if you have a multitrack audio recorder that is hooked to house sync.

Real-time sample rate conversion can degrade the general quality of the audio that is played back. For this reason, the best results are achieved when you



run Deck with Trigger Sync turned on, and your SMPTE source locked to house sync.

**Pulldown**—Changes the current session’s master playback sample rate. When you choose this command, the following dialog box appears:



*Session Playback Rate Settings dialog*

The Session Nominal Rate is the playback rate you chose when you created your session. You may change the Playback Rate by typing a new value in this field. Increases in sample rate raise pitch and decrease session duration. Decreases in sample rate decrease pitch and increase session duration.

The Pull-down button automatically lowers the Playback Rate to a rate useful when editing audio to video transfers of film when you intend to go back to film (mag or other) for the final result. The Reset button changes the Playback Rate to the Session Nominal Rate. The Pull-up button automatically raises the Playback Rate to a useful rate for laying back your edited audio to mag film (or to DAT for transfer to mag film). This is a very specialized command useful in NTSC countries, and here is an oversimplified explanation of the scenarios in which you might use it.

If you are rebuilding audio tracks to video telecine transfers of film by going back to the original location Nagra 1/4-inch tapes, digitize all audio from the 1/4-inch tapes at the 44.1 or 48 kHz rate. Then set the sample rate to Pulldown, and edit the sound to picture. When laying back the finished audio to DAT for transfer to mag (or direct to mag), Reset the pulldown rate. This will yield results that are time-

correct for film, and is the preferred method for preserving audio quality.

If you have built audio tracks to video telecine transfers of film using audio files and effects from your sound libraries or hard disk (which are not location sound), then you can edit all audio tapes at the 44.1kHz or 48kHz rate. When laying back the finished audio to DAT for transfer to mag (or direct to mag), choose the Pull-up option in the Pulldown dialog box. This will yield results that are time-correct for film.

You can also use the Pulldown command to stretch or squeeze audio. For instance, if you need to fill a 30-second spot, but only have 24 seconds of audio, and your Session Nominal Rate is 44100 Hz, you can use the following equation to stretch the 24 seconds into thirty:  $(24 \div 30) = (X \div 44100)$ . Thus if you enter 35280 (X) into the Playback Rate, Deck will stretch your audio to the desired length. Be warned, however, radical sample rate adjustments will not sound very good.

**Output MIDI Timecode**—This command allows you to use Deck as a MIDI Timecode master. When you select Output MIDI Timecode, a check mark will appear next to it, and Deck will automatically generate Timecode and send it through the Timecode Output Port you chose in the MIDI preferences. To stop sending Timecode, choose the command again to uncheck it. If the command is checked, Deck is sending Timecode.

### Automation submenu

**Conform To Audio Edits**—Enables a function that adjusts automation envelopes when edits are made to the regions that contain them. If you have an automated track, and you edit a portion of it, the automation on that track will adjust itself accordingly.

**Mute All**—Mutes volume and pan automation playback on all tracks.

**Play All**—Sets volume and pan automation on all tracks to play.

**Record All**—Enables volume and pan automation recording on all tracks.

**Erase All**—Erases all recorded and drawn volume and pan automation.

For more information about recording and editing automation, see Chapter 4, “Visual Waveform Editing,” and Chapter 6, “Automation, Mixing, and Mastering.”

**MIDI Map Faders**—This command allows you to map any MIDI controller (a MIDI keyboard, or JL Cooper FaderMaster, for example) directly to Deck Mixer window volume and pan faders and Transport window controls. This mapping process is quite simple, and requires no text entry.

To map a Deck Mixer window or effect window fader to an external controller, just choose the MIDI Map Faders command. All of your faders will highlight green, to show you they are ready for mapping. Next, click the fader or faders you wish to control, which will turn yellow to indicate they are ready for MIDI input. Now move the hardware controller that should control the selected yellow faders. (Your MIDI fader, or keyboard’s modulation wheel, for example.) These faders turn red to indicate they are mapped. To begin moving the faders from an external controller, just choose the MIDI Map Faders command to exit MIDI map mode.

To map the Transport window controls to MIDI note-on events, choose the MIDI map faders command. Transport window buttons (just like mixer and effect faders) will turn green, indicating that they are ready for mapping. Next, click the button(s) you wish to control, which will turn yellow to indicate they are ready for mapping. Now generate a MIDI note-on event from your hardware controller (for example, press a key on your MIDI keyboard). Selected buttons will turn red to indicate that they are now mapped. To begin operating the Transport window controls from your external MIDI controller, just choose the MIDI map faders command again to exit MIDI map mode.

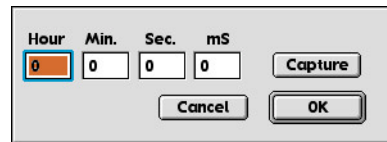
You cannot use this function unless you have an OMS-

compatible MIDI interface and a MIDI controller of some kind. Note that Deck does not directly support the JL Cooper CS-10, however Deck does directly support the Tascam US-428.

**Mute MIDI Map**—This command temporarily stops your external controllers from moving Deck faders in the Mixer window. It only functions if you have already mapped external controllers to faders using the MIDI Map Faders command. To turn external control back on, just choose the Mute MIDI Map command again.

**Edit MIDI Map**—Use this box to assign MIDI fader numbers, channel numbers and note-on numbers to specific functions, such as pan, volume and transport control. When you select Edit MIDI Map, a dialog box will appear. Now select the function you wish to assign a MIDI fader to, and click OK. The Edit Map Element dialog box appears. Use this dialog box to edit the MIDI channel and MIDI number for any MIDI mappable function.

**State Transition Time**—The State Transition Time command allows you to select a fixed automation fade time that will automatically be used whenever you record or play mixer automation using Deck’s Mixer States (accessed from the Transport window). When you choose the State Transition Time command, this dialog box appears:



The image shows a dialog box for setting the State Transition Time. It has four input fields for time units: Hour, Min., Sec., and mS. The Hour field contains the number 0 and is highlighted with a blue border. The Min., Sec., and mS fields also contain the number 0. To the right of these fields is a 'Capture' button. Below the input fields are two buttons: 'Cancel' and 'OK'.

The appearance of this dialog box will vary, depending on your current Axis units selection.

Use this dialog box to enter the duration of the fade you wish to occur between the time you click a Mixer State arrow, and the moment that the new mixer state arrives on the screen. Deck automatically fades to the new mixer state over this duration. Remember, these fades are recorded if you are recording automation.

## Selection Tools submenu

**Position at Beginning (Command-[ ])**—Scrolls the Tracks window to show you the beginning of the currently selected range or region. This is a very useful command when you are zoomed in very close, and you want to adjust region start time(s) without zooming out to find the region beginning.

**Position at End (Command-])**—Scrolls the Tracks window to show you the end of the currently selected range or region. This is a very useful command when you are zoomed in very close, and you want to adjust region end time(s) without zooming out to find the region end.

**Position to Fit (Command-, )**—Performs the same function as the Fit Selection icon. It automatically expands or contracts the display so that the current selection fills the screen. This is true whether the selection is a region or a waveform range. This command makes it possible to view rapidly any specific audio range, region, transition or event.

**Set Punch Time From (Command-^)**—Moves the start time of the current Tracks window selection to the begin counter and the end time of the current Tracks window selection to the end counter in the Deck Transport window. Use this command when you want to select a waveform range or region for sample-accurate punch-in recording or loop mode playback.

Any time you have a waveform range or region selected, you can press the C key on your Macintosh keyboard to set a cue loop automatically. This automatically transfers the range or region's begin and end times to the Transport window and turns on Loop mode. Option-C turns off loop mode.

**Set from Punch Time (Command-\_)**—Performs a function that is the inverse of the Set Punch Time from command. It automatically reads the start time and end times from the Transport window and selects that range in the Tracks window. The range is selected on any track that currently has a

selected range or insertion point. Remember, you can move and expand the selection using the Macintosh keyboard's arrow keys and Shift-arrow keys, respectively.

**Set Selection**—Enables you to select a range by specifying start and end times. The range is selected on any track that currently has a selected range or insertion point. Remember, you can move and expand the selection using the Macintosh keyboard's arrow keys and Shift-arrow keys, respectively.

**Make Markers From**—Makes markers for the current selection. For example, if you have a region selected in the Tracks window, Make Markers From will automatically create markers at the beginning and end of that region. Markers also show up in the location times pop-ups in the Transport window.

**Send to Slave (Command-=)**—Sends the current selection to the slave program. For example, if you have a one bar region selected at Bar 37 in Deck, select this command and switch to the slave program, the slave will also be at Bar 37.

**Snap to Grid**—When this command is checked, it turns Deck's Tracks window grid on and off. When the grid is on, all range selections and range and region dragging will be constrained (stick to) the Tracks window grid. Deck's Tracks window grid is a smart grid, in that it always adjusts to match the current grid. If you are viewing waveforms by SMPTE frame, the grid will snap edits to frame. If you are viewing waveforms by quarter note, the grid will snap edits to quarter note. To turn off the grid, select this command a second time. Remember, the Macintosh keyboard's arrow key edits (as well as Shift-arrow, Command-arrow, and so on) all conform to the grid when the grid is on.

You can also turn the grid on and off using the Grid button, located to the left of the Axis Units pop-up in the Tracks window.

**Set Grid Interval**—It is possible to manipulate the display resolution to a variety of different levels. If the Axis Resolution pop-up to the right of the Axis Units pop-up in the Tracks window does not offer you the grid units you desire, you may choose your own display resolution using the Set Grid Interval command.

The appearance of this dialog box will vary, depending on your current Axis units selection.

Enter the grid interval you desire. You may use the current SMPTE time by pressing the capture button.

**Set Nudge Time**—When you use Command-arrow keys on a selected object or range in the Tracks window, Deck physically moves the selected object or range left one unit, right one unit, up one track or down one track.

The appearance of this dialog box will vary, depending on your current Axis units selection.

Enter the nudge time you desire. You may use the current SMPTE time by pressing the capture button.

**Time Mode**—Deck's Time Mode submenu duplicates the function of the Axis units pop-up in the Tracks window. Use this to set the Axis Units (second, SMPTE, sample or beat) that will be used by Deck's grid, Time Axis, and Tracks window editing functions.

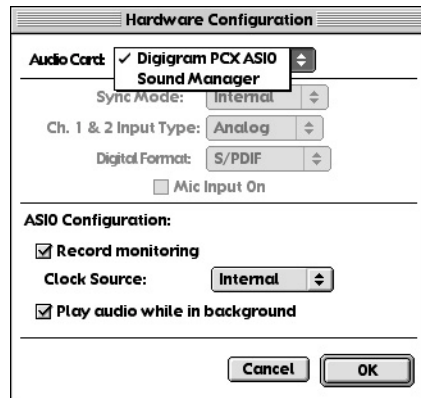
**Scroll During Playback**—This feature allows you to turn on or off real-time scrolling in the Tracks window. When this function is enabled, (signified by a check mark next to its name in the Options menu) the Tracks window will continuously update—or scroll—during playback, so the regions currently being played will always be seen on-screen.

### Hardware Configuration dialog

**Hardware Configuration**—Enables you to choose and configure your audio card, or to select the built-in audio hardware of your Macintosh.

Do not change your hardware configuration with a track or tracks record enabled in the Mixer or Tracks window.

These options are only available if you have an audio card installed.



**Sync Mode**—Set this menu to Digital if you are recording digitally via the S/PDIF or AES/EBU digital inputs on your audio card. Otherwise set this to Internal.

**Input Type**—Set this menu to Digital if you wish to record from the S/PDIF or AES/EBU digital inputs on your audio card. Remember, when you do this, Deck's inputs 1 and 2 will be taken from your digital inputs. When you are doing analog recording, set this to Analog.

**Digital Format**—Use this menu to choose your digital input/output format.

**Mic Input On**—This check box is only available when if you have an original Audiomeia card. That card has a built-in microphone preamp instead of digital input and output. When you turn this check box on, your original Audiomeia card will automatically mix its microphone input into inputs 1 and 2.

**Play audio while in background**—enables the selected ASIO driver to operate in the background while Deck is in the background. If you are

running more than one audio application using the same ASIO driver (e.g., BIAS Peak), you will want to disable Play audio while in background.

**Record monitoring**—allows you to monitor the audio input in the digital domain while you are recording.

**Analog Input Level submenu (Command-Option-0/7)**—If you own a Pro Tools 1/442 or Sound Tools II system, this submenu is not available to you. All other hardware systems allow you to set the input level of the incoming signal. Use this submenu to adjust the input level for recording. Make sure that you watch the input VU meters on your Mixer window record track as you adjust this level, and attempt to set the input recording level as high as possible (without clipping). If the level is too high, the clip light will turn on. You will generally want to set the value to 0 and adjust the level of the signal coming into your Macintosh. Note that there is a keyboard command shortcut: press the Option and Command keys, plus a number from 0 to 7, to quickly set input level. For more information about setting the Analog Input Level for different platforms, see Chapter 3, “Getting Started”.

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## Session menu

This menu contains commands that affect the entire session.

**Session Info (Command-I)**—Tells you how much free RAM you have, how much free disk space there is on the drive that contains the session, and lists the session’s sample rate and total number of free automation events. Below this basic information, you will find a list of all the sound files used in the current session. You can use this list to track down a file by selecting that file and clicking on the Show button, or simply double-clicking on the file name, under the “Files in session” display. This will automatically switch you to the Finder, open the folder that contains the

file, and select that file. To hear a sound file, click the Play button. To give your sound file a new name, click the Rename button, and enter the new name into the Rename dialog box. If you wish to delete a sound file, click the Delete button.

When you want to rename audio files, make sure to use the Session Info dialog box’s rename button. Simply renaming the file in the Finder will force you to re-find the file the next time you reopen the session. Do not switch out of a session and rename a file while the session is still open. This can cause unpredictable, possibly disastrous, results.

**Session End Time (Shift-Command-E)**—Changes the end time for your session. This command is useful when the “Autostop at end of Session” preference is turned on. Instead of stopping when the last sample of your session is detected, Deck will stop at the new end time you enter here.

**Compact Session**—Compacts all of the audio files in the session’s Audio Files folder which are used in the current session. Use this command to get rid of unused audio data in all sound files associated with the session. For more information about compacting a session, see “Using Compact Session and Compact Audio Files” on page 61

**Export Session Regions**—Saves all regions defined in the current session into their source sound files. When you install Deck, the program is set to save all regions to their source sound files whenever you save the current session. This is a good basic configuration, because it assures you that your regions will always be saved. You may also choose at any time to save the regions out to their sound files, even though the session has not been saved. That is the purpose of the Export Session Regions command. You might do this, for example, if you have defined an interesting region of audio, but you don’t wish to keep it in the current session. In such a case you can use the Export Session Regions command to save the region, and then delete the region from the session. Even though the region is not present in the session, you will find that it has

been saved into its source sound file.

**Read DECK 1.0 Session**—Reads a session that has been created in DECK 1.0 or later and translate it into a Deck session.

**Import Session**—Imports an existing session into the current session. The imported session will be placed into new work tracks.

## Library Operations submenu

**Sort By Name and Sort By Size**—Sorts all regions in the Library window by name or by size, respectively.

**Update from Session**—The Library window will only display regions that are in the Tracks window. If you would like new regions you have created to appear in the Library window, choose the Update from Session command.

**Find File**—This command is available when you have a region selected in the Library window. It automatically switches you out to the Finder and highlights the audio file that contains the selected region.

**Select Regions**—When you select a region in the Library and then choose Select Regions, all instances of that region will be selected, or highlighted.

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## Windows menu

This menu contains a list of the windows that are available in Deck. Choose the name of a window to open that window or bring that window to the front.

Window	Shortcut
Transport window	Command-1
Mixer window	Command-2
Tracks window	Command-3

QuickTime window	Command-4
MIDI window	Command-5
Library window	Command-6
Effect window	Command-7
Master Outputs window	Command-9
CPU Meter window	Command-0

**Close Window (Command-W)**—Closes the currently active window.

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## Links menu

The Links menu provides useful and informative links to BIAS' Web site, including Product Registration, the BIAS Home Page, Deck Updates, Deck Tech Support, and Online Documentation.

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## QuickTime menu

This menu contains all of the commands you will need to open, close, edit and export (mixdown) QuickTime movies in Deck, as well as configure live video. For more information about using QuickTime movies, including descriptions of the QuickTime menu commands, see Chapter 7, "QuickTime."

QuickTime Shortcuts:

Left/right arrow	Moves QT movie backwards/ forwards by a single frame
Up/down arrow	Moves to beginning/end of QT region
Click-drag window	Scrubs through QT movie

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## Help menu

The Help menu allows you to enable the standard

Macintosh Balloon Help.

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## **Conclusion**

You now know all the details of every Deck window and menu item. The final chapter presents an introduction to the basics of digital audio recording.

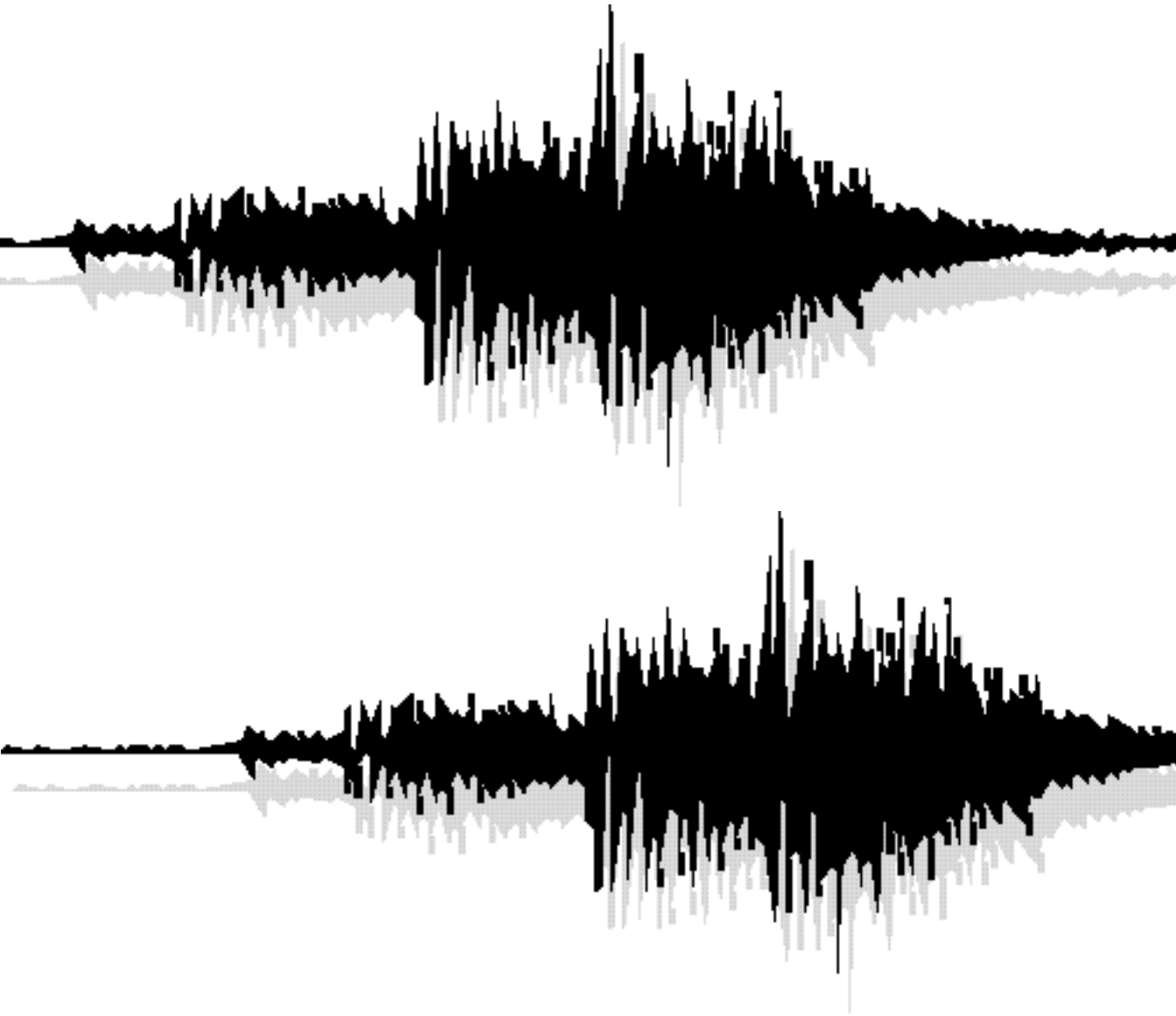
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# Chapter 10

## Digital Recording and Mixing Basics





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## Digital Recording and Mixing Basics

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Although Deck uses complex technologies to accomplish its recording, editing, and mixing tasks, it is based on two familiar pieces of equipment: the tape deck and the multichannel mixing board. Deck uses your hard disk as the multichannel tape deck, and your Macintosh screen as the mixing board and editing table. Anyone who has used a multitrack tape recorder will find the look of Deck very familiar. Since Deck builds on the tape deck metaphor, a basic understanding of multitrack recording concepts is essential for you to get the most out of the program. Also, since digital representations of waveforms are used to represent sound, familiarity with audio sampling is very helpful. At the end of this chapter is a reading list of excellent books on audio, computer music, MIDI, and the music business.

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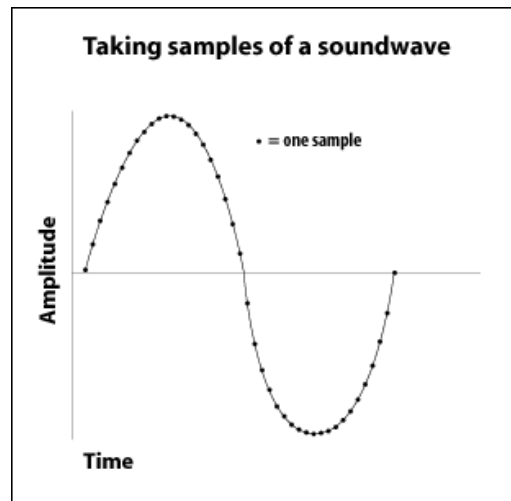
### Basic Sampling Concepts

Deck accomplishes its direct-to-disk recording tasks using a method called sampling. Unlike normal magnetic tape recording, which records an audio signal as a continuous charge on magnetic tape, a sampler converts an audio signal to discrete numbers which are then stored on a digital storage medium (a hard drive, for example).

Digital sampling of audio tracks is generally superior to the standard analog recording methods—not only because it offers extremely high fidelity, but because it avoids the standard tape generation and playback degradation problems. Because sampled audio is stored as a set of numbers, there is no loss of fidelity when you copy those numbers, regardless of how

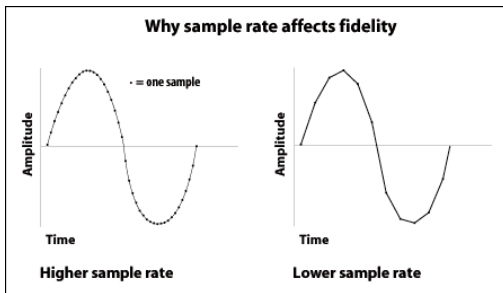
many “copies of copies” you make. Also, because the disk medium is not physically strained by playback (as is a reel of analog tape when it is pulled across the playback heads), repeated playback of a digital track will not alter or degrade that track in any way.

The process of digital recording (or sampling) is really quite simple: an audio signal is fed into a computer (or dedicated sampling device). That signal is run through an analog-to-digital converter (ADC), which measures the amplitude (volume) of the signal at regular intervals and passes these measurements, or samples, on to a storage medium. When the recorded track or tracks need to be played back, the samples are retrieved from the storage medium and run through a digital-to-analog converter (DAC,) which converts those samples back into a continuous wave. The signal that comes out of the DAC is the output signal, and it is a nearly exact image of the signal that was fed into the ADC.



As you can see, the incoming audio wave is approximated by a series of discrete points that describe that wave. The physical representation of this wave is called a waveform. The nature of this process illustrates one of the central questions of digital recording: How accurate is the digital representation of the original analog signal? To determine this you will need to understand the concept of sample rate.

Sample rate is the number of samples of a waveform that you take in a single second, and it has a very strong influence upon the quality of the recording you make. At best, a collection of samples is an extremely good approximation of the original input signal. By taking many samples of an audio signal, you end up with a more accurate depiction of the wave; fewer samples yield a less accurate, grainy depiction.



Notice how a higher sample rate yields a more accurate, and therefore higher-fidelity recording. Unfortunately, each sample requires storage space. Since a higher sample rate takes more samples per second, it will require more disk storage space for each second of audio than a lower rate. Deck uses set sample rates of 22,050Hz, 24,000Hz, 44,100Hz or 48,000Hz. (Note that additional hardware is needed to get a 48kHz rate on a Macintosh.) A sample rate of 44,100 Hz means Deck takes 44,100 samples every second and puts them on your hard disk. This is the same rate used by compact discs, and it allows you to record frequencies up to 22,050Hz accurately. Since normal human hearing arguably ranges from 20Hz to 20,000Hz, the sample rate of 44.1kHz generally offers acceptable fidelity. Deck also offers a sample rate of 48,000Hz, which is the basic rate used by many digital

audio tape (DAT) recorders. This higher sample rate actually allows you to record frequencies up to 24,000 Hz, but since these frequencies are theoretically outside the audible range for most humans, it is generally unnecessary to use this higher rate for fidelity purposes.

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## MIDI overview

Music and sound on the personal computer has changed radically over the last ten years. Most people in the audio industry are very aware of these changes, particularly due to the development of the MIDI standard in the early eighties. MIDI, which stands for Musical Instrument Digital Interface, became the accepted communications standard for electronic musical instruments, and it can now be found on virtually every electronic keyboard, drum machine, trigger device, tone generator and effects unit.

MIDI was originally conceived as a remote control standard that would allow musicians to control multiple instruments from a single keyboard, but it rapidly developed into an audio network environment. The creation of MIDI sequencers is largely responsible for the importance that the MIDI standard holds today.

By offering an inexpensive way to record and play back multiple-track compositions without a tape deck, MIDI sequencers opened the door to accessible computer music technology. However, MIDI sequencers do not accomplish this feat by recording an actual audio signal. You can think of a MIDI sequence as a player piano roll. The MIDI sequencer records events that occur at your keyboard: what key you pressed, how hard you pressed it, how hard you were holding it down, and when you let go. These little pieces of information, called MIDI events, are picked up and remembered by the sequencer as a sequence. To play the sequence, the sequencer sends the recorded events back to the keyboard, essentially playing the keyboard every time the sequence is played back.

Sequencing offers some new possibilities. For example, you can change the sound that is on a certain track by loading a different sound onto the keyboard. The sequencer is just playing notes, and it pays no attention to what sound it is playing. You can also change the tempo of a recorded MIDI sequence without changing the pitch of the notes (unlike tape, which changes pitch when playback speed is changed).

But the concept of MIDI has some inherent weaknesses. For example, how do you record a guitar track, or a vocal track, or a sax? These entities are purely audio signals; they have no natural place in the MIDI world. This is where Deck comes in. Although Deck is a full-functioned digital multitrack recorder, it both supports and augments MIDI. By running the Metro sequencer (or any other supported sequencer), on your Macintosh along with Deck, you can add fully synchronized MIDI functionality to any audio session. If you have an existing MIDI sequence, you can import it directly into Deck's MIDI window and record multiple audio tracks over it without running an external sequencer. If you wish to save disk space, you can use Metro to add MIDI tracks to your Deck multitrack audio recordings. Deck and Metro provide an environment where full-functioned MIDI and synchronized digital audio coexist.

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## Digital multitracking and the mixing board metaphor

The Deck interface looks like a simple mixer with some additional controls and surfaces. If you have used a portable multitrack device, then you should find recording and mixing with Deck very intuitive. If you haven't, then some background may be helpful.

Take a look at this illustration of the Deck Mixer and Transport windows:



*Transport window*



*Mixer window*

The mixing board consists of several vertical input/output modules, each with VU meters that register signal level. The input/output modules all look the same because they each represent one of Deck's digital record/playback tracks. (Remember that Deck allows you to create an unlimited number of tracks, but only a certain number of those tracks play at one time, depending on your hardware.) Each of the input/output modules has two modes: record and play. Record allows you to feed a signal into your audio card, set its monitor level, and record it to your hard disk. Once a track is recorded, play mode lets you play that track back, adjust its playback levels, add real-time effects, and automate its level or pan (placement in the stereo field).

The buttons in the Transport window function just as they would on a normal tape recorder. They allow you to rewind, fast forward, play, stop, and record Deck's digital tracks. They also offer controls for adjusting playback pitch and for storing location times, punch or loop times, and mixer states.

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## Recording from scratch

The production life cycle of a Deck project might progress like this:

1. You record a first track on track 1.
2. Then you play back track 1 to make sure you like it and set its volume level.
3. Next, you record track 2 while listening to track 1.
4. Then you play both tracks back while recording track 3.
5. You follow this same procedure to record track 4. (Remember, you can also record 2 or more tracks at once, depending on your audio interface.)
6. Then you listen to and mix levels and pan on all four tracks. If abrupt or smooth volume level or stereo pan setting changes are required, you can automate these changes. You may also wish to add effects from within Deck, or by using plug-in effects. When you are satisfied, you may choose to mix to a master stereo file for pressing a CD or album, or for playback from within a QuickTime movie, or from Macromedia Director™ or Flash™, and so on.

The process detailed above is essentially the same one you would follow if you were using an analog multitrack tape deck and mixing board. However, Deck is a digital recorder, so there are some special points you will wish to consider.

### The input signal

The input signal is the audio signal that you wish to record. It must be plugged into one of the audio inputs on the computer, or an audio card or audio interface box, to route it into Deck. It is often a good idea to route incoming signals through a mixer, and then into your computer. This allows you more

control over the incoming signal.

### Macintosh audio inputs

On systems where you are using the Macintosh computer's built-in audio hardware, it is a good idea to set a low input volume (Analog Input Level in Deck's Options menu) and increase the volume of the signal at the source. The Macintosh computer's built-in audio input amplifier can add noise to an incoming signal, and by setting the input volume lower and tracking a louder incoming signal, you can minimize extraneous noise.

### Digital distortion

When you feed a signal into any recorder, including Deck, you always need to adjust the input level so that you are optimizing your dynamic range. Essentially this means that your input signal should register as high as possible on your input meter without turning on the clip light. If the input level is too low, the recorded track will be noisy. If the signal is too high, it will be clipped.

Clipping is a situation that results when you feed a signal to a recorder or mixer if that signal is louder or "hotter" than the device allows. On many analog tape decks, a little clipping seems to add warmth to the sound—often by increasing use of the noise reduction circuitry (Dolby™ B or C, for example). In digital recording, clipping is to be avoided at all costs. It causes digital distortion, which almost always sounds like digital hash.

### Automated punching in and out

Automated punching in and punching out are extremely important concepts in multitrack recording. To understand the need for these functions, picture this situation: You are recording the last track of a five minute multitrack piece. You finish the track and listen to it playing back. During playback you realize that the track is perfect, except for a tiny mistake near the end.

Punch in and punch out are functions designed to cope with this problem. To fix the bad section, you

would set a punch-in point just before it and a punch-out point just after it. Then you would rerecord the track. During the recording process you would hear the original track right up to the punch-in point. At that moment the recording deck switches to record mode and you would play over the mistake. When the punch-out point is reached, the recording deck automatically switches out of record mode. This automated punch-in and punch-out have made it possible for you to rerecord only a small portion of a track, without requiring that you operate the tape transports.

### **Bouncing tracks and virtual mixing**

One of the basic problems inherent in multitrack recording has always been the limited number of tracks. What do you do in a four-track environment if you have five separate instruments to record? There are two answers to this question.

One way to squeeze extra material into a multitrack environment is to pre-mix incoming signals together and record them on a single track (a vocal chorus, for example). This method offers a high-fidelity solution, but it has a few serious drawbacks. Specifically, the relative level and tone of the different signals cannot be changed independently after they are recorded. Using the vocal example, you can't turn up one voice without turning up the other.

Bouncing, the other solution to the track limitation problem, offers more flexibility but hurts the overall fidelity of analog tracks. In an analog tape environment you might bounce tracks like this: Record three separate tracks and mix them with the relative level and EQ you want and then record the three mixed tracks to the fourth track. Since the three source tracks now exist as a single track, you are free to replace the originals with new tracks. In the analog world this method increases the number of recordable tracks, but each bounced track ends up being a recording of a recording, and the overall fidelity deteriorates.

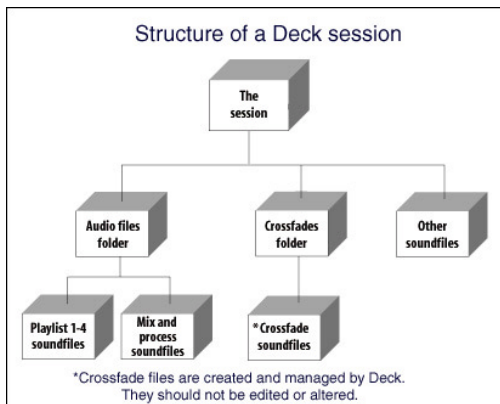
Deck offers the same track mix and track bounce capabilities you find in analog recording, but with some major improvements. The most important difference is that Deck bounces tracks with no loss of fidelity. Since all Deck tracks are digital, no noise is added during a bounce and no high frequencies are lost. Deck also allows you to save your original digital source tracks. This makes it possible to retrieve and re-bounce tracks long after they would have been erased in analog multitrack recording.

You may want to consider using Deck's virtual mixing feature instead of bouncing tracks. Virtual mixing is an option that really is not available in the analog world. Analog mixers are physically limited to the number of tracks that can be recorded. By using a Macintosh digital workstation, you are not hindered by that limitation of analog recording.

Deck allows you to work with up to 999 virtual (or work) tracks, all of which can be moved to active play tracks, auditioned, edited, processed, or mixed. So, while you have a limited number of tracks that can play back at any given time (the track count of your particular system) you can create mixes that include virtual tracks as well. Deck does not do its mixing in real-time, so there is no limit to the amount of audio it can mix at one time except hard disk space. Deck allows you to record as many tracks as you like and mix them all together during the final mixing process. For more information about Virtual mixing, see "Virtual mixing" on page 72.

### **Audio file formats and the Deck session file**

A Deck session is a Macintosh document that contains a map of a specific recording project. This diagram should give you a better idea of how a Deck session is organized:



A session file may contain any number of audio regions and tracks. Each audio track contains a list of audio regions that are located on your hard disk(s). An audio track is like a playback direction sheet. It tells Deck what pieces of what audio files to play and when to play them. Audio tracks make it possible to play any audio file regions in any order, and they oversee this playback in a non-destructive fashion. If you want to repeat something ten times, the same disk region is played ten times in a row. If you want ten minutes of silence, no disk region is played. A Deck session is able to play back multiple tracks simultaneously. The top tracks (the tracks represented by the Mixer window faders) are your active playback tracks. They contain the tracks that will play at any one time.

A Deck session remembers all mixer states (snapshots) and autolocation settings, and all fader settings and window configurations. Deck sessions also remember and reference any MIDI or QuickTime files that have been imported into the session. When you double-click on a session, the session's windows appear exactly as they were saved, and the associated audio tracks and automation data are loaded automatically.

### **New audio files**

When you create a new Deck session, no audio files exist for that session. At any time you have the ability to load existing mono or stereo Sound Designer II, QuickTime, PC/Windows-format (WAV), Apple Sound

Resource (SND) or Audio Interchange File Format (AIFF) audio files into the Tracks window, and to construct from those audio files an audio track. You can also create a new audio file by recording a new track. Whenever you record a new track in Deck, that track is saved in a new audio file named with the name of the track. These audio files are placed in the Audio Files folder (which is in the same folder as the session document). You will always create a new audio file every time you record onto a new track. When you punch in on an existing track (or after the end of an existing track) that audio is always added to end of that track's audio file in the session's Audio Files folder.

### **Support of different audio file formats**

Deck supports Sound Designer I and II, AIFF, SND, WAV and QuickTime audio files, but the native playback and record format is Sound Designer II mono. When you select and add any files that are not in Sound Designer II mono form, Deck will automatically make a Sound Designer II mono copy of those files in the session's Audio Files folder. If you select a stereo file, two mono files will be created. Since non-Sound Designer II mono files need to be converted in this fashion, adding them to your session will require more disk space, and may take a few moments.

If you move an audio file that is referenced by a Deck session to a new place on the hard disk (or to another hard disk), Deck will always prompt you to find those missing audio files when you next open the session.

### **What is non-destructive recording?**

Deck uses non-destructive recording technologies, which are far more powerful than the simple linear erase technology of analog recording (or original DECK). It is very important to understand the concept of non-destructive recording if you are going to get the most out of Deck.

In the world of analog audio, there is only one kind of recording—destructive. Whenever you record onto a track of analog tape, the new signal permanently replaces whatever was on that track before. If you



record something on track 1, and then record something else over the same time, the original recording is erased and replaced with the new audio. This is the nature of magnetic tape.

Because Deck runs on a computer, it offers you many new and different options. You can think of your Deck session document as an audio database. It keeps track of all the audio regions you have recorded and added, and it plays them back according to how you recorded or placed them. Because of this, Deck is capable of keeping track of many more sound files and audio regions than you are using, and Deck uses this capability to allow non-destructive recording.

Deck recording is non-destructive because the process of recording never replaces or deletes any audio file data. Instead, new data is always recorded and “mapped in” to the position of the old data. If, for example, you record a track, and then punch in a replacement take over one bar in the middle of that track, when the new take is recorded, it is simply added as new data to the drive, and this new data region appears over the old take. Because nothing was erased, you can return to your original take at any time. You could even record ten new takes and choose between them later. The benefits of this scheme are obvious; you never have to risk erasing a section of audio just because you want to try another take or audition another region in the same place. Because of this scheme, you can also bounce four tracks to one track without erasing the destination track, and you can always go back to your original tracks and “re-bounce” them for a new submix. These facts make non-destructive recording one of the most powerful features associated with digital audio workstations.

There is, however, one drawback to non-destructive recording. Since you never delete old audio by recording new audio over it, your hard disk will have a tendency to fill up more quickly, especially if you are recording multiple long takes. Deck offers you a tool for dealing with all of this data. It's called the Compact Session command. This command automatically looks at the current session and finds all of the audio in your

source audio files that is not used on any track, in any form. Then it deletes all of the unused audio.

Executing this command does not take very long, and it will free up all of the disk space that had been occupied by unwanted audio. The combination of non-destructive recording and the Compact Session command make it possible for you to make sure that you have maximum flexibility, while consuming the minimum hard disk space. For more information, see “Using Compact Session and Compact Audio Files” on page 45. Make sure you understand how Compact Session works before you use it.

## Fader automation

After you have recorded all of the tracks of a multi-track project, you are ready to begin the mixdown process. It is called mixdown because you will be combining all of the monophonic tracks to create a stereo master. You will use the stereo master to make your final product—whether that is a compact disc, album, cassette, DAT, 1/4-inch tape, or a disk file for multimedia purposes.

In the typical tape-based home recording environment, final mixdown is accomplished by playing back the multitrack source repeatedly. During each playback pass you set levels, and practice moving the faders to fade the audio in and out, change levels, change send settings, etc. When you have practiced the mix enough to feel confident, you attempt to “perform” it as you record to a mastering deck. This is usually a very touchy process that is both inconsistent and inaccurate.

Professional recording studios get around this problem by using mixing consoles that automate the movement of all faders. Mixing boards that support fader automation often allow the engineer to set up board states, where the position of every fader is recorded, and assign those states to particular times during the recording. Some of the more advanced automated mixing consoles even record the physical motion of each fader and replicate that motion on every playback run. The major drawbacks of this type

of automation are expense and complexity. Generally the cost of moving fader automation puts it outside the reach of the individual.

Deck gets around these problems by offering moving fader automation as a software entity, rather than a piece of hardware. After you have recorded digital tracks, you can use Deck to record any adjustment you make to volume and pan. You can also capture fader states for all Deck faders and assign those states to specific times in the recording. You can view and edit all of these control adjustments in a visual fashion. These tools allow you to build up a mix slowly and save that mix as one of a series of different mixes. When it comes time to create a stereo master, you can be assured of exactly the same level settings and fader transitions every time.

### **Synchronizing sound to picture**

For many people, sound editing tasks are aimed specifically at enhancing or complementing visuals. These tasks, typically referred to as “audio post-production” or “sweetening,” put very specific requirements on audio technology. Generally the sound editor begins with finished picture, in video or film form, and perhaps some rough guide tracks on video tape, audio tape, or magnetic film. The post-production process then consists of editing the existing audio, adding new dialog, effects, ambiences and/or music. Then the editor would automate a mix of all sound components, and create a two-track (or more) stereo master, which is again recorded back to the video master or to another time-referenced master (timecoded digital audio tape or center track 1/4-inch tape, for example).

Deck offers all of the basic audio functions you will need to create soundtracks, synchronize those soundtracks to picture, automate your mix, and create a CD-quality digital stereo master.

Deck differs from conventional analog systems in a number of ways. Particularly important is the fact that Deck records, bounces, processes, and mixes your audio completely in the digital domain. This guaran-

tees you maximum editing control with little or no added processing or generation noise. Also, since the computer is used as the platform for control, you are free to use the synchronization method of your choice. This makes it possible for you to use SMPTE time code as your sync source, or to work entirely off your hard disk by using QuickTime video picture as the sync source. For more information about these methods, see Chapter 6, “QuickTime.”

### **Final stereo mixdown**

Generally speaking, final stereo mixdown is the last step in any multitrack production. In order to distribute any audio project, you will need to put it into a form that is available everywhere. That means compact disc, CD-ROM, digital or analog cassette tape, video tape, or vinyl. Unfortunately, of these media, only analog cassette tapes and video tapes can be recorded cheaply at home, and these formats generally do not offer optimal fidelity.

In the professional recording world, the final stereo master has traditionally been recorded on analog two-track reel-to-reel tape. This tape is then used as the image for duplicating albums, CDs, videos, films, or cassettes. Although this is the status quo, quality reel-to-reel mastering machines are quite expensive to own or use, and a number of high-fidelity, affordable new options are appearing.

Perhaps the most promising of the new mastering media is digital audio tape (DAT). Coupled with Deck and your Macintosh, DAT mastering offers a relatively inexpensive, extremely high-fidelity solution that can be used directly for producing CDs, albums or cassettes. If you own an audio card that offers only analog outputs, you can hook the analog audio outputs of the card to the analog inputs of a DAT recorder and create a final digital stereo master that rivals the quality of most analog studios. Using a timecoding DAT machine even makes it possible to create time-referenced masters.

## Archiving suggestions

Audio is a complex phenomenon, and you need quite a bit of data to describe it. Recording audio to your hard disk will use a lot of disk space. For example, a single track of 44.1kHz, 16-bit digital audio takes up about 5MB of disk space per minute. For this reason, it is a good idea to have some type of archiving medium for keeping master and backup copies of your Deck audio. In addition to your final mix stereo audio file, you will most likely want to keep an archive of the entire session. You can use most any means of data backup currently available to Macintosh computers: hard drives, removable media, tape drives, CD-R, etc.

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## Suggested reading

Most of the items listed here are available through Mix Bookshelf, a unique clearinghouse for information on recording technology and the music business. To order any of these titles, or request a free catalog, contact Mix Bookshelf at (800) 233-9604 (toll-free U.S. & Canada) or (510) 653-3307.

All You Need to Know About the Music Business, Donald Passman. Excellent coverage of record deals and music publishing, written by a prominent music attorney. Simon & Schuster, 1994.

The Art of Digital Audio, 2nd Ed., John Watkinson. Thorough, detailed and authoritative reference work. The definitive work on the subject. Focal Press, 1994.

Audio in Media, Stanley R. Alten. A classic; broad-based college level textbook for serious self-directed study of audio. Wadsworth Publishing Company, 1994.

Becoming a Computer Musician, Jeff Bowen. Exciting new book/CD-ROM package gives a painless introduction to MIDI and digital audio. CD-ROM contains software demos, music clips and more! Howard W. Sams, 1994.

The Computer Music Tutorial. This is THE book on

computer music, dsp, synthesis, MIDI, and so much more. Curtis Rhoads, MIT Press, 1996.

Digital Audio Operations, Francis Rumsey. Intermediate-level hands-on guide to tape- and disk-based digital recording. Focal Press, 1991.

Digital Interface Handbook, Rumsey & Watkinson. Focuses on maintaining quality throughout the signal chain. Comprehensive & detailed. Butterworth-Heinemann 1993.

Electronic Musician Magazine (periodical). P.O. Box 3714, Escondido, California, 92025.

Entertainment Source Library, Greg Forest, ed. A collection of professional music business contracts on floppy disk. Not a replacement for qualified legal advice, but a good starting place for protecting your rights. Cardinal Business Media, 1992.

Getting Radio Airplay, Gary Hustwit. Learn how to get your music played on the radio; a proven method for any style of music. Rockpress, 1993.

Keyboard Magazine (periodical) 20085 Stevens Creek, Cupertino, California, 95014

Making Music with Your Computer, David (Rudy) Trubitt, ed. An entry-level look at MIDI, hard-disk recording and multimedia; compiled from the pages of Electronic Musician magazine. Mix Books, 1993.

Mechanics of Sound Recording, Tony Zaza. Explains the technology and techniques of producing audio for video and film. Prentice-Hall, 1991.

MIDI for Musicians, Craig Anderton. This classic introduction to MIDI is the book that got us started. Amsco, 1986.

MIDI for the Professional, Lehrman & Tully. An advanced reference work for serious MIDI users. Amsco, 1993.

Mix Reference Disc, by the editors of Mix magazine. Studio test tones on CD. Cardinal Business Media 1994.

Modular Digital Multitracks, George Petersen. Learn how to choose, use, and troubleshoot tape-based digital recorders including ADATs and DA-88s. The only book on the subject. Mix Books, 1994.

The Musician's Business & Legal Guide, Mark Halloran, ed. A comprehensive and easy-to-understand survival manual; includes sample contracts and documents. Prentice-Hall, 1991.

The Musician's Guide to MIDI, Christian Braut. Monumental reference work covers areas the other titles omit, such as Sysex, General MIDI, Show Control and Machine Control. Sybex, 1994.

1995 Recording Industry Sourcebook. Comprehensive directory to record labels, producers, managers, distributors, suppliers, media contacts and more. Updated annually. Mix Books 1994.

Practical Recording Techniques, Bruce & Jenny Bartlett. A no-nonsense, hands-on how-to book for professional recording. Howard W. Sams, 1992.

Principles of Digital Audio, Ken C. Pohlman. Recommended introduction to digital concepts and technology--clearly and thoroughly explains the fundamentals. Howard W. Sams, 1989.

The QuickTime How-To Book, Miller & Harris. A step-by-step tutorial on QuickTime features and multimedia authoring. Sybex, 1993.

Releasing an Independent Record, Gary Hustwit. How to set up your own record label and market your music on a national level. Written by a former SST Records staffer. Rockpress, 1993.

The Software Publishers Association Legal Guide to Multimedia, Thomas Smedinghoff. Covers legal issues such as licensing, trade secret law, patents, copyright,

trademarks and more. Learn how to market and protect your multimedia work. Addison-Wesley, 1994.

The Studio Business Book, Jim Mandel. The definitive book on owning or running a recording studio, in a new, fully revised edition. Mix Books, 1995.

Studio Business Forms, Kevan Patten. A collection of business documents, such as invoices, work orders, track sheets and templates, geared toward the needs of small studios. Patten Sound, 1993.

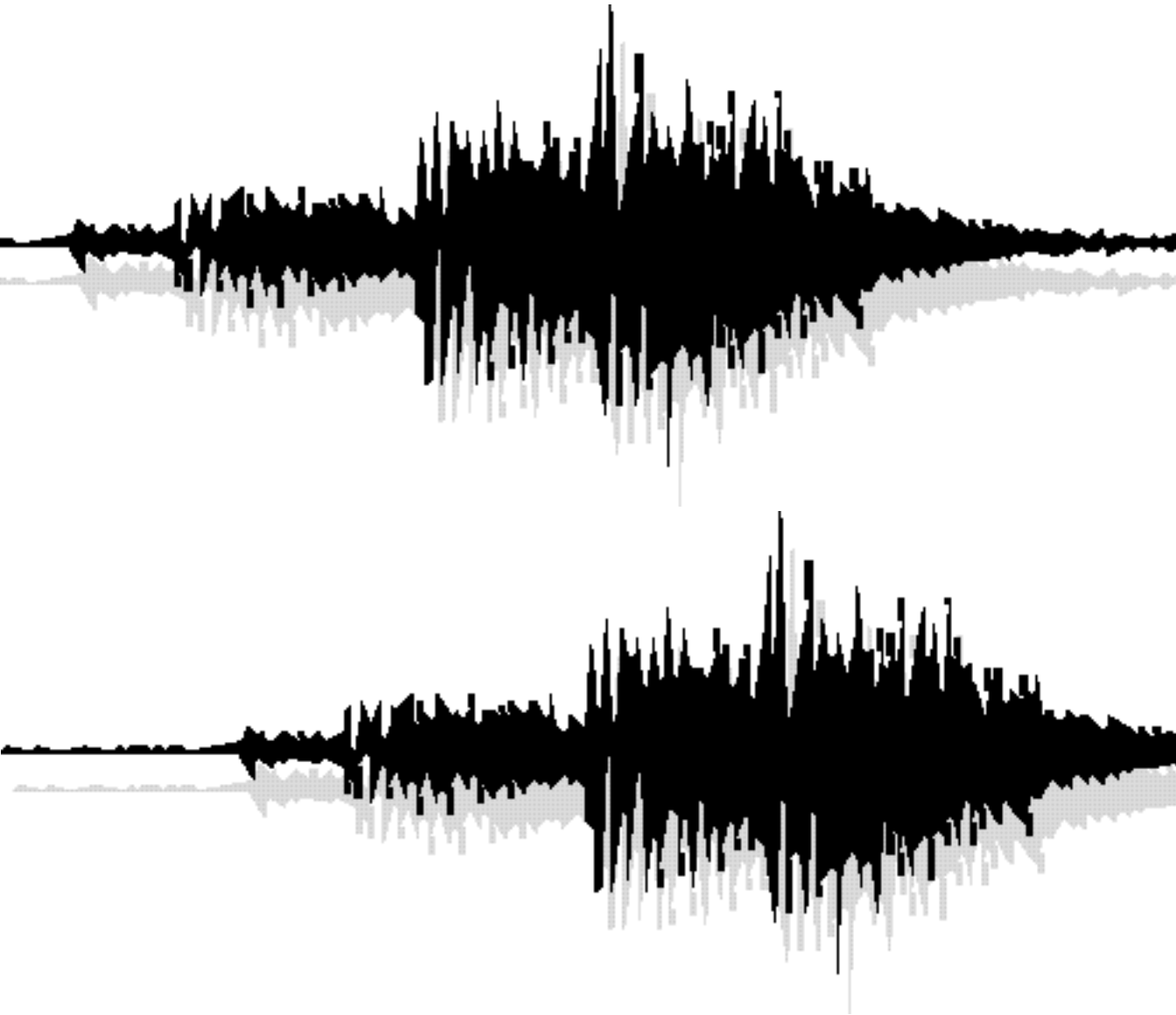
Synchronization: From Reel to Reel, Jeffrey Rona. Entry-level, hands-on coverage of SMPTE and MTC. Hal Leonard Publishing, 1994.

The Technique of Audio Post-Production in Video and Film, Tim Amyes. Intermediate-level look at audio post; includes good coverage of synchronization issues. Focal Press, 1990.

Tech Terms: A Practical Dictionary for Audio and Music Production, Petersen & Oppenheimer. Explains the most commonly-misunderstood words and phrases in recording and electronic music. Mix Books, 1993.

Time Code: A User's Guide, John Ratclif. An advanced, detailed handbook on SMPTE/EBU time code and its use in film, video and audio production. Focal Press, 1993.

# Appendices





# Appendix 1: Fine Tuning and Troubleshooting Your System

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Deck really pushes your Macintosh to its performance limits. The information listed in this Appendix will help you fine-tune your system to keep it as fast and efficient as possible, and deal with problems if they arise. If you are having trouble recording tracks due to computer or drive speed, consider the following issues.

Drive speed is more important than processor speed. Deck will perform without problem on most Macintosh computers. If you are having any type of recording problem, it is probably dependent on your drive.

Deck requires a hard disk that has a minimum average access time of 27ms and a sustained throughput of 300 KB/second or more for four-track recording and playback. For 8-12 track playback, you'll need access times of 12ms or less and 1.5MB/second throughput. For 12-16 track playback you'll need access times of 9ms or less and 3MB/second throughput. Avoid drives with automatic thermal recalibration routines, which will interrupt disk access. Manufacturers are concerned with selling hardware, so they are often not the best source for the average access time of the drives. Check around, ask friends, check newsgroups on the Internet, or read reviews of hard drives in computer magazines like *MacWorld* to get more accurate information about drive speeds.

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## Hard drives, formatting, and SCSI

If you already have a hard disk, and it seems to be too slow for recording, try optimizing or reformatting the drive. Often, the reason that your disk may choke during recording is that the remaining open disk areas exist as tiny segments that are spread all over the drive. These segments take much longer to find, and hence the disk slows down. Optimizing your hard drive is a good housekeeping procedure if you plan to do a lot of hard disk recording. Disk optimizing software, such as Norton Speed Disk™, will search your drive and rearrange it so your files (and open disk space) are no longer fragmented. This often speeds up the drive significantly.

If optimizing your drive doesn't work, remember that it is possible that your disk is too slow. If it is still under warranty, you may wish to have it benchmarked to judge if the manufacturer's information was false. If the drive is not as fast as claimed, contact the manufacturer directly. You can use a program such as FWB Hard Disk Toolkit to run benchmark tests on your hard drive(s).

## Throughput

As far as drive speed is concerned, average access time is not everything. A high-performance drive needs a good combination of average access time and throughput speed (in MB per second). There is no magic throughput number. The best thing you can do when considering a drive is to test the specific drive with your system before purchase or arrange a money-

back guarantee with the reseller.

## Formatting

It is recommended that you format your hard drive(s) HFS+ using Apple's own Disk Setup utility. You can also use other programs, such as Charisma Engineering's Anubis™ software or FWB Hard Disk Toolkit.

## SCSI Termination

The first and last devices in your SCSI chain must be properly terminated in order to avoid serious problems when working with Deck, and other disk-intensive applications. You usually don't need to worry about internal termination on the internal hard disk if it has been factory-installed by Apple. However, if your internal drive was not installed by Apple, you must be sure that it has been terminated according to the drive manufacturer's—and Apple's—specifications. If you have external SCSI devices connected to your Macintosh, we strongly recommend installing an active terminator on the last device in your external SCSI chain. Unfortunately, those little gray plugs that are usually provided with SCSI devices do not provide adequate termination and programs such as Deck make this evident. The SCSI Sentry from APS is an active terminator we have had very good results with, but just about any active terminator should do the job.

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## Extensions and Control Panel Conflicts

Keep your system clean. Deck is a program that accomplishes most of its important tasks in real time. This means that Deck is adjusting many facets of the audio as playback occurs. For this reason, you should make absolutely sure that your system is as simple as possible. You should attempt to avoid INITs and programs that run in the background. These programs may consume valuable processor time, which you need for Deck. Specifically, Norton DiskLight, certain virus-checkers, screen savers, background data

compression utilities, and background FAX receivers may cause you a host of speed problems and crashes if you run them while using Deck. For the best performance results, keep your System as simple and clean as possible.

There are no hard and fast rules, but please remember that Extensions and Control Panels may cause problems, and that you should run as lean a system as possible while using Deck. Many problems encountered when operating Deck have been traced to system Extension and Control Panel conflicts. BIAS recommends leaving the Apple installed extensions alone; but turning off file sharing, unmounting any and all network volumes, disconnecting from the internet (where applicable), turning off speech recognition, and turning off PC Exchange.

This should always be the first issue investigated when troubleshooting a problem. Listed below are system Extensions and Control Panels that have been known to cause problems with Deck. Third party Control Panels and Extensions not listed here can also be suspect.

### ***Incompatible System Extensions and Control Panels:***

- Aliasmenu
- Apple Menu Options
- AV Speed Up
- Billminder
- CD Remote Init
- Curtis Trackball
- Dal (Data Applications Language)
- Directory Assistance II
- Disinfectant
- Disk Lite (Norton)
- Express Modem
- Greg's Buttons



My Speech Macros

Now Tool Box & All Now Utilities

Radiusware

RAM Doubler

Record Button

SAM

Serial Extension

Virex

When tracking down system conflicts, you will need to actually open the System Folder, and open the Extensions and Control Panels folders. Select View By Name from the Finder's View menu. This is preferred to viewing extensions and control panels in start-up utilities such as Extensions Manager, where the listings may not reflect the actual contents of the Extensions folder. You may also consider using a program like Conflict Catcher.

To disable extensions or control panels, simply drag the items from their folder into the "Disabled Extensions" or the "Disabled Control Panels" folders and use them to store the items you wish to temporarily disable. Remember, you must restart your computer for the changes you've made to your System Folder to take effect.

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## RAM Allocation and Memory Management Hints

### Allocating RAM to Deck

In most instances you will need to allocate more RAM to Deck, as the factory default allocation is sometimes insufficient for sessions of any substantial length or complexity. You can change Deck's RAM allocation by highlighting the Deck application icon in the Finder, and select Get Info from the Finder's File menu. Enter the desired RAM allocation in the Preferred Size

window in Deck's Info Box.



*Changing Deck's RAM allocation can only be done while the program is not running.*

A good way to keep track of your System's RAM is to go to the Apple menu in the Finder and select About This Macintosh. This dialog box will show you how much RAM your System has, and how it is being used. It's a good way of keeping track of how much memory your applications are using, and how much unused RAM may be available to you.

To find out what your current session's RAM requirements are, go to Deck's Session menu while the session is active, and select Session Info. This dialog will tell you how much free RAM Deck has at its disposal. If the amount of free RAM shown is under 500K, you are running dangerously low on RAM if you intend to add any more material to the session, or use effects plug-ins. You should quit Deck and allocate more RAM to it before continuing with the session.

Set the memory partition for Deck by selecting it in the Finder and selecting Get Info from the File menu. Then increase the Preferred memory allocation. You can always decrease the amount of RAM required by Deck by decreasing the Max. Play Tracks count. To do this within Deck, go to the File menu and select Preferences. Then choose the Memory and Storage submenu, and change the Max. Play Tracks count to a lower number. Disk buffers are only allocated for play tracks, so decreasing the number of play tracks will decrease the number of buffers that will be placed into RAM.

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## MIDI

Keep MIDI trimmed down to a minimum, and mute tracks you don't need during record. Deck is an audio recording and mixing environment that supports simultaneous MIDI playback and recording (in background sequencers). As such, Deck puts full

emphasis on audio. If you are attempting to play back intense amounts of MIDI while recording audio tracks, you may run into speed or signal degradation problems. Although this will not happen in normal use situations, you may be able to cause problems if you use the MIDI Manager to split playback of 32 or more tracks (each of which is sending hundreds of messages per second). If, for some reason, you wish to play back such a MIDI file, you may wish to filter controller information, or mute some of the MIDI tracks while recording audio tracks. You will generally not encounter these problems during playback.

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## File management tips

A basic understanding of file management is very useful for new Deck users.

### Session file

A Deck session file does not contain audio files. Instead, it contains information that applies to audio files, such as region pointers, audio file paths, automations events such as pan and volume, etc. These files are relevant to the construction of your Deck sessions. A Deck session file is usually only around 200K in size.

### Track

Deck's playback track count reaches up to 64 tracks on some Power Macintosh computers (with very fast hard drives). A Deck track is analogous to a voice on a polyphonic synthesizer. A track always points to regions, and regions point to audio files.

### Work tracks

Work tracks are the same as regular tracks, except that they don't play. You can, however, audition audio regions in work tracks at any time by using Deck's audition tools. Work tracks can also be heard, complete with volume and panning automation, after performing a Bounce To Clipboard or Mix To Disk procedure, if Virtual Mixing has been enabled. Work

tracks can be moved up to playback tracks. A work track always points to regions, and regions point to audio files.

### Audio file

Audio files (also called sound files) are always mono 16-bit Sound Designer II files once they have been imported or recorded within a Deck session. The sample rate will be identical to the native sample rate of the session file. Sample rates can vary between 22.050kHz, 24kHz, 44.1kHz and 48kHz, depending on your CPU and audio hardware. Audio files are stored as individual files across your hard drive, until you perform a Mix to Disk or Bounce to Clipboard procedure, which creates a new audio file of your entire session. For more information about the Mix to Disk and Bounce to Clipboard commands, see Chapter 6, "Automation, Mixing, and Mastering."

### Crossfade file

Crossfade files are actual audio files that reside in your session's Crossfades folder. They are created each time you execute a crossfade in a Deck session. Crossfades are represented graphically within existing regions in a track.

### Region

Regions point to areas of existing audio files. Many regions can point to a single audio file. Regions can also be saved/stored within an audio file.

### Recording strategies

There are some strategies you can employ to help you organize your Audio Files, which will save you confusion later on.

Name your track(s) before recording. (Deck will name your tracks Track 1, Track 2, and so on, by default unless you do this.)

If you name each track as you work, you can avoid ending up with multiple files across various Deck sessions bearing the same name. By naming your own tracks, you will find it much easier to organize and

navigate your session.

To name a track, Command-click on the track's name pop-up at the left of the Tracks window that contains it. This brings up a dialog box that allows you to enter in a new name for your track. (You can also click on the track in the Tracks window to select it, then choose Rename from the File menu.)

Recording multiple passes of audio to the same track will result in a single, contiguous audio file containing all of the previous record passes. You can prevent this by always recording new audio passes onto a new track. This way, each record pass will exist as an individual audio file. Naming each track before recording will result in more manageable audio files, with recognizable names that are relevant to you. (For example, you could name multiple passes of a guitar solo "solo take 1," "solo take 2," and so on.) When choosing which of these multiple passes to use, you can delete unwanted takes by opening the Session Info dialog box, selecting the take by clicking on its name, and clicking the Delete key. This will free up hard disk space, and make your session less cluttered—but remember that this delete is a destructive edit that you can't undo.

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## A Note About Crashing and Restarting

Whenever your computer crashes and you are forced to restart, the first thing you should do is wait until the Desktop reappears, and then shut down normally. Let the computer sit for about a minute before starting it up again. This is called a cold boot.

If you have had repeated crashes, it is a good idea to rebuild the desktop files of your hard drive(s). You can do this by cold booting your computer while holding down the Command and Option keys down, and keeping them down until a dialog appears asking you if you are sure that you want to rebuild the Desktop file for your drive(s). Select OK for all of your drives.

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## Troubleshooting

Deck performs an amazingly complex series of tasks on a wide variety of Macintosh computers. While problems are rare, there may be times when you will get an error message or system crash, or have some other sort of problem while using Deck. The following troubleshooting guide will help you identify and correct these sorts of problems.

### Problems with output levels during monitoring

There is a bug in some Power Macintosh sound hardware. Specifically, when you turn on playthrough in your Sound Control Panel to monitor while recording, the output level of the entire system will drop by around 20db. This is not a bug in Deck, nor can it currently be fixed in software—it is a bug in Apple's Power Macintosh hardware.

This bug does not affect audio recorded into Deck, but it does affect the playthrough, or monitor volume. While setting levels, what you see on the VU meters and what you hear will be different than what is actually going into the system. With this in mind, do not base your record levels on DECK's VU meters—if you do, the playback signal will be much weaker than anticipated.

### Solution

Keep the Analog Input Level (DECK's Options menu) set at 0 to avoid this bug. With the Analog Input Level set at 0, the levels that you see and hear will be correct. You may find it helpful to use a good quality compact mixer to boost the incoming signal.

### Error Message: "Problems initializing Playback engine. No Supported hardware installed."

### Possible solutions

Check the sound control panel and make sure that

both a sound input and a sound output are available. Otherwise, rebooting will usually correct this problem.

Check to see how much free RAM you have on your Macintosh. Quit Deck, go to the finder and select About This Macintosh from the Apple menu. The Largest Unused Block indicates the amount of free RAM you have available. Make sure you have at least 16MB of free RAM on your Macintosh. (Remember not to increase the Hard Disk Buffer settings in Deck's Memory and Storage menu above the amount of RAM allocated to Deck.)

If you can, try allocating more RAM to the Deck Memory Partition. (Remember, to Get Info, you must highlight the application, not an alias, and the application must not be running.)

Throw away the Deck Preferences file (in the Preferences folder, which is found in the System Folder) and restart your machine. Users of Digidesign hardware must also throw away the DigiSetup and Digicomm files, if any, from their System folder. All new Preferences files will be created automatically the next time you use Deck.

Within Deck, decrease the Max. Play Tracks in Deck's Memory and Storage Preferences menu.

Perhaps Deck was not installed properly. It is possible that the wrong platform type was selected during installation, for example. If you suspect that this was the case, reinstall Deck. To learn how to install Deck, see Chapter 2, "Installation and Setup."

### **Problem: Cannot Record in Stereo—no Stereo Separation.**

#### **Possible solutions**

Make sure you are using stereo, as opposed to mono, adapters going to and from your Mac's audio input and output jacks (the following illustration shows a stereo mini-plug).

Be sure that the plugs fit snugly in the audio input and output jacks of your Macintosh.

Remember to set each record track to a different input in the Mixer window.

### **Problem: Scratchy-sounding Audio**

#### **Possible solution**

Be sure to use a stereo 1/8-inch adapter with a 1/2-inch tip and a tapered base that is slightly raised above the adapter's casing (see diagram below). The input socket on an AV Macintosh will prevent certain "flat-headed" 1/8-inch adapters from making full stereo contact.

### **General Problems with audio playback (glitches, pops, clicks, "Disk is Too Slow" messages)**

#### **Possible solutions**

Record audio to a hard drive that does not contain the System Folder. (This is why two hard drives are recommended when using Deck on AV Macintosh computers.)

Change the Disk Buffer setting. (Go to DECK's File menu, select Memory and Storage from Preferences, and enter 192K in the Disk Buffer Size box. This is the factory setting.)

### **Problem: Trouble with MIDI or with syncing to external time code (MTC)**

#### **Possible solution**

Install Opcode's OMS version 2.3 or later. We recommend installing OMS on all machines if you are doing work that entails synchronization. OMS provides compensation for dropouts in MIDI time code and is of great help when slaving Deck to external time code.

### **Error messages**

#### **-36 I/O errors**

These usually signify SCSI termination problems. Be sure that your internal drive is properly terminated, and that you install an active terminator device on the

last SCSI device in your external SCSI chain. (See the section on SCSI termination earlier in this Appendix for more information.)

### **-37 “Bad File Name” errors**

Region and audio file names must be less than 31 characters long, and illegal characters such as : and ; cannot be used when naming files.

### **-39 errors**

These are “End Of File” errors in which a region’s start and end times have somehow become corrupted.

These errors can occur when importing regions from files originally saved in Sound Designer II. There have also been reported instances of -39 errors during playback within a Deck session. Here are some instances of -39 errors, and ways to remedy them:

#### **-39 error during playback**

Take note of which region, or regions, actually cause this error. Deck will usually stop playback exactly at the start point of the problematic region(s). Find the problematic region’s original position. In Object mode, use the Trim tool to trim the problem region inwards to make it smaller. Now trim the region a second time and extend it back to its original duration. Now that the region’s start and end times have been redefined by the Trim tool, the -39 error should disappear.

#### **-39 error when importing region(s) originally saved in Sound Designer II**

Rebuild the Desktop file on all of your hard drives. (Restart your Macintosh while holding down the Command and Option keys; click OK when the dialog box appears.) Open your Sound Designer II application, redefine the problematic region(s)’ start and end points, and save them within Sound Designer II. Now you can Import the region(s) into Deck using Add Audio to Clipboard in Deck’s File menu.

### **-43 “File Cannot Be Found” errors**

These errors are usually caused by corrupted crossfade

files. This can happen if you’ve moved session files from volume to volume. To remedy -43 errors, select Rebuild Fades from Deck’s Process menu. If the problem persists, rebuild the Desktop file on all of your hard drives. (See the previous page for instructions on how to do this.) If you still get a -43 error, you may have to delete all of your crossfades (by selecting Delete Fades from Deck’s Process menu) and recreate them from scratch. But before resorting to this, try quitting Deck and throwing away the crossfades files folder from your problem session. Crossfades will be automatically re-created upon re-opening the session.

### **-108 (or - 2012) “Couldn’t Complete the Last Command due to a Mac OS error”**

Allocating more RAM to Deck’s Memory partition will remedy these errors.

### **-192 “Required Resources Missing” error**

Troubleshoot your Extensions and Control Panel setup, and rebuild the Desktop file for all of your hard drives. (These procedures are explained at length earlier in this Appendix.) If this doesn’t work, reinstall Deck. If you still get the -192 error message, you may have to perform a clean install of your System software.

### **-2720 error**

You have the incorrect input source selected. In the Sound Control Panel, set the input to Built-in instead of Digidesign.

### **“Problems Initializing Playback Engine”**

This error is usually the result of increasing Deck’s Disk Buffer size without first allocating sufficient RAM to the Deck application in the Finder. Higher Disk Buffer settings require more RAM allocated to Deck. To calculate the amount of RAM you’ll need to allocate to Deck in these cases, multiply the amount of the Disk Buffer increase by the number of tracks running in Deck. Now change Deck’s RAM allocation by entering the new amount in the Preferred box in Deck’s Get Info box in the Finder.

### **Deck freezes up or hangs during recording**

This may be the result of a SCSI termination problem. To test whether SCSI termination is the culprit, use Deck's Mix To Disk feature. Make a 5 minute selection in the Tracks window and select Mix to Disk from Deck's Process menu. Perform this process with the same selection a total of three times, creating three mix files. If any problems arise during any of these three Mix to Disk procedures, or if you have problems playing back any of the three mix files you created when they have been imported into a Deck session, then it is likely that there is something wrong with your SCSI chain. See the section on SCSI termination earlier in this Appendix for more information.

### **"Calculating File Overview" dialog appears continually when you attempt to scroll through the Tracks window**

Allocating more RAM to Deck will usually solve this problem. Unfortunately, allocating more RAM will not solve -39 error-related calculate overview loops.

### **"Disk Too Slow" messages or "out of memory" errors**

On slow disks, use the Memory and Storage preference (from the File menu's Preferences submenu) to increase the disk buffer size. This will increase overall memory required, but will decrease disk read frequency and put less strain on your drive.

### **A note about "Disk Too Slow" messages**

If you are running Deck with multiple slave programs on a single Macintosh, or if your Macintosh or hard disk is slow or older, you may encounter the "Disk Too Slow" message in Deck. This is not the kiss of death for your system. There are a number of simple adjustments you can make that will generally remedy this problem.

Try increasing the size of your disk buffers. Often you will get this message because your disk is really a bit slow. To compensate for a slow disk, you can increase the size of your disk buffers. This decreases the number of disk reads that need to be made, thereby

decreasing the total number of seeks required. Larger sections of audio are loaded during disk reads, and overall strain on your hard disk is reduced.

The only drawback may be a slight increase in the delay between pushing the Play button and begin of playback. To increase the size of your disk buffers, choose Memory & Storage from the File menu's Preferences submenu.

Use this dialog to enter a larger disk buffer size. Try 256K first, then increase it if that doesn't improve disk performance sufficiently. Remember, when you increase your disk buffer size, you must also increase the amount of RAM allocated to the Deck application. (Higher Disk Buffer settings require more RAM.) Here's how to calculate the required increase in RAM allocation when increasing the Disk Buffer for your session: take the amount of Disk Buffer increase and multiply that number by the number of tracks in your Deck session.

Change Deck's RAM allocation by quitting the program, selecting its Get Info box from the Finder, and changing the Preferred Size.

Decrease the update speed setting for background programs. Deck offers a special "Update speed during playback" option, available under General in the File menu's Preferences submenu. This preference allows you to set how much time is available for other programs to update in the background behind Deck audio playback. A setting of 1 allows the background program to update as often as possible. This setting makes it easier to see screen activity in background programs. A setting of 10 prevents background programs from updating during playback, allowing Deck to monopolize your display. This setting does not affect the performance of the background program at all. It only affects screen drawing. A setting of 5 is suggested. If you are running Metro in the background, and you experience "Disk Too Slow" messages, you may want to set this to 8 or 10 to decrease the background strain on your Macintosh CPU, or try decreasing Metro's steps per beat setting.

Turn off the “Stop playback if disk is too slow” preference. This is a particularly useful preference available under General in the File menu’s Preferences submenu. The “Stop playback if disk is too slow” preference allows you to set how carefully Deck checks to see if your drive is too slow. If you attempt to play multiple tracks from a very slow drive, Deck may not be able to play them without a small glitch, or skip in playback. Usually this skip is so subtle, you will not be able to hear it. When this preference is turned on, Deck will put up a warning dialog and immediately stop playback any time disk performance might cause a playback skip. When this preference is turned off, Deck will continue to play back, even if a slight skip may potentially occur.

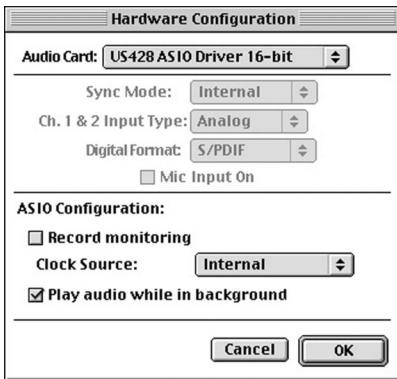
If you are mixing live directly to DAT, or any mastering medium, then turn on “Stop Playback if Disk is too Slow.” This will guarantee that audio playback will be supervised, and stopped before any skip might occur. If you are simply editing sound and you plan to mix to disk (which is the suggested way to use Deck), then leave this preference turned off. Most skips will not be audible, and, even if you do hear a skip, that skip will not appear in the master file that results from a Mix to Disk procedure.

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# Appendix 2: Support for the Tascam US-428

Deck and Deck LE offer direct support for the Tascam US-428 control surface. If Deck detects a Tascam US-428 control port available via OMS, Deck places itself in “US-428” mode.

To use the US-428 as your audio interface for Deck, install the US-428 ASIO Driver 16-bit in Deck’s ASIO Drivers folder. Launch Deck and choose the US-428 ASIO driver 16-bit from the Audio Card pop-up menu in the Hardware Configuration Dialog.



Hardware Configuration dialog



*Note that you do not have to use the US-428 as your ASIO driver in order to use the US-428 as a control surface.*

When in US-428 mode, Deck instantiates a Parametric EQ-4 (version 2.7.1) on the first effects insert of every track. The “High”, “Hi-mid”, “Low-mid”, and “Low” buttons on the Tascam US-428 select each of the four parametric bands in the EQ-4 algorithm.

Moving a fader on the US-428 will move the correlating Volume fader in Deck. The bank buttons on the US-

428 are used to select which group of Volume faders will be controlled by the 8 faders on the US-428 (e.g. 1-8, 9-16, 17-24).

Pressing the “Select” buttons on the US-428 selects the channel. The Pan knob and EQ knobs will control the Panning and the parameters of the 4-band EQ for the currently selected channel in Deck.

The Transport buttons on the US-428 map directly to the Transport controls in Deck. The Record button also acts as a modifier. To record arm a channel, press and hold the Record button and press a select button to toggle record armed status for the channel.

The “Mute” buttons display and toggle the mute status for the selected channel and the corresponding Track in Deck. If the “SOLO” button is lit, this function changes to display and toggle the solo status for the channel and the corresponding rack in Deck.

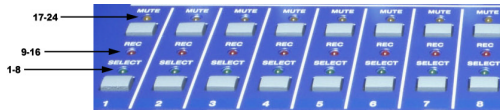
The “Locate <<”, “Locate >>”, and “Set” buttons on the US-428 are used to set and jump between location markers in the Tracks window in Deck. Bring the Tracks window in Deck to the foreground and use the Set button to drop a location marker at the current time.

The “Locate <<” button will jump to the nearest location marker before the current time, and the “Locate >>” button jumps to the nearest location marker ahead of the current time.

The select buttons on the US-428 select Tracks 1–8 from the current session in Deck LE. In the full version of Deck, the select buttons on the US-428 select Tracks 1–8 from the current bank. The Bank buttons select which bank of channels are affected by the US-428 controls (e.g. 1-8, 9-16, 17-24, etc.). The number of



available playback Tracks in the mixer is controlled by the General/Storage preferences in Deck.



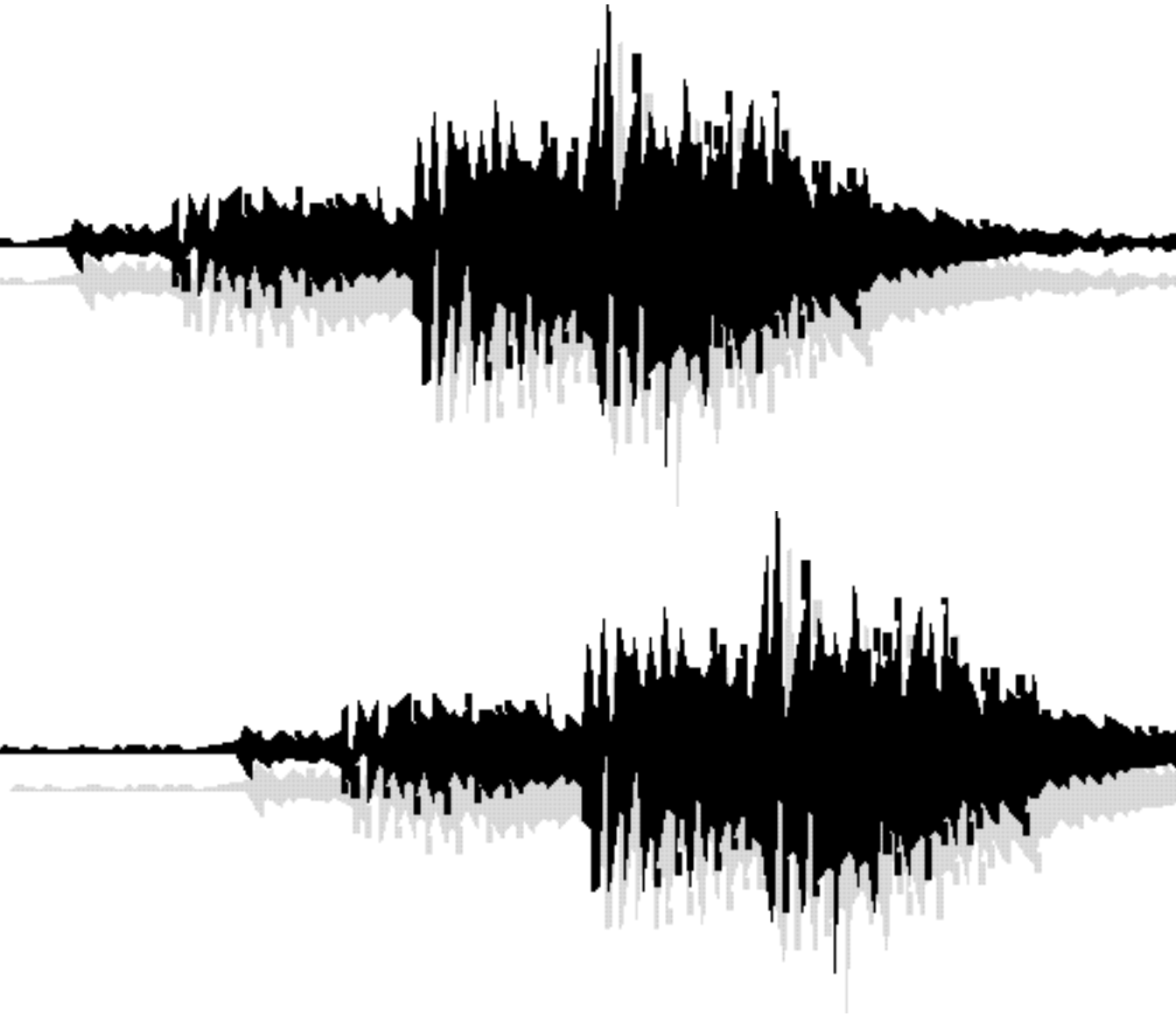
*Input/Output channel display when “ASGN” button is pressed*

The “ASGN” button in conjunction with the data wheel selects the input assignment for the currently selected channel. Press and hold the “ASGN” button and rotate the data wheel to change input assignment for the selected channel. While the “ASGN” button is depressed, the mixer state buttons (SELECT, REC, MUTE) display the current input channel assigned.

The “F1” button in conjunction with the data wheel selects the output assignment for the currently selected channel. Press and hold the “F1” button and rotate the data wheel to change output pair assignment for the selected channel. While the “F1” button is depressed, the mixer state buttons (SELECT, REC, MUTE) display the current output pair assigned (e.g. 1 = output pair 1-2, 2 = output pair 3-4, etc.).



# Glossary





# Glossary

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## **AIFF**

Apple's Audio Interchange File Format used for recording and storing digital audio.

## **audio card (third-party audio card, audio expansion card; audio recording/playback card)**

A third-party expansion card that plugs into a NuBus or PCI or PCMCIA slot in your Macintosh. These cards enhance a computer's audio recording and playback capabilities. Using Apple's Sound Manager software, Deck works with a variety of Macintosh audio cards from Digidesign, Digigram, Echo, Korg, Lucid, Mark of the Unicorn, MIDI Man, and others. In some cases, special Sound Manager Driver software or ASIO Driver software may be needed from the audio card's manufacturer to work properly with Deck.

## **audio document**

An audio document is a Macintosh audio data file created by Deck. Deck can create and open audio documents in a variety of common audio file formats. The SDII file format is Deck's default file format. For more information, refer to AIFF, WAV, Sound Designer II, and QuickTime.

## **bit resolution (bit rate)**

Describes how many bits—as in “0s” and “1s”—are available to describe a digital recording. In practice, the bit resolution defines the dynamic range of a sound, whereas the sample rate defines the frequency range. 16-bit audio is the professional Compact Disc standard; 8-bit audio is suitable for less demanding applications, such as multimedia presentations. More bits result in better quality, but also require more hard drive storage space. Also refer to dynamic range, frequency, and sample rate.

## **clipping**

A type of audio distortion that occurs when a source signal (such as from an audio CD player) is recorded at such a high level that the recording device (such as a Macintosh running Deck) runs out of “headroom.” It can also occur when a signal is played back from a audio source into an audio destination at an excessive level, such as when a mixing console feeds a signal to a power amplifier at an extremely high level. In either case, clipping represents a mismatch in level between an audio source and an audio destination. When digital clipping occurs, such as during digital recording, the results can be a harsh “crackling” or “raspy” sound. When you use Deck, you can avoid digital clipping by ensuring that the record levels are set so that the loudest incoming audio passages stay below the maximum input level, as indicated on the record or playback meters. Deck's Clip indicators above the vu meters in the Mixer window will easily show any clipping that occurs. Also refer to headroom.

## **dB (decibel)**

This is the most common unit used for measuring the level of audio. The greater the number of decibels, the higher the audio signal. Within Deck, the vu meters show a signal's relative level in terms of dB. There are many different kinds of decibel scales, but for the purposes of using Deck, “dB” can be used to describe the relative gain of different passages of audio, or to describe the available headroom during recording. Also refer to gain and headroom.

## **DSP**

DSP stands for digital signal processing. In the world of audio, DSP refers to manipulating a digital audio signal by processes such as level changes, reverberation, delay, or other such effects. Deck uses DSP to perform many of its audio processing tasks—including those found in the Destructive Effects submenu and

Deck's Built-in Effects.

### **dynamic range**

In audio recording terminology, dynamic range refers to the range in level between the quietest and loudest passages of a selection of audio. It is usually expressed in decibels. Bit resolution determines a recording's dynamic range. An 8-bit recording has 256 available levels, which translates into a dynamic range of 48dB. This may be suitable for some applications, but it may also sound noisy, since the difference in gain between the loudest passages and the quietest passages (which may contain hiss and other potential noise) is not that great. A 16-bit recording has 65,536 available levels, which translates into a high-quality dynamic range of 96dB. As a rule of thumb, you can calculate dynamic range in decibels by multiplying the bit rate by "6." Also refer to bit resolution, decibel, and gain.

### **fade-in/fade-out**

A fade-in is a process where the gain of an audio signal is increased from zero (silence) to its full volume. A fade-out is a process where the gain of an audio signal is decreased from its full volume to zero (silence). Deck allows you to create fade-ins/fade-outs by making a selection and choosing the Fade Selection command from the Process menu (Command-F). Envelope shapes can be editing with the Set Default Fade or Custom Fade commands in the Process menu.

### **frequency**

Sound consists of waves, which occur in cycles. Frequency refers to how frequently these wave cycles occur in a given period of time (generally, one second). The higher the frequency of a sound, the higher its "pitch" as perceived by human ears. Frequency is measured in Hertz (Hz), or cycles per second. Roughly speaking, humans are able to hear sounds in the frequency range between 20Hz and 20,000Hz (20kHz).

### **gain**

1) The process of amplifying a signal. 2) A way to express relative signal levels for audio. For instance, by

adding 6 decibels of level to a signal, we double the perceived loudness of the signal. Also refer to decibel and headroom.

### **headroom**

Describes how much gain is left before a signal induces clipping or distortion. When recording with Deck, the vu meters in the Mixer window indicate how much headroom is left before clipping. When playing back audio in Deck, the meter strip at the bottom of the screen will indicate this as well. Most professional audio engineers leave between 3dB and 12dB of headroom while recording, to minimize the possibility of clipping. If you leave too much headroom, however, your signal may be recorded at too low a level, and you may end up with excessive noise or hiss. Also refer to clipping, decibel, and gain.

### **Hz (Hertz)**

This is the unit of measurement for frequency, and refers to the number how many "cycles per second" a sound wave generates. In the world of sound, the higher the number of Hertz, the higher the frequency of a sound and hence the higher its "pitch" as perceived by human ears. A thousand Hertz can be expressed as 1kHz (one kilohertz), so that 20,000 Hertz may also be referred to as 20kHz.

### **loop**

Loops are used to sustain or repeat a section of audio; a loop is a repeating region of audio.

### **marker**

A marker is a location in the Deck timeline that you define as important; you can also think of a marker as a "memory location." By marking a specific location in a recording, you can easily navigate to it for selection, editing or playback purposes.

### **Plug-Ins**

Plug-Ins are optional software enhancements for Deck that are available from BIAS and other developers that support the Adobe Premiere Audio Plug-In Standard

and the Steinberg VST standard. By installing plug-ins in Deck, you can enhance Deck's audio editing and processing capabilities with tools such as filtering, reverberation, chorusing and flanging, noise reduction, spatialization, and more.

## QuickTime

This is an audio format developed by Apple Computer for QuickTime-based multimedia. It is supported by all Macintosh software applications that support QuickTime. The QuickTime format is best if you plan to use an audio document in multimedia applications that support QuickTime, such as Adobe Premiere or Macromedia Director.

## region

A region is a portion of an audio document.

## sample

(verb) Sampling refers to the act of recording audio material digitally by a sampling instrument or other digital recording device. See sampler and sample rate.

## sample

(noun) A sample refers to audio material which has recorded digitally or "sampled" by a sampling instrument or other digital recording device. Sample also refers to a single wave-cycle "snapshot" of sound. See also sampler and sample rate.

## sample rate

Sample rate describes how frequently an analog audio signal is been "sampled" or analyzed as it is recorded and converted to a digital medium. Sample rate directly affects audio fidelity in terms of upper frequency response: the higher the sample rate, the higher the available frequency response. A fundamental principle of sampling states that to accurately capture a sound, the sample rate must be at least twice the highest frequency in the sound. The standard sample rate for Compact Discs is 44.1 kHz. The following are common sample rates which are supported by many Macintosh computers and Deck software.

**48.000kHz** This is one of two standard sample rates for digital audio tape (DAT) recorders, and is often used by sound editors working in audio post-production for video or film. This rate results in an upper frequency response of 24kHz — well above the range of human hearing.

**44.100kHz** This is the standard sample rate for Compact Discs, digital audio tape (DAT) recorders, and high-fidelity audio applications on Macintosh and PC-compatible computers with 16-bit playback capability. It is colloquially called "forty-four one" (as in 44.1kHz). Most sound engineers working in music production — or anything that may be distributed on a CD — work at this rate. This rate results in an upper frequency response of 22,050Hz — above most people's hearing range.

**22.050kHz & 11.025kHz** These sample rates are sometimes used for lower-fidelity audio playback on Macintosh and PC-compatible computers. Many games, web-sites and other multimedia productions utilize 22.050kHz (or lower) 8-bit audio, since it uses half the disc space of CD-quality audio. The 22.050kHz sample rate results in an upper frequency response of 12.025kHz; this may sound "muffled," since most people can hear considerably higher frequencies than 12.025kHz.

Also refer to bit resolution, frequency, and Hertz.

## SCSI

Stands for Small Computer System Interface. It is a standard developed to allow a variety of computers and peripheral devices such as hard disks, CD recorders, scanners, and other storage media, to connect and transfer data. Most external hard drives designed for use with the Macintosh are SCSI hard drives and must be connected to the SCSI port on the rear of the Macintosh. The SCSI specification allows up to seven SCSI-equipped devices to be connected or "daisy-chained" together.

## **Sound Designer II™**

This is an audio file format developed by Digidesign for use with its digital audio products. The format can also be read by a wide variety of Macintosh-based audio editing and multimedia development programs. It is Deck's standard file format.

## **.WAV**

This is Microsoft's Windows Audio File Format. It is supported by many Windows software applications and some Macintosh applications. The WAV format is best if you plan to use an audio document in an application that supports or requires WAV format files.

## **zero-crossing**

The zero-crossing is the point where the waveform meets the zero crossing line or the center line through the waveform. It is the point of zero amplitude in the waveform.

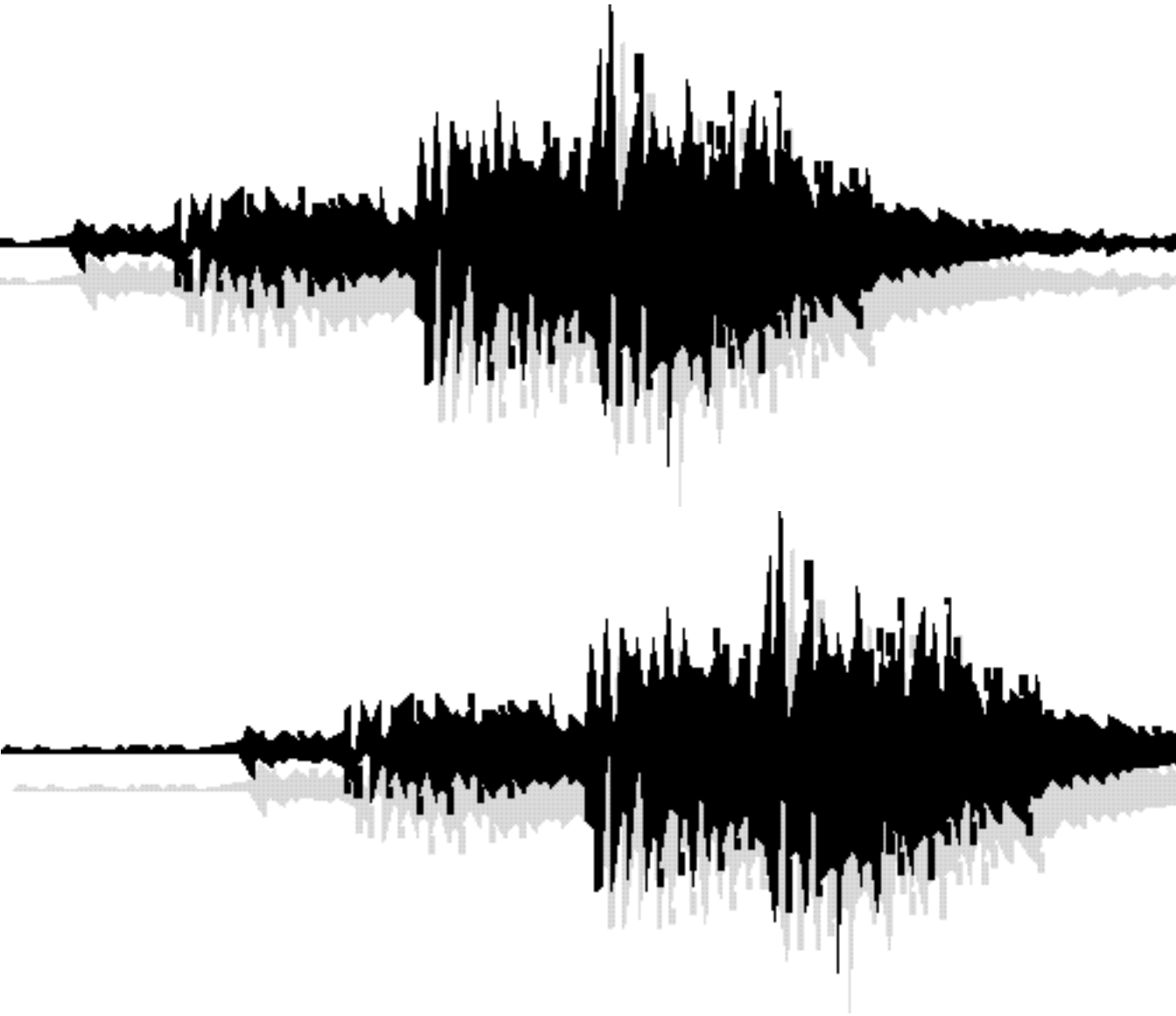
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